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SECTION I. Physical sciences

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SIGNIFICANCE OF URANUS STATIONS IN AIR TRAVELS

Uranus (in Ancient Greek Οὐρανός, “sky”) - in
Greek mythology personification of heavens

It is considered that air travels are one of the safest means of transport. Nevertheless, even here statistics shows fatalities. Choosing a flight, a person hopes that the aircraft functions properly, that the pilots, controllers and maintenance personnel are professional. However, even they sometimes fail. Therefore, unforeseen situations may happen. [3]

The work includes the analysis of about 1500 cases of fatal aircraft accidents in civil aviation. The information about them is taken from websites [1-4]. It appears that the Aviation Safety Network (ASN) website gives the most comprehensive database of air accidents. The website founder is Harro Ranter. He started to collect information about air accidents in 1983. In 1995 Harro first thought of creating a website concerning aircraft accidents, and in January, 1996 he actually set up “the Aviation Safety Web Pages”. Fabian Lujan, who joined Ranter in 1999, suggested to rename the site as ‘Aviation Safety Network’ and move it to a new domain name. Most of the information in the ASN database is taken from official sources and from the authorities of the country, where an accident has happened. [Wikipedia]

The database of the site includes information on 20677 accidents (as at October 3, 2016). We did not analyze the entire database since the majority of cases are classified as situations, in which you can say “That was close!”, and this causes a lot of noise, which makes it difficult to analyze exactly fatalities. From ASN we took the data for 1919-1939 and 1947, data on Russia and data from the subbase «100 worst accidents», which can be used exactly for our research. The final active database has been checked for concurrency of dates of events.

Then let us indicate the information from the sources: [1-3] as years 1923-2016, [4] as ASN (Russia), ASN 1919-1939, ASN 1947, 100 worst accidents.

In the work [7] the author (based on a vast amount of data and on biography of B.L. Pasternak) showed that person's life events are concentrated nearby transition stations of the planets of the Solar System, which are stationary at the person's birth date.

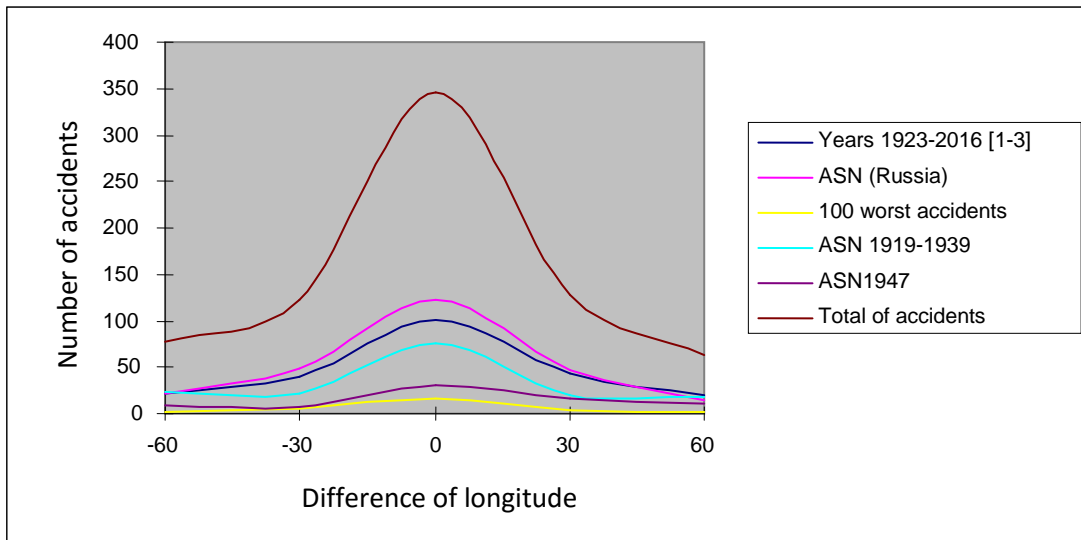
Let us see, how the dates of accidents spread out in the neighbourhood of Uranus transition stations, i.e. we analyse only the dates with stationary Uranus (orb of stationarity 60' before and after the station [6]). Let us create the distribution of two characteristics: the number of accidents and the death toll. On the x-axis zero corresponds to the Uranus station, nearest to the accident date.

