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Cylindrical nonisothermal oscillatory Couette gas flow in the slip regime: Wall shear stress and energy transfer, numerical investigation

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Abstract

The oscillatory Couette flow between an oscillating inner cylinder and a stationary outer cylinder is considered in the study. New results for the stress and heat flux at the "gas-cylinder wall" interface are obtained. The continuum model based on the Navier-Stokes equations for compressible fluid is completed with the equations of continuity and energy transport. Along with the numerical solution proposed in our previous paper [29], it is used to investigate the cylinder-gas interaction. The wall shear stress (drag) and heat flux variation at the cylinder walls are numerically investigated. First order velocity-slip boundary conditions are specified referring to two types of motion of the inner cylinder- harmonic oscillations and stepwise oscillations. Two types of energy transfer boundary condition at inner cylinder are considered - inner cylinder with constant wall temperature and adiabatically insulated inner cylinder. Results found for the drag and heat flux variations are presented accounting for different oscillation frequencies and Knudsen numbers. Parts of the results obtained for the harmonically oscillating inner cylinder are compared to the numerical data, obtained by the DSMC method in [18]. In the case of harmonically oscillating inner cylinder a drag phase delay with respect to the wall velocity is established and studied. Hydrodynamic selfsimilarty of the drag and energy transfer variations is confirmed and analyzed.

Keywords: Rarefied gas, Compressible Navier-Stokes, Microfluidics, Numerical Methods

1. Introduction

The Couette flow in both plane and cylindrical geometry has been investigated by many authors [1], [2], [3], [4], [5], [6], [7], [8]. Recently the study of oscillatory planar Couette flow between vertically moving surfaces has become an important part of MEMS modeling [9]. Thus, Park et al. [10] presented a thorough study of oscillatory Couette flows between two parallel smooth walls, using DSMC solutions. Hadjiconstantinou [11] extended the work of [10] to include a second-order slip-flow boundary treatment. A plane oscillatory Couette flow was considered also by [13], where an analytical solution in the hydrodynamic regime was obtained. A critical analysis of theoretical and experimental data on the slip and jump coefficients available in

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the open literature was presented in [21]. Tang et al [14] analyzed the effects of the Stokes and Knudsen numbers, the coefficient of tangential momentum accommodation of an oscillating Couette flow and the Stokes second problem by using lattice simulation. Based on the linearized Boltzmann equation a detailed numerical solution for a wide range of gas rarefaction and oscillatory frequency was proposed by [16]. Taheri et al [17] utilized the linearized Navier--Stokes--Fourier equations and regularized 13-moment equations to present the rarefaction effects in the plane oscillatory Couette flow. problems. Non-planar effects in an oscillatory cylindrical gas flow have been studied in [18], where an incompressible viscous flow model and the Direct Simulation Monte Carlo method were used to predict the velocity and shear stress profiles within the whole range of Knudsen number. The energy generation as a consequence of dissipation cannot be neglected even in the case of oscillating with moderate amplitude of the driven wall velocity. Recently the incompressible Navier-Stokes-Fourier (NSF) equations in the cylindrical polar coordinate reference frame were employed in [15], while the simultaneous effects of viscous dissipation and rarefaction phenomenon were taken into account. Analytical solutions for the gas and liquid velocity and temperature distribution were found in [28] for steady state one-dimensional microchannel cylindrical Couette flow between a shaft and a concentric cylinder.

In a previous paper [29] we presented numerical analysis of the continuum model of nonisothermal oscillatory cylindrical Couette gas flow in the slip regime. Our analysis was based on the continuum Navier--Stokes (NS) equations for compressible fluid completed with the equations of continuity and energy transport. Note also that nonstationary velocity, temperature and density variations were considered. Here we extend our previous investigations. Analyzing an oscillatory cylindrical Couette flow we present new results for the stress and heat flux at the gas-cylinder wall interface, and they turn to be important gas flow characteristics. We also calculate and discuss numerical

results found for the drag and heat flux variations, regarding different oscillation frequencies and Knudsen numbers that change within limits relatively wider than those specified in [29]. Along with harmonic (smooth) oscillations we consider the other limit case of stepwise (impulse) oscillations of the rotating cylinder. Yet, an arbitrary periodic movement of the rotating cylinder may find room between the two limit cases - the harmonic and the stepwise ones. Two cases of boundary conditions at the inner cylinder wall employed to solve the energy transfer equation are investigated. The first one corresponds to constant wall temperature of the inner cylinder and the second one - to an adiabatically insulated inner cylinder. The latter requirement might be important in the case of insulated cylindrical system without temperature control of the inner cylinder. A part of the results obtained for harmonic oscillations of the inner cylinder have been compared to the numerical data, obtained in the paper [18] by the DSMC method. In the case of harmonically oscillating inner cylinder a drag phase delay [10] with respect to the wall velocity is established and investigated. Noticeable heat flux variations in the gas flow are observed when the adiabatic insulated inner cylinder is investigated. The previously observed and established fact of low speeds selfsimilarity of the macroscopic flow characteristics is numerically confirmed also for drag and heat flux variations, too. The selfsimilarity with respect to the wall velocity amplitude variations allows prediction of low speed effects such as drag and heat transfer.

2. Problem formulation

The mathematical model outlined in the subsections below (2.1 an 2.2) and containing the transport equations and the correspondingly boundary conditions, is set forth in [29].

2.1. *Continuum model*

We study a rarefied hard sphere gas flow between two coaxial cylinders (one dimensional, axis-symmetric problem). The inner cylinder has radius R_1 and

peripheral velocity V_1, the outer - R_2 and V_2, respectively. The continuous model is based on the Navier–Stokes (NS) equations for compressible fluid, completed with the equations of continuity, the ideal gas low and energy transport. For details see [1], [11], [29].

The following standard notations are used: ρ for the density and T for the temperature, where **V** is the velocity vector. u and v are the velocity components along axis r and φ, P is the pressure, $\rho, P, T, u, v = f(r,t)$, $\tau_{i,j}$, $i = r, \varphi$; $j = \varphi, z$ are the stress tensor components and Φ is the dissipation function [19].

For a perfect monatomic hard sphere gas, the viscosity and heat transfer coefficients read as [20]:

(1) $\mu = \mu(T) = C_\mu \rho_0 l_0 V_0 \sqrt{T}, \quad C_\mu = \frac{5}{16}\sqrt{\pi}$.

(2) $\lambda = \lambda(T) = C_\lambda \rho_0 l_0 V_0 \sqrt{T}, \quad C_\lambda = \frac{15}{32}\sqrt{\pi}$.

The model equations are normalized by using the following scales: for density $\rho_0 = mn_0$ (m is the molecular mass, n_0 – the average number density), for velocity $V_0 = \sqrt{2RT_0}$ - R is the gas constant, for length - distance between the cylinders $L = R_2 - R_1$, for time $t_0 = L/V_0$, for temperature T_0 - the wall temperature of both cylinders. The Knudsen number is $\mathrm{Kn} = l_0/L$, where the mean free path is l_0 and $\gamma = c_P/c_V = 5/3$ (c_p and c_v are the heat capacities at constant pressure and constant volume respectively). In this way, the characteristic number Kn and the constants C_μ and C_λ take part in the dimensionless model. For brevity, hereafter the same symbols r, t, ρ, P, T, u, v and $R_i, i = 1,2$ are used for the corresponding dimensionless variables and t is the dimensionless time.

2.2 *Boundary conditions*

Following [12] and [18] the first-order slip boundary conditions, imposed at both walls, can be written directly in dimensionless form as follows

(3) $v \mp A_\sigma \mathrm{Kn}\left(\frac{\partial v}{\partial r} - \frac{v}{r}\right) = \overline{V_i}(t)$,

(4) $u = 0$,

(5) $T \pm \zeta_T \mathrm{Kn} \dfrac{\partial T}{\partial r} = 1$,

at $r = R_i,\ i = 1,2$. The upper sign in (3) and (5) corresponds $i = 1,\ r = R_1$ and the lower one to $i = 2,\ r = R_2$. For diffuse scattering we have used the viscous slip and temperature jump coefficients $A_\sigma = 1.1466$ and $\zeta_T = 2.1904$, calculated in [22] and [23] respectively using the kinetic BGK equation (see [24] for details). The same slip coefficients were used by [25], [26], [29]. Two types boundary conditions for the inner cylinder are used, when the outer one is at rest (i.e. $\bar{V}_2 = 0$).

- harmonic oscillations:

(6) $\bar{V}_1(t) = V_1 + \Delta V_1 \sin(\bar{\omega} t)$,

where $\bar{\omega}$ is the dimensionless circular frequency (the forced frequency).

- stepwise oscillations:

(7) $\bar{V}_1(t) = \begin{cases} V_1 + \Delta V_1, & 2k\pi \le \bar{\omega} t \le 2k\pi + \pi \\ V_1 - \Delta V_1, & 2k\pi + \pi \le \bar{\omega} t \le 2(k+1)\pi \end{cases}$,

where $k = 0,1,2,3....$ The dimensionless period of the oscillations t_{PER} is equal to:

(8) $t_{PER} = 2\pi / \bar{\omega}$.

In Eqs.(6), (7) V_1 is the mean wall velocity and ΔV_1 - its amplitude.

We consider in the present study circular frequencies much larger than the molecular collision frequency. The characteristic parameter θ, used in [12], to characterize the speed of oscillation $\theta = \nu_m / \omega$, connects the intermolecular collision frequency ν_m and the dimensional oscillation frequency ω. If $\theta \to 0$, the molecular collisions can be neglected.

It is convenient to introduce an additional dimensionless parameter, to describe the forced frequency influence, namely the Stokes number as given in [10], [18]:

(9) $\beta = \sqrt{\frac{\omega t_{\dim}^{\ 2}}{\nu}}$.

In Eq.(9) ω is the dimensional circular frequency, $t_{\dim}$ - the dimensional time and ν is the kinematic viscosity. Using Eq.(1), the following relation between dimensionless circular frequency $\bar{\omega}$ and Stokes number β can be written.

(10) $\bar{\omega} = C_{\mu}\mathrm{Kn}\beta^2$.

2.3. *Wall shear stress (drag) definition*

The wall shear stress or the drag is defined as dimensionless stress tensor component $\bar{\tau}_{r\varphi}$, expressing the viscous interaction between two neighboring thin "shells" of the gas medium:

(11) $\bar{\tau}_{r\varphi} = \tau_{r\varphi} / \left(\rho_0 V_0^2\right)$,

where $\tau_{r\varphi}$ is the stress tensor component along the axis φ, according to [19], written on the driven wall, in dimensional form. Accounting for the axis-symmetric case and using the definitions in the previously section 2.1, the dimensionless stress tensor component $\bar{\tau}_{r\varphi}$ can be expressed through the dimensionless quantities v, T :

(12) $\bar{\tau}_{r\varphi} = -C_{\mu}\mathrm{Kn}\sqrt{\bar{T}}\left[r\frac{\partial}{\partial r}\left(\frac{v}{r}\right)\right]$.

2.4. *Heat flux definition*

The heat transfer measure is the heat flux in the gas media on the wall, expressed as:

(13) $q_T = -\lambda\frac{\partial T}{\partial r} = -c_p\rho_0 T_0 C_{\lambda}\mathrm{Kn}\sqrt{T}\frac{\partial T}{\partial r} = -c_p\rho_0 T_0\,\bar{q}$,

where the dimensionless heat flux $\bar{q}$ is

(14) $\bar{q} = -C_{\lambda}\mathrm{Kn}\sqrt{T}\frac{\partial T}{\partial r}$,

And λ is the heat transfer coefficient defined in Eq.(3).

2.5. *Numerical solution*

The transfer equations, together with the boundary conditions (3)-(7) written for *u*, *v*, with zero initial profiles, formulate the unsteady-state initial-boundary value problem. The initial variations for density and temperature are constant i.e. $\rho(r,t=0)=1,\ T(r,t=0)=1$.

A central implicit finite difference scheme of second order of approximation is used to solve numerically the formulated problem [25], [26]. The numerical solution is described in [29].

Everywhere in the calculations, the value $\Delta V_1 = 0.3$ of the velocity amplitude is used and $V_1 = 0$. The dimensionless cylinder radii are $R_1 = 1,\ R_2 = 2$. The case corresponding to Kn=0.1 is chosen to be a characteristic one. This value of the Knudsen number is close to the upper limit for the slip flow regime [10], [11]. Hence, the numerical results for different Knudsen numbers (less or larger then Kn=0.1) are put together with those found for Kn=0.1.

The difference value problem is solved starting from initial profiles for all unknown quantities and proceeding until the establishment of a steady oscillating regime. It takes commonly from about one or two periods (in the case of harmonic oscillations and relative small Stokes number - $\beta \le 4$), to 16-24 periods (in the case of stepwise oscillations and relative high Stokes number - $\beta \ge 32$). Everywhere in the figures time evolution of the numerical results for $0 \le \overline{\omega} t/(2\pi) \le 1$(where $t = 0$ is a reference time), for one period is shown after the establishment of steady oscillation.

3 Numerical results: Wall shearstress

3.1 *Harmonic oscillations*

Typical cases of harmonic oscillating inner cylinder, for two different Knudsen numbers are presented on Fig.1a, 1b, where the drag results obtained

with NS model are compared against the corresponding DSMC results (calculated also for $\Delta V_1 = 0.3$).

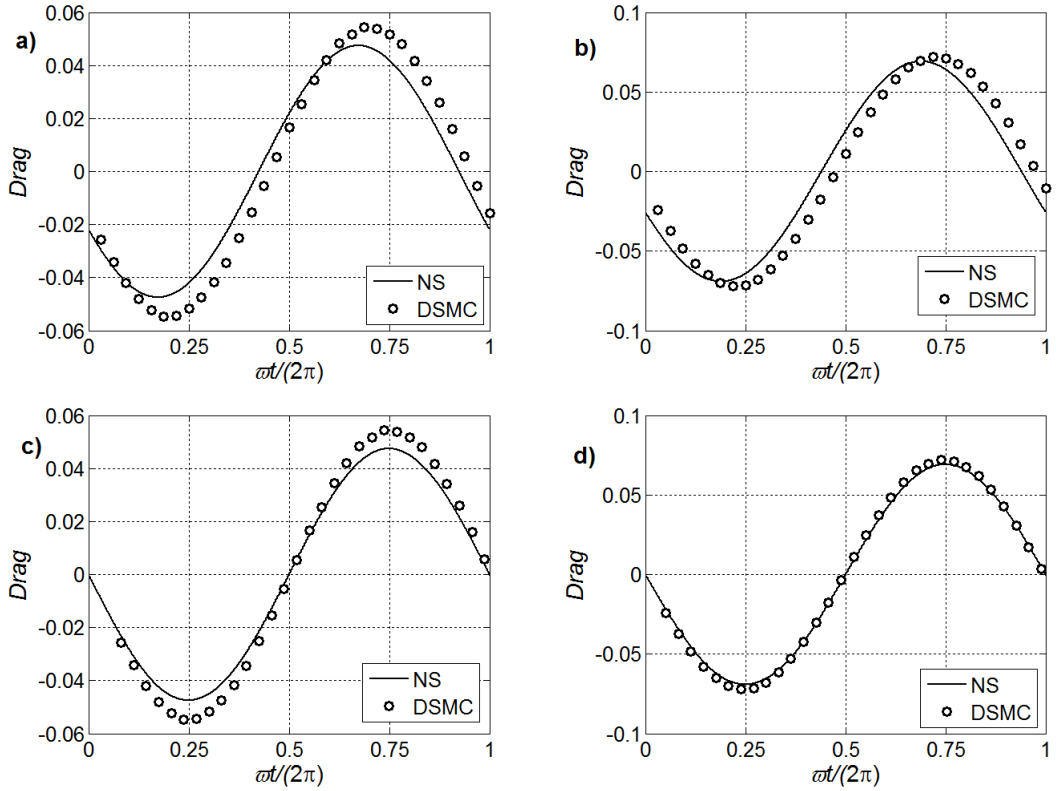


Fig.1 Harmonic oscillations – drag, comparison NS – DSMC, $\beta = 4$, $\Delta V_1 = 0.3$, $\overline{\omega} = 0.8862$ $\varphi_{1,d} = -0.075929$, $\varphi_{2,d} = -0.060179$ a) Kn=0.1 with phase delay, b) Kn=0.2 with phase delay, c) Kn=0.1 without phase delay, d) Kn=0.2 without phase delay.

The drag changes harmonically following the wall velocity change with negative sign as described in boundary condition Eq.(3). For both groups of results presented on Fig.1a, a phase delay can be observed i.e. the drag phase depends in relation to the wall velocity phase. The same results without the phase delay are plotted on fig.1b. The values of phase delay in both cases are $\varphi_{1,d} = -0.075929$ and $\varphi_{2,d} = -0.060179$.

Applying the scales introduced in section 1, the dimensionless period is defined as Eq.(8), and a new dimensionless variable τ can be introduced instead of dimensionless time *t*.

(15) $\tau = \overline{\omega} t / (2\pi)$, $0 \le \tau \le 1$, $0 \le t \le t_{per}$.

More generalized results for drag variation for different values of Knudsen number and frequencies are shown on Figs. 2a and 2b. For that purpose the mean integral drag value is introduced:

(16) $$Drag_M = \int_0^1 abs[Drag(\tau)]d\tau \ ,$$

where t_{per} is the dimensionless oscillating period and $Drag = \bar{\tau}_{r\varphi}$.

The results, presented on Fig.2 are in agreement also with the analytical solution results, presented in Emerson et al [18],

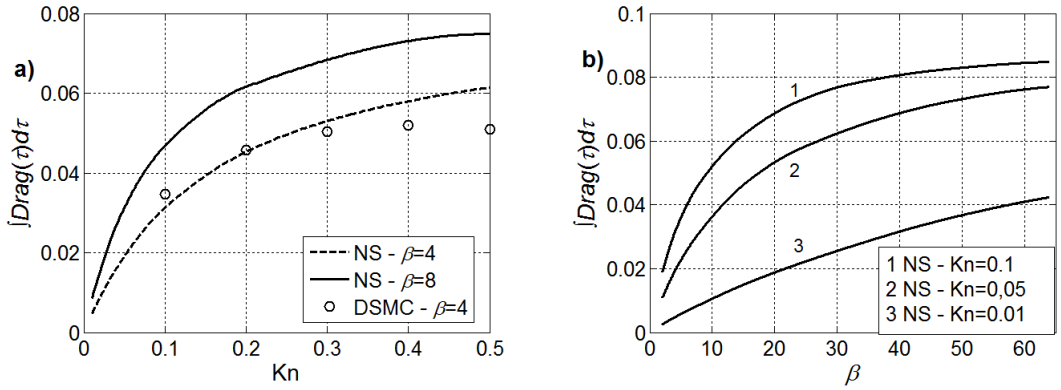


Fig.2 Drag dependencies. on Kn, a) for two fixed values of β and b) Drag dependencies on β, for three fixed Knudsen numbers

Following Park et al (2004) [10], the general representation of the velocity signal at any arbitrary coordinate *r* is expressed as:

(17) $$v(r,t) = \Delta V_1 \sin(\varpi t + \psi),$$

where ψ is the phase angle. From the slip boundary condition on the cylinder wall at $r = R_1$ follows the connection:

(18) $$\frac{A_\sigma}{C_\mu}\bar{\tau}_{r\varphi} = \Delta V_1 \sin(\varpi t) - v(R_1,t).$$

In Eq.(18) the gas velocity can be expressed using Eq.(17) or using the numerical results for $v(R_1,t)$. As seen from numerical results, plotted on Fig.3a, the gas velocity variation on the wall shows also harmonic time dependence. The $\bar{\tau}_{r\varphi}$ variation according Eq.(18) is proportional to difference between both

velocities (those of wall and gas). This difference is also presented on Fig.3a and the phase delay of the velocities difference with respect to the wall velocity is obvious. The change of the Knudsen and Stokes number cause only quantitative variation in the phase delay value. Let φ_d is the value of drag phase delay value close to the inner cylinder wall $r = R_1$

(19) $\varphi_d = \overline{\omega} t_d / (2\pi)$,

and t_d is the corresponding dimensionless delay time of drag variation toward to driven wall velocity. Note that the above described process is not observed in the case of stepwise oscillations (Fig3.b).

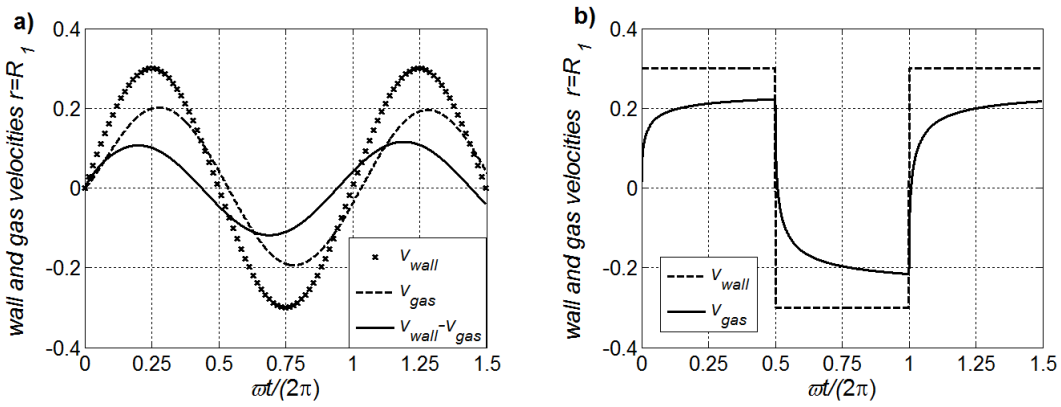


Fig.3 Velocity variation on the driven cylinder wall, $\mathrm{Kn} = 0.1$, $\beta = 4$, $\Delta V_1 = 0.3$, $\overline{\omega} = 0.8862$,
a) harmonic oscillations, b) stepwise oscillations

Fig.4a presents the relation of the drag phase delay corresponding to the case of harmonic oscillation for two fixed values of β and three fixed values of Kn. The DSMC results calculated for $\beta = 4$ and presented on the same figure confirm the phase delay existing, and are in qualitative agreement with the NS results. The phase delay dependencies for three fixed Kn numbers and $2 \le \beta \le 64$ are plotted on Fig.4b.

Hydrodynamic selfsimilarity

Our previous paper [29] established and explained the hydrodynamic similarity between velocity profiles for wall amplitude values of $\Delta V_{1,i} \le 0.3$ to

those calculated for wall amplitude values of $\Delta V_1 = 0.3$, (note that $\Delta V_{1,i}$ is the value of the velocity amplitude different from 0.3 and used in boundary condition Eq.(6) instead of ΔV_1).

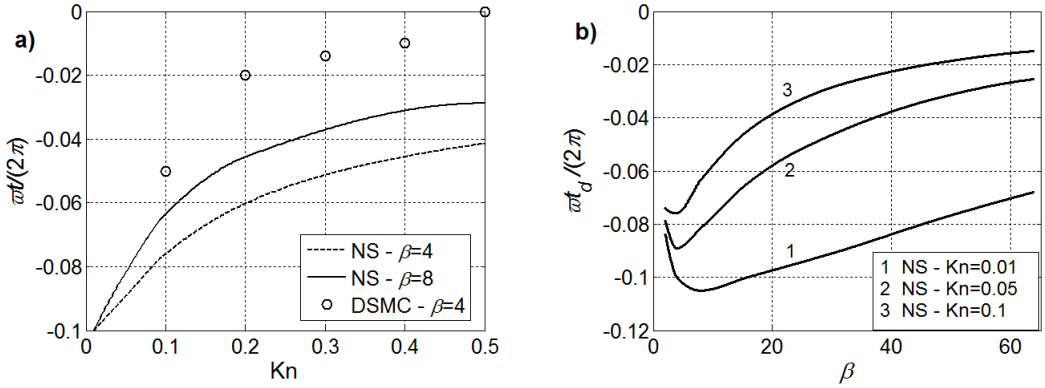


Fig.4 Harmonic oscillations – drag phase delay a) for three fixed values of β, b).for three fixed values of Kn.

The same fact is observed for the drag interaction between the gas media and the inner cylinder wall. Drag relation Eq.(12) written for $\Delta V_1 = 0.3$, can be modified for amplitude values of $\Delta V_{1,i} < 0.3$ as follows:

$$(20) \quad \bar{\tau}_{r\varphi,i} = -\frac{\Delta V_1}{\Delta V_{1,i}} C_\mu \mathrm{Kn}\sqrt{\bar{T}}\left[r\frac{\partial}{\partial r}\left(\frac{v}{r}\right)\right] = \frac{\Delta V_1}{\Delta V_{1,i}}\bar{\tau}_{r\varphi} \ .$$

For example on Fig.5 are compared the NS results, calculated for $\Delta V_{1,i} = 0.3\cdot 10^{-2}$ and scaled using Eq.(20), with NS results for $\Delta V_1 = 0.3$ and DSMC results (presented on Fig.1). The NS results after applying Eq.(20) for drag and phase delay in both cases are identical. The results confirm the hydrodynamic selfsimilarity again.

4.2. *Stepwise oscillations*

The drag variation numerical results, for two cases with different Stokes numbers (different forced oscillation frequencies) are plotted on Fig.6.. The first case $(\beta = 4)$, corresponds to this on Fig.1a, but for stepwise oscillating inner cylinder. No phase delay is established, as explained in previous subsection.

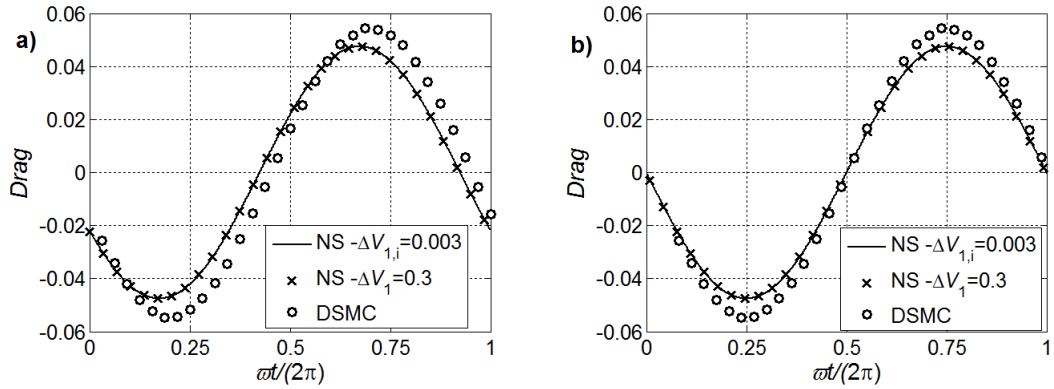


Fig.5 Selfsimilarity in drag dependencies for two different velocity amplitudes, harmonic oscillations a) with phase delay, b) without phase delay.

The numerical results for mean integral drag dependence for three fixed values of Kn and Stokes number β changing in the limits $2 \le \beta \le 128$, are presented on Fig.7.

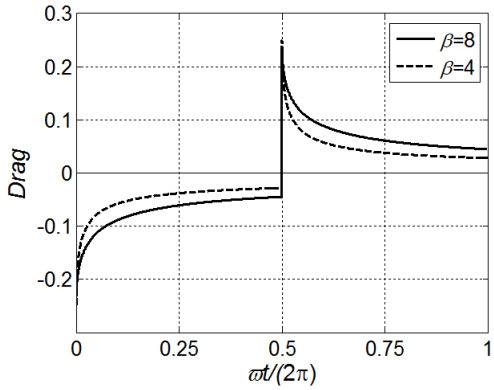


Fig.6 Stepwise oscillation: drag comparison for two forced frequencies, $\mathrm{Kn} = 0.1,\ \beta = 4,8,\ \Delta V_1 = 0.3$

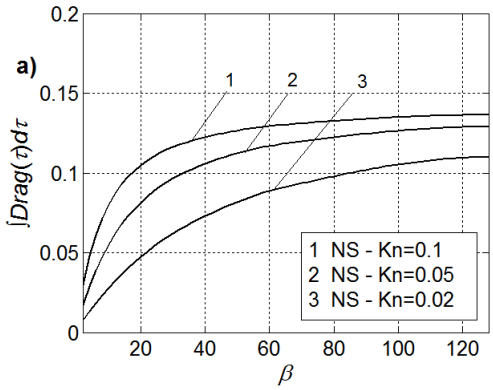


Fig.7 Mean integral drag dependencies on β, for three Knudsen values, stepwise oscillations,

Hydrodynamic selfsimilarity

The hydrodynamic selfsimilarity discussed in the previous section can be observed also in the case of stepwise oscillation. Fig.8 shows comparison between the numerical results, calculated for $\Delta V_{1,i} = 0.3 \cdot 10^{-2}$, and scaled using Eq.(20) with the results calculated for $\Delta V_1 = 0.3$. The results confirm again the existence of hydrodynamic selfsimilarity.

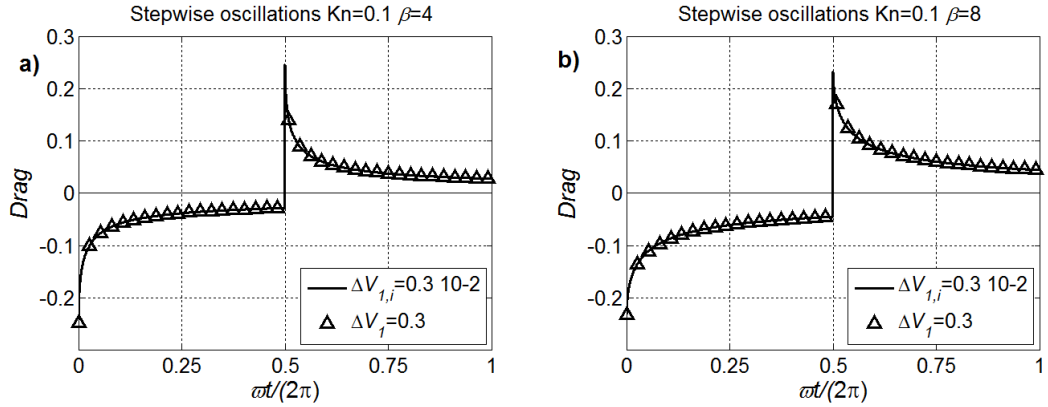


Fig.8 Selfsimilarity in drag variations, stepwise oscillations, a) $\mathrm{Kn} = 0.1,\ \beta = 4$, b). $\mathrm{Kn} = 0{,}1,\ \beta = 8$.

4. **Numerical results: Heat transfer "cylinder wall – gas media"**

In this section we analyze the energy transfer in a system "`cylinder wall--gas media'" considering both cylinders -- the oscillating inner cylinder and the static outer one. Variations of the heat flux at the inner and outer cylinder walls, regarding one period in both cases of oscillations -- harmonic and stepwise, are shown on Fig.9. The results concern the same typical cases as those, shown in Fig.1a and 6. Visible difference between the heat flux variations on the outer cylinder wall is observed when the adiabatically insulated inner cylinder is investigated -- the line marked with 3.

4.1. *Hydrodynamic selsimilarity*

The hydrodynamic selfsimilarity is valid also in the cases of heat transfer through cylinder wall. The heat flux dependence Eq.(15) written for $\Delta V_1 = 0.3$, can be modified for values of $\Delta V_{1,i} < 0.3$ as follows:

(21) $$\bar{q}_i = -\left(\frac{\Delta V_1}{\Delta V_{1,i}}\right)^2 C_k \mathrm{Kn}\sqrt{T}\frac{\partial T}{\partial r} = \left(\frac{\Delta V_1}{\Delta V_{1,i}}\right)^2 \bar{q}$$

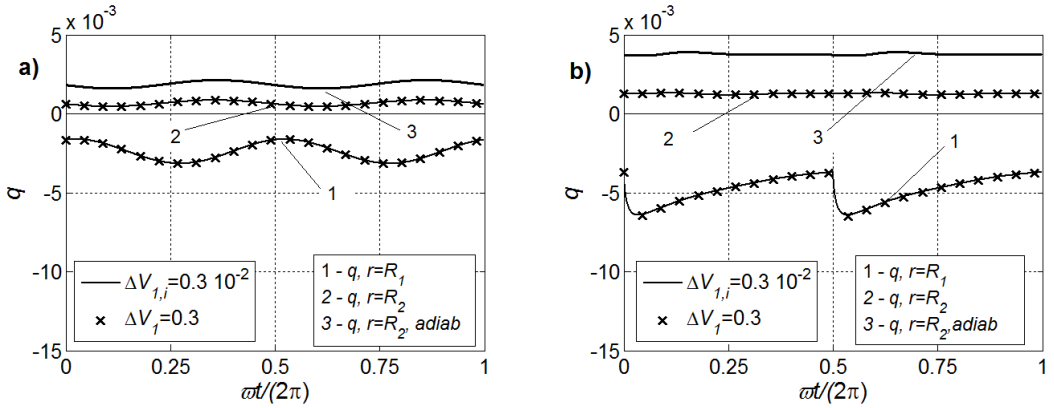


Fig.9 Heat flux, selfsmilarity, $\mathrm{Kn} = 0.1,\ \beta = 4$, a)harmonic oscillations, b) stepwise oscillations.