From zero we mark off the Uranus difference of longitude (in minutes) between the station and the accident date, on the left – if the accident happens later time wise than the station, and on the right – if otherwise. On the y-axis – the number of accidents (death toll). Then we divide the x-axis into five intervals: (-75,-45), (-45,-15), (-15,+15), (15,45), (45,75). Now we count the number of accidents (and the death toll) on each of the intervals. Tables 1 and 2 show the obtained results in numbers. Pictures 1 and 2 show the distributions of each of the two characteristics. Notice, that in the second characteristic of a particular person a crash victim may be considered as the main event for the person – their death. I.e. the death toll of one accident is the total of events of all the victims of the flight at the same date. Thus, in the second characteristic we show the process of events. These tables and pictures once again, in a particular theme, prove “the laws of events”, obtained in [6, 7].

Table 1

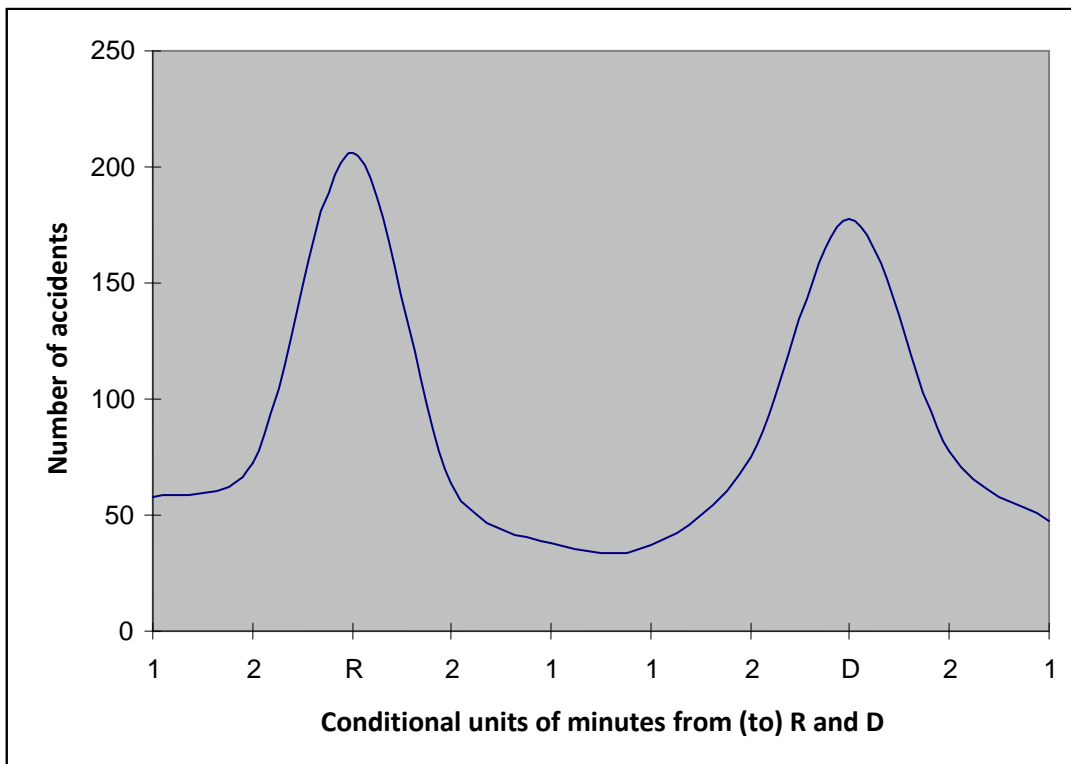
Distribution of the number of accidents with stationary Uranus in the date from different sources of information and the total