Note that $\bar{q}_i$ in Eq.(22) is the heatflux, calculated for velocity amplitude $\Delta V_{1,i} = 0.3 \cdot 10^{-2}$, and scaled using Eq.(21). The second power of the velocity quotient can be explained by the quadratic dependence between heat energy and fluid velocity in the dissipation function.

Based on the numerical results found for drag and heat flux for both types of inner cylinder oscillations, we may confirm and extend the conclusion of [29], stating that in the case of oscillations with relatively small velocity amplitude, neither NS nor DSMC additional computations are needed. It is sufficient to use Eq.(20) or Eq.(21) to recalculate the results once found for drag or heat flux obtained at a moderate wall velocity amplitude $\Delta V_1 = 0.3$. Regarding both types of inner cylinder wall oscillations that approach adopted with some caution, can avoid a lot of unnecessary and time consuming calculations of the viscous drag and heat energy transfer in a system "cylinder wall -- gas media" system.

As in Fig.9, Fig.10a, b shows the variation of the heat flux at the outer cylinder wall heat flux variations presented but on a larger scale. It is clearly

seen that the period of variation of dimensionless heat flux $\tau_{per} = 0.5$ is exactly twice smaller [26] then that of the driven wall velocity variation $\tau_{per} = 1$.

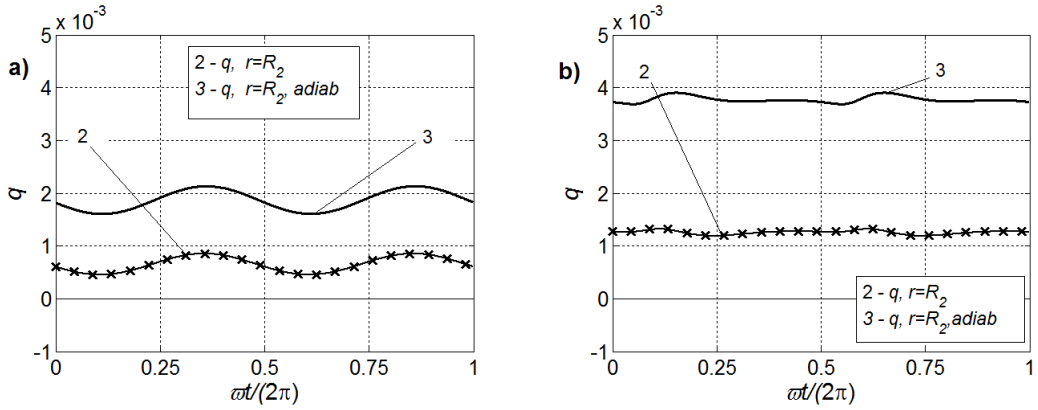


Fig.10 Outer cylinder wall heat flux:
$\mathrm{Kn} = 0.1,\ \beta = 4,\ \Delta V_1 = 0.3,\ \bar{\omega} = 0.8862,\ \omega_q = 1.7724$, a)harmonic oscillations, b) stepwise oscillations .

Using the Eq.(19) the dimensionless circular frequency of the heat flux is calculated as $\omega_q = 1.7724$. This frequency is twice larger then the forced frequency $\bar{\omega} = 0.8862$. Such a correlation can be observed for Stokes number values $\beta \le 4$ and Knudsen numbers $\mathrm{Kn} \le 0.1$ at the slip regime, for both types of oscillations of the inner cylinder. As our numerical calculations show this frequency quotient does not depend on Kn or β numbers within the above specified limits. This fact can be used to calculate the forced circular frequency in a system, where this frequency of the inner cylinder oscillations is unknown and can not be measured.

4.2. *Adiabatic insulated inner cylinder*

The case of adiabatically insulated inner cylinder [29] is a case possibly more close to the reality then the case of an inner cylinder with constant temperature. The corresponding boundary condition at the driven cylinder wall, used instead of Eq.(5) is

(22) $\dfrac{\partial T}{\partial r} = 0,\ r = R_1$.

The numerical results show difference in the temperature profiles in both cases [29], but this does not affect significantly the drag value at the oscillating cylinder wall. Hence, such results are not shown on the figures. Energy generated as a result of dissipation is transferred through the outer cylinder wall, only. The condition presented by Eq.(22) is applied, and the heat flux calculations at the outer cylinder wall are presented in Fig.9a for harmonic oscillations and in Fig.9b -for stepwise oscillations (denoted with 3). In both cases the heat energy transfer is about two times more intensive.

Heat flux mean integral value

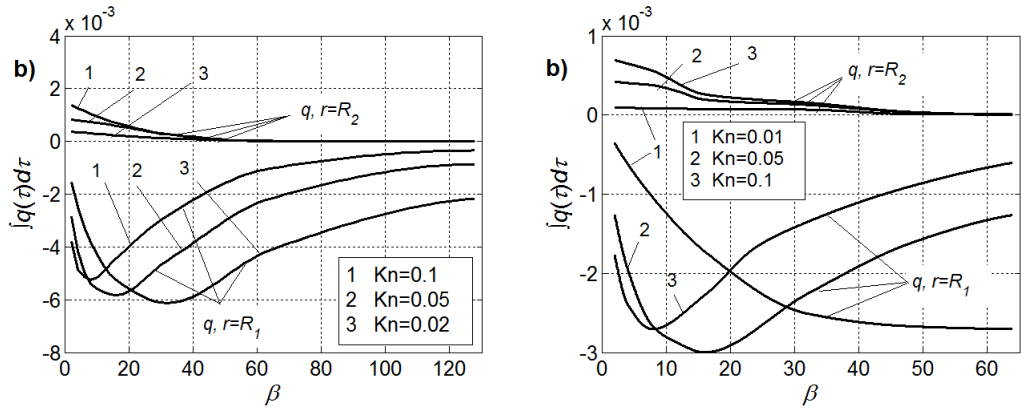
The heat flux mean integral value is defined similarly as the drag mean value:

$$q_M = \int_0^1 q(\tau) d\tau \tag{23}$$

The plot of the mean integral value of the heat flux vs. Stokes number in the case of a harmonically oscillating inner cylinder is shown in Fig.11a. and in the case of stepwise oscillations – on Fig.11b The heat flux moduli at both cylinder walls are of the same order of magnitude. Our qualitative comparison to DSMC results found in [29] shows, that the numerical results of the NS model solution must be examined carefully for Knudsen numbers $\mathrm{Kn} \geq 0.2$ and Stokes numbers $\beta \geq 16$.

4.3. *Gas temperature at cylinder walls: frequency and phase delay*

The numerical results provide a twice larger circular frequency of the gas temperature variations at both cylinder walls [29]. That correlation between circular frequencies does not depend on the oscillations type and the phase delay value. Gas temperature variations at the wall of a harmonic oscillating inner cylinder with and without phase delay is shown in Fig.12. A phase delay with respect to the wall velocity of the inner cylinder wall is visible analyzing gas temperature variation at the inner and outer cylinder walls.



Fig,11 Mean integral heat flux dependencies, a) harmonic oscillations, b) stepwise oscillations

Analyzing the numerical results about a harmonically oscillating inner cylinder the following conclusions can be drawn: gas temperature at the inner cylinder wall has larger mean value and oscillates within relatively wider range as compared to the gas temperature at the outer cylinder wall. An opposite tendency is observed when analyzing the phase delay values. The thermal wave arising near the driven wall as a result of dissipation needs finite time to reach the outer cylinder wall. Let $\varphi_{1,d}$ be the delay of the gas velocity phase close to the inner cylinder wall and $\varphi_{2,d}$ - the delay of the gas velocity phase delay close to the outer cylinder wall, then

(24) $\varphi_{1,d} = \overline{\omega} t_{1,d} / (2\pi);\ \ \varphi_{2,d} = \overline{\omega} t_{2,d} / (2\pi)$,

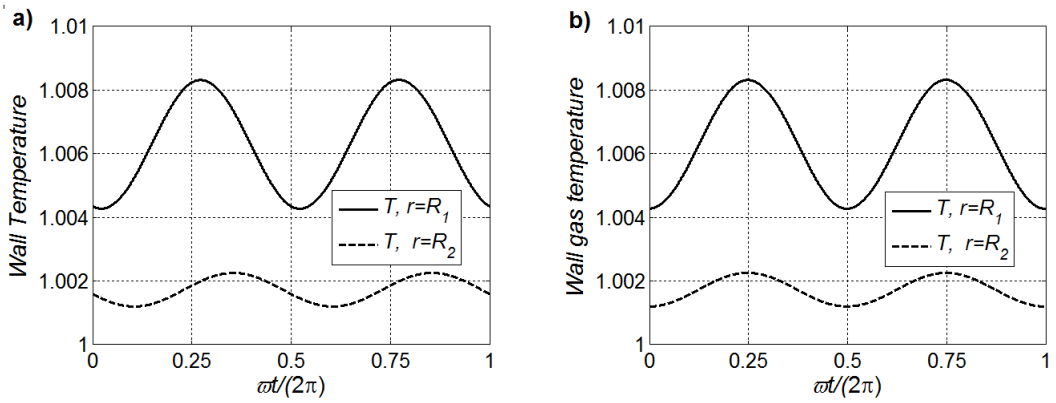


Fig.12 Gas temperature variations at the wall, $\mathrm{Kn} = 0.1,\ \ \beta = 4,\ \ \Delta V_1 = 0.3,\ \ \bar{\omega} = 0.8862$, harmonic oscillating inner cylinder $\varphi_{1,d} = 0.023411$, $\varphi_{2,d} = 0.10629$. a) with phase delay, b) without phase delay.

where $\varphi_{1,d}$ and $t_{2,d}$ are the corresponding dimensionless delay times. The difference

(25) $\Delta t = t_{2,d} - t_{1,d} = \frac{2\pi}{\varpi}\left(\varphi_{2,d} - \varphi_{1,d}\right)$,

is the dimensionless time needed for temperature wave to reach the outer cylinder wall.

In the case of stepwise oscillating inner cylinder no phase delay of the gas temperature variation at the inner cylinder wall is observed. At the same time, the phase delay of the gas temperature variation at the outer cylinder wall is larger then that of the case with harmonically oscillating inner cylinder.

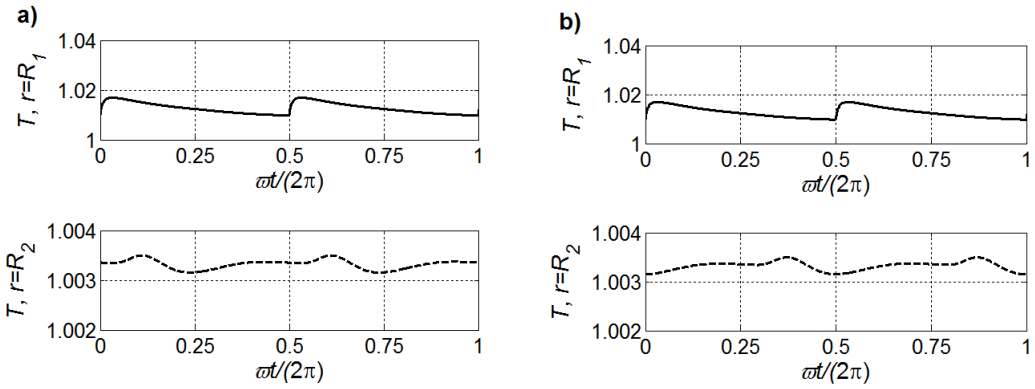


Fig.13 Wall gas temperature variations, $\mathrm{Kn} = 0.1$, $\beta = 4$, $\Delta V_1 = 0.3$, stepwise oscillating inner cylinder, $\varphi_{1,d} = 0.$, $\varphi_{2,d} = 0.23921$ a) with phase delay, b) without phase delay.

6. Conclusions

The NS model and the numerical solution found enable one to investigate numerically a cylindrical oscillatory Couette flow in two limit cases of oscillation of the active inner cylinder. The viscous interaction "`cylinder- gas"' is studied within relatively wide ranges of oscillating frequencies - Stokes number. The calculations confirm the existence of hydrodynamic selfsimilarity in drag and heat transfer in both cases of oscillation of the inner cylinder. It is also found that a phase delay of drag, wall gas temperature and heat flux variations exist in one hand and the driven wall velocity variation, in other hand. In the case of harmonically oscillating inner cylinder the drag phase delay with

respect to the driven wall velocity is numerically investigated. Visible difference in heat flux variations within the gas flow are observed when studying an adiabatically insulated inner cylinder.

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The Mössbauer effect in homogeneous magnetic field

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Abstract

We derive the probability of the Mössbauer effect realized by the charged particle moving in the homogeneous magnetic field, or, in accelerating field. The submitted approach represents new deal of the Mössbauer physics.

Key words: Schrödinger equation, Mössbauer effect, magnetic field, electric field, maximal acceleration.

1 Introduction

The discovery of the Mössbauer effect is unique (Mössbauer, 1958a; 1958b; 1959; 2000). The emission and absorption of x-rays by gases had been observed previously, and it was expected that the resonance effects would be found for gamma rays, which are created by nuclear transitions (as opposed to x-rays, which are typically produced by electron transitions). However, attempts to observe nuclear resonance produced by gamma-rays in gases failed due to recoil, preventing resonance (the Doppler effect also broadens the gamma-ray spectrum). Mössbauer was able to observe resonance in nuclei of solid iridium, as opposite to no gamma-ray resonance in gases. He proposed that, for the case of atoms bound into a solid, the nuclear events could occur essentially without the recoil.

The photon emission energy for the atom of iridium is approximately 1 eV and the recoil energy is $E_{recoil}(optical) =$ GeV $= 10^{-11}$ eV . (Rohlf, 1994). On the other hand the γ-emission energy of the iridium nucleus is $\approx 10^5$ eV. Then, the recoil energy caused by the emission of such γ-ray is $E_{recoil} \approx 10^{-1}$ eV (Rohlf, 1994). So, we see that the recoil caused by the γ-ray emission is substantially greater than the recoil caused by the optical emission and we can expect the big shift of spectral lines in the nuclear system.

The motion of the decaying excited nucleus of iridium $^{191}\mathrm{Ir}^*$ causes the Doppler broadening and the Doppler shift of the gamma spectrum. Let us consider the motion of the excited iridium in the direction of the emitted photon. The Doppler formula for the Lorentz boosted proton energy E' is as follows (Rohlf, 1994):

$$E' = E\frac{\sqrt{1+v/c}}{1-v/c} = E\gamma(1-v/c) \approx E(1+v/c);. \tag{1}$$

The fractional change of he proton energy is $(E'-E)/E = v/c$.

The resonance (the overlapping of emission and absorption curves) is destroyed if v/c is equal few times $\Gamma/E = (\hbar/\tau)/E (= 2.7 \times 10^{-11}$ for iridium), where Γ is the natural spectral line width and τ is the life time of the excited state of nucleus. For $v/c = \Gamma/E$, we get $v/c = 2.7 \times 10^{-11}$. The corresponding speed is $v = (3 \times 10^8 \text{ m/s}) \times (2.7 \times 10^{-11}) \approx 10^{-2} \text{ m.s}^{-1}$. So, the speed of centimeters per second destroys the resonance absorption. In other words, the overlap of the very narrow absorption and emission curves is zero for the nuclear system.

In a solid, the nuclei are bound to the lattice and do not recoil in the same way as in a gas. The lattice as a whole with mass M recoils but the recoil energy is negligible because M is the mass of the whole lattice. However, the energy in a decay can be taken up or supplied by lattice vibrations. The energy of these vibrations is quantized in units known as phonons. The Mössbauer effect occurs because there is a finite probability of a decay occurring involving no phonons. Thus, the entire crystal acts as the recoiling body, and these events are essentially recoilless. In these cases, since the recoil energy is negligible, the emitted gamma rays have the appropriate energy and resonance can occur.

Gamma rays have very narrow line widths. This means they are very sensitive to small changes in the energies of nuclear transitions. In fact, gamma rays can be used as a probe to observe the effects of interactions between a nucleus and its electrons and those of its neighbors. This is the basis for Mössbauer spectroscopy, which combines the Mössbauer effect with the Doppler effect to monitor such interactions.

2 The quantum theory of the Mössbauer effect in the homogeneous magnetic field

We can define the Mössbauer effect in homogeneous magnetic field as the analogue of the Mössbauer effect for crystal, where particle in crystal is replaced by the charged particle in homogeneous magnetic field. We consider the situation where the nucleus emitting the gamma rays is inbuilt (implanted) in homogeneous magnetic field. The initial state of the crystal let be $\psi_{crystal}$ and the final state of crystal let be $\psi_{crystal}$. Then, according to Feynman (1972), there is a probability of no recoil after the photon emission with

momentum $\mathbf{k}$ from nucleus. The amplitude of probability is ($\mathbf{k} = \mathbf{p}/\hbar$)

$$a = \left\langle \psi_{crystal} | e^{i(\mathbf{k}\cdot\mathbf{r})} | \psi_{crystal} \right\rangle, \tag{2}$$

here $\mathbf{r}$ is the displacement of lattice atom.

The probability of unchanging of the basic magnetic state ψ_0 (the analogue of the persistence of vacuum in quantum field theory) after the γ-emission is then $P = a^2$. So, we have

$$P = \left| \left\langle \psi_0 \left| e^{i\mathbf{k}\cdot\mathbf{r}} \right| \psi_0 \right\rangle \right|^2 = \left| \int e^{i\mathbf{k}\cdot\mathbf{r}} |\psi_0|^2 d\mathbf{r} \right|^2, \tag{3}$$

where the exponential function in (3) can be expanded using the partial amplitudes taken from the textbooks of quantum mechanics of scattering processes as follows:

$$e^{i\mathbf{k}\cdot\mathbf{r}} = 4\pi \sum_{l=0}^{\infty} \sum_{m=-l}^{l} i^l j_{kr} Y_{lm}(\Theta, \Phi) Y^*_{lm}(\theta, \phi). \tag{4}$$

The mathematical term $i\mathbf{k} \cdot \mathbf{r}$ can be written using the azimuthal angle φ for the process in the plane of motion in the magnetic field as $ikr\cos\varphi$. So, we shall calculate the probability corresponding to the situation where the crystal is replaced by the homogeneous magnetic field.

We take the basic function ψ_0 for one electron in the lowest Landau level, as

$$\psi_0 = \left(\frac{m\omega_c}{2\pi\hbar}\right)^{1/2} \exp\left(-\frac{m\omega_c}{4\hbar}(x^2 + y^2)\right), \tag{5}$$

which is solution of the Schrödinger equation in the magnetic field with potentials $\mathbf{A} = (-Hy/2, Hx/2, 0)$, $A_0 = 0$ (Drukarev, 1988):

$$\left[\frac{p_x^2}{2m} + \frac{p_y^2}{2m} - \frac{m}{2}\left(\frac{\omega_c}{2}\right)^2 (x^2 + y^2)\right] \psi = E\psi. \tag{6}$$

So, The main problem is to calculate the integral in the polar coordinates r, φ as follows:

$$I = \int_0^{2\pi} \int_0^{\infty} d\varphi r dr |\psi_0|^2 e^{ikr\cos\varphi}, \tag{7}$$

which can be simplified introducing constants C and α as follows (Q is a charge of the Mössbauer particle, c is the velocity of light):

$$C = \left(\frac{m\omega_c}{2\pi\hbar}\right)^{1/2}; \quad \alpha = \left(\frac{m\omega_c}{4\hbar}\right); \quad \omega_c = \frac{|Q|H}{mc}. \tag{8}$$

Then,

$$I = C^2 \int_0^{2\pi} \int_0^{\infty} d\varphi r dr e^{-2\alpha r^2} e^{ikr\cos\varphi}. \tag{9}$$

Let us firs consider the calculation of the polar integral of the form:

$$I_1 = \int_0^{2\pi} [\cos(kr\cos\varphi) + i\sin(kr\cos\varphi)] d\varphi. \tag{10}$$

Using identities

$$\cos(a\cos\varphi) = J_0(a) + 2\sum_{n=1}^{\infty}(-1)^n J_{2n}(a)\cos(2n\varphi), \tag{11}$$

$$\sin(a\cos\varphi) = 2\sum_{n=1}^{\infty}(-1)^{n+1} J_{2n-1}(a)\cos[(2n-1)\varphi)], \tag{12}$$

where J_n are the Bessel functions, we get after integration that

$$I_1 = J_0(kr), \tag{13}$$

where the Bessel function J_0 can be expressed as the series

$$J_0(x) = \sum_{k=0}^{\infty}\frac{(-1)^k x^{2k}}{2^2 2^4 ....(2k)^2} = 1 - \frac{x^2}{2^2} + \frac{x^4}{2^2 4^2} - \frac{x^6}{2^2 4^2 6^2} + ... \tag{14}$$

So, The following step is, to calculate the following integral:

$$I_2 = \int_0^{\infty} J_0(kr)e^{-2\alpha r^2} r dr \tag{15}$$

If we restrict the calculation with the approximate Bessel function, then we get for the probability of the persistence of the state in the form:

$$P \approx C^2 \left| 2\pi \int_0^{\infty} r dr \left[e^{-2\alpha r^2} - e^{-2\alpha r^2}\frac{(kr)^2}{2^2}\right]\right|^2 \tag{16}$$

Using the integrals

$$\int_0^{\infty} e^{-2\alpha r^2} r dr = \frac{1}{4\alpha}; \tag{17}$$

$$\int_0^{\infty} \frac{k^2 r^3}{2^2} e^{-2\alpha r^2} dr = \frac{k^2}{32}\frac{1}{\alpha^2}, \tag{18}$$

where the integrals are the special cases of the table integral (Gradshteyn and Ryzhik, 2007a)

$$\int_0^{\infty} x^{2n+1} e^{-px^2} dx = \frac{n!}{2p^{n+1}}; \quad p > 0, \tag{19}$$

we get the final approximation formula for the existence of the Mössbauer effect in magnetic field realized by the decay of the charged ion. Or,

$$P \approx 4\pi^2 C^2 \left| \frac{1}{4\alpha} + \frac{k^2}{32\alpha^2}\right|^2 \tag{20}$$

Using explicit constants from eq. (8), we get the final approximation form for the existence of the Mössbauer effect in magnetic field:

$$P \approx \frac{\pi}{2}\frac{\hbar^3 c^3}{|Q|^3 H^3}\left(\frac{2|Q|H}{\hbar c} + k^2\right)^2. \tag{21}$$

Let us remark, that we can use approximation $e^{-2\alpha r^2} \approx 1 - 2\alpha r^2$. Then instead of eq. (16), we write:

$$P \approx C^2 \left| 2\pi \int_0^\infty r dr \left[J_0(kr) - 2\alpha r^2 J_0(kr) \right] \right|^2 . \tag{22}$$

Then using table integral (Gradshteyn and Ryzhik, 2007b)

$$\int_0^\infty x^n J_l(ax) dx = 2^n \frac{1}{a^{n+1}} \frac{\Gamma\left(\frac{1}{2} + \frac{l}{2} + \frac{n}{2}\right)}{\Gamma\left(\frac{1}{2} + \frac{l}{2} - \frac{n}{2}\right)}, \tag{23}$$

we get:

$$P \approx C^2 \left| \frac{2\pi}{k^2} \frac{\Gamma(1)}{\Gamma(0)} + \frac{32\pi\alpha}{k^4} \frac{\Gamma(2)}{\Gamma(-1)} \right|^2 . \tag{24}$$

To our surprise, this form of the magnetic Mössbauer effect was not published in the Mössbauer literature.

3 Discussion

The Mössbauer effect on magnetic field is in no case the exact analogue of the Mössbauer effect in crystal, because magnetic field is the special physical reality (medium) with unique quantum electrodynamic properties.

In case that the decaying charged particle moves in accelerating potential $V = Fx$ where $F = -\partial V/\partial x$ is the accelerating force, then the corresponding Schrödinger equation in the momentum representation ($\hat{x} = i\hbar\partial/\partial p$) is as follows (Drukarev, 1988):

$$\left(-i\hbar F \frac{\partial}{\partial p} + \frac{p^2}{2m} - E \right) \langle p|E\rangle = 0 \tag{25}$$

with the solution

$$\langle p|E\rangle = \frac{1}{\sqrt{2\pi\hbar F}} \exp\left[\frac{i}{\hbar F} \left(Ep - \frac{p^3}{6m} \right) \right]. \tag{26}$$

Then,

$$\langle x|E\rangle = \int_{-\infty}^{\infty} \langle x|p\rangle \langle p|E\rangle \, dp = \frac{1}{2\pi\hbar F^{1/2}} \int_{-\infty}^{\infty} \exp\left\{ \frac{i}{\hbar} \left[\left(x + \frac{E}{F} \right) p - \frac{p^3}{6mF} \right] \right\} dp, \tag{27}$$

where we have used relation

$$\langle x|p\rangle = \frac{1}{\sqrt{2\pi\hbar}} e^{ipx/\hbar}. \tag{28}$$

The classical turning point is given by relation $V = E$, from which follows the coordinate of the turning point $x_0 = E/F$. Then we write with regard to the last statement:

$$\langle x|E\rangle = \frac{1}{2\pi\hbar F^{1/2}} \int_{-\infty}^{\infty} \exp\left\{ \frac{i}{\hbar} \left[(x - x_0)p - \frac{p^3}{6mF} \right] \right\} dp. \tag{29}$$

After introducing the new variable

$$u = \frac{p}{(2m\hbar F)^{1/3}}; \quad z = \left(\frac{2mF}{\hbar^2}\right)^{1/2}(x_0 - x), \tag{30}$$

we get the solution of the Schrödinger equation for charged particle moving in the accelerated potential in the final form:

$$\langle x|E\rangle = \left(\frac{2m}{\hbar^2 F^{1/2}}\right)^{1/3} \frac{1}{2\pi}\int_{-\infty}^{\infty} \exp\left[-i\left(\frac{u^3}{3} + zu\right)\right] dp, \tag{31}$$

where

$$v(z) = \frac{1}{2\pi}\int_{-\infty}^{\infty} \exp\left[-i\left(\frac{u^3}{3} + zu\right)\right] dp \tag{32}$$

is so called Airy function.

The final formula for the existence of the Mössbauer effect in the accelerated field is

$$P = \left|\int e^{i\mathbf{xk}} |\langle x|E\rangle|^2 d\mathbf{x}\right|^2. \tag{33}$$

Ninio (1973) used instead of the Feynman amplitude the impulsive force $F(t) = const\,\delta(t-\lambda)$ to calculate the persistence of harmonic oscillator. After applying such impulsive force, the basic oscillator function is

$$\psi_0 = \exp\left(-\frac{1}{2}|\xi(t)|^2\right)\sum_{m=0}^{\infty}\frac{[\xi(t)]^2}{(m!)^{1/2}}\phi_m, \tag{34}$$

where

$$\xi(t) = i(2m\hbar\omega)^{-1/2}Ae^{i\omega\lambda} \quad (t > \lambda). \tag{35}$$

The corresponding probability of the basic state persistence is

$$P \approx |\langle\psi_0|\psi_0\rangle|^2 = e^{(-|\xi(t)|^2)} = e^{(-A^2/2m\hbar\omega)}. \tag{36}$$

Thus, there is non zero probability that the impulse creates no phonons. However, it must be remembered that the oscillator particle is bound to a fixed center. No doubt, that it is possible to use the Ninio method to calculate the Mössbauer effect in magnetic field and in the accelerated field. In addition, there is not excluded, that the so called maximal acceleration may play some role in case of accelerated charged particles. The recent discussion of the specific application of the maximal acceleration in the Mössbauer physics was presented by Potzel (2014). The introduction of the maximal acceleration into physics by means of transformations between the reference systems was given by author (Pardy, 2003).

The article is in a some sense the new mainstream of ideas related to the Mössbauer effect in physics and it can be applied in chemistry, biology, geology, cosmology, medicine and other human activities. Let us remark that the discovery of the Mössbauer was rewarded with the Nobel Prize in Physics in 1961 together with Robert Hofstadter's research of electron scattering in atomic nuclei. Mössbauer effect in the magnetic, or,

electric field represents, the crucial problem for experimentalists and it is not excluded that the experimental realization of this effect leads to the adequate appreciation.

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The Study of Acid-Base Properties of 2-(4-Amino-5-(2-, 3-, 4-Nitrophenyl)-1,2,4-Triazole-3-Ylthio) Acetic Acids And Their Salts

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Abstract

The creation of new original drugs is one of the major aims of pharmaceutical industry for today, it based on purposeful synthesis of new highly efficient and low-toxic compounds and the study of its biological activity. From both practical and theoretical point of view the determination of ionization constants of synthesized compounds plays an important role. In our work we determined ionization constants of 2-(4-amino-5-(2-nitrophenyl)-1,2,4-triazole-3-ylthio)acetic acids and its salts and detected the influence of substituents on the acid-base properties of the compounds. Suggestion that discussed acids and their salts in oral administration will be more actively absorbed in the stomach or bowels has been made based on the results.

In today's economic situation the regulation of veterinary products' market is based on market research, identifying internal and external relations, systematic study of various phenomena and processes that occur in the market and in related areas. Based on these and other methods, including mathematics and statistics one, you can make certain predictions and develop perspective plans for the future of the industry.

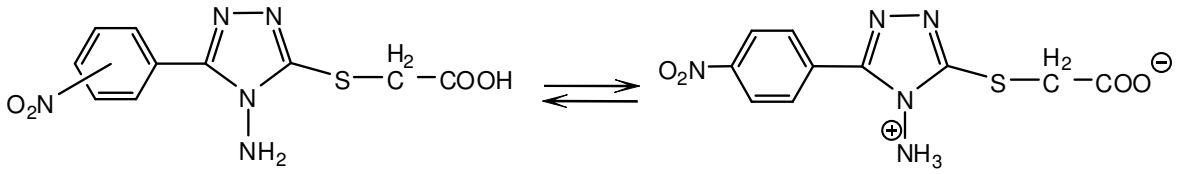
The application of original medicines into medical practice is one of the major social and economic problems of pharmaceutical industry for today. The main stage of original medicines' creation is the purposeful synthesis of new highly efficient compounds and the study of their biological activity.

Working on synthesis of 1,2,4-triazole-3-ilthioacetic acids and also salts, complex esters, amides, hydrazides, ylidene- and acyl hydrazides, based on them, we see that both from theoretical and practical point of view it is necessary to study physical and chemical properties of the synthesized compounds, including the establishment of the ionization constants of substances that comprise carboxyl group. As an example esterification reactions of carboxylic acids are catalyzed by free ions of hydrogen. Thus carboxylic acids that dissociate completely or almost completely will engage in these reactions more active and we can get higher yields of desired products of the reaction. From biological point of view

ionization constants of compounds will correctly detect the part of the gastrointestinal tract where will the suction of a substance be in case of oral medications, and also make assumptions about compound's overcoming of the blood-brain barrier.

Working on 4,5-alkyl-(aryl-, heteryl-) substituted 1,2,4-triazoles-3-ylthioacetic acids it should be noted that they have amphoteric properties, that is the simultaneous presence of both acid (-COOH) and basic (N: in a loop) centers [3]. The presence of free amino group in the molecule significantly increases interest in the acid-base properties. From theoretical point of view working on 2-(4-amino-5-(2-, 3-, 4-nitrophenyl)-1,2,4-triazole-3-ylthio) acetic acids we should take into account additional centre named above.