Centers of intervals	-60	-30	0	30	60	Σ
Years 1923-2016 [1-3]	21	40	100	44	19	224
ASN (Russia)	22	48	123	46	15	254
100 worst accidents	2	6	17	3	1	29
ASN 1919-1939	23	22	75	19	18	157
ASN1947	9	7	31	16	10	73
The total of accidents	77	123	346	128	63	735



Picture 1. Distribution of the number of accidents with stationary Uranus in the date from different sources of information and the total

It is interesting to watch the whole process, showing how the number of accident changes while Uranus goes through the entire cycle of stations: approaching the R, retrograde motion to station D and further:

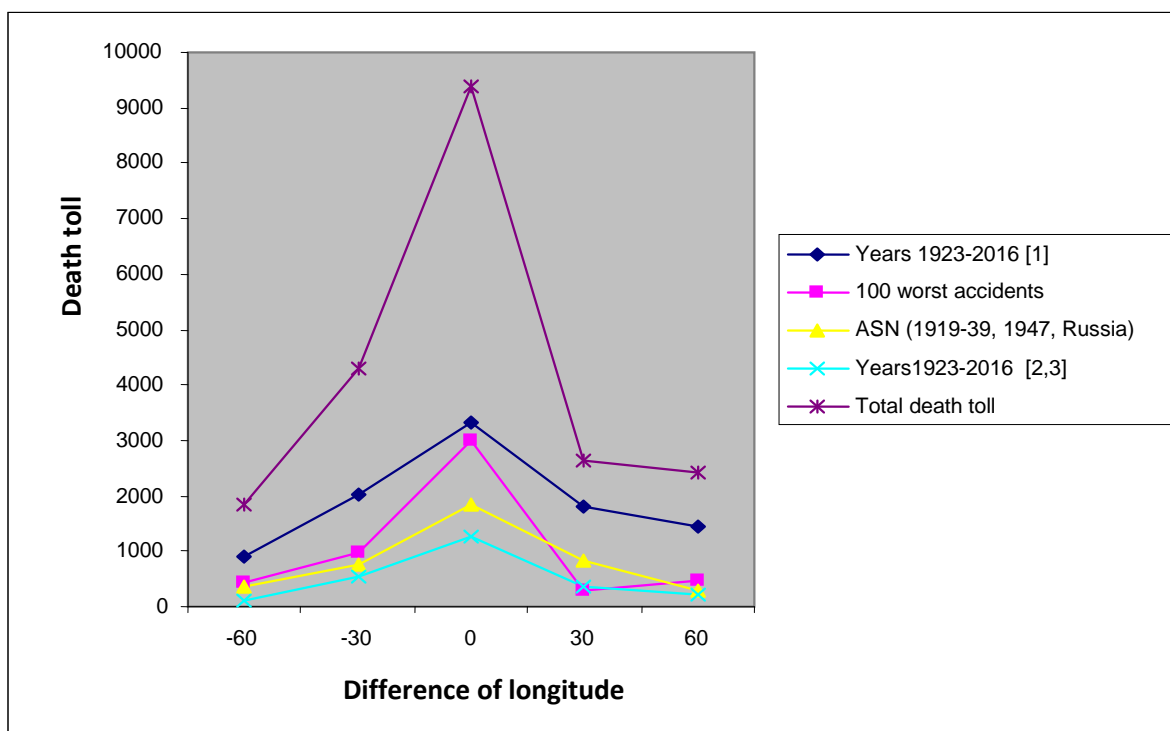


Picture 1(a). Number of accidents in the process of going through the entire cycle of stations by Uranus

Table 2

Death toll of accidents with stationary Uranus

Centers of intervals	-60	-30	0	30	60	Σ
Years 1923-2016 [1]	901	2033	3330	1814	1438	9516
100 worst accidents	449	966	2985	293	475	5168
ASN (1919-39, 1947, Russia)						
Years 1923-2016 [2,3]	113	537	1253	373	212	2488
Total death toll	1835	4302	9399	2620	2410	20566