Considering organic amines in terms of their basicity it should be noted that most basic are aliphatic amines, which are compounds with electron donor substituents towards amino group. Replacing alkyl-radical on aromatic group reduces discussed properties of amino group. As an example, aniline, forms ammonium salts only with strong mineral acids. The presence of several aromatic radicals even greater reduces the basicity of the amino group (diphenylamine). This fact can be explained by the interaction of unshared electron pair of the nitrogen atom with π-electrons of aromatic structure. Taking into account the fact that 1,2,4-triazole cycle exhibits aromatic properties, from theoretical point of view, we can not hope for high amphoteric properties of these class of compounds, although the migration of a carboxyl group's proton is possible:



Moreover we should also pay attention to the strong electron acceptor presence in the structure of the investigated molecules, namely the nitro group in *o* -, *m* - and *p*-positions of the benzene nucleus at C_5 carbon atom of 1,2,4-triazole cycle. From theoretical point of view the presence of the nitro group should increase the acidic properties of the compounds.

Summarizing the foregoing we should allow the presence of relatively high acid properties of carboxyl group in 2-(4-amino-5-(2-, 3-, 4-nitrophenyl)-1,2,4-triazole-3-ylthio)acetic acids. Using Spykman and Bates methods theoretical assumptions of

compounds' ionization constants have been confirmed, the results are summarized in Table. 1 [4].

Experimental determination of ionization constants of salts of 2-(4-amino-5-(2-, 3-, 4-nitrophenyl)-1,2,4-triazole-3-ylthio)acetic acids has been carried out at the Department of physical-colloidal chemistry at Zaporozhye State Medical University by potentiometric titration of samples in aqueous solution [1]. The point of equivalence has been determined with using device for measuring ions ЭВ-74 using glass (ЕСЛ6307) and silver chloride (ЕВЛ1193) electrodes. Measurements have been performed in cell that has been thermostated to the standard (20°C) temperature. To determine the ionization constants 0.01 M solutions of the compounds (1-19, table 1) have been titrated with 0.1 M solution of hydrochloric acid and parallel with solution of 0.1 M potassium hydroxide, every ten portions of 0.25 ml each using a pipette dosing П-1 with measuring pH after each addition of titrant. Constants have been calculated using formula (1) by the average of experiments with deviations not exceeding 0.05 units.

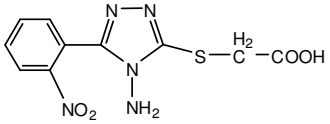
$$pKa = pH + \lg([A] / [B]) \qquad (1)$$

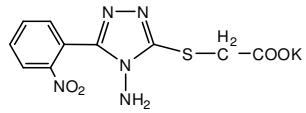
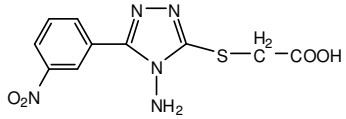
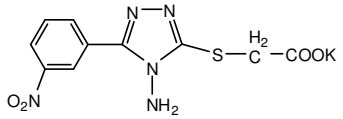
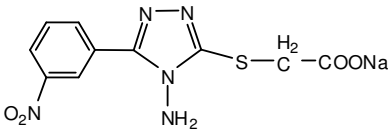
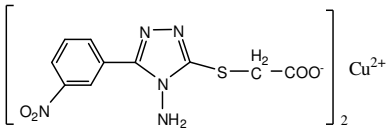
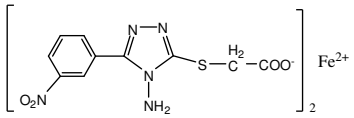
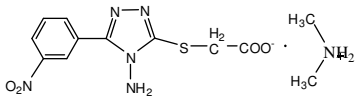
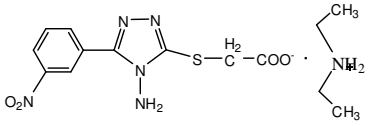
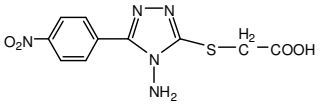
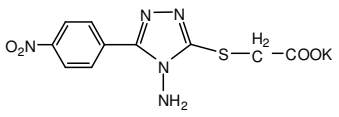
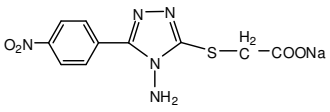
where [A] - equilibrium concentration of acid, mol/L, [B] - base equilibrium concentration, mol/L.

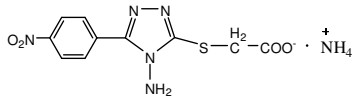
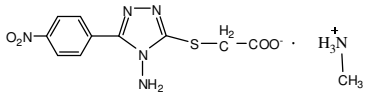
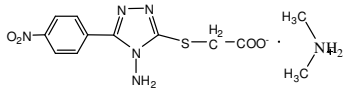
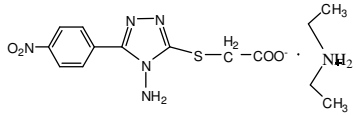
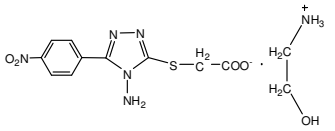
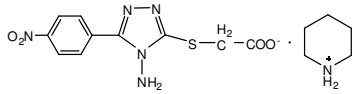
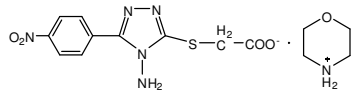
2-(4-amino-5-(2-nitrophenyl)-1,2,4-triazole-3-ylthio)acetic acid (1), 2-(4-amino-5-(3-nitrophenyl)-1,2,4-triazole-3-ylthio)acetic acid (3), 2-(4-amino-5-(4-nitrophenyl)-1,2,4-triazole-3-ylthio)acetic acid (10) are slightly soluble in water, so in order to determine their ionization constants water-soluble salts have been used. The results of calculations and experimental determination are shown in Table 1.

Table 1

Ionization Constants of 2-(4-amino-5-(2-, 3-, 4-nitrophenyl)-1,2,4-triazole-3-ylthio)acetic acids and its salts

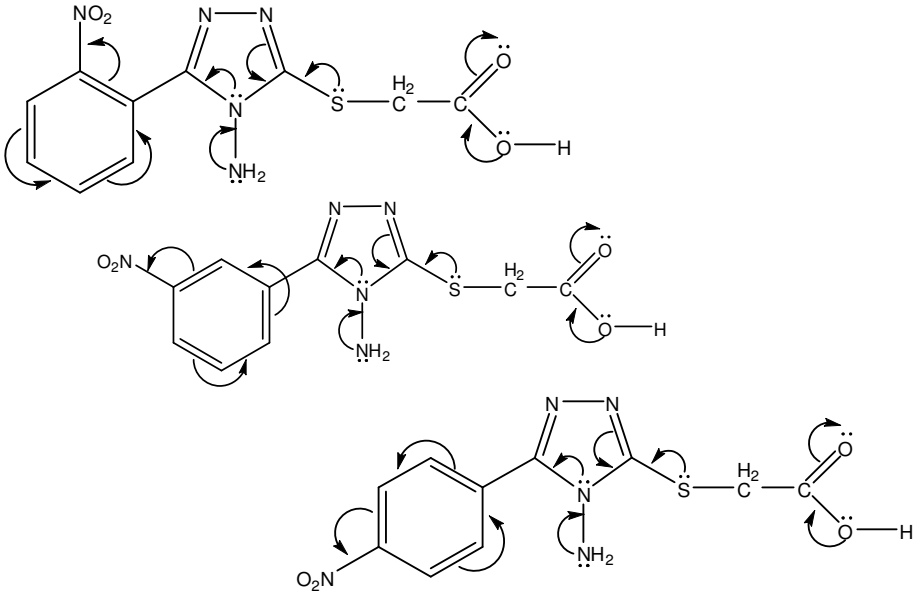
№ Compound	Formula	pKa COOH/NH_2/N: (calculated)	pKa COOH/NH_2 (found)
1		3,13/1,39/9,15	3,10
			1,35

2			3,05
			1,35
3		3,19/1,47/9,01	3,15
			1,55
4			3,20
			1,55
5			3,20
			1,60
6			3,15
			1,60
7			3,15
			1,60
8			3,20
			1,60
9			3,20
			1,60
10		3,37/1,47/9,01	3,35
			1,50
11			3,35
			1,50
12			3,35
			1,50

13			3,40
			1,55
14			3,45
			1,55
15			3,45
			1,50
16			3,45
			1,50
17			3,40
			1,55
18			3,40
			1,50
19			3,45
			1,50

The calculations (Table 1) confirm the assumption that 2-(4-amino-5-(2-, 3-, 4-nitrophenyl)-1,2,4-triazole-3-ylthio)acetic acids have 3 distinct centers - hydrazine nitrogen atom of 1,2,4-triazole cycle, amino group in 1,2,4-triazole cycle and a carboxyl group, and the basic properties of the amino group are not severe, and the acidity caused by the carboxyl group has almost same results as other compounds of this series. Ionization constants that have been obtained experimentally within the error practically do not differ from calculated constants. Pattern changes in both calculated and experimentally determined constants should be also noted. Thus there are minor differences in the constants of various salts, which are derivatives of the same acid.

2-(4-amino-5-(2-nitrophenyl)-1,2,4-triazole-3-ylthio)acetic acid has the strongest acidic properties and 2-(4-amino-5-(4-nitrophenyl)-1,2,4-triazole-3-ylthio)acetic acid has the smallest acidic properties. This circumstance can be explained by the fact that nitro group as a substituent with electron acceptor character is placed in different positions *(o-*, *m-*, *p-*). Assuming that 1,2,4-triazole cycle is an electron donor towards the phenyl radical, then it becomes clear that the nitro group in the *ortho-position* most actively charge over the electron density, including the electron density from 1,2,4-triazole nucleus. This assumption is supported by theoretical and experimental pKa constants of other isomers. So nitro group, which is placed further in the conjugation chain, namely in the *meta-position* less actively charge the electron density, and the lowest elelektron acceptor properties has been found at nitro group maximum distance from 1,2,4-triazole cycle, i.e., *para-position*. Conjugation scheme of the studied compounds can be cited as follows:



Comparing ionization constants (calculated and determined experimentally) we should assume that discussed acids and their salts in their oral administration will be more actively absorbed in the stomach (pH 1-3), or bowels (pH 8) [2]. Therefore, it is advisable to recommend compound in tablet form for oral administration.

Conclusions:

1. Theoretical and practical determination of ionization constants of 2-(4-amino-5-(2-nitrophenyl)-1,2,4-triazole-3-ylthio)acetic acids and its salts has been done, wherein it is detected that theoretical calculations are correlated with experimental calculations.

2. The influence of substituents on the acid-base properties of the compounds has been detected based on theoretical assumptions, calculations and experimental calculations.

3. Suggestion that discussed acids and their salts in oral administration will be more actively absorbed in the stomach or bowels has been made basing on the results.

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Transnational Corporations in the Economy of Ukraine

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Abstract

This article presents the study of transnational corporations and foreign direct investments in the economy of Ukraine. Foreign direct investments play one of the main roles in the developing of Ukrainian economy. The author describes the activity of TNCs in Ukraine's economy and their role in the attraction of foreign direct investments in Ukraine.

Keywords: globalization, multinational, transnational corporations (TNCs), foreign direct investment, transnational corporations, development, Ukraine.

I. Introduction. Nowadays humanity is occupied by problems of globalization, influencing on all spheres of society's life: economic, social, political, cultural. A process of globalization has an objective character, being the inevitable result of the world economy's evolution, strengthening of worldwide connections. While forming the world market domination of transnational corporations (TNC) is being established on it [3].

According to definition of UNCTAD TNC (Transnational, Multinational Corporation) are incorporated or unincorporated enterprises comprising parent enterprises and their foreign affiliates. A parent enterprise is defined as an enterprise that controls assets of other entities in countries other than its home country, usually by owning a certain equity capital stake [6].

II. The aim of the article. In this article our ambition has been to investigate the role of transnational corporations in the economy of Ukraine.

III. The Results. It is possible to say that the first multinational corporations came to Ukraine right after falling of «ferrous curtain». The former citizens of country of the developed socialism at the beginning of 90th were surprised, when discovered that in the world existed detergent, not eating away a hand, tooth-paste, pleasant to the taste, shampoos which a scurf disappears after. The first "McDonald's" snack bars of became real cultural phenomenon for a country, not spoiled by the domestic public catering. It is possible to give many examples of such kind.

Just for a few years globalization firmly entered the world of the Ukrainian consumer. In course of time Ukrainians became more particular, and a lot of them were not even sure in the utility of global companies' products. But it was late – most national consumers at mental level already had "steady attachment" to the products of transnational corporations. First of all TNC occupied the "eternal" segments of market – commodities of everyday demand, food stuffs, petrol, tobacco products.

In Ukraine TNC are divided in relation to local business in two large groups: companies, not having the real competitors among local industry (producer of hygiene facilities "Procter&Gamble" or tobacco companies), and corporations, which interests directly touch many Ukrainian enterprises ("Coca-Cola", etc.).

A primary objective of any TNC is a presence at the market at any cost. And Ukraine did not become an exception. It is said in the documents that today a few tens of world large scale multinational corporations work in Ukraine. Ten of years backmost of them opened small representative offices with two-three workers in Kiyev, which accompanied trial deliveries of goods. Now TNC are the active participants of the Ukrainian market. Majority from them are quoted on the exchange stocks of the USA and Europe. Among the most known multinational corporations, operating in Ukraine, one can name "McDonald's", "Coca-Cola", "Procter&Gamble", "Nestle", "Google", "Nike", "Adidas", "Oriflame", "Toyota", "Ernst&Young" and other [3].

Big international companies helped found Ukraine's economy. Now they're helping refine it big multinational companies are responsible for building Ukraine's nascent economy 10 years ago, and new ones arriving are on the threshold of big opportunities. "Multinational corporations have had a very positive impact on the continuing development of a market economy in Ukraine, as they by and large have been the first foreign investors to put down roots in the country," said Jorge Zukoski, president of the American Chamber of Commerce (AmCham) [4].

It is important to note, however, that the main motives of TNCs entering on the Ukrainian market are: the conquest of new, large, undeveloped, and often because of promising markets, the potential for convenient use of Ukrainian factors of production, especially labour, the desire to diversify the activities of on markets. The most attractive industries for TNC in Ukrainian economy are food processing, machine building and

metalworking, finance, insurance and commercial areas. Foreign multinationals are willing to carry out its activities in Ukraine. Nevertheless such factors stand on their way: as unstable and excessive adjusting, absence in Ukraine of permanent strategy and corresponding national plan of actions, imperfection of national legislation, unclear legal system, instability of economic and political situation, high level of corruption, overload by regulator norms and complication of the tax system, substantial tax loading, subzero solvent demand of the Ukrainian consumers [5].

Also, the attraction of investment, the use of research, innovation, use of organizational and managerial skills are important factors in the success of a country that is developing, however, remember that for the interaction with TNCs in their own country in the world markets, it is necessary to create own transnational structure, which would compete with Western companies.

T.Orekhova, V.Koshelenko write that powerful natural potential of the country provides ample opportunities for Ukraine in certain sectors to create complete corporate closed-loop, which would be engaged in production of raw materials, processing, manufacture of its products and its implementation.

Some steps in this direction have already been made – some of the financial-industrial groups, which are factors have been able to create a full production cycle and have their own company abroad formally meet the status of the TNC, and although they are inferior to foreign transnational of their assets, available resources, level of management, the value of reserves-tilt technology (table 1) [5].

Another positive factor for the integration of Ukrainian financial-industrial groups in the national economy is expanding the circle of their economic interests, which include not only specialized, export-oriented segments, but also industry,

Table 1. Profile of Ukrainian companies that meet the status of TNCs

Company Name	Sphere of interest in the international market	Countries of interest
System Capital Management	Mining and metallurgical enterprises.	Italy, Switzerland, Turkey.
Privat Group	Metallurgy, oil (the world's largest producer of manganese-ferrous alloys)	Russia, Romania, Poland, USA.
Corporation «Industrial Union of Donbass» (ISD)	vertically integrated holdings in the chain of 'coal – coke – metal'	Hungary, Poland.
Corporation « Interpipe»	pipe industry, metallurgy, ferroalloy production (the world's largest supplier of silicomanganese)	Belarus, Switzerland, Russia (subsidiaries).

aimed at the domestic market. Thus, the property „SCM", „ISD", „Private" are numerous assets in agriculture, construction industry, food industry, service sector. Investments of many companies focused on the development of transport and information and communication infrastructure, which not only stimulates the domestic market, but also provides development assistance in Ukraine, new high segments. Vast opportunities in the international market have Ukrainian vodka producers, a large proportion of production, which is exported. In other cases, the Ukrainian company „Nemiroff", „Soyuz-Victan", „Khortytsya" is already recognized globally and have some of the world's largest growth rates [5].

According to our research, we can present the volume of foreign direct investments in the Ukrainian economy (table 2).

Table 2 Foreign direct investments to Ukraine (31.03.2011)

FDI volume, USD million.	49 362,3 (as of 31.12.2011)
FDI per capita, USD.	1084,3.
2011 FDI growth comparing to 2010 (%)	10,2.
Ten major FDI source countries for Ukraine.	1. Cyprus. 2. Germany. 3. Netherlands. 4. Russian Federation. 5. Austria. 6. United Kingdom. 7. France. 8. Sweden. 9. British Virgin Islands. 10. USA.
EU countries share in FDI (%)	79,9
FDI structure by sector	• Finance – 33,1% • Manufacturing- 30,9%, including: Metal products – 12,3%; Foods and beverages – 4,2%; Chemicals – 2,8%; Machine building – 2,5%; Electricity, gas, water – 1,4%. • Real Estate – 11,6% • Retail– 10,5% • Construction – 6,1% • Transport and telecoms – 3,8% • Agriculture – 1,6% • Hotels and restaurants – 0,9% • Healthcare – 0,3% • Other – 1,4%.

Source: Foreign Direct investments to Ukraine [2].

To conclude, foreign direct investment (FDI) is a key element in international economic integration. FDI creates direct, stable and long-lasting links between economies. FDI is defined as cross-border investment by a resident entity in one economy with the objective of obtaining a lasting interest in an enterprise resident in another economy.

Transnational corporations are incorporated or unincorporated enterprises comprising parent enterprises and their foreign affiliates. The first multinational corporations came to Ukraine right after falling of «ferrous curtain». Big international companies helped found Ukraine's economy. Now they're helping refine it big multinational companies are responsible for building Ukraine's nascent economy 10 years ago, and new ones arriving are on the threshold of big opportunities. Powerful natural potential of the country provides ample opportunities for Ukraine in certain sectors to create complete corporate closed-loop, which would be engaged in production of raw materials, processing, manufacture of its products and its implementation.

The major FDI source countries for Ukraine are: Cyprus, Germany, Netherlands, Russian Federation. The structure of foreign direct investments of Ukraine is the next: Finance sector – 33.1%; Manufacturing sector – 30.9%; Real estate – 11.6%; Retail – 10.5%.

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The System of Providing Competitiveness of the Enterprise

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Abstract

The construction of the system of providing competitiveness of the enterprise that is based on the internal environment subsystems is examined: technique and technological, social and labour, marketing, organizationally-economic and financially-investment. For functioning and connection with the environment the system of providing competitiveness of the enterprise needs the scientific, normatively-legal, resource data ware and providing of different approaches: system, situational, complex, integration.

Keywords: system, competitiveness, enterprise, subsystem, approach, providing, environment.

Competitiveness is necessary requirement that is produced by world's economy to any economic subject. At the same time, the question of competitiveness providing of the enterprises embraces the system of organizational, technological, innovative, and administrative and other events of alteration activity of the enterprises that are adapted to the modern terms of manage in Ukraine and strategic aims that are sent to the achievement.

The construction of the system of competitiveness providing in the obedience to the hierarchy of aims is divided into 2 levels: 1) methodological; 2) applied.

The methodological level of this system includes the theory of economic laws, conformities to law and laws of organization, scientific approaches and principles of their construction, functioning and development of management of the socio-economic and technical systems, researches of competition mechanism that in obedience to a primary objective are form the theoretical providing of competitiveness.

The application layer of this system provides the practice using of methodical approaches, development of events in relation to the competitiveness providing of different objects (management, personnel, production, products, commodity brand, and enterprise).

Thus, the system of competitiveness providing can be presented as totality of the subsystems of different influence and can be provided in accordance with the object of competitiveness. As it was said, according to the author's opinion, the competitiveness achievement of the enterprise is needed to have the effective providing system that consists of subsystems: technique and technological, social and labour, organizationally-economic, marketing and financially-investment, that characterize the internal environment, scientific, normatively-legal, resource data ware that is responsible for the connection with the

enterprise environment. Every subsystem provides the competitiveness of its own object (personnel, production, finances, products, commodity brand and others), effectively co-operating and complementing the action of other subsystems. Analyzing the system of competitiveness providing of the enterprise it is worst to pay attention to all the subsystems that are constantly develop accordance with the dynamic development of the market relations and competition environment.

The data ware of the system of competitiveness providing of the enterprise includes the receipt of various information on the world's achievements of scientific and technical progress and science, innovations in industries, competitors, consumers, suppliers, government bodies and others that is needed for analysis, forecasting of home and world markets situation after all directions of competitiveness of the enterprise increasing.

The scientific providing of the system of competitiveness providing of the enterprises includes scientific approaches, developments, researches, distributions of connections between scientists and producers, realization of research works and practical events in relation to the competitive edges creation.

Normatively-legal providing of the system of the competitiveness providing includes: study and use of laws and acts, that regulate activity of the enterprises (industries), norms, standards, technical requirements, instructions, collective agreement, position, agreements and other.

The resource providing of the system of competitiveness providing of the enterprises includes: high scientific level of resource saving development technologies; finding new sources and forms of the resource providing; choice of progressive logistic technologies of material streams; choice of modern information technologies of setting of norms, planning, account and control of the resources expense; analysis of the resources use efficiency.

The social and labour subsystem of the system of competitiveness providing of the enterprises has the main value, because a labour collective must realize and perceive the urgent requirement of fundamental changes in functioning of the enterprise in new terms. The constituents of social and labour subsystem are: system of preparation and personnel studies; study and new methods of management and labour introduction; providing labour safe terms; scientific labour organization; labour set of norms; workplaces attestation; developed of social sphere and organizational culture of the enterprise.

The technique and technological subsystem of the system of competitiveness providing of the enterprises includes: there are technique and technological possibilities and

productive potential of the enterprise for providing production of high-quality goods for satisfaction of consumers' necessities.

The constituents of this subsystem are: production capacity; modern equipment; logistical support, production attestation; source of raw materials; front-rank flow sheets of production; complex processing of raw material and no waste, resource saving technologies; flexible productive processes; standardization and certification of production; ecological safety.

The organizational and economic subsystem of the system of competitiveness providing of the enterprises is based on the achievement of production efficiency, optimization of charges, and also the efficiency in the sphere of market activity. Basic constituents of organizational and economic subsystem are: organizational structure of the enterprise; logistic system of the enterprise; the system of material stimulation and responsibility for the results of labour; foreign economic activity; innovative activity.

The marketing subsystem of the system of competitiveness providing of the enterprises envisages an improvement in the sphere of pricing, commodity politics, forecasting, and study of demand, sales promotion and other. The main constituents of marketing subsystems are: complex market study of own enterprise; a concordance of parameters, descriptions and properties of products with the necessities of consumers; a calculation of prices on products, determination of payment terms, discounts; planning of sale and products realization; providing of communication intercommunications with consumers; consumers service; control and analysis of marketing activity.

The financial and investment subsystem of the system of competitiveness providing of the enterprises is based on the clear determination of financial resources necessity, permanent correlation of charges and expenses for providing the increase of production efficiency of the enterprise and strategic aims on the future. Thus, it grounds the choice of constituents of this subsystem: budgeting of productive investments), financial resources, choice of investment projects, favorable crediting, portfolio foreign investments, choice of the taxation system, mutual relations with the bank institutions, creditors, partners, investors and other.

The basis of forming the system of competitiveness providing of the enterprises are: situational, complex, functional, continuous, with special purpose and other approaches of the systems.

The approach of the systems to competitiveness providing of the enterprises is based on the effectiveness of enterprises' activity that depends on the state of environment,

connections with other environment subjects. The aim of the systems' approach is an exception of contradictions between the aims of the system of competitiveness providing and the aims of the management system of the enterprise and achievement of co-ordination of actions between them; a search of increase factors of effective activity and commercial success at the market for achievement and maintenance of competitive edges.

The situational approach to the system of competitiveness providing of the enterprises envisages the choice of forms and adjusting methods depending on the terms of certain circumstances are: economic, political, legal, social, technical, natural changes of environment; that allows reducing the factors of big influence and adapting the management system.

The complex approach to the system of competitiveness providing of the enterprises envisages all-round research of causal connections and consequences, complex estimation of entry parameters of the providing system, their change and development on the investigated object (enterprise) in space and time, on quantitative and quality signs and initial parameters of this process. Complex approach must take into account the technical, technological, psychological, economic, organizational, ecological and other aspects of providing and their intercommunication, to carry out the effective management of the enterprise.

The continuous approach gives an opportunity to examine the system of competitiveness providing of the enterprises as continuity of interdependent functions: planning, forecasting, design, adjustment, adaptation, information selection, realization of researches and other that influence on the achievement of management strategic aims and socio-economic development of the enterprise on the whole.

The functional approach provides the system of competitiveness providing of the enterprises that providing includes the row of functions that needed to be executed for satisfaction of the enterprise's necessities for attaining the certain level of competitiveness.

The integration approach to the system of competitiveness providing of the enterprises is aimed to rapprochement, research and strengthening of intercommunication between the systems: competitive management and operating-room, their subsystems and other elements.

The social approach provides the system of competitiveness providing of the enterprises, the central place in the system occupies a personnel (labour collective) where all terms are created: for development of the personal potential, complete self-realization and self-expression; professional increase and confidence in the future; legal defense of worker on

the enterprise; good payment for labour; comfort mutual relations in a staff; deserving place of labour in a person life and others.

The innovative approach to the system of competitiveness providing of the enterprises envisages forming of innovative models of enterprises development on the basis of achievements application of scientific and technical progress.

The global approach to the system of competitiveness providing of the enterprises provides the terms of globalization that must be taken into account at planning of foreign economic activity, international cooperation of enterprises, going into world markets, export-import operations, creation, functioning and development of transnational corporations.

Conclusions. To forming the system of competitiveness providing of the enterprises taken the approaches must be used simultaneously and competent each other, as they light up the different aspects of functioning the system of competitiveness providing.

The further research is needed by the research and practice recommendations to develop the system of competitiveness providing of the enterprises on the example of certain industries.

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Graphical Method of Assessment of The Human Resource Marketing At The Enterprises

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Abstract

In recent years, researchers have become increasingly interested in the possibility to use marketing in human resource management. The article focuses on the necessity of transition from traditional personal management to HR-marketing, as a new management quality. It will help the company to achieve the high outcomes. A central issue in the research is the authors' assessment method of the current state of the HR-marketing at the enterprise. The factors and assessment algorithm are determined in the article; they are universal for various industries. This paper shows also the results of the approbation of the authors' assessment method.

Keywords: staff assessment; assessment factors; hr-marketing.

Introduction. The situation when almost all success factors can be copied by competitors is becoming obvious. This fact confirms the critical importance of human resources in ensuring the success of the company. Modern HR needs to move to a new level – hr-marketing [2].

Research of the field of improvement human resource effectivity are reflected in the works of A. Kibanov, O Crushelnytska, R. Marra, S. Povajnyi, J. Pfeffer, M. Huzelid [4-9] and others. However the HR-management based on the marketing elements is only beginning to be explored. Therefore, theoretical and applied aspects of human resource marketing are important subjects of researches for scientists and management practitioners.

Main text. During the analysis of scientific achievements in the field of staff evaluation [3-5],[9] we had discovered the presence of a high level subjectivity Understanding that the specialist's subjective position makes effect on the outcomes, the authors have tried to form an assessment method that would allow to minimize this risk. The authors' aim was to create a method that would ensure objectivity, simplicity and overall approach of assessment.

It is known, the marketing focuses on a customer. This means that the criterion for HR-marketing assessment should be a satisfaction of its customers - it is the company and its staff.

Recognizing the appropriateness and topicality of this methodological approach, we have identified the following factors of staff assessment:

- staff turnover;
- staff competence;
- human resources development;
- exceeding labor productivity growth over the salaries growth;
- age structure of the staff;

These parameters allow assessing the condition of the personnel policy of the company in terms of company's and its staff's satisfaction

We will make the assessment of the HR-policy at the enterprises by using a graphical method. The graphical method consists of building a polygon of the HR-marketing, calculating the area of its segments and comparison them with each other.

For more reliable results it is better to use the average of the past five years. For a comparison of the values of different factors it is necessary to bring them to the same units. To reach this goal we chose a scale from 0 to 10 standard units for each of the factors, where 10 corresponds to the best value of index, 0 – respectively to the worst (in terms of running business).

Enterprise's data for each of the factors are given in the table 1. Table shows the values of the factors in standard units. It shows also the most problem areas of the HR-policy at the enterprise, taking into account that the maximum value for each factor is 10 standard units. With the amount received standard units we can determine the average. This will be the indicator of the previous assessment of HR-marketing development at the enterprise (like GPA student), in other words it will be a basic assessment of HR-marketing.

Table 1.

Assessment factors of the HR-marketing

Factors / enterprises	DE PJSC "Kyivkhlib" Bakery №10	DE PJSC "Kyivkhlib" Bakery №2	LLC Confectionery "Mercury "	JSC "Shpolyansky food factory"	LLC "Delicate"	LLC "Slavutich"
staff turnover	3,025	2,266	4,095	1,448	1,756	0,387
staff competence	4,149	3,741	5,126	3,414	4,242	4,067
exceeding labor productivity growth over the salaries growth	8,518	4,767	9,771	4,743	9,773	4,929
hr-development	6,300	9,005	2,785	10,000	0,235	2,695
age structure of the staff	7,157	7,297	7,548	7,432	5,283	7,401
total	29,149	27,076	29,325	27,037	21,289	19,479
average value	5,830	5,415	5,865	5,407	4,258	3,896

From the table 1 we can see that according to the previous assessment, the highest level of the HR-marketing takes place at LLC "Confectionery" Mercury" (5.865). DE PJSC "Kyivkhlib" Bakery №10 has 5,830 units; DE PJSC "Kyivkhlib"
Bakery №2 has 5,415 units; JSC "Shpolyansky food factory" – 5,407. It should be noted that although these are the highest indicators, they are pretty mediocre, as was mentioned that the highest score is 10.

Graphical method presupposes the construction of hr-marketing polygon. The polygon with the largest area will meet with the company's highest level of the HR-marketing. The area of the each polygon is calculated by the formula [1, p.207]:

$$S_i = \frac{1}{2}\sum_{i=1}^{n} q_i * q_{i+1} * \sin \alpha_i , \quad (1)$$

where S_i – area of the polygon;

q_i– value of HR-marketing factor;

α_i– angel between the factors.

So, the area of the hr-marketing polygon at the analyzed enterprises will be:

$$S_{bakery№10} = \frac{1}{2} * 0{,}951 * 3{,}025 * 4{,}149 + \frac{1}{2} * 0{,}9511 * 4{,}149 * 8{,}518 + \frac{1}{2} * * 0{,}9511 * 8{,}518 * 7{,}157 + \frac{1}{2} * 0{,}9511 * 7{,}157 * 6{,}3 + \frac{1}{2} * 0{,}9511 * * 6{,}3 * 3{,}025 = 82{,}2710 \text{ (square units)}$$

$$S_{\text{bakery№2}} = \frac{1}{2} * 0{,}9511 * 2{,}266 * 3{,}741 + \frac{1}{2} * 0{,}9511 * 3{,}741 * 4{,}767 + \frac{1}{2} * 0{,}9511 * * 4{,}767 * 7{,}297 + \frac{1}{2} * 0{,}9511 * 7{,}297 * 9{,}005 + \frac{1}{2} * 0{,}9511 * * 9{,}005 * 2{,}266 = 70{,}0057 \text{ (square units)}$$

$$S_{Mercury} = \frac{1}{2} * 0{,}9511 * 4{,}095 * 5{,}126 + \frac{1}{2} * 0{,}9511 * 5{,}126 * 9{,}771 + \frac{1}{2} * 0{,}9511 * * 9{,}771 * 7{,}548 + \frac{1}{2} * 0{,}9511 * 7{,}548 * 2{,}785 + \frac{1}{2} * 0{,}9511 * 2{,}785 * 4{,}095 = = 84{,}2933 \text{ (square units)}$$

$$S_{\text{Shpol.factory}} = \frac{1}{2} * 0{,}9511 * 1{,}448 * 3{,}414 + \frac{1}{2} * 0{,}9511 * 3{,}414 * 4{,}743 + \frac{1}{2} * * 0{,}9511 * 4{,}743 * 7{,}432 + \frac{1}{2} * 0{,}9511 * 7{,}432 * 10 + \frac{1}{2} * 0{,}9511 * * 10 * 1{,}448 = 69{,}0432 \text{(square units)}$$

$$S_{\text{Delicate}} = \frac{1}{2} * 0{,}9511 * 1{,}756 * 4{,}242 + \frac{1}{2} * 0{,}9511 * 4{,}242 * 9{,}773 + \frac{1}{2} * 0{,}9511 * * 9{,}773 * 5{,}283 + \frac{1}{2} * 0{,}9511 * 5{,}283 * 0{,}235 + \frac{1}{2} * 0{,}9511 * 0{,}235 * 1{,}756 = = 48{,}5969 \text{(square units)}$$

$$S_{\text{Slavutich}} = \frac{1}{2} * 0{,}9511 * 0{,}387 * 4{,}067 + \frac{1}{2} * 0{,}9511 * 4{,}067 * 4{,}929 + \frac{1}{2} * * 0{,}9511 * 4{,}929 * 7{,}401 + \frac{1}{2} * 0{,}9511 * 7{,}401 * 2{,}695 + \frac{1}{2} * * 0{,}9511 * 2{,}695 * 0{,}387 = 37{,}6105 \text{ (square units)}$$

The results of the graphical analysis method are shown in Figure 1.

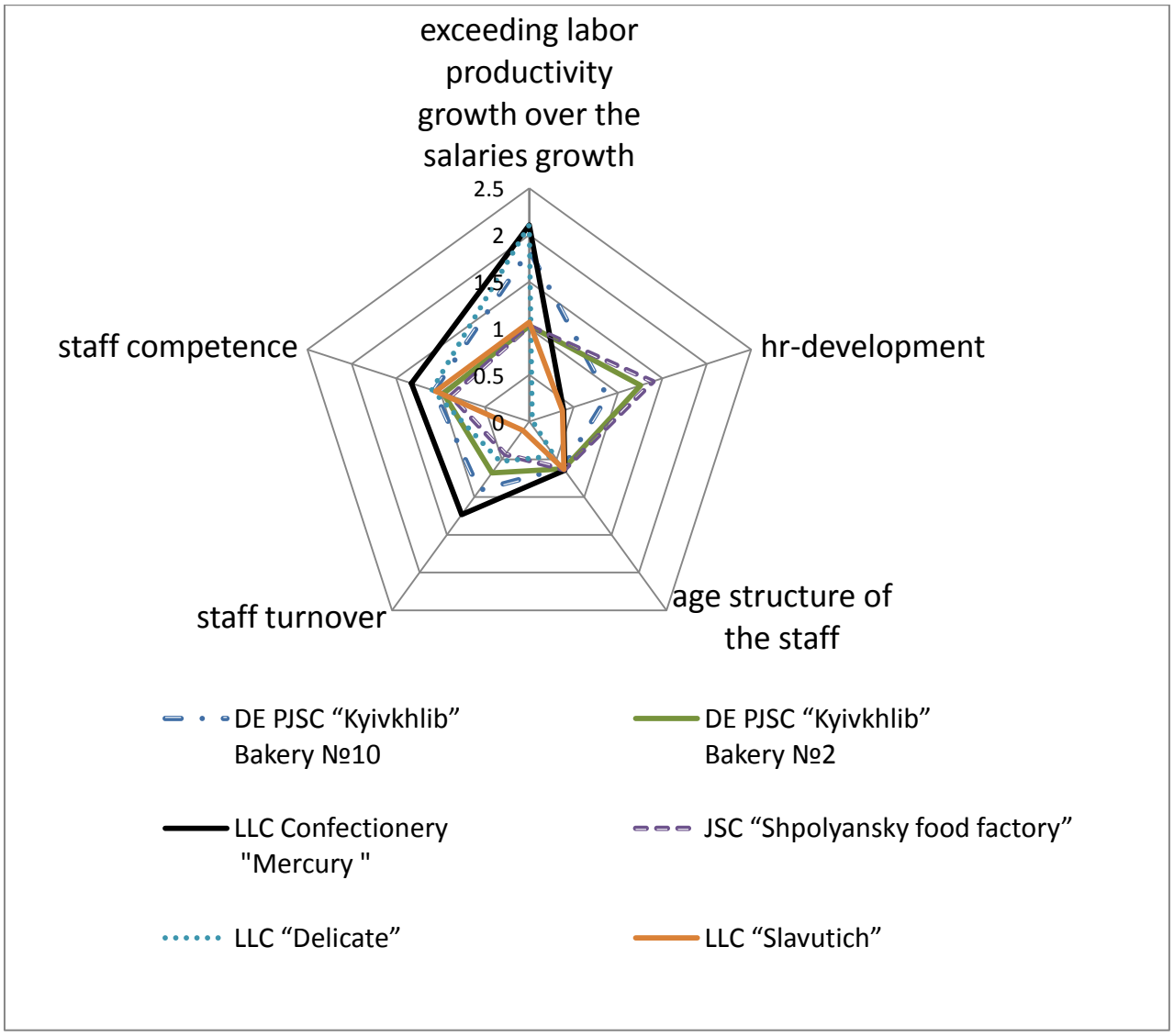

Figure 1. The HR-marketing polygon of analyzed enterprises (in standard units)

As we can see from the figure, the largest area has the polygon of LLC Confectionery "Mercury " (84,2933 Quad.), it means that HR-marketing at the enterprise is organized well. Behind him is the DE PJSC «Kyivkhlib» Bakery №10 (82,2710 Quad). DE PJSC «Kyivkhlib» Bakery №2 is far behind (only 70,0057 Quad). JSC “Shpolyansky food factory” has fourth position (69,0432 Quad). LLC “Delicate” has fifth position (48,5969 Quad). And the last position takes LLC “Slavutich” (only 37,6105 Quad).

Conclusion. The experience of successful companies shows that the key role in achieving success belongs to the employees of the company. Company staff provides the highest standards of service that affect customer satisfaction and their loyalty to the company and "repeat purchases." It is clear that the high standards of service can only create the staff who is genuinely interested in the success of the company, who is satisfied with their work and proud of it. To reach this goal the enterprises should understand the necessity of transition from the traditional personal management to the HR-marketing, as a new management quality.

The authors have proposed a methodology for the assessment of HR-marketing at the enterprise. The authors' method is universal for enterprises and organizations of various industries; it gives a possibility to assess the general condition of HR-marketing at the enterprise and to see problem areas in the field of human resource management at the enterprises. The innovation of this approach of staff assessment consists of the following key aspects: objectivity, simplicity and overall approach.

The authors' method was tested at the enterprises of different branches of food industry. The results of the approbation show that the actual size of the enterprise and sector of activity do not have a significant impact. The data also show that there are many problematic issues in the human resource management at the enterprises. Given the above, we can conclude about the necessity of building the HR-management on the new quality level – HR-marketing.

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Economic Consequences of Occupational Injuries in Consumer Cooperative Organizations

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Abstract

The article reveals problems of occupational injuries in the consumer cooperative organizations, gives indices of occupational injury and their calculation value on the basis of sampling, and evaluates economic consequences of work-connected injuries and accidents for business entities.

In today's economic situation the regulation of veterinary products' market is based on market research, identifying internal and external relations, systematic study of various phenomena and processes that occur in the market and in related areas. Based on these and other methods, including mathematics and statistics one, you can make certain predictions and develop perspective plans for the future of the industry.

The problem of occupational injuries and diseases is very comprehensive and in conjunction with the labor process factors, which exist in modern production, depends directly on labor conditions characterized by the fact that workers are exposed to harmful and dangerous factors of production.

Modern high-tech automated production reduces hazards to which a human being is exposed. However high-tech production is not widely used in consumer cooperatives, so it is impossible to avoid influence of negative factors due to their nature and production technology.

The analysis of occupational injuries and common diseases of consumer cooperative system's workers was conducted on investigating cooperative organizations in the Belgorod Regional Union of Consumer Societies (oblpotrebsoyuz).

It was found out that injury rates vary in a certain pattern, which is characteristic for a particular activity. Indices of injury frequency (Кч), severity of injury (Кт) and disability

rate per a thousand of workers (Пн) were determined in the study of occupational injuries basing on a statistical analysis method.

The results, which were obtained during the study, allow to establish the causes of accidents objectively and reliably and to develop a mechanism of reducing professional risks.

According to the comparative studies results of the occupational injuries dynamics for 2007-2012 years it was found out that Кч declined steadily from 0.28 (in 2007) to 0 (in 2008), and significantly increased in 2010 (0.91) . In 2012 the figure was 0.3 (Table 1).

The study showed that the reason of injuries was caused by a poor organization of production work, as well as non-compliance with labor and technological discipline, low individual responsibility of employees but the most important factor was the weakening of attention, paid to the industrial safety on the part of the leaders and officials who are working in organizations of Belgorod Regional Union of Consumer Societies.

Table 1

Dynamics of occupational injuries in the system of Belgorod oblpotrebsoyuz during 2007 – 2012 years

Indices	Years						Growth Rate, 2012 to 2007	
	2007	2008	2009	2010	2011	2012	+ ; ─	%
Average labour force (body of people)	3467	3339	3245	3285	2987	2518	-43	98,7
Number of occupational injuries (body of people)	1	-	1	3	2	1	-	-
Number of the injured employees, who became disable for 1 working day or more (body of people)	1	-	1	3	2	1	-	-
Number of incapacity for work days	21	-	22	192	217	32	11	1,5 (half as much)
Factors: ─ frequency of injuries ($К_ч$); ─ severity of injuries ($К_т$).	0,28 21	-	0,30 22	0,91 65	0,66 108	0,39 32	0,11 11	- -

The main indicator, that fully characterizes the situation with the injury, is the indicator of the working time loss, which had the highest meaning in 2010 – 192 persons/day.

Determination of the occupational risks is associated with the study patterns of influence of the factors that determine both injuries/diseases and the interaction between these factors. Correlative analysis method was used to describe the random events associated with injuries [1]. In this case summarizing indicators, which characterize injuries, are presented as a multidimensional vector functions Ή (t), where (t) is the time sequence in which accidents occur (Table 2).

To determine the connection closeness between the number of injuries and the indicators, which characterize the victims, we used corresponding components γi(t) vector function Ή (t):

– $\gamma_1(t)$ – $K_Ч$ frequency of injuries;

– $\gamma_2(t)$ – $K_Т$ severity of injuries;

– $\gamma_3(t)$ – gender of the injured person (1 – male, 2 – female);

– $\gamma_4(t)$ – age of the injured person (1 – 20-25 years old, 2 – 26-30 years old, 3 – 31-35 years old, 4 – 36-40 years old, 5 – 41-45 years old, 6 – 45-50 years old, 7 – older than 51);

– $\gamma_5(t)$ – occupational status (1 – worker, 2 – employee, 3 – engineer);

– $\gamma_6(t)$ – working experience of the injured person (1 – less than a year, 2 – from 1 to 3 years, 3 – from 3 to 5 years, 4 – from 5 to 10 years, 5 – from 10 to 15 years, 6 – from 15 to 20 years, 7 – more than 20 years);

– $\gamma_7(t)$ – type of injury (1 – contusions, 2 – cuts, 3 – burns, 4 – fractures, 5 – brain concussion, 6 – internal [intraabdominal] injury);

– $\gamma_8(t)$ – degree of injury (1 – mild, 2 – serious, 3 – lethal).

Table 2

Initial indicators characterizing injuries in the system of Belgorod oblpotrebsoyuz during 2007 – 2012 years

Indices		Годы					
		2007	2008	2009	2010	2011	2012
Frequency of injuries γ_1	$K_ч$	0,28	0	0,30	0,91	0,61	0,30
Severity of injuries γ_2	$K_т$	21	0	22	65	108	32
Gender of the injured person γ_3	$\gamma_3(1)$	1	0	1	1	1	0
	$\gamma_3(2)$	0	0	0	0	0	2
Age of the injured person γ_4	$\gamma_4(2)$	0	0	0	0	0	0
	$\gamma_4(3)$	1	0	0	1	1	0
	$\gamma_4(4)$	0	0	1	2	1	5
Occupational status γ_5	$\gamma_5(1)$	1	0	1	1	1	1
Working experience of the injured person γ_6	$\gamma_6(4)$	0	0	0	2	0	0
	$\gamma_6(5)$	1	0	0	1	1	0
	$\gamma_6(6)$	0	0	1	0	1	1
Type of injury γ_7	$\gamma_7(1)$	0	0	0	1	0	0
	$\gamma_7(2)$	1	0	1	0	1	0
	$\gamma_7(6)$	0	0	0	2	1	4
Degree of injury γ_8	$\gamma_8(1)$	1	0	1	1	0	0
	$\gamma_8(2)$	0	0	0	2	2	2

The analysis of injuries and determining factors showed that the highest correlation was identified between the gender of the injured person γ_3 (1), occupational status γ_5 (1), age of the injured person γ_4 (3) and the working experience of the injured person γ_6 (5), and a lesser relationship was stated between age γ_4 (2), γ_4 (4) and experience γ_6 (4), γ_6 (6). Young workers who have little working experience, as well as older workers with high seniority have a more responsible approach to their health and safety. Injury frequency indices were determined according to the occupational status γ_5 (1), type of injury γ_7 (6) and degree of injury γ_8 (2).

Knowledge of the regularity of injuries dynamics reveals opportunities to improve safety, to develop measures for preventing accidents and injuries during professional activities.

In conditions of market relations more and more business entities achieve economic success, demonstrating possibility of improving working conditions through a combination of concern for the employees' welfare and profitability. Business executives, officials and heads of departments begin to realize both economic and social importance of improving working conditions to ensure safety and health of their workers in order to increase efficiency and production development.

Relative quantitative indicators such as indices of frequency, severity, disability and economic index of injury severity were used for making comparative analysis and evaluation of the economic costs of accidents (Table 3).

Table 3

Indicator values of occupational injuries in the system of Belgorod oblpotrebsoyuz during 2009 – 2012 years

№ п/п	Indices	Type Code	Years				Absolute Changes +/-	Rate of increase, % 2012 to 2008
			2009	2010	2011	2012		
1	Injury frequency index	$K_Ч$	0,30	0,91	0,66	0,39	0,09	130
2	Severity of injury index, days	K_T	22	64	108,5	32	10	145,4
3	Disability index, days (for 1000 employees)	$П_Н$	6,7	58,3	65,1	9,6	2,9	143,2
4	Economic severity of injury index, rubles.	$П_{Э.Т.}$	13217,6	44032	54716	14320	1102,4	108,3
5	Economic severity of common diseases, rubles.	$П_{Э.З.}$	14166,3	14382,8	10189,8	10691,2	-3475,1	-75,4

According to the analysis it was found out that in Belgorod oblpotrebsoyuz in 2010 the number of the injured laborers, compared with 2009 increased for 2 people. Thus there was a 170-day increase in the quantity of disability days caused by injuries, and as a result the increase of the disability index. In 2010 the value of this indicator constituted 58.3 days per a

thousand of employees, in 2012 the number of disability days equaled to 32 days, the value of the indicator of disability per a thousand of employees was 2.9 days.

These economic losses data investigation shows that the largest number of injuries occurred in Belgorod oblpotrebsoyuz cooperative organizations in 2010. The total duration of disability of injured workers amounts to 70 days, sick payments amount to 21 656 rubles and 54 kopecks.

Temporary disability caused by occupational injuries and imperfection of the working conditions brought considerable financial losses to business enterprises. Furthermore, the identification of the economic consequences of disability allows to establish a pattern or connection between different reasons of the caused injuries.

Economic and social losses from «not received» or «lost» benefits can arise in case of unstable enterprise development. It is reflected in the specific cost values. More than 20% of those who initially were defined as physically challenged ones lost their ability to work at the age of 45 – 50 years. Physically challenged people who suffered from an occupational disease, as a rule, are people of an active working age and socio-economic compensation for the damage to their health requires substantial economic costs. Every year due to particularly hazardous working conditions two hundred thousand people retire 5 –10 years prior to the generally established pension age [3].

Assessment of economic losses, obtained in the study, shows that temporary disability caused by injuries in the workplace and losses of the working time entail material losses in the form of volume reduction of turnover at the trade enterprises and public catering, lack of production skills, reducing procurement turnover, reducing of the provided paid services, increase of insurance payments as well as, reduction of production volume, followed by quality reducing caused by involvement in the production process of employees with lower level of qualifications.

The investigation results showed that the main reasons of injuries are: incompetent organization of the labor process in various fields of consumer cooperatives activity, violation of labor protection.

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The Determination of Market Demand on Veterinary Products to the Conditions of the Current State of the Economy in Ukraine

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Abstract

The regulatory method is the most effective method of determining the capacity of veterinary drugs' market for today. Technology of calculation is based on consumption of certain types of veterinary drugs (or some pharmacological groups) that is calculated per one animal over time. From our point of view the optimal period of time is a year, as certain trends in the number change and incidence of animals can be observed throughout the year.

Keywords: veterinary pharmacy, veterinary drugs market, the development of veterinary pharmacy, requirement, demand, market capacity.

In today's economic situation the regulation of veterinary products' market is based on market research, identifying internal and external relations, systematic study of various phenomena and processes that occur in the market and in related areas. Based on these and other methods, including mathematics and statistics one, you can make certain predictions and develop perspective plans for the future of the industry.

Measures to stimulate the development of veterinary pharmacy, in other words - an increase in supply of veterinary drugs, is appropriate only when there is demand for them. The ability to implement them is a major issue that needs to identify current and prospective sales volumes of veterinary drugs, namely, the calculation of market capacity.

In this context, the requirement for veterinary drugs is their required amount to ensure effective prevention and treatment, and effective demand is a requirement that is supported by the purchasing power of consumers and some subjective non-price factors. It is clear that to maintain epizootic welfare of the country it is important that the demand for veterinary products match the requirement [1,4,5,6,12].

Based on this, the model of market demand for a particular veterinary drug, which producers should be guided by in the formation of enterprise commodity-product policy, can be represented by multivariable function:

$$Q_i^D = f(P_i, Qlty, A, N_l, N_c, I, Inf, VP, VP_{new}, Av, F, D_l, U, G) \quad (1)$$

where: Q_i^D - the demand for the *i* species of veterinary drugs, in natural units;

f - function;

P_i - price of the *i* species of veterinary drugs;

Qlty - veterinary drugs quality;

A – drugs-analogs of this drug (of other manufacturers), their quantity, market prices and quality;

N_l – number of cattle;

N_c - number of domestic animals;

I - incidence of animals;

Inf – professionals' conversance about veterinary medicine and consumers about veterinary drugs;

VP - accepted practice of animal diseases' treatment and prevention;

VP_{new} - implementation of new animal diseases' treatments and prevention into veterinary medicine practice;

Av - accessibility (availability) of veterinary drugs;

F – the financial condition of veterinary drugs' customers - owners of cattle and domestic animals;

D_l - the demand of animal products;

U - facilities for the production of veterinary drugs;

G - factors of state influence (government purchase of veterinary drugs).

The creation of such models for specific drug is a complex process and requires not only the evaluation of each factor importance, but also of its influence in time [3].

In general, the demand for veterinary drug is formed in three stages:

1. Animal disease emergence (or the need for preventive measures).
2. Appointment of veterinary drug by veterinary medicine specialist.
3. The decision to purchase a veterinary drug.

Therefore, factors that influence the demand for veterinary drugs also can be divided into three main groups (Table 1).

I. Factors that determine the requirement for drug prevention and treatment

1. The number of animals and the dynamics of its change. The development of stockbreeding in the region (in both cattle and domestic animals segments) defines one of the main market characteristics - its capacity. Consequently, in regions where the number of animals is bigger the consumption of veterinary drugs is also higher. Thus the number of animals is necessary to be analyzed sharing it not only for two segments (cattle group and a group of domestic animals), but also on the structure of species.

2. Incidence of animals and epizootic situation in the region determine allowances of veterinary drugs for preventive and therapeutic measures for animals per head.

3. Climatic and environmental factors largely affect the segment of cattle. Significant deterioration of ecological situation in the region in short time can lead to health complications of domestic animals and, consequently, to a certain increase of demand on veterinary drugs. In the long time it will likely lead to the reduction of animals' number.

II. Factors that influence the appointment of veterinary drug

1. Veterinary factors determine the level of veterinary services in the region.

2. Veterinary-pharmaceutical factors determine the accessibility of veterinary drugs to veterinary specialists and information about them.

Table 1

System of factors that determine the demand in the market of veterinary drugs

Group	Subgroup	Factors	The impact on sales of veterinary drugs by major segments	
			Cattle	Domestic animals
1	2	3	4	5
I. Factors that determine the requirement for veterinary drug treatment	Number of animals	• the existence and dynamics of changes in numbers of cattle in the region (by type) that are in public ownership	direct	-
		• the existence and dynamics of changes in numbers of cattle in the region (by type) that are held in private farms of citizens	direct	-
		• the existence and dynamics of changes in numbers of domestic animals in the region (by type)	-	direct
	Incidence of animals	• epizootic situation at the region	direct	direct
		• animal incidence (stage, form and severity), its structure, level, geography and seasonality	direct	direct
	Climatic and environmental	• climatic conditions of the region	direct	-
		• unfavorable ecological situation in the region (contamination of water by sewage, pastures by chemical fertilizers and harmful emissions, air by emissions, increased background radiation, etc.)	In short period of time – direct, In long-term period of time – inverse	direct
		• the level of urbanization in the region	inverse	direct

Extension of Table 1

1	2	3	4	5
II. Factors that influence the appointment of veterinary drug	Veterinary	• the number of specialists in veterinary medicine on 1000 households (for urban and rural areas)	direct	direct
		• The number of veterinary clinics and hospitals in the region	direct	direct
		• common treatment practice and professional level of specialists on veterinary medicine	direct	direct
		• bias in the appointment of a drug	direct	direct
		• the scheme of preventive measures	direct	direct
		• the introduction new methods of treatment and diagnosis of animal diseases into the veterinary practice	direct	direct
		• moral and ethical standards of community		
	Pharmaceutical	• the range and amount of domestic production and import of veterinary drugs		
		• the development of new veterinary drugs and their availability on the market	direct	direct
		• information on new veterinary drugs and new methods of treatment	direct	direct
III. Factors that affect the acquisition of veterinary drug	Macroeconomic	• the economic situation of the region	direct	direct
		• sectoral focus of the region:		
		agrarian	direct	-
		industrial	inverse	-
		• the level of development of agriculture (including cattle farming) in the region	direct	-

Extension of Table 1

1	2	3	4	5
III. Factors that affect the acquisition of veterinary drug	Socioeconomic	• population and its structure (the ratio of urban and rural population, groups on age, groups on income of people), the number of households in the region	direct	direct
		• the number of large cattle and poultry farms in the region and their financial status	direct	-
		• cash income of households (urban and rural)	direct	direct
		• the level and structure of expenditures of households (urban and rural)	direct	direct
	Veterinary-economic	• economic feasibility of drug treatment (or slaughter)	direct	direct
		• the amount of preventive measures carried out by public funds	direct	-
	Features of regional market	• the structure of the distribution network (number of wholesalers of veterinary drugs and veterinary chemist shops at the region)	direct	direct
		• accessibility (availability of a particular veterinary drug at any given time) and range of veterinary drugs on the market	direct	direct
		• prices of veterinary drugs	inverse	inverse
		• prices of goods-substitutes (which include drugs of humane medicine, adulterated veterinary drugs)	direct	direct
		• customers' waiting of market changes		

Source: Developed by the author.

III. Factors that affect the acquisition of veterinary drug

1. Macroeconomic. Group of factors that reflect macroeconomic features of the region.

2. Socioeconomic factors that determine the solvency of animals' owners.

3. Veterinary-economic factors that reflect the economic feasibility of veterinary measures (preventive and curative work) in the region.

4. Features of regional market: rivalry, the structure of distribution network, prices, expectations of buyers and others.

The nature and the degree of influence of these factors should be evaluated separately for each of the two main segments of veterinary drugs both the cattle segment and domestic animals one [2,7,11].

To assess the capacity of national veterinary drugs' market at present and to forecast future periods in conditions of high uncertainty is quite challenging not only for manufacturers of veterinary drugs, but also for state governments.

The regulatory method is the most effective method of determining the capacity of veterinary drugs' market for today. Technology of calculation is based on consumption of certain types of veterinary drugs (or some pharmacological groups) that is calculated per one animal over time. From our point of view the optimal period of time is a year, as certain trends in the number change and incidence of animals can be observed throughout the year.

The general formula for calculating the market size of veterinary drugs is following:

$$M_{PBП} = \sum_i \sum_j N_{ij} \cdot S_i \ , \qquad (2)$$

where: M_{VDM} - total size of the veterinary drugs' market, hryvnia or natural units;

S_i - the number of i group of consumers *(i* type of animal), number of animals;

N_{ij} - received empirically or science-based consumption of j veterinary drug *(j* pharmacotherapeutic group of veterinary drugs) by i group of consumers *(i* type of animal), hryvnia or natural units per one animal.

Herewith only consumption of biological products intended for vaccination (compulsory vaccination in accordance with plan of conducting anti-epizootic measures) can be justified, consumption for other kinds of veterinary drugs should be determined empirically (in present conditions - through the study of veterinary drugs' use in a period of time, by animals' species, per one animal.

Market demand can be predicted by the kinds of veterinary drugs, pharmacotherapeutic groups or animals' species, based on the information of rational consumption rates of veterinary drugs, the number of different species of animals and also predicted changes of animals' number.

The number of animals is determined by statistical references. When forecasting the prospective market size it is appropriate to use correlation and regression analysis, or use a simple formula that accounts the average annual growth of the animals' number. To predict the prospective number of *i* animals the received average annual index of increase (decrease) should be raised to a power equal to the number of years:

$$T_{it} = T_i^t = \left(\sqrt[n]{\frac{S_{irep}}{S_{ibase}}} \right)^t \quad (3)$$

where: T_{it} - the rate of *i* animals' number increase (decrease) during the forecast period *(t* years);

T_i - average annual increase (decrease) of *i* animals' number;

t - the years' number of the forecast period;

$S_{i\,rep}$ - the number of *i* animals in the reporting year;

$S_{i\,base}$ - the number of *i* animals in the base year;

n - the number of years between base year and reporting one.

The number of *i* animals determines based on forecast information about increase (decrease) of animals' number in the forecast period by following formula:

$$S_{it} = S_{i\,rep} \cdot T_{it} \quad (4)$$

where: S_{it} - the number of *i* animals during the forecast period *(t* years);

$S_{i\,rep}$- the number of *i* animals in the reporting year;

T_{it} - the increase (decrease) rate of animals' number in the forecast period *(t* years).

The lack of scientifically based or empirically derived consumption rates of most types of veterinary drugs is one of the main problems of the regulatory method of veterinary drugs' (the segments) market research. You must also pay attention to the fact that science-based consumption reflects the requirement, not the demand for specific veterinary drug for certain animals per year.

The peculiarity of the veterinary drugs' market is that one drug can be used to treat many kinds of animals, but in different dosages and for different durations of treatment (application of different treatments). Therefore, to calculate the annual consumption rates for veterinary drug by specific species of animals it is offered the typical formula:

$$N_{ij} = D_{ij} \cdot K_{ij} \cdot n_i \qquad (5)$$

where: N_{ij} - consumption norm of *the j* drug by *i* animal, hryvnia or natural units;

D_{ij} - course treatment dosage of *i* drug for *i* animals;

K_{ij} - the amount of annual term doses of *j* drug for the *i* animals;

n_i – the number of ill animals among the total number of *i* animals during the calendar year.

To calculate the consumption rate of a drug according to formula (5) can be difficult due to the possible presence of a large number of analogs and substitutes in the market, the use of which in a particular case, is influenced by largely subjective (recommendations of veterinarians, attitude to manufacturer, country of origin, advertisement, recommendations of relatives or friends) and price factors.

Annual demand for certain veterinary drug (certain pharmacological group of drugs) based on science-based consumption rates can be calculated by the following formula:

$$P_j = \sum_i N_{ij} \cdot S_i \qquad (6)$$

where: P_j - annual requirement *j* drug (*j* pharmacotherapeutic group of veterinary drugs), hryvnia or natural units;

N_{ij} - consumption of *j* drug (*j* pharmacotherapeutic group of veterinary drugs) by *i* animals, hryvnia or natural units;

S_i - the number of *i* animals.

We can determine the potential market size for pharmacological groups of veterinary drugs and animal species based on rational consumption rates of veterinary drugs and number of animals (predictions in the change of animals number per species).

Summary. After all we can also estimate the potential size of the market for a specific drug of specific manufacturer. For this purpose it is necessary to build a rating of drugs-analogues of different manufacturers taking into account not only medical and consumer, but also economic (price, advertising activity, distribution channels, etc.) properties. Indicators

and their ratings can be determined by analyzing the actual state of the drugs market, the characteristics of these drugs and the actions of firms on promoting drugs on the market. After we calculated the rating, we can estimate the potential size of the market based on the principle of Pareto and the corresponding rating value of a particular drug.

The real size of the veterinary drugs' market can be calculated based on the empirically determined consumption rates of veterinary drugs (if this is not able with the formula 1).

To plan future situation the main prediction tool is the method of extrapolation, whereby the dynamics of changes in demand in the future is determined by the trends of change in prior years [8,9,10].

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Institutes And Institutions:
The Problem of Distinctions Between the Terms

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Abstract

The interpretation of category "institute" and "institution" is considered. The difference between the probed categories is represented. The author vision in relation to the probed category is proposed.

Інститути та інституції: проблема розмежування понять

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Abstract

Розглянуто тлумачення сутності понять "інститут" та "інституція", відображено різницю та запропоновано власне бачення досліджуваних категорій.

Постановка проблеми. Становлення та розвиток суспільства й економіки в цілому, окремих їх складових нерозривно пов'язаний з поняттям інституцій та інститутів в якості базових елементів та основних регуляторів суспільного розвитку. При цьому однією з найпоширеніших економічних теорій сьогодення можна вважати інституціоналізм. Дана концепція почала формуватися наприкінці XIX ст. Найбільш характерним для теорії інституціоналізму є поєднання методології різних наук, де досліджується поведінка людини, яка перебуває у певному суспільному середовищі, на відміну від неокласиків, які розглядали індивіда окремо, ізольовано від суспільства, інституціоналізм розглядає процес становлення і розвитку інституцій та їх вплив на індивіда та суспільство.

Аналіз останніх публікацій. Вивченню проблематики теорії інституціоналізму в цілому присвячено чимало публікацій та наукових праць вітчизняних і закордонних

науковців. Вагомий внесок у дослідження даних питань зробили, зокрема, Дж. Б'юкенен, Т. Веблен, О. Вільямсон, У. Гамілтон, Дж. Гобсон, Т. Эггертссон, Р. Коуз, Т. Негіші, Д. Норт, Р. Позер та ін. Пострадянська інституціональна парадигма формується під впливом фундаментальних і прикладних досліджень С. Архієрєєва, В. Вольчика, Т. Гайдая, В. Гейця, А. Гриценка, Р. Капелюшнікова, С. Кваші, С. Кірдіної, М. Корецького, М. Латиніна, Ю. Лопатинського, О. Мороз, В. Радаєва, П. Саблука, В. Тамбовцева, О. Шпикуляка, А. Чухна та ін.