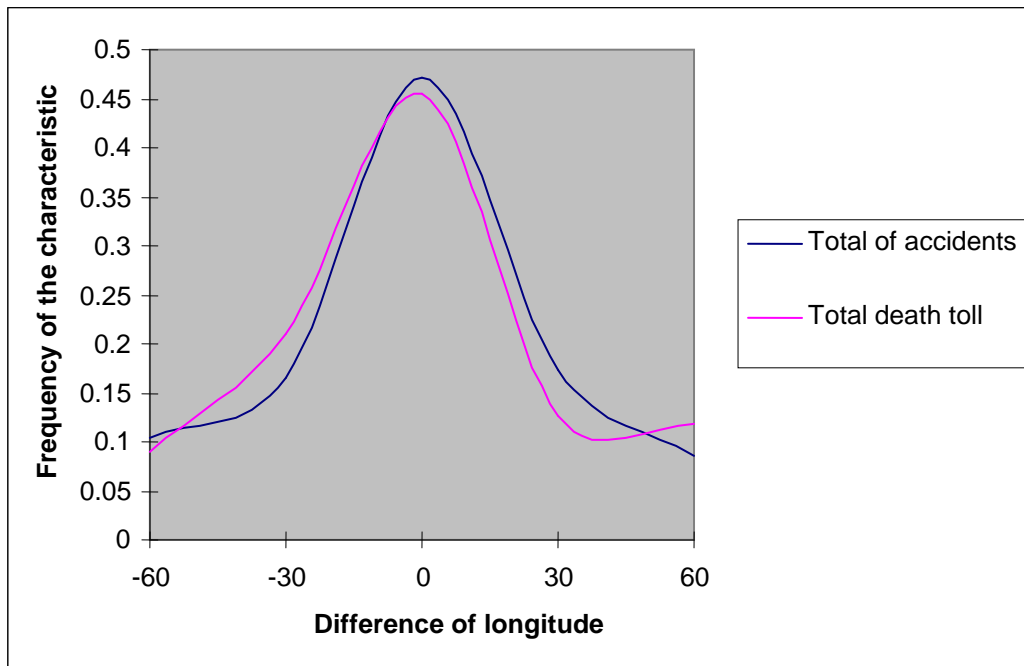
Picture 2. Death toll of accidents with stationary Uranus

Table 3 and picture 3 give similar frequency distribution of both, seemingly, absolutely different-type characteristics. It may be observed, that almost a half of the two characteristics fall in the zero interval (which is only 1/5 of the whole interval):

Table 3

Frequency distribution of the total of accidents and the total death toll

Centers of intervals	-60	-30	0	30	60	Σ
Total of accidents	0.105	0.166	0.472	0.174	0.086	1.003
Total death toll	0.09	0.21	0.456	0.126	0.118	1

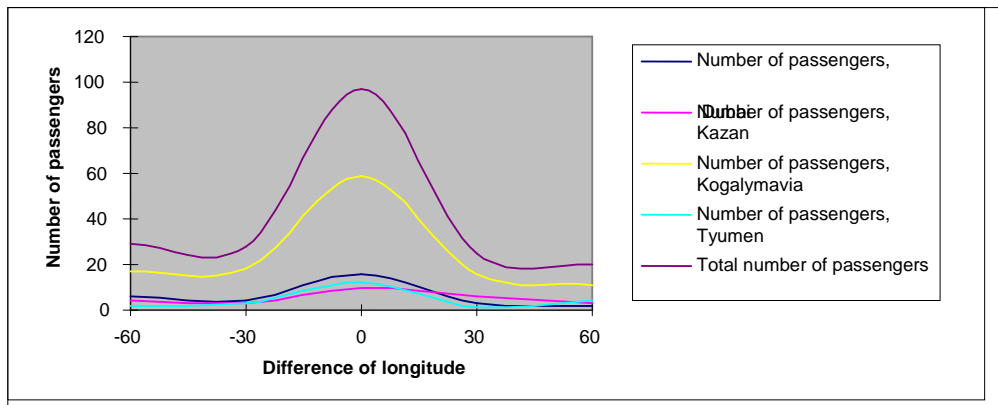


Picture 3. Frequency distribution of the total of accidents and the total death toll