Не зважаючи на значну кількість досліджень в даному напрямку, сьогодні, досить часто поняття "інститут" та "інституція" вживаються як синонімічні або ж як опозиційні. Тому виникає питання правомірності (наукової обґрунтованості) такої взаємозамінності, змістової нівеляції. Це й підтверджує актуальність досліджуваної тематики.

Метою статті є визначення та розмежування сутності понять "інститут" та "інституція".

Основний виклад. Ідейні основи інституціоналізму було закладено американським економістом і соціологом Т. Вебленом. Відомі філософи Ч. Пірс, Дж. Дьюї та Ж. Леб зробили значний внесок у формування методологічних основ інституціоналізму. Вагомий вплив на формування й розвиток інституціоналізму справила німецька історична школа з її історичним методом, акцентуванням уваги на правових нормах та політиці держави. В американській економічній літературі навіть стверджувалося, що інституціоналізм є суто американським різновидом історичної школи. Так, всесвітньо визнаний авторитет у царині історії економічної думки японський економіст Т. Негіші також називав інституціоналізм американським напрямом історичної школи [1, с. 34].

Інституціоналізм, як напрямок економічної думки, виник і набув поширення в США за умов раннього періоду імперіалізму. Його започаткування вважають своєрідною опозицією дрібної і середньої буржуазії та її ідеологів монополістичному капіталізмові, яка проявилась у гостро критичному підході до реалій капіталізму та у спробах його реформування. Саме тому можна вважати, що найбільшу ідейну спорідненість інституціоналісти мають з англійськими соціологами й економістами – прихильниками буржуазного реформізму, зокрема Дж. Гобсоном, який, на думку

самих американських інституціоналістів, зробив спробу теоретично обґрунтувати реформістські програми.

Одне з перших визначень інституцій дав теоретик інституціоналізму У. Гамільтон. За його твердженням інституція – це словесний символ для кращого позначення низки суспільних звичаїв. Вони означають переважний і постійний спосіб мислення, який став звичним для групи і перетворився для народу у звичай. Вони встановлюють форми та межі людської діяльності. Світ звичаїв і звичок, до якого ми пристосовуємо наше життя, є сплетінням і незламним життям інституцій [2, p. 84]. Вони впливають на діяльність соціальних груп та окремих індивідів, оскільки ці установи чи утворення покликані для виконання загальнозначущих завдань.

На думку Т. Веблена всім людям притаманні інстинкти. Під їх впливом формуються прийнятні для даного суспільства способи мислення та дії, традиції, які вчений вважає інституціями. Тобто, їх Т. Веблен розумів і як звичні способи реагування на стимули, і структуру виробничого або економічного механізму, і систему суспільного життя. Вчений трактує інституції, як поширений спосіб судження, який стосується окремих відносин між суспільством і особою та окремих виконуваних ними функцій; і систему життя суспільства, яка складається із сукупності діючих правил, норм, обмежень у визначений час або у будь-який момент розвитку суспільства, може з психологічного боку бути охарактеризована загалом як переважаюча духовна позиція чи розповсюджене уявлення про спосіб життя в суспільстві [3, с. 201-202]. Тобто, тут інституції розглядаються як правила, норми і звичаї, які регулюють відносини між особою та суспільством.

Дж. Коммонс стверджує про домінування права над економікою. За його визначенням, інституція – це колективна дія з контролю, лібералізації (звільнення) і розширення індивідуальної дії, розширення того, що індивідуум може досягти своїми незначними і тривіальними діями. Ці дії насправді є "транс-діями" [4, p. 652]. Тобто вчений розглядає правові норми як інституції, які врегульовують конфлікти і сприяють укладанню угод. І в даному випадку термін інститут вживається більше в правовій сфері ніж в економіці.

Сучасні інституціоналісти надають поняттю інституція ширшого трактування. Загального визнання дістало визначення Дагласа Норта, згідно якого інституції

являють собою структуру, яку люди накладають на свої взаємовідносини, визначаючи в такий спосіб стимули, що разом з іншими обмеженнями окреслюють межі вибору, а вони, у свою чергу, задають рамки функціонування економіки й суспільства протягом того чи іншого періоду часу. Вони охоплюють як формальні правила й неформальні обмеження (загальновизнані норми поведінки, досягнуті угоди, внутрішні обмеження діяльності), так і певні характеристики примусу до виконання тих та інших [5, с. 6-7]. Дж. Ходжсон додає, що інституції це – сталі системи існуючих і укорінених суспільних правил і звичаїв, що структурують соціальні взаємодії [6, с. 16]. Зазначені підходи та визначення інституцій, на думку багатьох авторів, до якої ми приєднуємося, можна вважати найбільш доцільними та узагальнюючими.

Із розкриттям сутності поняття інституцій як соціально-економічної категорії, досить важливе значення відіграє визначення їх ролі та місця як інструментарію регулювання суспільного розвитку. Ведучи мову про роль інституцій, Д. Норт зауважує, що вони – це "правила гри" у суспільстві, або, виражаючись формальніше, створені людиною обмежувальні рамки, які організовують взаємини між людьми. Отже, задають структуру спонукальних мотивів людської взаємодії – чи то в політиці, соціальній сфері, чи економіці [5, с. 17]. Тому, за таких умов, на нашу думку, інституції розглядаються як основний інструмент раціоналізації інтересів економічних суб’єктів.

Фундаментальний для інституціоналізму термін "institution" у 1970-1980 рр. перекладали російською мовою і як інституція (В. Афанасьєв) [див. 7, с. 28], і як інститут (С. Сорокіна) [див. 8]. Найбільш поширеним став другий, не зовсім точний варіант перекладу, використаний в першому російськомовному виданні праці Т. Веблена “Теорія бездіяльного класу”. Як наголошувалося в передмові до даної книги, розмежування понять інституції й інституту є досить умовними, оскільки в концепціях інституціоналістів вони мають досить широкий і розмитий зміст [див. 8, с. 6]. Аналогічний підхід використовувався і для перекладу праць Д. Норта та Т. Еггертссона, незважаючи на те, що в оригіналі їх праці присвячені саме інституціям [див. 5; 7]. Переважання у перекладах терміну “інститут” й закріпило використання категорії "інститут" та нехтування поняттям "інституція" при описанні явищ відповідного характеру.

Слід відмітити, що в зарубіжній інституціональній теорії базовою категорією є "інституція", натомість "інститут" має обмежену сферу застосування і майже не використовується у наукових текстах в інституціональному трактуванні [див. 9]. На теренах Росії під впливом підходу С. Сорокіної наполегливо за базову категорію приймають "інститут". Проте в Україні категорія "інституція" нині є більш вживаною за "інститут" [див. 10]. Не зважаючи на це, більшість дослідників вважають за необхідне здійснити чіткіше розмежування сутності понять.

Спробу розмежування категорій "інституція" та "інститут" здійснювали О.В. Іншаков та Д. П. Фролов, а також ще ряд російських та вітчизняних науковців [див. 11]. Так, наприклад, О.В. Іншаков трактує інституцію як соціальну форму типізації функцій суб'єктів господарювання, що визначає їх статуси, ролі в системі суспільного виробництва, а також забезпечує еволюцію системи суспільного поділу праці на підставі норм, правил, регламентів інструкцій контрактів стандартів та порядків [11, с. 56]. Погоджуємося з О.В. Іншаковим та Д.П. Фроловим, що саме інституція виступає рушійною силою будь-якої цілеспрямованої діяльності та є базовою категорією інституціональної теорії. Натомість інститут – це поняття складніше. Інститут можна трактувати як функціональну організацію за допомогою якої здійснюється реалізація конкретної системи однорідних інституцій.

Інститути розуміють як складні чинники суспільного виробництва, що є видовими комплексами взаємодії інституцій і організацій, які закріплюють ефективні інституції в рамках господарської системи. За трактуванням В.М. Білоусова, інститути – це типові комплекси інституцій, які виступають функціональними генотипами організацій, моделями, що еволюційно склалися, їх функціональної структури [12, с. 178]. Відповідно, кожен інститут має у своєму складі унікальний набір інституцій, що дає можливість урізноманітнити форми організації людської діяльності.

Зазначені підходи підтверджують неоднозначність трактування категорій "інституція" та "інститут". Вагомий внесок у цю дискусію внесли й українські науковці М.Й. Малік, О.Г.Шпикуляк, О.Ю. Лузан [13].

Узагальнюючи огляд різних підходів, вважаємо, що у вітчизняній науковій термінології для характеристики основної предметної одиниці теорії інституціоналізму коректніше застосовувати саме термін "інституція". Натомість "інститут" має звужене

і більш прикладне застосування.

Крім того, нечіткість категоріального розмежування інституцій і організацій, що зберігається дотепер, наочно підтверджує дискусія Р.Познера і Дж.Лінареллі, яка розпалилася на початку 2010 року на сторінках авторитетного"Journal of Institutional Economics" [див. 14; 15]. І відповідно, це визначає завдання подальших наукових досліджень у даному напрямі.

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Contemporary Actuality of N. A. Berdyaev's Criticism of an Idea of Scientism as Improper Transference of Scientific Methods on Other Areas of Culture

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Abstract

The given article shows actuality of Nikolai Alexandrovich Berdyaev's (1874-1948) criticism of attempts (taking place within his age and still happening in a contemporary Russian culture) to solve socially significant value issues within the framework of a narrow utilitarian approach, which (attempts) were based on improper transference of scientific cognition methods on spheres of culture alien to such. It is thus important to stress that such limits of scientific claims do not diminish and weaken science but, on the contrary, strengthen it, as contemporary criticism of science for its inefficiency, anti-humanism, etc may be viewed as a reverse side of a conviction in boundlessness and universality of possibilities of science in that the scientific progress is able to automatically solve social, moral, and existential issues. Natural collapse of such s conviction within social experience leads to groundless disappointment in scientific approach on the whole.

Keywords: science and scientism, belief in science, criticism of science, scientization of a value sphere, justice, scientific rationality, value thinking, objective limits of scientific cognition.

Transformation of both science and its image in public conscience during the 20th century resulted in the latter at the beginning of the 21st century still including (in an exaggerated and poorly reflexed upon form) both legacy of the Age of the Enlightenment (namely, boundless belief in possibilities of science as public force, progress of which is able through education and enlightenment to solve all the social and moral problems) and a wide range of anti-scientism ideas, up to a radical criticism of science for its inefficiency and anti-humanism as compared to alternative forms of cognition. The latter views may be explained, firstly, by the fact that contemporary science has become in terms of both content and methods incomprehensible for the majority, thus deepening the gap between mass consciousness and scientific knowledge, and, secondly, by disappointment on the part of a considerable part of the society of a scientific method of stating and solving issues that appeared to be powerless

for social, existential, and moral issues claimed to be solved with the help of it from the beginning of the New age. Hence, there is obvious need in developing a scientific world outlook as a way of thinking on the one hand corresponding to style and principles of scientific cognition, but on the other hand taking into account its fundamentally limited nature realized in the 20th century. In connection with the latter, it is necessary to take into consideration an idea of the President of the Russian Philosophical Society, an academician of the Russian Academy of Sciences, a well-known scientist, a philosopher, and an organizer of science V. S. Styopin that in acknowledging existence of limits of a scientific method, “there is no anti-scientism" [1, p. 110] but only "a statement of an indisputable fact that science cannot replace all the forms of cognition in the world and the whole culture. And all that slips out from its range is compensated by other forms of a spiritual comprehension of the world such as creative art, religion, morality, and philosophy" [1, p. 110]. In other words, acknowledging truthfulness of an idea of one of the most authoritative modern Russian public thinkers, a science philosopher S. G. Kara-Murza that "We cannot *undo* science and go back to pre-Galileo times, even if someone regrets about it. We can overcome a crisis caused partly by science only through moving forward with the help of science" [2, p. 3], and we must remember a warning by B. Pascal that "abuse of truth must be as punishable as use of lie" [3, p. 427], i. e. it is impossible to consider all the problems arising in the society and a personality cognizable to a scientific method.

It compels therefore to appeal to the legacy of one of the most prominent Russian philosophers, Nikolai Alexandrovich Berdyaev, who did not only distinguish but also contrasted science with what he called *scientific character*, i. e. operations for imitating it in other spheres, or improper "transference of scientific criteria on other spheres of spiritual life and alien sciences" [4, p. 264] (certainly, what N. A. Berdyaev meant should not be confused with a more widespread meaning according to which scientific character of knowledge or research is considered compliance with scientific criteria). According to him, by such an *idea fixa* of the so-called *scientific character* “contemporary consciousness…is hypnotized”, [4, p. 262], but at the same time N. A. Berdyaev may not be considered a critic of science as such!

Indeed, despite the fact that many European historians of modern philosophy consider him the founder of existentialism, from which point of view a scientific method of cognition is not capable to cognize essence of being and society and is also anti-humanistic per se, N. A. Berdyaev did not doubt importance of science describing it as "an undeniable fact necessary to every person" [4, p. 264], and a reaction of "self-preservation of a person lost in a dark forest of the world life" [4, p. 266] helping to "cognitively orient in the world given coming upon him from every side" [4, p. 266], to adapt to it. However, despite the fact that "no one earnestly doubts value of science" [4, p. 264], "one may doubt value and necessity of *scientific character*" [4, p. 264], and the latter is furthermore considered by N. A. Berdyaev a sign of a crisis of consciousness, a spiritual danger due to a scientific method having begun to have a decisive influence on forming methods of thinking in other spheres of culture ("a criterion of *scientific character* imprisons and liberates everything whatever it wants and however it wants" [4, p. 265]).

Given that, to understand the message of N. A. Berdyaev's criticism of the so-called *scientific character* it is important to note that the latter "is not science and is not extracted from science" [4, p. 265] since "no science provides guidelines to scientific character for spheres alien to such" [4, p. 265]. Moreover, he pointed out the possibility for a reverse correlation of these concepts as "psychology of belief is found in uttermost rationalists and most fanatic supporters of scientifically positive world outlook" [5, p. 37]. Therefore, "people of *scientific* (i. e. inappropriately scientized – Auth.) consciousness are full of various beliefs and even superstitions such as belief in progress… and science, exactly belief" [5, p. 37]. Specifying this point as it applies to the problem examined in the given article, in terms of "heralds of the upcoming positive era" who "denied belief in their consciousness but… believed in different things often as invisible as objects of a truly religious belief" [5, p. 38] it demonstrates that an idea of science *autocracy* as the only possible or at least the *supreme* method of cognition is an object of such belief, and such an idea "is scientifically, positively, and convincingly impossible to be asserted" [5, p. 38]. Since "positivist beliefs are beliefs, too" [5, p. 38] and claims of universality of science are not confirmed, it leads, as N. A. Berdyaev's warns, to disappointment in science as such, in science on the whole, and "deep dissatisfaction with rationalism and aspiration to liberate irrational in life" [4, p. 275]

Hence, he formulates what we consider extremely important within the context of searches and comprehension of ways to overcome scientific and value crises of a contemporary civilization and which is a warning against a tendency to scientize a value sphere, noting that "At present, the before metaphysical idealism has become pseudo-scientific or is imagined to be such" [4, p. 275], "so that science is presented with an object that is essentially not of and beyond science, and values are assessed with the help of a method to which such are not cognizable" [4, p. 276]. Contemporary actuality of N. A. Berdyaev's criticism of attempts to solve value issues "with the help of a method to which such are not cognizable" is most strikingly seen in terms of a Russian social and political discourse in which within the last two decades such issues as unemployment, continuous poverty of public workers, or inaccessibility of a number of prestigious professions for children of the latter due to minimum or complete absence of state subsidized places for such specialties in universities, etc are examined only in terms of economics although they are value ones. Accordingly, specific economic and political solving of such issues should be preceded by their comprehension in connection with philosophical images of a person and a society and place of morale within the system of society priorities. For example, acknowledging human dignity as a generic quality for humans (who, according to I. Kant may not be divided into more and less deserved) is incompatible with legitimization as morally acceptable of continuous *labour poverty* or even *labour misery*, or unemployment, even if existence of such social phenomena is justified by some representatives of economic science as inevitable costs for economic *progress* (interpreted as *transition to market*, *increased competition in the labor market*, "*liberalization (deregulation) of economy*", "*modernization*", etc). This brings back to N. A. Berdyaev's criticism of a belief in a narrow utilitarian approach of understanding science as "the supreme criterion of the whole life of a spirit, when everything has to obey its order, with its prohibitions and permissions being decisive everywhere" [4, p. 264] while "scientifically a value (here moral values – Auth.) cannot be assessed as well as caught" [4, p. 276] as axiology "is eventually a type of metaphysics of existence, metaphysics of the sense of the world sense, and all the less scientific" [4, p. 276]. Hence, it explains his famous idea that "Dostoevsky once astonishingly said if there were truth on one side and Christ on the other one, it would be better to give up truth and side with Christ, i. e. sacrifice dead truth of

passive intellect in the name of the living truth of an integral spirit" [4, p. 282]. In respect to the above mentioned examples, it is not possible to acknowledge as proper, for example, continuing arguments in favor of a flat rate tax based on the assumption that introduction of a progressive rate tax would lead possessors of excess revenue to tax evasion resulting in less monetary funds to be collected in total in comparison with the current situation. Even if such regularity would be insuperable, i. e. would be considered in N. A. Berdyaev's terms *intellectual truth*, it is not possible for a state to decide upon it as it conflicts with *living truth* as *truth* and *justice*. It is thus important to see in often contradictory and emotional ideas of N. A. Berdyaev the point that limits of science claims do not diminish and weaken it which is proved by him as "the idea of the all-solving science is in a deep crisis as there is no belief in such a myth related to positive philosophy sharing its fate" [5, p. 39-40] while "it is impossible to destroy science as it is eternal in its meaning, as well as submissive" [5, p. 40]. Moreover, such submissiveness, i. e. acknowledging by science of objective limits to its scientific cognition, is able to cut off considerable part of contemporary criticism of scientific approach as such.

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The Role Ukrainians by Origin Played in Terrorist Acts in the Russian Empire of Late 19th - Early 20th Century

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Abstract

Social and economic reasons that impelled Ukrainians by origin to commit terrorist acts in the times of the Russian Empire have been researched into. Their social factors and historic specificity have been revealed.

In today's economic situation the regulation of veterinary products' market is based on market research, identifying internal and external relations, systematic study of various phenomena and processes that occur in the market and in related areas. Based on these and other methods, including mathematics and statistics one, you can make certain predictions and develop perspective plans for the future of the industry.

Topicality of this survey lies in the enhancement of world terrorist activity, which requires investigation of the reasons and factors that can lead to intensification of terrorist activity on the territory of modern Ukraine or beyond its borders.

The end of the 18th century - beginning of the 19th century was marked by an upsurge of terrorism in the Russian Empire and this phenomenon was studied by many modern researchers, in particular A. Geifman, U. Laker, M. I. Leonov, S. O.Lantsov, K. V. Gusiev, D. V. Olshanskyi and others.

A.Bebel, B.Savinkov, S.Nechaiev, M.Morozov were eyewitnesses and direct participants in those events, they left a lot of information in their memoirs. Other sources were leaflets issued by "Narodna Volia", parties of social revolutionaries and anarchists that aimed to explain the motives for the terrorist acts, in order to win more people round, case files on breaches of laws of the Russian Empire (protocols of interrogations, police dossiers), newspaper articles, etc. Thus, it can be asserted that modern research into terrorism of the times of the Russian Empire had sufficient information for the detailed analysis of this phenomenon.

However, none of the researchers focused on the fact that more than half of the terrorists had been Ukrainians by origin, this fact having attracted the attention of solely contemporary researchers, in particular V.M.Volkovynskyi, Giroaki Kuromia, V. Faitelberg-Blank, etc.

In the 19th century, Narodna Volia especially stood out among terrorist groups. This organization advanced its own political program that was based on the experience of narodnyky movement of the 1860s -1870s, its goal being deliberate striving for violent deposing of the monarchy [1].

M.Hrushevskyi and M.Drahomanov, Narodna Volia's contemporaries, active public figures of Ukraine, representatives of intellectual elite, who criticized the emperor's authority, sympathized with the ideas proclaimed by the terrorists, which can be presumed from the analysis of their treatises and correspondence. Late 19th century was marked by a sharp increase of interest in psychology and psychiatry not only among scholars and writers but, according to a psychiatry professor of Kharkiv University I.H.Orshanskyi (1851- 1923), who in his article " Contemporary Psychological Movement" mentioned that all cultivated Russian society had an obsession with psychology issues, which enabled the author to determine this phenomenon as 'a psychological movement" [2, p.3].

Famous works by Ch.Lombrozo and F. Nietzsche which were popular at that time stimulated researchers not only simply to describe any social phenomenon or activity but also to search for explanations and motives using for that the accessible data that were subjected to statistical analysis and scientific assumptions: described persons' appearance, social origin, scrupulously studied peculiarities of generation and development of the human personality that aroused scientific or public interest [3].

One of the contemporary Ukrainian researchers of terrorism in the Russian Empire V.M.Volkovynskyi in his work "Revolutionary Terrorism in the Russian Empire and Ukraine (second half of the 19th century - early 20th century)" [4] refers to an unpublished article of an outstanding Ukrainian scholar, politician M.Hrushevskyi in which he was the first to remark that among "... the five executed "culprits of March the first event" there were three Ukrainians and two Great Russians" (spelling and punctuation of the original is being quoted in compliance with Volkovynskyi) [4, p.336]. Drahomanov, while publishing Zheliabov's letter in which the latter ascertained his approach to the Ukrainian issue, expressed regret and

reproached Ukrainians who participated in the tsar' s assassination that none of them had found it necessary to focus on their Ukrainian origin explaining that they had been acting as avengers for the wrong done by Russian despots to the Ukrainian people" [4, p.336].

Following M. Drahomanov, M. Hrushevskyi characterized A.Zheliabov as "a real one-hundred-percent Ukrainian", "a life-long revolutionary" [4, p.336-337]. In describing a typical destiny of a young man of those times who came from a village to study in a city, Hrushevskyi asserts that a socially conscious person could not but be involved in students' societies, "going to the people". It was in the same way that other young intellectuals such as Sofia Perovska, brothers Volodymyr and Ivan Debohoriy-Mokriievych started their terroristic activities.

Of interest is Zheliabov's psychological portrait given by Hrushevskyi: "impressionable, expansive, a born leader, rally organizer", "...but Zheliabov denies for himself all life attractions for the sake of the idea of social justice [4. p.337], "Zheliabov could not have any compromises with his convictions as he was fully committed to what he acknowledged as just at the moment" [4, p.338].

V. Figner, a well-known terrorist of those times, who was a member of the Militant Operational Organization of the Socialist Revolutionary Party, wrote in her memoirs about M.I.Kibalchich, another terrorist of Ukrainian origin:

"Being a dreamer and a little phlegmatic by nature, Kibalchich was a person not of this world. He was a seeker who admiringly elaborates and changes his ideas and never hurries up with practical implementation of his first design" [4, p. 352]. Kibalchich is known to have been ensuring the technological provision of terrorist acts of the Militant Operational Organization of the Socialist Revolutionary Party. He made in his laboratories bombs and explosive devices but did not directly participate in assassinations. His friends characterized him: "He was not a militant person at all, he could not dare to raise his hand against a human being like himself. He could not be calm at the moment when he had to be fighting. But being firmly convinced that his cause was just, since he was able to be committed to his favorite idea by all his soul, he could calmly face death. … And on the day before his death he was most worried about the destiny of his airplane project..." [4, p.351]. The police department archives preserve a note of 23 March 1881, in which Kibalchich describes the draft of the airplane structure, created by him several days before his execution on the charge of the tsar's

assassination, while he was held in custody [4, p.351, 352]. Thus, there are reasons to assert that the so-called “bomb” terrorism laid the background for the psychology of distance terrorism inherent in contemporary technological world.

As to Sofia Perovska, the third 'Ukrainian darling” as Hrushevskyi called her [4, p.355], all sources inform that she belonged to aristocracy, however, as the author focuses in his unpublished article (Hrushevskyi) “ that it was a Ukrainian aristocracy, with not only hetman's blood flowing inside her but also hetman's traditions alive” (4, p.355]. Tracing Perovska' s genealogy, Hrushevskyi asserts that “Perovskys are identified with Rozumovskys who “...stronger uphold interests of Ukraine and its past, are characterized by distinctive patriotism, dynastic feelings and opposition to Russian centralism and despotism” [4, 356]. In his survey Hrushevskyi remarked: “One of Zheliabov' s biographers presumed that Zheliabov' s voluntary statement of his participation in the tsar's assassination was an act of suicide aimed to put an end to his commitment of an active terrorist which he assumed for a certain time but did not mean to prolong it to infinity. The same can be said about Perovska with even greater plausibility” [4, p.360], as “to cause sufferings and death to the people, no matter who they might be, was against her sensitive and tender nature”[4, 360].

A well-known writer Konstantin Paustovskyi described Yuzivka where he lived during the World War I: “A disorderly, filthy settlement, muddy, anti-sanitary and arduous working conditions, desolate landscape, severe climate, coal-dusted atmosphere, squalor, misery and despair. Disease, fatigue, inertia, high industrial mortality rate and disabilities [6, p.35-37] – all these resulted in people's prevailing fatalistic attitude to life as a psychological defense against fear [6, p.51], high level of crime [6, p.57], severe inter-ethnic conflicts [6, p.76]. Dissatisfied miners used bombs throwing them at representatives of authorities, bomb terrorism was popular due to cheap and easily accessible dynamite, as it was used in mines and was frequently stolen [6, p.106].

Ukrainian peasants were for the most part indifferent to politics and did not support social and political slogans of members of Narodna Volia and Socialist Revolutionary party [6, p.105].

As to nationalist ideas, at that time neither terrorists (see Hrushevskyi) nor their target audience (the people) failed to set the goal of creating a national State [6,p.105].

Unlike the unprincipled terrorism of today, which applies mass extermination

weapons, Socialist revolutionaries and anarchists of the times of the Russian empire performed terrorist acts against a limited number of persons- representatives of authority or of those social groups which constituted the top of the social pyramid. Another essential distinction of the then terrorism is a moral non-acceptance of killing and maiming women and children (see B.Savinkov's "Terrorist's Recollections" about I.Kaliaiev's assault on the Grand Prince Sergiy Oleksandrovych [5, p.62].

Therefore, one can assert that Ukrainians participated in terrorist acts for economic and social reasons (Donbas) and for political motives (central and southern regions of Ukraine that were part of the Russian Empire). Moreover,

as a contemporary scholar V. Feitelberg-Blank states in his survey "Gangster Odessa", Ukrainians for the most part were not at the head of the terrorist activity and mostly came from the lower strata of social hierarchy -workers and peasants. However, this statement does not conform to reality, which is convincingly proven by the fact that M.Hrushevskyi and brothers Debohoriy-Mokriievych came from landlords but actively participated in terrorism publicity elaborating its ideological principles.

Terrorist acts in Donbas were aimed at restricting state power's influence on internal issues of the region, were motivated by separatist tendencies and by upholding the right to independently resolve regional issues.

Thus, motivation for the participation in terrorism was different, however, all participants were united by the idea of deposing the monarchy as a symbol of despotic power. At the same time both Drahomanov and Hrushevskyi who supported the idea of Ukraine's autonomy as a part of the Russian Empire did not participate in terrorist acts. They were substantiating and developing the idea of Ukrainian independence.

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Paradigmatic of the Attitude (Relation) in a Banking-Financial Terminology of the Uzbek Language

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Abstract

In the given clause the information on the phenomenon paradigmatic of the attitudes (relations), that is synonymy, homonymy, antonym, polysemy, paronimy, giponimy, thematic grouping in a banking-financial terminology of the Uzbek language.

Keywords: a banking-financial terminology, phenomenon paradigmatic of the attitudes (relations), synonymy, homonymy, antonym, polysemy, paronimy, giponimy, thematic grouping.

Парадигматические отношения в банковско-финансовой терминологии узбекского языка

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Аннотация

В данной статье даётся информацию о явление парадигматических отношений, то есть синонимии, омонимии, антонимии, полисемии, паронимии, гипонимии, тематической группировки в банковско-финансовой терминологии узбекского языка.

Keywords: банковско-финансовая терминология, парадигматические отношения, синонимия, омонимия, антонимия, паронимия, полисемия, гипонимия, тематическая группировка.

Язык как макросистема развивается на основе развития и соотношения микросистем, которые входят в его состав. Материально-коммуникативные единицы языковых систем, на основе определенных правил, входят между собой в необходимые связи, составляют определенные группы (парадигмы), зарождают речевые единицы.

Эти связи и соотношения являются совершенно логическими, объективными, социальными и наблюдаются, реализуются в двух направлениях – в парадигматических и синтагматических связях, исследуются, анализируются и изучаются в этих аспектах (Расулов, 2007: 238). Такие связи между языковыми единицами называются парадигматическими и синтагматическими отношениями. Эти понятия введены в лингвистическую теорию со стороны Ф. Де Соссюра, который начал новую эпоху в лингвистической истории. Он, подчеркивая, что каждые синхронные этапы языковой системы построены на основу соотношений, показывает что соотношения, которые совпадают с разными видами умственной деятельности человека, опираются на два основных отношения – синтагматические и ассоциативные. Отношение, названное Ф. Де Соссюром ассоциативным, со стороны Л. Ельмслева был назван парадигматическим (Мирзакулов, 1994: 20).

Банковско-финансовая терминология является системой (Мухамедова, Ширинова, 2012: 156-161), поэтому в ней фиксируются синтагматические и парадигматические отношения, свойственные системам.

Парадигматические отношения – это отношение единиц, входящие в одну парадигму, внутренний процесс (Расулов, 2007: 239). Понятие парадигматическое отношение является широким и определяется как вертикальное отношение между языковыми единицами. К числу таких отношений входят определенные связи между лексическими единицами, словами – *синонимия, антонимия, омонимия, полисемия, паронимия, тематическая группировка, гипонимия* и др.

Далее будем анализировать активность парадигматических отношений в банковско-финансовой терминологии узбекского языка.

Синонимия. Явление синонимии в лингвистике признается как проявление парадигматических отношений в лексике (Коновалова, 1998: 109). Не смотря на то что, синонимия является хорошо изученным явлением в лингвистике, существуют дефиниции в толковании этого понятия. Также, существуют разногласия по вопросу существования синонимии в терминологии. Так как, некоторые лингвисты категорически отрицают явление синонимии в терминологии, другие общеязыковому явлению синонимии противопоставляют явление дублетности (Коновалова, 1998: 110). Проанализировав все мнения по поводу синонимии в терминологии, мы соглашаемся с

мнением Е.А.Коноваловой, которая считает, что: «Синонимия – это явление, свидетельствующее о формировании, развитии и совершенствовании языка, в том числе и языка терминологического. Терминология – постоянно развивающаяся система, и ей присущи все способы развития естественного языка. Поэтому нельзя назвать синонимию вредной или полезной, она закономерное явление живого языка» (Коновалова, 1998: 116). Примером этого процесса может служить банковско-финансовая терминология узбекского языка, которая в сегодняшней день развивается с большой скоростью и имеет множество синонимических единиц как: ***аванс, бўнак; акционер, ҳиссадор; маржа, спред; маклер, брокер, даллол; пеня, ўсим; бартер, мол айирбошлаш, товар айирбошлаш, мувоза; шартнома, контракт, битим, келишув, пакт*** и др. Это объясняется первоначальным, переходным периодом терминологической системы, т.е. этапом естественного отбора терминов. В результате развития языка самые стабильные, закрепившиеся в узуальной лексике термины переживут естественный отбор и сохранят свой статус.