We also managed to find 4 websites [5], containing lists of crash victims (I hope they will excuse me for disturbing, and may they rest in peace) with their dates of birth. We select the dates with stationary Uranus and distribute them into the intervals – table 4 and picture 4. We can see the concentration of the number of passengers in the neighbourhood of Uranus stations, which once again proves the efficiency of model 1 [6] concerning the strength of stationary planets:

Table 4
Distribution of the number of passengers with stationary Uranus at birth, in 4 accidents separately and altogether

Centers of intervals	-60	-30	0	30	60	Σ
Number of passengers, Dubai 19.03.2016	6	4	16	3	2	31
Number of passengers, Kazan 17.11.2013	4	3	10	6	3	26
Number of passengers, Sinai 31.10.2015	17	18	59	16	11	123
Number of passengers, Tyumen 02.04.2012	2	3	12	1	4	22
Total number of passengers	29	28	97	25	20	202



Picture 4. Distribution of the number of passengers with stationary Uranus at birth in 4 accidents separately and altogether

Thus, the anomaly of the number of fatal accidents in civil aviation with dates in the neighbourhood of Uranus stations is clearly evident.

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SECTION II. Mathematics

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REWRITING TECHNIQUES FOR COMPLEX ONTOLOGIES

We summarize results on rewriting techniques for ontologies with universal role, nominal constrains, transitive role, or number restriction. We follow standard notations for ontology language descriptions using the symbol 'S' to identify transitivity property, 'Q' for number restrictions, 'O' for maintenance of nominals and 'I' for inverse roles [3]. Let us consider each case in details.

Universal role. The universal role means that for all individuals from the domain there is a relation. If we want to obtain universal role as a part of our Description Logic (DL) then we may take DL containing transitive relation and nominal constrains. In such a case we can define a new role R_{ex} and a new nominal o_{ex} and the following axioms:

$$\top \sqsubseteq \exists R_{ex}. o_{ex}, \quad \top \sqsubseteq \exists R_{ex}^-. o_{ex}, \quad R_{ex} \circ R_{ex} \sqsubseteq R_{ex}.$$

So, we can rewrite the universal role in term of the given DL[7]. Nevertheless, this method does not solve the general problem because it requires the presence of another “undesirable” constructs, such as transitivity rule, which is not FO-rewritable in general case. Moreover, taking together with the combined complexity query answering over ontology containing universal role and transitivity is computationally hard problem.

However, for some cases the problem with regard to universal role can be reduced to the task about existential role [6], reducing to another role:

$$C_1 \sqsubseteq \forall P. C_2 \Leftrightarrow \exists P^-. C_1 \sqsubseteq C_2.$$

Nominal Concepts. The idea of rewriting nominals is similar to a case with universal role. We should consider ontologies with a universal role then it is possible to eliminate all nominal concepts using the rules [7]:

- (1) $\{o_1, \dots, o_n\} \Rightarrow \{o_1\} \sqcup \dots \sqcup \{o_n\}$;
- (2) $\{o_i\} \Rightarrow A(o_i) \forall i = 1, \dots, n$;
- (3) add $A(o_i) \forall i = 1, \dots, n$ to the data ABox;
- (4) add $\top \sqsubseteq \leq 1 R. A(o_i) \forall i = 1, \dots, n$ to the TBox in ontology.

The efficiency of this method depends on the number of nominals. Therefore, for large sets of nominals the rewriting will require a lot of memory.