Антонимия. Антонимы – это слова противоположного значения. Здесь соотношение чисто семасиологическое, оно основано на противопоставлении понятий (Реформатский, 1967: 95). По отношению этой проблемы Н.С.Трубецкой считает, что: “ ... не могут противопоставлены друг другу две вещи, не имеющие основания для сравнения, или, иными словами, не обладающие ни одним общим признаком...” (Трубецкой, 1960: 75). Антонимия межъпонятийное отношение, поэтому она свойственна лексемам и терминам. Нужно подчеркнуть, что, некоторые языковеды считают, что антонимия является одним из определяющих терминологию как систему, то есть “А.Г. Анисимова следующим образом сформулировала принципы определения терминологии как системы: ... 4) наличие антонимических отношений между терминологическими единицами;” (Анисимова, 1994). Также, в лингвистике существуют мнения как: “...В терминологии она помогает обозначить крайние точки терминологического поля, перебрать логические возможности терминологической системы” (Суперанская и др., 1989: 52). Исходя из этого, можно сказать, что терминологическая антонимия – явление, имеющее положительную оценку, чем терминологическая синонимия и полисемия. При исследовании банковско-финансовой

системы определены термины антонимы: *импорт – экспорт, актив – пассив, инфляция – дефляция, фойда – зарар* и др.

Омонимия. Рассуждая о явлении омонимии Т.Б.Назарова считает: «... необходимо различать, с одной стороны омонимы, возникающее при совпадении звучания разных единиц, и, с другой, омонимы возникающее в результате распада полисемии, когда звуковое сходство разных слов является следствием их былой принадлежности одному многозначному слову» (Назарова,1994: 52). В отличие от лексической омонимии, «особенно сложно обстоит дело с омонимами в терминологии, где недопустимо существование омонимов термина в одном терминологическом поле» (Абдуллаева, 2000: 90). Не смотря на существовании таких предположений, в банковско-финансовой терминологии узбекского языка существуют омотермины (термины-омонимы): *агент, актив, капитал, пул, ринг* и др. Например: *агент[1] – (от, шахс оти) воситачи, битимга у мутасадди эмас, даллол сифатида киришади (*Иқтисод банк изоҳли луғат, 1996: 3*); Бирор муассаса ёки киши топшириғи (ваколати) билан иш олиб борувчи шахс, вакил. М: Таъминот агенти (банк-молия термини). агент[2] – (от, нарса-буюм оти) бирор воқеа-ҳодисани юзага келтирувчи сабаб. М: Атмосфера агентлари. Химик агент (кимёвий термин) (Рахматуллаев, 1984: 17).*

Полисемия. По правилу термину присуща однозначность. Многие языковеды считают, что термин не должен иметь полисемию. В том числе С.Усмонов утверждает, что «термин всегда и в предложении, и внепредложении имеет одно значение. Его однозначность возникает в результате его употребления в определенной науке или специальности» (Усмонов, 1968: 7). Однако, полисемия терминов возникает естественным образом, как отмечал В.В.Виноградов, «ни один язык не был бы в состоянии выражать каждую конкретную идею самостоятельным словом или конкретным элементом. Конкретность опыта беспредельна, ресурсы же самого богатого языка строго ограничены» (Виноградов, 1986:15). Конечно, обозначение одним термином несколько смыслов объясняется интенсивным развитием терминологической системы, и мы не можем игнорировать полисемию в терминологии, однако известно то, что она порождает определенные трудности в употреблении терминов, какой-либо сферы. При анализе словарей по специальности банковско-финансовой системы обнаружилось большое количество полисемантических терминов

как: *аутсайдр, депонент, лот, валюта* и др. Если привести статистические данные анализа, доля многозначных терминов составляет 10.5% общего количество терминов, которые были изучены.

Паронимия. Главный критерий выделения паронимов – их сходство в произношении. Это явление тоже было зафиксировано в банковско-финансовой терминологии узбекского языка. Например: ***абонент – абонемент, адресант – адресат, дебет – дебит, импорт – экспорт, конъектура – конъюктура, фикс – фиск, экспонат – экспонент и др.*** Значит, паронимия относится не только к лексическим единицам, но и к терминологическим.

Гипонимия. В лингвистике гипонимия признаётся универсальным, фундаментальным парадигматическим отношением, структурирующим словарный состав языка (Коновалова, 1998: 97). Это явление основывается на родовидовых отношениях. Это явление осуществляется понятиями гипероним (единица с более широким содержанием) и гипоним (более узкое понятие). Связь «термин – гипероним – гипоним» похожа на связь «лексема – семема – сема». В этих связях наблюдается иерархичность. Благодаря гипонимии возникают дереванты терминов. Так как, ***банк*** гипероним, который означает род, а *национальный, народный, строительный, валютный, ипотечный* и другие компоненты термина – гипонимы, означающие виды банка. Таким образом, с помощью гипонимов формируется ряд деривантов с одним гиперонимом. В некоторых исследованиях компонент такого характера, то есть основа деривантов называется *минимальным элементом (Йўлдошев, 2005: 195)*. В банковско-финансовой терминологии узбекского языка существуют ряды терминов деривантов созданные из одного гиперонима (минимального элемента), например, на основе термина **валюта** создано около 60 терминов.

Тематическая группировка. В узбекском языкознании наблюдаются рассмотрения в некоторых диссертациях (Данияров, 1987; Джамалханов, 1966; Касимов, 1982; Мадвалиев, 1986; Мирахмедова, 1994.) вопроса о распределении терминов в тематические группы и существуют монография (Искандарова, 1999), посвященная этой проблеме. Так как, этап развития системной лексикологии характеризуется изучением, разделяя слова на тематические и лексико-семантические группы, а смысл на компоненты» (Сафарова, 1996: 47). Основываясь на традиционную

точку зрения, посчитали правильным, анализировать термины банковско-финансовой системы разделяя их на тематические группы. Широкое использование банковско-финансовых терминов способствует возникновению определенных затруднений при классификации их на тематические группы. Не смотря на это, мы определили критерии классификации терминов этой сферы деятельности. В данном случае, в первую очередь мы обращаем внимание на структурный состав терминов, и если в структурах нескольких терминов существует общий компонент, то они относятся к одной тематической группе. Если с внешней стороны невозможно определить сходство терминов, необходимо провести компонентный анализ терминов, и пре выявление активных интегральных сем в семантическом составе терминов, они относятся к одной тематической группе, а при наличии активных дифференциальных сем они относятся к различным тематическим группам. Известно, что термины любой сферы деятельности относятся к разным тематическим группам. По нашему мнению разделение терминов по вышеуказанным критериям дают возможность определить круг использования терминов той или иной терминологической системы. Опираясь на эту позицию, далее даётся более конкретные критерии классификации терминов банковско-финансовой системы, которые выявлены на основе словарей и источников по специальности.

1. ***Критерий относительности по форме:*** объединение терминов, с общим компонентом в структурном составе, под одну тематическую группу.

2. ***Критерий семантической относительности:*** объединение терминов под одну тематическую группу, которые не имеют сходство по форме, но имеют активные интегральные семы в семантическом составе.

Нужно отметить что, в первом случае классификация обходится легче, чем во второй. Потому что, компоненты объединяющие термины под одну тематическую группу выражены во внешнем плане термина. Например, существование компонента банк во всех терминах как: ***банк*** *векселi,* ***банк*** *операциялари,* ***банк****нинг актив операциялари,* ***банк****нинг пассив операциялари* делает очевидным их относительность в тематическую группу “банк иши (банковсое дело)”, а существование компонента валюта в терминах ***валюта*** *бозори,* ***валюта*** *конверсияси,* ***валюта*** *курси,* ***валюта*** *операцияси,* ***валюта*** *позицияси,* ***валюта*** *тизими,* ***валюта*** *трансферти...* относит их к

тематической группе **драгоценные бумаги**. Также, на основе этого критерия определяются дериванты терминов.

Термины дилер и брокер не имеют внешние сходство, поэтому они классифицируются по второму критерию.

ДИЛЕР – *молиявий активлар савдосидаги воситачи*; мижознинг ҳисобига ва унинг топшириғи бўйича, шунингдек, ўз ташаббуси билан ўз ҳисобига битимларни бажарувчи, битим суммаси ва активларни сотиш ва сотиб олишдаги курс фарқланишидан тушган фойдадан мукофот ҳақи олувчи шахс (Шодиев, 2002: 265). (**ДИЛЕР** (от англ. dealer - торговец, агент) Частное лицо или фирма, члены фондовой биржи, ведущие биржевые операции не в качестве простых агентов-посредников (брокеров), а действующие от своего имени и за собственный счет, то есть вкладывающие в дело собственные деньги, осуществляющие самостоятельно куплю-продажу ценных бумаг, валюты, драгоценных металлов; участник бизнеса, физическое или юридическое лицо, закупающее продукцию оптом и торгующее ею в розницу или малыми партиями. Обычно это агенты фирм-производителей продукции, выступающие в роли участников ее дилерской сети (Словарь банковских терминов Википидия. www.bank.ru: 131)).

БРОКЕР (маклер, комиссионер, куртье) – *молиявий активлар савдосидаги воситачи (даллол)***;** мижоз топшириғига кўра ва унинг ҳисобига олди-сотди битимини амалга оширади. Мижоз билан тузилган шартнома асосида олди-сотдининг маълум бир фоизи миқдорида мукофот олади (Шодиев, 2002: 262). (**БРОКЕР –** Лицо, биржевой работник, участник рынка, агент рыночных отношений, выступающий в роли посредника между продавцами и покупателями товаров, ценных бумаг, валюты. Брокеры способствуют заключению торговых сделок, "соединяя" между собой покупателей и продавцов. Брокеры действуют по поручению своих клиентов и за их счет, получая плату или вознаграждение в виде комиссионных при заключении сделки. В роли брокера могут выступать отдельные лица, фирмы, организации (Словарь банковских терминов Википидия. www.bank.ru: 59)).

Данные термины не имеют сходство в номеме, но в их семантическом плане существует общая сема *молиявий активлар савдосидаги воситачи (даллол),* которая соотносит термины к тематической группе финансовая система и обеспечивает их

синонимию. Как утверждается в диссертации А.А.Абдуллаевой "Слова, выражая свои собственные значения, в рамках одной лексико-семантической группы в то же время оказываются связанными между собою отношениями, не безразличными для их собственных значений. Это отношения синонимии, антонимии, всякого рода уточнения, дифференциации и обобщения близких или сопредельных значений" (Абдуллаева, 2003: 21).

На основе исследования банковско-финансовой терминологии узбекского языка выясняется, что все парадигматические отношения в разной пропорции, активности наблюдаются между терминами данной сферы. Это подтверждает, что терминология, как система, является микросистемой, составляющей естественного языка, и ей присущи все между понятийные логические, диалектические, парадигматические отношения.

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Braille System of Tactile Dots For Blind People

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Abstract

This article describes and illustrates standard Braille of tactile writing systems used with individuals with blindness. The article focuses on the important of learning Braille. The authors stress that in today's high-tech digital age, blind and visually impaired individuals have dozens of highly effective options for communication.

Keywords: Braille, tactile symbols, tactile writing, reading, people with blindness and visual impairments.

I. Introduction. Braille has been around for nearly 2 centuries, changing very little throughout this time. Braille, the reading and writing code currently used in the U.S. and other English speaking countries by readers with blindness and visual impairments, was invented by Louis Braille. Braille was a Frenchman who lost his sight from an eye infection caused by an accident with his father's leather working tools in childhood. Louis Braille developed his ideas for a tactile code system adapted from French soldiers who wanted to be able to read notes in the dark. Louis Braille modified this 12-dot system into 6 dots and had written in Braille and taught others by 1832. Braille was introduced in the U.S. about 1860 and was taught at the St. Louis School for the Blind and other schools [10].

II. The aim of work is to investigate theoretical material and to study researches on this theme.

III. The Results. Many professionals in work with the blind stress recorded media with blind children. Many people who become blind do so in old age and are not encouraged to spend the time and make the effort needed to develop the new reading and writing skills that depend on feeling rather than seeing. There are even Braille teachers who do not expect speed and accuracy of their blind students. As a result, the students learn Braille as a chore and a drudgery.

At The Royal Blind School in Edinburgh pupils start to learn Braille by strengthening their fingertips. Students play with items such as macaroni and peas in a tray and try to sort them using their fingertips. They then progress to learning actual Braille that is taught by their teachers, printing their own stories on Brailling machines. Finally as teenagers they can progress to Braille notebooks that are a really fast and professional means of writing and transcribing Braille [9].

Braille [12] is used mainly by people who are blind, deafblind or visually impaired. It is critically important to the lives of these people as the ability to read and write in Braille opens the door to literacy, intellectual freedom, equal opportunity, and personal security. Teachers, parents and others who are not visually impaired ordinarily read Braille with their eyes.

Braille is a system of reading and writing by touch used by the blind. Braille is not a language. Rather, it is a code by which languages such as English or Spanish may be written and read. It consists of arrangements of dots which make up letters of the alphabet, numbers, and punctuation marks. The basic Braille symbol, called the Braille cell, consists of six dots arranged in the formation of a rectangle, three dots high and two across. Other symbols consist of only some of these six dots. The six dots are commonly referred to by number according to their position in the cell:

There are no different symbols for capital letters in Braille. Capitalization is accomplished by placing a dot 6 in the cell just before the letter that is capitalized. The first ten letters of the alphabet are used to make numbers. These are preceded by a number sign which is dots 3–4–5–6:

Thus, 1 is number sign a; 2 is number sign b; 10 is number sign a-j and 193 is number sign a–i–c: [1].

Named after its creator, Louis Braille, it is a system of making raised dots on paper to form letters and words that are read by the blind with their fingertips. The basic Braille 'cell' consists of two columns of three dots. The dots are numbered 1-2-3 from top to bottom on the left side of the cell and 4-5-6 from top to bottom on the right side of the cell. Each Braille letter, word, punctuation mark, number, or musical note can be made using different combinations of these dots. Braille can be written with a Braillewriter (similar to a typewriter) or by using a pointed stylus to punch dots down through paper using a Braille slate with rows of small

"cells" in it as a guide. This method of writing Braille compares to writing print with a pen or pencil [3; 6].

Braille was originally based on a system devised by the French army to send secret messages at night. The night writing was later perfected by Louis Braille for use by the blind. The blind child can read in many places where his or her sighted friends can't: under the covers without the use of a flashlight, in the car traveling at night [2].

When every letter of every word is expressed in Braille, it is referred to as Grade 1 Braille. Many newly blinded adults find Grade 1 Braille useful for labeling personal or kitchen items. Books or other reading materials can also be transcribed in Grade 1 Braille. The system often used for reproducing textbooks and publications in English is known as Grade 2 Braille. In this system, cells are used individually or in combination with others to form a variety of contractions or whole words. For example, in Grade 1 Braille the phrase "you like him" requires twelve cell spaces. If it were written in Grade 2 Braille, this same phrase would use only six cell spaces. The letters Y and L are also used for the whole words "you" and "like" respectively. Similarly, the word "him" is formed by combining the letters H and M. There are 189 different letter contractions and 76 short form words used in English Grade 2 Braille. These short cuts reduce the volume of paper needed for reproducing books in Braille and make reading faster [9; 7].

Braille revolutionized life for the vision impaired. Discover how this remarkable system works. This video will teach you the Braille alphabet, numbers and punctuation marks which are found in Grade 1 Braille [11].

Today there are three methods of writing Braille, just as there are two methods of writing print. A Braille writing machine (comparable to a typewriter) has a keyboard of only six keys and a space bar, instead of one key for each letter of the alphabet. These keys can be pushed separately or altogether. If they are all pushed at the same time, they will cause six dots to be raised on the paper in the formation of a Braille cell. Pushing various combinations of the keys on the Braille writer produces different letters of the alphabet and other Braille symbols.

In Braille, a cell dot pattern gives you the letter to read. The dot height is about 0.5 mm; the space between dots is about 2.5 mm. A standard page in Braille has about 40 – 43 cells per line and about 25 lines. Larger cells are often used by those who have problems

feeling the normal Braille cells. Most languages have two grades of Braille. Grade one is used by beginners. Each letter of the word is spelled out. Grade two Braille is an advanced form. It makes reading and writing quicker because it has special codes for words or groups of letters that are often used in that language. Almost all books use this grade because it saves space and makes reading quicker.

When writing in Braille a person need a slate and a stylus in which each dot is created writing from right to left at the back of the page. There are also special Braille keyboards that you can attach to a computer. Braille is thought to be the main way that blind people can read and write, only few people really use it. Although, in Great Britain, for example only about 20,000 out of 2 million visually impaired actually use Braille. Younger people tend to use electronic text on computers instead. A debate has started on how to make Braille more attractive to users [13].

The Braille reader reads from left to right, for the dots are then on the top side of the paper. Although this may seem a bit confusing, it need not be at all troublesome, since both reading and writing progress through words and sentences from beginning to end in the same manner. The speed of writing Braille with the slate and stylus is about the same as the speed of writing print with pen or pencil.

Braille is also produced by a machine known as a braillewriter. Unlike a typewriter which has more than fifty keys, the braillewriter has only six keys and a space bar. These keys are numbered to correspond with the six dots of a braille cell. In that most braille symbols contain more than a single dot, all or any of the braillewriter keys can be pushed at the same time [8].

Technological developments in the computer industry have provided and continue to expand additional avenues of literacy for braille users. Software programs and portable electronic braille notetakers allow users to save and edit their writing, have it displayed back to them either verbally or tactually, and produce a hard copy via a desktop computer-driven braille embosser. Just as the personal computer has revolutionized writing in print today, it is also possible to produce Braille more easily and quickly than ever before. Assuming that the proper equipment is available, a computer user can now send a document to a standard printer to produce a paper copy in print or to a Braille embosser to produce the document in Braille. And one need not even know Braille to create this miracle [1; 9].

Good Braille readers, like good print readers, can read much faster than they can talk. Today blind people use Braille to take notes in high school and college, to write letters, to read books and magazines, to keep addresses and phone numbers, to keep recipe files, to write books and other materials, and to do the other things you might do using print. There are special libraries that provide Braille and recorded books and magazines for the blind free of charge. Most states have one or more of these libraries where blind people can borrow these materials [3; 4; 5].

It is important to note, that Braille standards for Canada, New Zealand and the United States of America are set by the Braille Authority of North America (BANA). In the United States, the National Library Service for the Blind and Physically Handicapped of the Library of Congress sets standards, based upon BANA's, for its producers. In the United Kingdom, the Braille Authority of the United Kingdom (BAUK) sets the braille standards. In other countries and locations, standards may be set by a similar national or international authority, or by schools or agencies for the blind or other established producers [14].

To sum up, Braille is not a "Universal Language" as some people assume, although many languages do use the same alphabet and today, thanks to Louis Braille, blind people are able to read many books that published in braille.

Though his image is that of a saintly teacher leading the blind out of the darkness, Braille's accomplishments place him alongside Samuel F.B. Morse, Alexander Graham Bell, and Steve Jobs as one of history's great communications technology innovators.

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The Determinants of Adolescent Deviant Behavior

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Abstract

The article describes the features of the formation of deviant behavior in adolescence, its causes, based on the basic psychological approaches. It reveals generalized model of factors determination adolescent deviant behavior and describes the main directions of correction of this phenomenon.

Keywords: deviant behavior, deviant behavior of children and adolescents, the generalized model of factors determination adolescent deviant behavior.

Social and economic restructuring of the last 10-15 years have changed the value systems of modern society. Unfortunately, not all of them are positive. Each of us faces with displays of socially negative behavior – aggressions, addictions, unlawful acts etc. Despite the fact that the issue of deviant behavior among adolescents is very traditional, today appears range of new issues, one of which is an effective way of prevention and correction of the problem - oriented on basic psychological determinants of adolescent tendency to deviations. The purpose of this work is to determine the main factors of deviant behavior of adolescents, its analysis and comprehensive generalization of psycho measures.

Deviant behavior is a social behavior that does not conform to the norms in the society. Deviations in the behavior of children and adolescents are those features and expressions, which not only attract attention but also alarming parents, teachers and society. Deviant behavior is different in content and targeting, can manifest itself in various social deviations: evasion study, theft, vandalism, fights, alcoholism, drug abuse, suicide, etc. These features characterize the behavior not only deviations from the standard of conduct, but also pose potential risks to the subject of behavior, development of his personality, the people around him and society [1].

Classify deviant behavior of adolescents as follows:

1. Social deviations of selfish orientation: offenses, behavior relating with the desire to obtain material, money, property benefits.

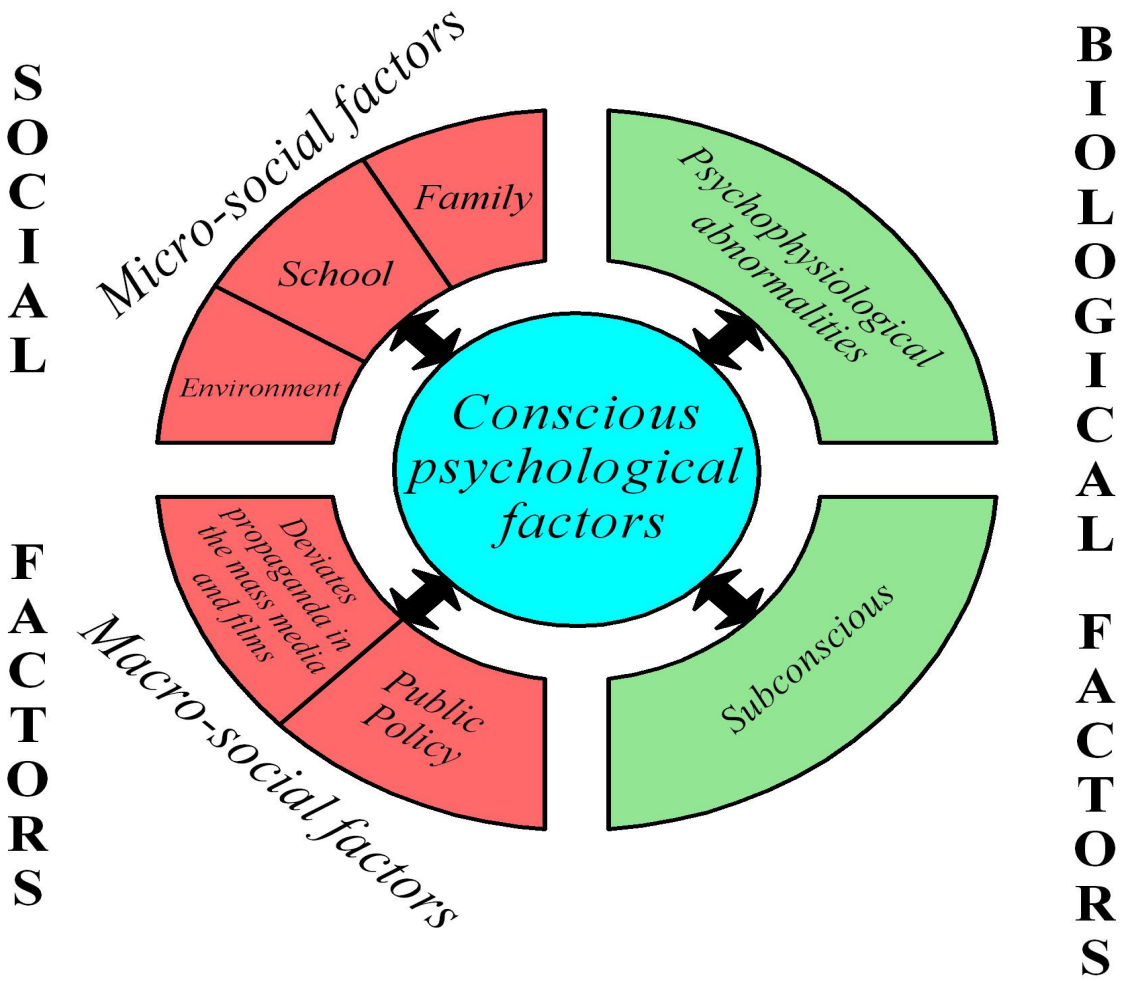
2. Social deviations aggressive orientation – action against the person (offenses, disorderly conduct, assault, murder, rape).

3. Deviations socio-passive type: the desire to avoid an active lifestyle, to evade civic duties unwillingness to solve personal and social problems (evasion of studying, vagrancy, alcoholism, drug addiction, toxic mania, etc.). Notable among these deviations takes the suicidal behavior. [2]

Typically, deviations in behavior and social development of children and adolescents can be reduced in two groups: the situational forms of deviations in behavior (temporary signs or reactions caused by certain factors and circumstances: the reactions of refusal, protests, withdrawals, aggressions, etc.) and the resistant forms of deviations in behavior (developed by one or another type due to unfavorable conditions of life and work in general) [1].

After analyzing the basic approaches to the understanding of teen deviations can conditionally schematized generalized model of the determination factors of deviant behavior among adolescents as follows:

The determinants of adolescent deviant behavior



That is, the full range of factors that contribute to the emergence of deviant behavior in adolescence can be divided into three main groups: social, biological and psychological conscious.

In turn, **social factors** are divided into **micro-** and **macro-social factors**. Micro-social factors includes: *Family* (hyper-or hypo care and negative example of family members, etc.); *School* (social launches, school failures, etc) and *The Environment* (availability of negative behavior standards in an environment, membership in groups with negative orientation, etc).

Macro-social factors includes: *Deviates propaganda in the mass media and film* (mostly advertising of tobacco and alcoholic beverages, creating the popular movie characters who have signs of deviant behavior, creation of "fashion" in the expression of certain deviations

among teenagers) and *Public policy* (social and economic crisis as a factor in the sharp increase in manifestations of deviant behavior, the availability of alcohol, tobacco, drugs, etc., reduction in developing leisure destinations available, deficiencies in the national legal framework conducive to various deviations in children and adolescents).

Biological factors are divided into *Psychophysiological abnormalities* (genetic predispositions, organic brain damages, psychopathologies, accentuations, etc.) and *Subconscious* (basic fears, complexes, inadequate defense mechanisms, etc.).

And **conscious psychological factors** include the full range of individual and personality characteristics of teenagers that usually can be investigated using psychological methods.

In the submitted scheme arrows between groups of factors displays the idea that in conditions of resistant negative social and biological factors then it should be applied to the conscious personality of a teenager, make it more flexible, but at the same time solid and more responsible in their decisions.

It is expedient to quote folk wisdom: "If you want to change the world, start from yourself!"

Understanding the complex system of determinants of deviant behavior among adolescents, it is necessary to build an appropriate structure of preventive and corrective work on this phenomenon. Therefore, the socio-psychological training supplemented careful work on forming a circle of interests teenager by features of his character and abilities. It should seek to minimize the period of free time a child by bringing to socially useful cases and positive-developmental classes: reading, self-education, music lessons, sports, involving cleaning, etc. [4]

Of course, along with individual and group corrective work with young people psychologist should work with parents, teachers and others who interact with the child. Adults should learn to take care, patience and love for these students. It’s important to show children that adults do care what happens to them and that they really want their children to feel worthy and began to respect themselves. Teachers and parents need to change their perception of a teenager who is prone to deviant behavior, to positive, finding strong, good side of the child.

It is important to help children create a desire for self-development and self-realization, growth achievement motivation, preparation of life plans, as well as deepening spirituality. Although this does not exclude the need of the national and local levels, more favorable conditions for self-realization and creative development of the adolescent as a "healthy" alternative way of forming behavioral deviations and self-destructive adolescent personality.

Conclusion

Thus, we can conclude that the tendency of adolescents to deviant behavior is a complex multifaceted phenomenon that has its own specifics with regard to the age characteristics and issues that require immediate resolution. Currently, we see widespread interest of the scientific community to study and solve the problem.

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Cross-Cultural Differences Within "Self"-Aspects' Structure of Personal Identity (an American-Russian Research)

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Abstract

This research represents an attempt to contribute to cross-cultural psychology development on the part of the Russian science of psychology. The presented research consists in a factor analysis of in-group ethnocultural identity of Russian and American respondents. Respondents were offered AIQ-IIIx Aspects Identity Questionnaire by J. M. Cheek and L. R. Tropp. Cross-cultural differences in the structure of identification priorities of the Russian and American respondents have been revealed.

Keywords: Identity, ethnocultural, in-group, factor, commitment, facet, comparison.

Эмпирическую базу исследования составили данные серии исследований, проведенных автором в течение 2001–2006 гг. Всего нами были опрошены в 2001 г. 202 респондента в США в Международном центре научных исследований имени Вудро Вильсона, одним из подразделений которого является Институт перспективных российских исследований имени Дж. Кеннана, (город Вашингтон, округ Колумбия) и в университете штата Мэриленд (город Колледж-Парк, штат Мэриленд). По критерию этнорасовой принадлежности американские респонденты в нашем исследовании оказались распределены следующим образом. Доля респондентов, идентифицирующих себя с доминантной этнокультурной группой – американцы европейского происхождения или белые американцы – 32,2%. Доля респондентов, идентифицирующих себя с недоминантной специфической этнокультурной группой 53,5%, а именно американцы азиатского происхождения, включая китайцев, японцев и других 14,4%, афроамериканцы 28,7%, латиноамериканцы 9,4%, американские индейцы 1,0%, иные 2,5%. Доля недоминантной неспецифической этнокультурной группы в американской выборке нашего исследования – респонденты от смешанных браков – составляет 11,9%.

Во второй части нашего исследования, осуществленной в России в 2005 г., были опрошены 244 респондента из числа студентов Саратовского государственного университета имени Н. Г. Чернышевского. Доля респондентов, идентифицирующих себя с доминантной этнокультурной группой (русской), 73,0%. Доля респондентов, идентифицирующих себя с недоминантной специфической этнокультурной группой, 9,4%: казахи, украинцы, чуваши, татары, азербайджанцы, ассирийцы, армяне. Доля недоминантной неспецифической этнокультурной группы в российской выборке нашего исследования – респонденты от смешанных браков – составляет 17,6%.

Методология эмпирического исследования представлена процессом комплексного (последовательного) использования количественных методов: корреляционного, дисперсионного и факторного анализа. Общий план эмпирического исследования согласуется с моделью измеренных этнических коррелятов, принятой в кросскультурной психологии.

Опросник AIQ-IIIx Aspects Identity Questionnaire включает 34 пункта, например: «Мои личные ценности и моральные стандарты», «Моя привлекательность для других людей» и т. п. Формат ответов: «не важно для моего самовосприятия», «важно для моего самовосприятия в незначительной степени», «важно для моего самовосприятия в некоторой степени», «очень важно для моего самовосприятия», «крайне важно для моего самовосприятия». Для выполнения опросника AIQ-IIIx предусматривается десять минут. Подсчитываются медиана и среднеквадратичное (стандартное) отклонение по трем шкалам: «личностная идентичность», «социальная идентичность» и «коллективная идентичность».

Полученные методом анкетного опроса данные были подвергнуты статистической обработке при помощи компьютерной программы SPSS for MS WINDOWS Release 17.1. Определялись значения средних величин и стандартных отклонений для переменных из этих опросников. Нами был применен метод главных компонент, позволяющий выделить факторы из массива данных. В SPSS for MS WINDOWS Release 17.1 предусмотрена проверка теста Бартлетта (Bartlett) о сферичности распределения данных. Проверка теста Бартлетта подтвердила многомерную нормальность распределения полученных нами данных. Для повышения

интерпретируемости факторов, методом варимаксного вращения (нормализация по Кайзеру) была улучшена контрастность матрицы факторных нагрузок.

В американской выборке первые десять факторов объясняют 65,6% дисперсии, причем каждый из 10 факторов объясняет не менее 3,0% дисперсии, соответственно, мы будем рассматривать всего десять факторов в структуре «я»–аспектов личностной идентичности американских респондентов. В российской выборке, напротив, первые восемь факторов объясняют 58,9% дисперсии, причем каждый из восьми факторов объясняет не менее 3,0% дисперсии, соответственно мы будем рассматривать всего восемь факторов в структуре «я»-аспектов личностной идентичности российских респондентов. Мы полагаем, что в российской культуре и в личностной идентичности/«я»-концепции россиян параллельно существуют две оценочные системы: система социальных оценок и система самооценки, которые вполне могут не совпадать. Такое рассогласование в оценках выполняет для личности, воспитанной в коллективистской российской культуре, функцию психологического механизма защиты.

В составе структуры идентичности российских респондентов на два фактора меньше, чем у американцев – она менее дифференцирована и в меньшей степени способствует адаптации личности к условиям *инвайронмента*. В идентичности российских респондентов отсутствуют факторы «патриотизм», «эгоизм и эгоцентризм», «политическая и социально-экономическая дифференциация» идентичности американских респондентов, но выявлен фактор «семья», отсутствующий у американских респондентов.

Идентичность российских респондентов менее дифференцирована, но также более однозначна – в отличие от идентичности американских респондентов, наибольшие различия внутри российской выборки связаны лишь с одним фактором «внешняя привлекательность (имидж) или нарциссизм». В американской выборке таких факторов четыре: «патриотизм», «образование и профессиональное развитие», «внешняя привлекательность (имидж) или нарциссизм», «политическая и социально-экономическая дифференциация».

Фактор «образование и профессиональное развитие» идентичности российских респондентов является более значимым и важным в российской культуре, по

сравнению с фактором «образование и профессиональное развитие» идентичности американских респондентов в американской культуре. Сходства по данному фактору между российскими респондентами достаточно велики. Фактор «семья» – один из наиболее значительных в структуре идентичности российских респондентов. Он включает в себя также часть переменных, которые в идентичности американских респондентов значимым и существенным образом связаны с фактором «патриотизм». Фактор «самопознание и самооценка» в идентичности российских респондентов более существен, чем в идентичности американских респондентов, что говорит о большей рефлексивности «я»-концепции россиян. Фактор «социальное поведение и аффилиация» в идентичности российских респондентов менее существен, по сравнению с аналогичным фактором идентичности американских респондентов. В «я»-концепции американцев данный фактор является главенствующим. Можно объяснить это тем, что в американской культуре данный фактор позволяет объединять множество личностных и культурных особенностей в единую американскую культуру, которая не монолитна: «E Pluribus Unum!».

Российские респонденты социализируются в культуру своего социума через семью, американские респонденты – через нормы социального поведения и через удовлетворение потребности в аффилиации. Речь идет о неодинаковых типах социализации и инкультурации. Американский вариант опосредуется периферическим социальным окружением, российский – семейным или проксимальным социальным окружением. Американский способ социализации и инкультурации предоставляет личности больше автономности в частной, проксимальной сфере жизни. Российский способ социализации и инкультурации регламентирует проксимальную, частную сферу жизни, поэтому для россиян остается лишь одна сфера, где личность может быть в относительной степени автономна – это сфера самопознания и самооценки. Отсюда – большая рефлексивность носителей российской культуры и большая параллельность социальных оценок своей личности другими людьми самооценке личности.

Идентичность носителей американской культуры в большей степени ориентирована на социальное поведение и на аффилиацию, более эгоцентрична и менее рефлексивна. В идентичности российских респондентов не обнаружен особый фактор «эгоизм и эгоцентризм», что свидетельствует о меньшем индивидуализме российской

культуры. Российские респонденты более ориентированы на самовосприятие в качестве члена семьи. Особый фактор «семья» в идентичности российских респондентов антонимичен фактору «эгоизм и эгоцентризм» идентичности американских респондентов.

Особый фактор «политическая и социально-экономическая дифференциация» идентичности американских респондентов также служит усилению идивидуалистического характера американской культуры. Отсутствие аналогичного фактора в идентичности российских респондентов характеризует российскую культуру как более коллективистскую.

Фактору «патриотизм» в структуре идентичности американских респондентов противостоит фактор «семья» в структуре идентичности российских респондентов, что также отражает различия в способах социализации и инкультурации в российской и американской культурах. В американской культуре социализация и инкультурация детерминируются периферическими социальными институтами, а в российской культуре – прежде всего проксимальными институтами.

В целом, структура личностной идентичности россиян менее дифференцирована по сравнению с структурой личностной идентичности американцев. Меньшая степень дифференцированности сильнее способствует ассимиляции личности, что придает российской идентичности и российской культуре характер коллективистский. Идентичность россиян более монолитна, следовательно, менее адаптивна. Очевидно, что этнокультурная атомизация и индивидуализация, приемлемые в индивидуалистической культуре, способны порождать напряженности в культуре другого типа – коллективистской.

Идентичность российских респондентов, по сравнению с американскими респондентами, более ригидна, менее гибка и пластична, в меньшей степени допускает возможность её трансформации и адаптации к изменениям условий инвайронмента. Ригидность идентичности сама по себе выступает для носителей российской культуры важным стрессогенным фактором в периоды социально-экономических и политических изменений.

Российский вариант социализации и инкультурации, детерминированный проксимальными социальными институтами, поддерживает коллективистский характер

российской культуры и оказывает воздействие на психику индивида в российской культуре, которое проявляется в меньшей дифференцированности «я»-концепции россиян. Применительно к американской выборке картина иная – американский вариант социализации и инкультурации, детерминированный периферическими социальными институтами, влияет на психику индивида в американской культуре в направлении усложнения и углубления дифференциации «я»-концепции. В результате из «я»-концепции исключаются факторы, присущие коллективистской культуре, и формируются факторы, не свойственные коллективистской культуре.

The Technology of Eventful Education In Professional Training of Future Engineers-Teachers

Kankowskiy I.E.

Abstract

In the article attention is accented on the necessity of the innovative approach in preparation of engineers-teachers. Explanation of essence of eventful studies is given, classification over of events is brought. Importance of planning and organization of events is underlined in a pedagogical process. The phenomenon of event is examined as to the means of forming of eventful educational association and his signs over are brought.

Keywords: engineer-teacher, technology of studies, event, eventful studies, singing-existence, eventful educational activity.

Технология событийного обучения в профессиональной подготовке будущих инженеров–педагогов

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Abstract

В статье акцентируется внимание на необходимости инновационных подходов к подготовке инженеров-педагогов. Даётся объяснение сущности событийного обучения, приводится классификация событий. Подчеркивается важность планирования и организации событий в педагогическом процессе. Рассматривается феномен события как средства формирования со-бытийного образовательного общества и приводятся её признаки.

Keywords: инженер-педагог, технология обучения, событие, событийное обучение, хронотоп, со-бытие, со-бытиевое образовательное общество.

Постановка проблемы. Педагогику наших дней часто называют «кладбищенской». И это не потому, что она поражена страшным кризисом, который может её полностью разрушить. Ответ здесь кроется в том, что она сегодня не может дать положительного результата в процессе обучения и воспитания личности имеющимися у нее средствами и технологиями. Настоящее требует трансформации образовательных ориентиров, изменения самой существенной функции образования - передачи знаний на воспроизведение духовности, развитие способности человека к

самореализации на основе выбора ценностей, смыслов, имеющих выраженную социальную и личностную значимость.

Система инженерно-педагогического образования, в свою очередь, нуждается в обновлении целей и ценностей образования, инновационных подходов к подготовке будущих инженеров-педагогов, которые должны обладать профессиональной компетентностью, быть готовыми нестандартно и творчески решать различные инженерно-педагогические задачи, саморазвиваться, проявлять мобильность. По нашему убеждению при подготовке инженера-педагога должна быть использована , наряду с другими технологиями, и технология событийного обучения.

Цель статьи состоит в обобщении психолого-педагогических исследований по использованию феномена события в учебном процессе как средства формирования со-бытийного образовательного сообщества и изучение возможности и необходимости его реализации в процессе профессиональной подготовки инженера-педагога.

Анализ последних исследований и публикаций. К со-бытийным аспектам в становлении человека сегодня обращаются в основном российские ученые среди которых Н. Борытко, Н. Крылова, Л. Лузина, Ю. Мануйлов, И. Шустова и другие. Среди работ украинских исследователей этой проблемы уместно вспомнить А. Ярошинскую.

Крылова Н.Б. обращает внимание на то, что проблемы обеспечения со-бытийности в образовательной и педагогической деятельности становятся все более актуальными, они напрямую связаны с созданием необходимых культурных условий для раскрепощения человека в образовании [1, с. 137].

Изложение нового материала. Если наполнить процесс подготовки специалиста событиями, которые не оставят его в стороне, то можно существенно изменить как сам учебный процесс, так и отношение к нему студента. Для осознания сущности технологии событийного обучения используем понятие хронотопа, которое было введено в науку А. А. Ухтомским еще в 1925 году [2].

Утверждение, что человек достигнет поставленной цели лишь учитывая ситуацию, в которой он находится и накопленный опыт не вызывает сомнения. Связывая цель, которую поставил человек перед собой, с будущим, ситуацию, в которой он находится - с настоящим, а накопленный опыт - с прошлым, можно прийти

к выводу, что человек станет успешным, если будет сочетать в себе время, жить одновременно как бы в трех «цветах» времени: прошлом, настоящем, будущем (рис.1).

Жизнь человека, которая обусловлено целями, мечтами, планами, надеждами, полна событиями, которые являются своеобразными элементарными единицами вечности.

Событие - явление настоящее и явление настоящего. Жизнь теряет смысл, если оно не наполнено настоящими событиями, поскольку главный признак события - это наличие смысла, который обусловлен памятью и опытом прошлого, а также целями, планами и надеждами будущего.

Как отмечает Зинченко В.П. «физическое» время, которое лишено событий - это время распада, разложения. Оно не удерживается человеческой памятью, которая событийная, а не хронографическая» [4, с.41]. Эта пустота, по мнению ученого, заполняется или скукой или суетой. Вместо событий жизнь заполняется или поиском развлечений и удовольствий, или ничем не заполняется. Тогда настоящее сжимается, хронотоп уменьшается (рис. 2).

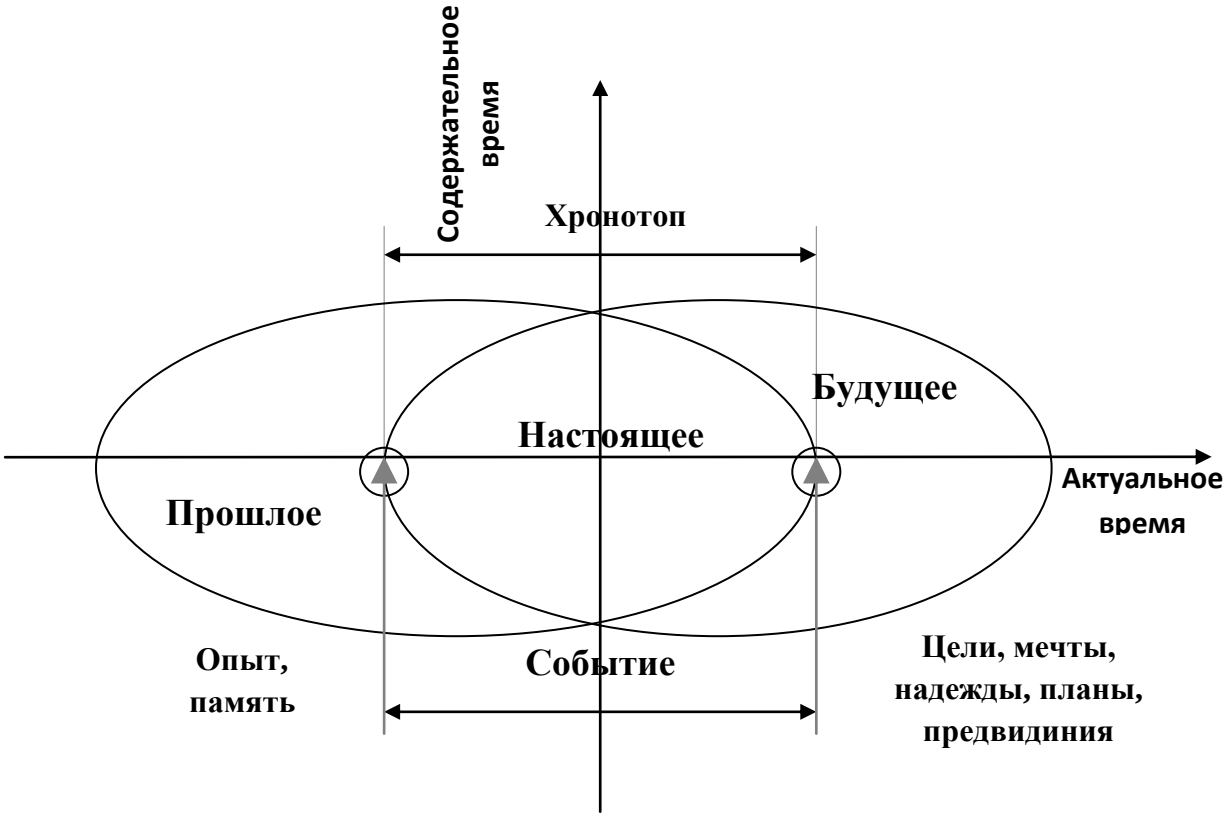

Рис.1-Модель сочетания «цветов» времени в хронотопе [3]

Если хронотоп сжимается до нуля и превращается в «мгновение между прошлым и будущим», то исчезает ось содержательного времени. В таком случае человек становится рабом времени, из его жизни исчезают смыслы, жизнь заполняется суетой, скукой.

При отсутствии у человека собственных целей, планов и надежд, его обучение сводится к задаче повышения занятости, охвата, задействованности. Такая же ситуация происходит, если цели деятельности навязаны преподавателем. Тогда жизнь того кто учится пытаются заполнить мерами, цели которых известны и понятны только преподавателям. Эти цели не прожиты, не почувствованы человеком, который учится, они «спущены» преподавателями, или ими навязаны; навязанные цели освобождают от ответственности за их достижение. Целенаправленная учебная деятельность становится суетой без смысла для тех, кто учится. Цель педагога сводится к тому, чтобы «занять», «заполнить» досуг, «охватить» какой-либо деятельностью всех. Часто мероприятия, которые проводят для учащихся, или студентов, не становятся событиями их жизни. Их «отбывают», «отсиживают», а не переживают.

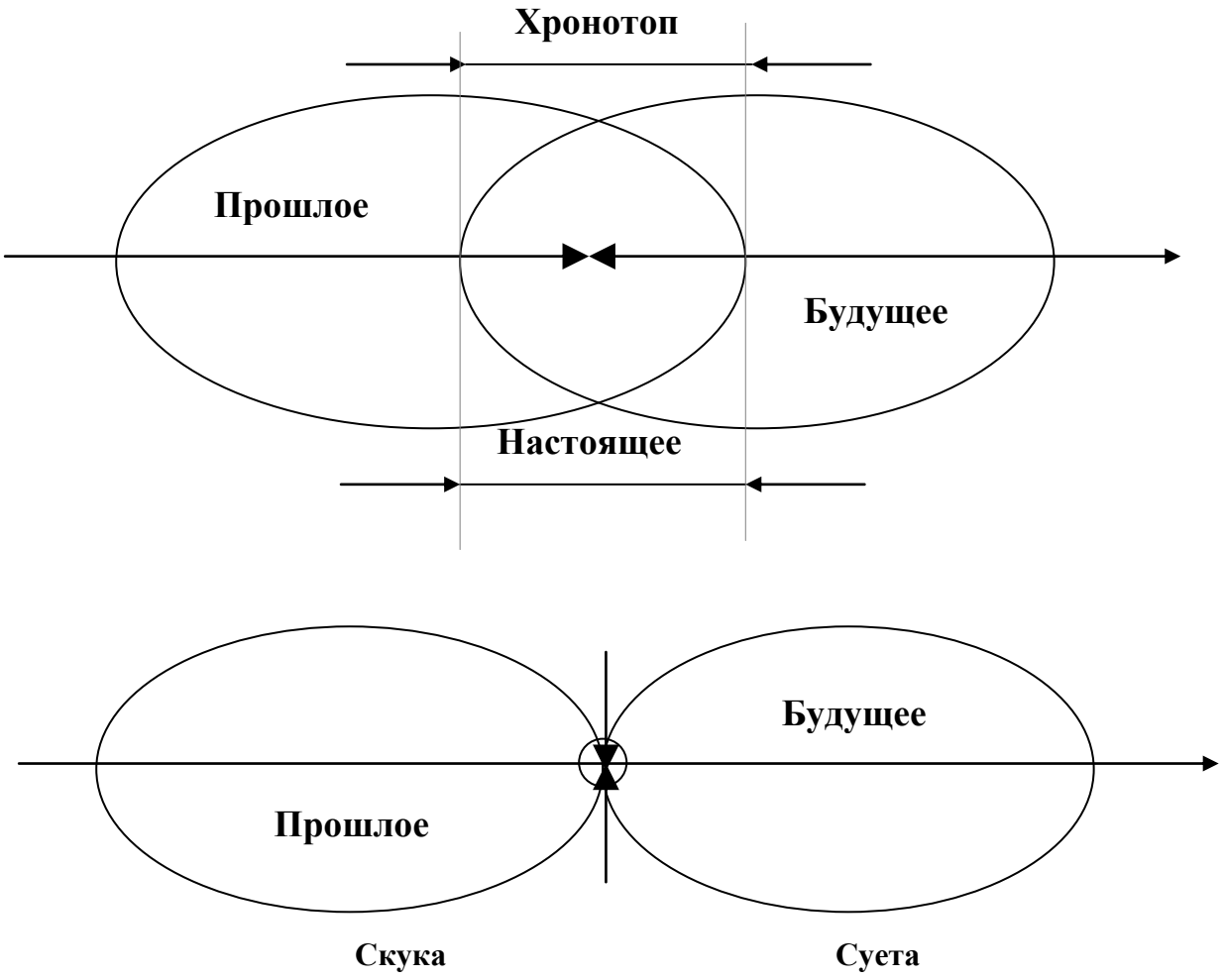

Рис.2 - Возможная трансформация хронотопа

Всё многообразие событий, происходящих в жизни человека можно классифицировать следующим образом: по характеру эмоционального отклика на событие - положительные, вызывающие эмоции радости, счастья и отрицательные, связанные с неприятностями и неудачами; по степени воздействия на сознание - биографические, которые становятся поворотным пунктом в биографии человека, определяя его траекторию; критические, которые вызывают существенные изменения в жизни человека; нормативные, происходящие обычно в соответствующем возрасте и имеющие соответствующее содержание; ненормативные, которые являются

нетипичными для большинства людей и такими, которые не предусматриваются, ведут к потере контроля, к дезорганизации, заниженной оценки своих возможностей; по предметной области, в которой происходят - события-впечатления, которые фиксируются в сознании человека и приобретают форму образов, картин; пророческие сны; события мысленно, происходящие в сфере мышления как результат мысленной деятельности; события-поступки, что меняют ситуацию, в которой находится человек и могут выводить его на новый уровень развития [5, с.229].

Событие имеет широкий спектр толкований и является предметом изучения ряда наук. Обобщая подходы к определению понятия «жизненное событие» в философской, психологической и педагогической науках, мы понимаем его как основной элемент человеческой жизни, что представляет собой совокупность обстоятельств, которые вызывают эмоциональное отношение к тому, что происходит и приводят к изменениям последующей жизни, а также влияют на развитие сущностных сфер личности [6], [7], [8].

Нам импонирует позиция тех, кто рассматривает педагогический процесс как управление динамикой формирования и развития личности через организацию и осуществление соответствующих событий в жизни коллектива студенческой группы или ученического класса и отдельной личности.

Так, по мнению Е. Соловьева, планирование и организация событий в педагогическом процессе может стать основой для переоценки обучающимися, жизни, соответственно изменения мировоззрения и формирования социально-значимого поведения личности [9]. Он отмечает, что событие является вариантом сообщения информации, а также может предоставить богатый эмпирический материал, который может стать основой для совместной деятельности преподавателя и ученика [10].

Троицкий Ю.Л. убеждает, что событийность в образовании - это способ образовательной экзистенции (образовательного существования, бытия), что противостоит образовательной повседневности [11, с.93]. Он подчеркивает, что событие имеет смысл только в отношении повседневного образовательного опыта, как праздник иногда прерывает будни. Оно боится обобщений и обобществления. Обобщение как логико-дискурсивная операция уничтожает уникальность события, а обобществление, как социальное действие, игнорирует авторское начало.

Заметим, что не существует событийных учебных предметов, так же как и предметной событийности: есть событийность как кратное качественное состояние внутри любых предметов и возможность трансформации предметного контекста в предсобытийное состояние. Условием, что инициирует образовательные события, является развивающая образовательная среда.

Событийный подход нашел свое отражение и в педагогической деятельности А.С. Макаренко, который подчеркивал, что большое значение в жизни человека имеют яркие и волнующие события. Поэтому жизнь коллектива должно быть наполнено работой, трудовым напряжением и успехом завтрашнего дня [12].

Ученые единодушны в том, что всякому событию предшествует учебная ситуация, которая потенциально событийная. Поскольку, событийность не жестко детерминированное, вероятностное явление - можно сказать: каждое событие вырастает из учебной ситуации, но не каждая ситуация превращается в образовательное событие. Важно это помнить для того, чтобы избежать профанации и обесценения образовательного события, не превратить его в подготовленное мероприятие.

Технология событийного обучения открывает перед учебным заведением, который ее применяет, возможность сформировать со- бытийную образовательную общность - особый источник развития будущего специалиста .

На этом акцентирует внимание и В.И. Слободчиков, который определяет со-бытийную общность как необходимую ситуацию развития человека: «Полнота связей и отношений между людьми обеспечивается только в структуре со- бытийной общности, основная функция которой - развитие. Событием является то, что развивает и развивается, результат развития здесь - та или иная форма, тот или иной уровень индивидуальной коллективной субъективности [13,с.153 -157].

Шустова И.Ю. отмечает, что со-бытийная общность может быть охарактеризована как совместное бытие , как соприкосновение жизней (бытия) нескольких людей, пересечение в общем эмоционально- психологическом и ценностно-смысловом пространствах, которое ощущается ими как встреча Я - Ты, духовная общность, ощущение «Мы» [14, с.27]. К основным признакам со- бытийной общности ученый предлагает относить следующие:

- со- бытийность как совместное бытие, соприкосновение жизней, их пересечение в общем эмоционально - психологическом и ценностно-смысловом пространствах, характеризуется принятием друг друга, взаимопониманием;
- неформальный, открытый тип отношений, общность создается совместными усилиями участников;
- взаимодействие в сотрудничестве бытийной общности - межпозиционное, требующее самоопределения, выбора, проявления открытой позиции, что необходимо для воспитания и развития субъектности человека;
- единственная целевая ориентация в деятельности, объединение участников вокруг общей, значимой для всех, цели;
- рефлексивная общность, в ней осуществляется индивидуальная и групповая рефлексия, которая позволяет осознать те процессы и явления, происходящие в общности [14, с.29].

Состояние со-бытийной общности может проявиться в любой студенческой группе. Оно естественно слаживается, не задаётся внешними атрибутами, позволяет проявиться внутренней спонтанной активности, выйти на авторские способы самореализации, обеспечивает становление субъективности.

Со-бытийная общность начинается с эмоционального восприятия субъектом другого (других), как значимого и интересного человека, из создания совместного пространства взаимодействия, в котором каждый может открыто проявить себя, найти «себя в другом» и «другого в себе» в условиях открытого диалога на уровне смыслов.

В со-бытийной общности человек испытывает высокое эмоционально-интеллектуальное напряжение, пребывание в нём может выводить его на феномен «прозрение» и «открытие» нового знания для себя, индивидуального смысла, нового опыта самореализации.

Особенно важным является то, что со-бытийная общность может быть проявлена для участников общности как жизненное событие, где состоялось открытие, родилось новое знание, понимание себя и другого, появился новый опыт деятельности.

Как качественная характеристика студенческой группы она предполагает выход каждым ее участником на осознание своих ценностей и смыслов.

В реализации модели со-бытийной общности педагогу необходимо решить следующие задачи:

- обеспечить свободу, добровольность выбора участия в совместной деятельности, возможность выбора направлений и способов деятельности;
- выстраивать и поддерживать отношения равенства, взаимного интереса, взаимопринятия и взаимоуважения;
- создать условия для межпозиционной взаимодействия, стимулировать проявление и осознание участниками своей позиции, способности уважать и понимать позицию другого;
- моделируя со- бытийную общность, учитывать опыт, который в ней получат участники;
- стимулировать рефлексивных процессы;
- понимать и учитывать в своей работе влияние складывающихся отношений и рефлексии на формирование единого ценностно-смыслового пространства внутри общности [14, с.34].

Настоящее требует перехода от взгляда на педагогический процесс как на внешнее однонаправленное влияние на студента к пониманию его как глубокого межчеловеческого взаимодействия и сотрудничества его участников в сфере смыслов и способов их совместного бытия (со-бытия). Свойство, которое утверждает необходимость взаимодействия людей и создает возможность преодоления недостаточности отдельного субъекта по отношению к миру называют целостностью со-бытия. Как справедливо отмечает В.А. Герт, это свойство «порождает изменения не для одного субъекта, а как минимум для двух сторон взаимодействия [15, с.187]. Он видит со-бытие как бытие человека с мнением, со смыслом, как образование нового типа детерминации - смысловой. «Отдельный человек может быть носителем смыслов, но для смыслообразования нужен еще и другой человек (другие люди)» - указывает В.А. Герт [16]. Одного человека для осмысленного развития и существования недостаточно. По его убеждению «другой человек не только расширяет пространство индивидуального бытия у каждого человека и делает его надиндивидуальным, но и порождает ситуацию со-относительного выхода за пределы самого себя и трансцендирования к новым смыслам [15, с.189].

«Именно в бытийной общности выращивается жизнеспособность индивида, именно здесь приобретает себе защиту от внешних проблем и психическое благополучие», - утверждает В.И. Слободчиков [17, с.8]. Он считает исходной нормой общности устойчивую духовную связь между ее участниками, обеспечение понимания одной индивидуальностью другой индивидуальности.

Эта возможность реализуется только при условии постоянного общения, диалога, взаимного доверия и сопереживания. В общности люди встречаются, она создается общими усилиями ее участников, нормы, цели, ценности, смыслы общения и взаимодействия в общности привносятся ими самими, делая ее по - настоящему со-бытийной общностью.

Со-бытийную общность необходимо отличать от симбиотического сращивания и формальной организованности. В симбиозе отношения практически отсутствуют, действуют только связи, поэтому для симбиоза характерна ситуация, когда ее участники между собой практически ничем не отличаются. В формальной организованности - другая крайность, здесь фактически отсутствуют связи (ее участники находятся лишь в отношениях друг с другом). Только в со- бытийной общности совокупность связей и отношений находится в гармоническом единстве [17, с.8 -9].

Особенно ценным для процесса обучения является то, что со- бытийная общность несет в себе и целевые ориентиры совместной деятельности, и ценностные основы своего единства.

Как отмечают ее исследователи, такая общность не может возникнуть стихийно, сама по себе. Ее становление связано со специальными и осмысленными усилиями каждого из участников.

Таким образом, можно сделать **вывод**, что новые ценности, цели и содержание образования невозможно реализовать в непосредственном педагогическом воздействии. Способность к самообразованию и к саморазвитию невозможно сформировать путем прямого педагогического воздействия. Студента нельзя заставить быть самостоятельным, самобытным, самодействующим, невозможно заставить его стать и быть личностью. Педагог может лишь создать особые условия, при которых у

него действительно появится шанс самому вырасти в меру этих, по - настоящему человеческих, способностей, встать на путь их приобретения.

Именно такие условия впервые появляются тогда, когда педагог целенаправленно, специально и осмысленно выстроит со-бытийную образовательную общность - как совокупного (коллективного) субъекта совместно - распределенной деятельности .

Данное обстоятельство чрезвычайно важно для становления профессиональной компетентности инженера-педагога, для выработки его ответственной профессиональной позиции, прежде всего потому, что общность такого типа всегда позиционная для всех ее участников.

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Time Perspective Peculiarities of Students With Different Levels of Professional English Language Learning

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Abstract

228 students who study English as a humanitarian cycle discipline (N = 101), as a discipline of specialization (N = 78), as a professional subject (N = 49) took part in the research. In the course of the investigation motivational induction method by J. Nuttin was used; students were asked to write authors' grammar and lexical test in English. It was proved that more successful respondents indicate a lot more motivational objects localized within the period of 1 year (Y) and are connected with socio-political aspirations (Pt), with profit or material values obtaining (P), professional activity and aspiration for leaving abroad (EX).

Keywords: educational success, motivational induction, motivational objects, time perspective, interconnection, correlation.

In today's economic situation the regulation of veterinary products' market is based on market research, identifying internal and external relations, systematic study of various phenomena and processes that occur in the market and in related areas. Based on these and other methods, including mathematics and statistics one, you can make certain predictions and develop perspective plans for the future of the industry.

Formulation of the problem. High-level professional competitiveness may not be connected with the student's working capacity or one's intellectual possibilities than rather depend on one's educational motivation.

An important factor of the subject's behavior motivation is his (her) time perspective. The influence of time perspective may result in motivational process with the help of which all purposes and cause and effect structures regulate behavior. The nature of the events lying in the core of the student's time perspective may determine direction and content of the student's activity in the educational process, initiativeness, activity, satisfaction with studies, and understanding of personal significance in gaining new knowledge. As far as the transformations that take place in the society change external (social) learning motives, social prestige of higher education, significance of profession, the social demands for specific specialists, students' ideas about their own realization. Empirical data, acquired in the last

decades don't reflect current state of the mentioned problem. Time perspectives and learning motivation can also be influenced by regional and cultural peculiarities of students.

The state of case study. The study results of many scientists show that it is impossible to reach efficiency of studies only by means of improvement of the educational process methods, paying no attention to the motives of educational activity ([3], [4], [7], [9], [17]). In our opinion, this is supported by the study results of human motives as the source of human activity (B.H. Ananyev [1], V.H. Asyeyev [2], L.I. Bozhovych [6], A.N. Lyeontyev [12], A.K. Markova [13-16], T.A. Matis [15], A.B. Orlov [15], A. Maslow [17], H. Heckhausen [20]). The researchers investigated peculiarities of structure and development of motivational sphere of pupil's personality, established the characteristics of separate leading motives of studies: "cognitive interest" (N.F. Talyzina [21]), cognitive need, (Ye.P. Ilyin [8]), social and cognitive motives (A.K. Markova [15]), achievements and hard luck avoidance motives (N. Skorokhodova [19], H. Heckhausen [20]), communicative motive and creative self-realization motive (N.Ts. Badmayeva [5]). Also, the problem of educational motivation formation was researched (V.H. Asyeyev [2], A.K.Markova [13-16], N.F. Talyzina [21]), namely, interconnection between educational progress in studies of senior pupils and motivation objects of their time perspective (L.I. Luzyo [10,11], I.V. Ryabikina [18]). The purpose of our research is to emphasize differences of time perspective motivation characteristics in student groups level with different professional level of English language study.

Methods and organization of the study. The study was carried out in April-May 2012 on the basis of Lviv State University of Internal Affairs and Vasyl Stefanyk Subcarpathian National University. Empirical sample includes 253 respondents. 25 (10%) people out of all respondents under study have not carried out all suggested methods. Therefore, the results of 228 students were analyzed among which 18.4 % men (42 people) and 81.6% - women (186 people). All respondents were divided into three groups under study. Group No. 1 included those who study English as a humanitarian cycle discipline: I-III year students in training directions "Management psychology", "Practical psychology", "Economic safety", "Investigators" and "Social pedagogy". The carried out research encompassed 112 students who apart from their professional disciplines study English during the first courses of studies. 11 (10%) students out of the given number of investigated people have not carried out all suggested methods. Therefore, the results of 101 respondents, among

which 33 students (32.7%) – men, 68 – women (67.3%), were analyzed. The age of people under study was from 17 to 21 (M=19±1).

Group No. 2 included people studying English as a discipline of specialization: I-III year student in degree program "Primary education and English". The total number of people under study was 82 students. Only 4 (5%) people out of the general amount of respondents have not carried out all suggested methods. Therefore, the results of 78 respondents (all women) aged 17 to 21 (M=19±1) were analyzed.

Group No. 3 included respondents studying English as a professional subject: I-II year student in degree program "English language and literature". The total number of people under study was 59 students. Only 10 (20%) people out of the general amount of respondents have not carried out all suggested methods. Therefore, the results of 49 respondents, among which 9 (18%) men and 40 (82%) women aged 17 to 19 (M=18±1), were analyzed. Students of the 2nd and 3rd groups study English during all courses of studies.

The procedure of study provided fulfillment of the suggested methods by each group of students of the mentioned degree programs. Time for fulfillment of the methods was unlimited. The respondents were successful to completely fulfill the tasks during 1 hour.

We used positive inductors of the motivational induction method by J. Nuttin [18] for explication of structural and semantic peculiarities of time perspective of student youth. There are two stages in motivational induction method. The first stage represents formation of the list of motivational objects for a group of respondents. The core of the method is the incomplete sentences method. We suggested 40 sentences formulated from the 1st person singular and which provide finding motivational objects of time perspective of the future respondent. The investigated complete each of the sentences formulating the objects that motivate them.

An investigator carries out motivational object coding, which is indicated by a respondent, at the second stage of motivational induction. Each motivational object obtains two codes – temporal and meaningful.

While processing the received results with the help of temporal code, estimation of probability of the time of beginning, performance of event, plan, intention described by an investigated person who ends the sentence. In the process of coding procedure we marked motivational objects during calendar periods of respondent's life.

Namely, in order to do localization in time, if it is possible, the following symbols were used: Lf – – used in cases when a person under study indicates at one's further life as the unity (e.g., "I would like to live here for the rest of my life") or it is impossible to understand to which life period it is necessary to refer things written by a respondent (e.g., "I would like to work as an investigator"); X – refers to objects connected with the time of a respondent's death or localized in the period after his death; M – events referring to the period from three days to three years; A – Nuttin method the given category of symbols is divided into several periods, however, in connection with the fact that in our study only separate respondents localized events in the period of finishing their professional carrier, we marked events referring to the time period of investigated people aged 25 and more (if they indicated the localization, otherwise the event was marked as "Lf").

The main categories of analysis of the content of motivational induction:

SR (Self-realization) – actions or intention of a subject aimed at his development (actualization, self-realization) and which are impossible to refer to other (next) categories of analysis; C – actions and aspirations of a subject referring to personal, familial life or expectation/fear of possible loneliness; C_2 – purposes formulated as the desire to do something for others ("help one's parents"); C_3 – expectation of something from others ("I want parents to understand me"); R_2 – professional activity; R_3 – studies; R_4 – the category included objects, where students expressed their desire to finish educational course, university, receive a diploma, but did not indicate the necessity for obtaining knowledge, progress in studies; R(A) – desire to study English or work in the sphere where it is necessary to know English (the given category included objects that had already been correlated with R_2 or R_3, that is why the given indices were taken into consideration only when estimating general amount of objects); EX – desire to leave abroad for a long time (except for tourism); L – activity connected with leisure, game, mode of life; P – motives connected with the desire to own something, have something or get something; Pt – desire for social and political changes. With the purpose of comparison of the amount of motivational objects we estimated their amount in each of respondents (not all students continued all 40 uncompleted sentences; separate investigated people indicated several motivational objects in one uncompleted sentence).

With the purpose of the students' progress estimation in English language study, they were suggested to indicate a grade they got in the given subject in the previous semester. Apart from that, taking into consideration the authentic nature of the grade, possibly different grade criteria, which could be used in the investigated students' groups by different English language teachers, we also used author's grammar tests. The tests were compiled according to the educational program in English for the students of all specialties. The test gives the possibility to check complex mastering of educational material on the basis of combination of lexical and grammar tasks.

Tests consist of four parts: A, B, C, D. Each part contains 5 tasks. All tasks have a typical structure. Task A – this is a gap-filling task. It suggests to complete a sentence with a separate lexical unit according to the context. Task B – it is necessary to choose one correct answer; the task is based on the learned grammar material. There are four options with answers to each sentence and only one answer is correct. Task C- represents a task in morphology. It is necessary to correctly determine and create a derivative part of speech from a verb given in brackets according to the context. Task D – represents a task on correct use of grammar forms. In each sentence it is necessary to find and cross an odd lexico-grammatical form. The tasks are estimated according to the grade system. Each correct answer is estimated 1 point. Maximum amount of points for one task is 5. 20-25 minutes are given to do the test. Statistical data processing was done with the help of SPSS 20.

Results of the study. According to the obtained data, students of English Philology Department showed the best results in English test; students studying English as a specialization discipline have sufficiently better results of the given test than the students studying English as a humanitarian cycle discipline (Fig. 1).

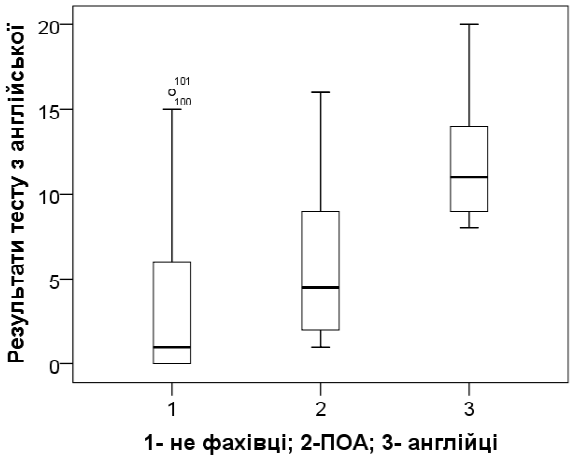

Fig. 1. Diagram showing the indices of English grammar test accomplishment by respondents of investigated groups.

The results of all three groups (See Table 1) show considerable interconnection between the performance level of English test accomplishment and the amount of aspirations for leisure (L) and a negative correlation of the first parameter with the amount of motivational objects connected with the will to finish studies (R_4). "Excellent" students are prone to indicate a greater number of events of the expected future.

For excellent students studying English as a specialization discipline and the students of English Philology Department the common thing is motivational objects localization in the nearest perspective (for one month and one year).

Such respondents indicate more objects connected with aspiration for influencing other people (C_3), future studies (R_3) and going abroad (EX).

The general sample of the investigated (all three groups) English grammar test results are successfully correlated (Table 1) with motivational objects localization within one month (M). Therefore, students with better results of English test have more detailed plans as far as the nearest future is concerned than their less amount of colleagues. We noticed the same tendency concerning the amount of plans for studies (R_3), aspirations for leaving abroad (EX), leisure (L).

Table 1

Indices of correlation relationship of progress parameters between learning English and time perspective of the students of all the groups under study

		Progress in studies of English			English test result			
	po Spearman	Group No.1	Group No.2	Group No.3	Group No.1	Group No.2	Group No.3	Total sample
Lf	correlation coefficient	,268**		-,447**			-,465**	
Y	correlation coefficient			,450**		,264*	,373**	
M	correlation coefficient.			,437**		,503**	,637**	,268**
SR	correlation coefficient.			-,534**	,214*	-,293**	-,535**	
C_2	correlation coefficient.	,199*						
C_3	correlation coefficient..		,268*	,330*			,342*	
R_3	correlation coefficient.		,280*	,333*			,343*	,153*
R__A	correlation coefficient.			,301*				
R_4	correlation coefficient.	-,200**	-,226*	-,363*		-,316**	-,380**	
EX	correlation coefficient.		,310**	,541**			,344*	,179**
L	correlation coefficient.			,334*	,215*	,310**	,515**	,411**
Time Perspective duration	correlation coefficient.	,217*	-,322**	-,311*	,251*	-,275*		,151*
Number of events	correlation coefficient	,285**		,464**		,281*	,312*	,263**

Comparison of indices of time perspective parameters of the investigated students studying English as a humanitarian discipline and a discipline of their specialization, reveals the fact that the latter possess considerably larger amount of motivational objects related to their personal lives/anticipation of loneliness (C); expectations of something from the others (C3); continuation of studying (R_3), in particular, further study of English (R_A); aspiration for taking abroad (EX). At the same time, students learning English as a humanitarian discipline have showed significantly more motivational objects related to (SR) self-realization (Table 2).

Table 2

Statistical difference indices between the results of J. Nuttin motivational induction methods performance by the groups of students studying English as a humanitarian discipline (group No. 1) and English as a specialization discipline (group No.2)

Group 1 and 2		SR	C	C_3	R_3	R_A	EX
Mann–Whitney U		1689,5	2956,5	3030,0	2372,5	3180,0	2487,5
Wilcoxon W		4770,5	8107,5	8181,0	7523,5	8331,0	7638,5
Z		-6,558	-2,873	-2,667	-4,624	-3,308	-5,509
Asymptotic value		,000	,004	,008	,000	,001	,000
1	Average	20,86	4,20	3,05	1,92	,19	,18
	Statistical deviation	6,547	3,438	2,426	2,382	,809	,669
2	Average	14,74	5,81	3,99	3,44	,62	,91
	Statistical deviation	3,729	4,007	2,586	2,431	1,131	1,271

Students of English Philology Department are more likely than the respondents from group No.1 to localize the motivational objects of their time perspective within the period of 1 year (Y) and after graduation (A_0); they indicate a lot more motivational objects related to the

future studying (R_3), in particular, further study of English (R_A); aspiration for leaving abroad (EX), or for profit or material values obtaining (P), leisure (L), socio-political aspirations (Pt). However, the group No.1 respondents more frequently provide motivational objects (Table 3), which are related to the whole life of the subject (Lf) and are connected with personal self-realization (SR).

Table 3

Statistical difference indices between the results of J. Nuttin motivational induction methods performance by the groups of students studying English as a humanitarian discipline (group No. 1) and students of "English language and literature" degree program (group No.2)

1-3		Lf	Y	A_0	SR	R_3	R_A	EX	L	Pt
Mann–Whitney U		1896,5	1139,5	1818,0	1283,5	1375,5	412,5	433,5	1182,0	1462,0
Wilcoxon W		3121,5	6290,5	6969,0	2508,5	6526,5	5563,5	5584,5	6333,0	6613,0
Z		-2,324	-5,546	-2,739	-4,779	-4,475	-9,652	-9,556	-5,271	-4,824
Asymptotic value		,020	,000	,006	,000	,000	,000	,000	,000	,000
1	Average	33,56	,96	1,28	20,86	1,92	,19	,18	1,91	,33
	Statistical error	,608	,116	,182	,651	,237	,080	,067	,223	,077
	Statistical deviation	6,106	1,166	1,834	6,547	2,382	,809	,669	2,245	,776
3	Average	32,69	2,29	1,65	15,73	3,24	1,90	1,90	3,55	,82
	Statistical error	,516	,193	,183	,612	,273	,163	,155	,259	,104
	Statistical deviation	3,613	1,354	1,284	4,281	1,910	1,141	1,085	1,815	,727

In comparison with students of English philology, students learning English as a specialization discipline (see Table. 4) reveal a lot more motivational objects associated with their personal life/loneliness (C), expectations of something from the others (C_3). Meanwhile, the students of English philology more often localize their motivational objects within the period of 1 year (Y), provide a lot more objects related to their aspiration for further studying

of English in the future (R_A), leaving abroad (EX), leisure (L), profit or material values obtaining (P), social and political aspirations (Pt).

Table 4

Statistical difference indices between the results of J. Nuttin motivational induction methods performance by the groups of students studying English as specialization discipline (group No. 2) and students of "English language and literature" degree program (group No.3)

Group No.2 and 3		Y	C	C_3	R_A	EX	L	P	Pt
Mann–Whitney U		608,0	1377,5	1330,0	753,0	953,5	1068,0	1406,0	1022,0
Wilcoxon W		3689,0	2602,5	2555,0	3834,0	4034,5	4149,0	4487,0	4103,0
Z		-6,706	-2,660	-2,910	-6,131	-4,941	-4,244	-2,626	-5,246
Asymptotic value		,000	,008	,004	,000	,000	,000	,009	,000
2	Average	,67	5,81	3,99	,62	,91	2,18	,96	,24
	Statistical error	,089	,454	,293	,128	,144	,207	,133	,073
	Statistical deviation	,784	4,007	2,586	1,131	1,271	1,829	1,178	,648
3	Average	2,29	3,88	2,67	1,90	1,90	3,55	1,43	,82
	Statistical error	,193	,380	,239	,163	,155	,259	,165	,104
	Statistical deviation	1,354	2,659	1,676	1,141	1,085	1,815	1,155	,727

Results discussion. It should be taken into consideration that the sample under study consists of students who entered different specialties at higher educational establishments and, consequently, before admission they had undergone competitive selection according to the results of their knowledge of different for all of them subjects. In particular, for the students-philologists (English language and literature specialty) the list of competitive subjects in the Certificate of the Ukrainian Center of Estimation of Education Quality included English. In their attempt to enter their higher educational establishments such students had to demonstrate strong knowledge of English which, in turn, anticipates they had made a lot of efforts. For the other respondents competitive selection did not include evaluation of their knowledge of

English. It is possible to assume that the students of the “English language and literature” specialty may have a different motivation of learning English though their average level of English can be much higher than that of other respondents.

In addition to the abovementioned, the curriculum for students-philologists provides a lot more training hours in English than for the students of other groups under study. However, the curriculum of students in training provides a lot more educational hours in English than in other student groups under study. First of all, educational plan of the students in training direction “English” provides a considerably greater amount of educational hours than in respondents of other training directions (however, less than in the students-philologists under study). To our mind, it is conditioned by a sufficiently higher level of knowledge of English of the students under study who learn the language on a higher professional level than the students learning English less because of less amount of educational hours.

Comparison of the presence and direction of the correlation relationships which were revealed in the three groups under study enables us to draw conclusions about the existence of common traits and differences of these relationships between the groups of students of different specialties.

The higher number of motivational constructs that are peculiar to the more successful respondents can be explained, probably, by their higher level of diligence, allowing them to learn more effectively. On the other hand, this does not exclude a greater level of cognitive complexity of the "outstanding students" that allows them to produce a greater number of motivational objects and more successful learning. The revealed tendency of motivational objects increasing numbers, which are localized at the age of 25 years or older, may indicate the presence of more clear life plans of these respondents in this period. This also corresponds to the presence of a positive correlation between the level of grammar test progress and the number of motivational objects localized in the period of several months or years. This may witness the fact that progress in studying of English in the groups of students under the study depends to a greater extent on those goals of the students which are temporary localized in the nearest future.

The predominate aspirations for taking abroad, found among the "outstanding students", may be considered an important motivational factor for studying English. In all probability, this caused the increase in a number of "outstanding students’" motivational

objects, localized in the nearest future, since living abroad can be imagined as less predictable due to the lack of students' experience of staying abroad. On the other hand, less successful students, who have more plans that are localized in the adulthood period, do not plan to immigrate but strive to obtain abstractly formulated by them self-realization in Ukraine more than "outstanding students".

The received by us dependence does not correspond to the results by I. V. Ryabkina [ ], which state that self-development motives dominates among senior pupils with high progress in studies. However, the above mentioned work did not study the pupils' progress in studying English, for which the motive of going abroad may be very important and accordingly lessen the amount of aspirations for self-realization and self-development.

Limitations of the study. The results received should be interpreted in the context of some limitations. First of all, the sample of respondents consisted mostly of students who live in the foothills and highlands of Carpathian mountains (Ukraine). Thus our results must be tested on the samples of people living in other regions and countries. Secondly, the sample was presented by the respondents of 17-21 years old. As far as the peculiarities of time perspective may depend on the person's age, our results must be tested on the sample of the representatives of other ages. Thirdly, the results may depend on the economic state, cultural and legal norms of the society that the respondents belong to (those who live in the foothills and highlands of Ukrainian Carpathian mountains). Thus, the research of cross-cultural differences in the identified interrelations remains relevant.

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The Pedagogical Cooperation of Teacher With Students

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Abstract

This paper analyzes the concept of cooperation and pedagogical cooperation. Disclosed essence of pedagogical dialogue as a form of educational cooperation, discusses the main features of pedagogical communication. We analyze the cooperation in the teacher-students system. Also considered typical relationship between teacher and students in the class.

Keywords: cooperation, pedagogical co-operation, teaching activities, pedagogical communication.

Introduction. In modern society, the key, basic result of educational activity is development of harmonious personality of child. In this connection, for today there is a construction of educational process the basic tasks of education thus, as a result of which for schoolboys the integral system of scientific knowledge, abilities and skills would be formed effectively, and simultaneously, their personality developed harmoniously. Main principles of reform is humanizing and democratization of education, on condition of humanizing of style of human relations in the main link of pedagogical process – system «teacher-student». Because of that on the modern stage maintenance of education changes cardinally, modified and forms of pedagogical co-operation between a teacher and students. In the past, in the conditions of totalitarianism, authoritarian, one-sided relations (from a teacher to the students) prevailed between a teacher and students, that resulted in alienation of many children from school, from the teachers, created a bureaucratic atmosphere in establishments of education. So, today the major task of reform of education is re-erecting of co-operation between a teacher and students. Consequently, expedient will be carry out the theoretical analysis of concept of pedagogical co-operation between a teacher and students, to probe the features of their co-operation.

Analysis of the last researches and publications. The problem of pedagogical co-operation more interests researchers lately. It is necessary to mark that the problem of the

psychological and pedagogical co-operation foremost goes out from the analysis of pedagogical communion. Among the classics of domestic psychological science, which was interested in the problem of co-operation of teacher with students it follows to remember B.F. Lomov, O.M. Leont'ev, O.V. Mudrik, O.V. Parigin V.A. Kan-Kalika and others. It should be emphasized that developed of problem of pedagogical communication as a communicative mean of combination of activity of teacher and students in domestic psychological science and gave beginning of development of term of pedagogical co-operation (Y.l. Kolominskiy). The problem of pedagogical interactions involved O.V. Kirichuk V.J. Laudis. Among modern researchers which are engaged in development of ideas of pedagogical co-operation it is necessary to remember L.K. Velitchenko, that probes psychological bases of pedagogical co-operation, M.V. Kaminsku, that is engaged in the problem of compatible activity of teacher and students in the theory of educational activity in practice of developing studies, Z.Y. Koval'chuk, that engaged in consideration of interpersonality co-operation of teacher with senior pupils and others like that.

The main material. In psychological science concepts co-operation is seen differently. In terms of philosophy, this category represents one of the common forms of relationship between events. Its essence consists in reverse influence of one object or phenomenon on other. Therefore co-operation reproduces the processes of influence of objects on each other, them mutual conditionality and generation one object other.

Considering the term "co-operation" is necessary to appeal to the attitudes B.F.Lomov, O.M.Leontyev, who view it as a necessary component of communication, emphasizing the prevailing importance of this component. Thus co-operation is examined as an exchange ideas, by interests, forming of settings, mastering of socialhistorical experience. O.M. Leont'ev underlines that the central moment of determination of intercourse is an «information not transfer», but co-operation, with other people, as an internal mechanism of life of collective. According to G.M. Andreev, interaction - is the aspect of communication, which appears in organization of mutual actions of humans, directed on realization of compatible activity and achievement of general purpose. Consequently, co-operation (interaction) is mediated communication, in fact due to him people can enter into co-operation [1].

Considering the fact that pedagogical communication - is the extremely multifaceted process and every its line determined by the context of interaction, V.A. Kan-Kalik identifies several important functions that are implemented in teacher communication. First, the author emphasizes cognitive function that provides an explanation of the surrounding world. The second important function he considers emotional, reflecting the attitude of the communicator of information to be reported to the conversation. The third function is defined educational, directed to formation of socially useful qualities of the individual student. The fourth function is facilitative and is aimed at facilitate the process of student self-expression, expressions the fact that it is positive. The following function takes regulatory action and directs the participant to activity coordination through communication. Finally, V.A. Kan Kalik considers the function of self-actualization pedagogical communication, which requires a person to realize their capabilities [3].

A structural transfer of idea of pedagogical intercourse is in the social-psychological paradigm of interpersonality relations of teacher and students with application of position of V.M. Myasischev about intercourse as got unity of «relation» and «expression» logical continuation in a term «pedagogical co-operation» (Y.l.Kolominskiy) [1].

Examining pedagogical interaction, O. Kirichuk identifies its components - the transfer of theoretical and practical knowledge and spiritual values - education in the broadest sense, and psychological contact, understanding teacher and pupil - Communication as a form of expression in terms of education, pedagogical interaction that is carried out in the context of "joint labour", the author defines the characteristics and structure of "joint work" as a joint activity by separation of the concept of "activity" signs that actually characterize the as the carrier of [5].

Considering the scheme of educational interaction, I.A. Zimnyaya, describing it as a two sided subject-subject interaction (S1 - S2), where S1 - teacher, S2 - student. Educational interaction of the student and teacher, is a more complex system of interactions in the educational process (interacting with the system of "family" and a system of "community"). All these connections are transferred to the educational process directly in the classroom to a greater or lesser extent. This is reflected in the attitude of student learning, teachers and schools, which in turn, is a projection of their values on the nature of learning activities [4].

As marks L.K. Velitchenko, psychological basis of pedagogical co-operation is formed: awareness of experience, recreation and mastering of rich in content and functional signs of interactive situations of studies and education; integrative combination of methods of subject-subject and subject-object actions of teacher and student in the events of intercourse, studies, education; setting of teacher and students as generalized reflection of their interactive experience. In accordance with his research, by reality of pedagogical co-operation personalities (S – S) and active sleep (S – O) copulas of teacher and student, which at the terms of co-ordination operate as the united subject in relation to a general object. These relationships are reflected in the minds of teachers and students as facts mutual reflection, personal and activity-relationships that enrich experience and improve regulation [1].

Co-operate teacher, in particular class leader, with the students of class it is possible to examine as co-operate two systems. Therefore, examining co-operation in the system «students» of teacher it is necessary to accent attention not only on their co-operation directly in intercourse but also to consider by the features of subsystems, which can appear into this system, and on the greater systems which it enters in, in particular system « school», «educational system» and others like that.

Coming from research of K.V. Sedykh, co-operating of teacher with the students of class is built after 4 basic types: leader mediated, direct, the alliance -coalition, economic mediated. And the relationships of students with teachers and class are built more difficult, eight types of configurations are selected, except for 4 types, which coincide with teaching selected: spider «web», symbiotic-conflict, remotely conflict, a «sun» [5].

Conclusions. So, the term of pedagogical cooperation the term has its origins of psychological analysis of pedagogical communication and pedagogical psychology in general. So pedagogical cooperation is directly related to pedagogical communication and reveals aspects peculiar combination of activities of the teacher and students. Interaction between teachers and students is a holistic socio-psychological system that consists of unity perceptual, communication and interactive components that are mutually dependent on each other.

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Teaching Activities of High School Teacher

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Abstract

The article discusses about the features of educational activities of high school teachers, disclosed features of the interaction of teachers and students. Reasonably factors that provide high quality education, and the challenges that are put before a high school teacher lists the teachers in the process of teaching. Reasonably productive levels of educational activities; lists the functions of the teacher in the process of professional development.

Keywords: teacher training, educational activities, educational culture, the levels of educational activities, creativity, function of the teacher.

Педагогическая деятельность преподавателя высшей школы

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Abstract

В статье рассматривается вопрос об особенностях педагогической деятельности преподавателей высшей школы, раскрыты особенности взаимодействия преподавателей и студентов. Обоснованно факторы, которые обеспечивают высокое качество образования, и задачи, которые ставятся перед преподавателем высшей школы перечислены требования к педагогам в процессе педагогической деятельности. Обоснованно уровни продуктивной педагогической деятельности; перечислены функции преподавателя в процессе профессионального становления.

Keywords: подготовка преподавателя, педагогическая деятельность, педагогическая культура, уровни педагогической деятельности, творчество, функции преподавателя.

Постановка проблемы. Обучение и воспитание – древнейшие понятия общественного развития. Человек, заботясь о продолжении своего рода, всегда заботился и о передаче новому поколению опыта старших. Сначала эту функцию в полном объеме выполняли родители. Но позже другие функции воспитания детей в родах, общинах члены общества передавали, наиболее опытным, наиболее мудрым людям – педагогам. Уже в этимологии этого слова заложен глубокий социальный смысл. Слово педагог происходит от греческого paidahos (pais – ребенок; alio – веду, воспитываю). Педагогами называли людей, которые занимались детоведениям, воспитанием детей. Поэтому не случайно, что профессия педагога является древнейшей

на Земле. Учитель как уполномоченный общества наравне с родителями несет ответственность за социальную зрелость каждого воспитанника[1].

Еще в конце прошлого века в мире пришли к консенсусу относительно того, что любому обществу необходим обновленный процесс образования для решения задач XXI века, связанных с обеспечением интеллектуальной независимости, производством и продвижением новых знаний, подготовкой и формированием ответственных и образованных граждан и высококвалифицированных специалистов, без которых невозможен ни экономический, ни социальный, ни культурный, ни политический прогресс. Поскольку общество все больше и больше требует знаний, образование, особенно высшее, выступает в качестве основных компонентов культурного социально-экономического и экологического устойчивого развития человечества. Поэтому развитие образования в большинстве стран мира отнесены к важнейшим национальным приоритетам. В Украине также происходит становление новой системы образования, ориентированной на вхождение в мировое образовательное пространство. Приоритетное внимание при формировании высшего образования в стране должна предоставляться подготовке нового поколения научно-педагогических кадров – национальной элиты, способной трансформировать в себе новую образовательно-мировоззренческую парадигму национально-государственного созидания, гуманистического вознесения самоценности личности воспитанника[2].

Анализ последних исследований и публикаций. В исследованиях, посвященных проблеме подготовки будущего учителя к педагогической деятельности особое значение уделяется организации научно-исследовательской работы студентов (А.Мороз, В.Сластьонин, Н.Филипенко), формированию у них умений проектировать, конструировать (В.Бондарь), развития самодеятельности и самовоспитанию (В.Андреев, Л.Попова), использованию дидактических игр в учебном процессе (Н.Посталюк), созданию педагогических условий индивидуализации профессиональной подготовки (О.Пехота), интенсификации обучения в высшем учебном заведении (Н.Кичук).

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Однако почти отсутствуют исследования проблемы подготовки преподавателей-предметников, которые, по мнению В.Краевского, призваны перейти от идеологии «информационно-описательного преподавания» к идеологии методической направленности обучения[3].

Целью статьи является раскрытие особенностей психолого- педагогической подготовки, которая способствует формированию творческого потенциала будущих преподавателей.

Изложение основного материала. Трудно представить себе по-настоящему гуманистическое общество без преподавателя – духовного проводника, наставника, помощника, а затем преподавателя – учителя, который владеет искусством влиять, будить мысль, побуждать. Развитие нации возможно лишь при условии существования ее просвещенной, высокодуховной, интеллигентной части – профессионального учительства.

Современные украинские исследования свидетельствуют, что основными факторами, которые обеспечивают качество образования, являются:

1) профессиональная подготовка субъектов преподавания, их личностные качества (порядочность, ответственность, принципиальность, толерантность и т.п.);

2) учебно-методическое обеспечение процесса подготовки (учебные пособия, методические разработки);

3) наличие системы контроля и оценки преподавания, уровня знаний субъектов обучения, отвечающего современным требованиям;

4) применение в учебно-воспитательном процессе современных образовательных технологий (активных методов обучения, интернет- технологий и др.);

5) привлечение субъектов учебно-воспитательного процесса в научно-исследовательской деятельности и т.д. [4]

В такой образовательном учреждении усиливается ориентация на конечный результат: формирование личности будущего выпускника, его нравственного и творческого потенциала, достижения нового состояния обучающегося, – потребности в

[3] Краевский В.В. Педагогика как наука и как учебный предмет // Известия Волгоград. гос. пед. ун-та. – 2003. – №1. – С.15.

[4] Кузьминский А.И. Педагогика: Учебник / Кузьминский А.И., Омельяненко В.Л. – [2-е изд., Перераб. и доп.]. – М.: Изд-во, 2004. – С.234.

постоянном самосовершенствовании и приобретении знаний, умений и навыков, освоении общей и профессиональной культуры. А это, в свою очередь, порождает востребованность кадрового потенциала преподавателей-предметников, преподавателей-создателей, преподавателей-мастеров. Изменения в организации высшего образования обусловливают проблему подготовки кадрового педагогического потенциала.

Наука и образование сегодня относятся к тем социальным институтам общества, которых вес высокопрофессионального интеллектуального труда чрезвычайно высока и где профессиональное качество научных и педагогических кадров имеет решающее значение. Преподаватели вузов выступают одной из основных профессиональных групп, на которую общество возлагает два, чрезвычайно важны и взаимосвязанные задачи:

1) сохранение, приумножение и трансляция культурной и научно-технической добычи общества и цивилизации в целом;

2) социализация личности на соответствующем этапе ее формирования, связанной с получением профессиональной подготовки, которая требует высшего профессионального уровня[5].

Профессиональная деятельность преподавателя высшей школы многоаспектная: она охватывает научные исследования, чисто преподавательскую деятельность, методическую работу, воспитательное и организационное воздействие на студенчество, самосовершенствования. Преподаватель является публичным человеком, все, что он делает, является открытым для наблюдения студентов и их оценки. В каждом из направлений деятельности оказывается или формальное отношение преподавателя к ней, его стремление осуществлять работу на качественном уровне. Эти высокие требования к собственной деятельности, креативность, критичность мышления и отличают преподавателя с высоким уровнем педагогического мастерства.

Особенность деятельности преподавателя высшей школы состоит в том, что она является многоаспектной и состоит из нескольких взаимосвязанных видов, имеющих общие компоненты. Преподаватель вуза осуществляет такие виды деятельности как:

[5] Мороз А. Г. Педагогика и психология высшей школы: Учебное пособие / под ред. А. Г. Мороза, О.С.Падалка, В.И.Юрченко. – К.: НПУ, 2003. – С.67.

педагогическая, научно-исследовательская, профессиональная, административно-хозяйственная, управленческая, коммерческая и общественная. Однако ведущую роль в деятельности преподавателя играет педагогическая деятельность.

Российский психолог Кузьмина выделяет 5 уровней производительности педагогической деятельности:

1) репродуктивный, когда педагог умеет рассказать другим то что знает сам;

2) адаптивный, при котором он способен адаптировать свой доклад с возрастными и психологическими особенностями аудитории;

3) локально-моделирующий, когда педагог обладает стратегией обучения, знаниями, умениями и навыками по отдельным разделам курса, позволяющие определить педагогическую цель, поставить задачу, разработать алгоритм их решения и использовать педагогические средства включения студентов в учебно-познавательную деятельность;

4) системно-моделирующий, при котором педагог может превратить свою дисциплину в средство формирования личности студента, его потребности к самовоспитанию, самообучению и саморазвитию[6].

Одной из важных характеристик деятельности специалиста является его функции в процессе профессиональной деятельности. Такими функциональными компонентами являются рефлексия, проектирование, конструирование, организация и коммуникация.

Однако, одна из главных задач преподавателя – помочь студенту найти себя. Если человек получает задание, что не соответствует ее склонностям, она никогда не почувствует, какой интересной может быть работа, и не узнает радости труда. Но эти два признака составляют основу мотивации деятельности, в которую задействован студент[7].

Не менее важным компонентом в деятельности преподавателя является его информационная культура. В условиях перехода общества в постиндустриальное и информационное общество выдвигаются новые требования и создаются новые

[6] Матушанский Г.В. Основные характеристики психолого-педагогической подготовки и переподготовки преподавателя высшей школы на современном этапе / Г.У.Матушанский, Ю.В.Цвенгер // Психологическая наука и образование. – 2001. – № 2. – С. 27.

[7] Витвицкая С.С. Основы педагогики высшей школы: Учебник по модульно-рейтинговой системе обучения для студентов магистратуры. – М.: учеб. лит-ры, 2006. – 384 с.

возможности в применении информационных технологий и компьютерной техники практически во всех отраслях производства, науки, образования, культуры и даже быта.

Еще одной неотъемлемой частью характеристики преподавателя является уровень его педагогической культуры. Педагогическая культура является частью общечеловеческой культуры, в которой с наибольшей полнотой отражены духовные и материальные ценности образования и воспитания, а также способы творческой педагогической деятельности, необходимые для обслуживания исторического процесса смены поколений, социализации личности и осуществления образовательно-воспитательного процесса. Педагогическая культура интегрирует историко-культурный педагогический опыт и регулирует сферу педагогического взаимодействия[8].

Итак, запросу высшей школы в современном социально-экономическом развитии общества является модель высококвалифицированного, хорошо подготовленного преподавателя, который бы совмещал в себе глубокую научную эрудицию с основательным знанием основ психолого- педагогической науки и высоким уровнем методических умений. Преподаватель должен учитывать психологические особенности студентства, помогать им самореализоваться и самоутвердиться. Именно он должен так организовать учебно-воспитательный процесс в вузе, чтобы молодые люди легко могли приспосабливаться к мимолетным изменениям сегодняшнего мира.

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