G. Stefanoni et. al. in [8] suggested a new approach for $DLELHO_1^r$ that takes into account almost all properties of OWL 2 *EL* with the exception of complex role inclusions and transitive roles. Authors stated that this extension is nontrivial due to nominals, which require equality reasoning and increase the complexity of the rewriting and query answering algorithms. Moreover, due to nominals, recursive dependencies may appear in the filtering conditions. To solve this problem, their algorithm evaluated the original CQ and then employed a polynomial function for checking of the relevant conditions for each answer.

Negation. As for a negation, we note when a rewriting is obvious [6]:

$$C_1 \sqsubseteq \neg C_2 \Leftrightarrow C_1 \sqcap C_2 \sqsubseteq \perp .$$

Some researches about ontologies with negations have been considered by us in [2]. The authors of [1] proposed a new method for a problem of instance retrieval when there is an atomic negation. They showed that the suggested method was efficient and scalable when applied to analysis and decision of instance retrieval for all negated atomic concepts.

Transitive and numbers constrains. Bernardo Cuenca Grau et. al. in [4] presented a method of rewriting *SHI*-ontology T to datalog program for all ground queries. The rewriting proceeds in the following scheme:

- (1) eliminating the axioms of T containing transitivity \Rightarrow an *ALCHI*-TBox Ω_T and a set of datalog rules \mathcal{E}_T s.t. facts entailed by $T \cup A$ and $\Omega_T \cup \mathcal{E}_{T(A)}$ coincide \forall ABox A (ordered resolution techniques);

- (2) transformation of Ω_T into a disjunctive datalog program \Rightarrow $DD(\Omega_T)$;
- (3) transformation of Ω_T into a datalog program \Rightarrow a set of datalog rules P .

The final step may be not terminated in general, however, the authors were interested in cases relative to Horn TBoxes, particularly, authors show that their algorithm always finishes if T is a $DL-Lite_{bool}^{H,+}$ -ontology, which is practical ontology language extending OWL 2 QL with Boolean connectives and transitive roles. They proved NLOGSPACE-complexity of query answering over all ground queries and provided practical rewriting technique for it.

Rewritings of *SHIQ* knowledge base (KB) was also studied in [5], where U. Hustadt and B. Motik have reduced a *SHIQ* KB to a disjunctive datalog program $DD(KB)$, such that $DD(KB)$ and KB entails ground facts from the original KB. It can be used to model ontologies in managing big data applications, which consist of a class hierarchy and simple relations. Horn-*SHIQ* extends *DL-Lite* trying to retain formalisms with qualified existential quantification, conditional functionality and role inclusions. The results of their work seem to be interesting, but their rewriting model has exponential size of the TBox in some cases. Let us follow the idea of the rewriting algorithm, which consists of:

- (1) eliminating the transitivity axioms from *SHIQ* KB using axiomatic translation \Rightarrow an $ALCHIQ\Omega(KB)$;
- (2) structural translation into first-order clauses \Rightarrow the set of clauses $\mathcal{E}(KB)$;
- (3) saturation of $\mathcal{E}(KB)$ by basic superposition $\Rightarrow \mathcal{E}'(KB)$;
- (4) elimination of function symbols from $\mathcal{E}'(KB)$ \Rightarrow a function-free clause set $FF(KB)$;
- (5) conversion of $FF(KB)$ to Disjunctive Datalog $\Rightarrow DD(KB)$;
- (6) applying practically successful deductive database optimization techniques, such as magic sets.

In particular, it was shown that the data complexity of reasoning in *SHIQ* is in NP, but for a fragment called Horn-*SHIQ* the data complexity is in P . That is why Horn-*SHIQ* is interesting for practical applications.

In conclusion, it is important to emphasize that modern DL reasoners are optimized primarily for TBox reasoning. Nevertheless, some applications, for example, metadata management in the Semantic

Web, are based largely on query answering instead of concept satisfiability or subsumption testing. Presented DL reasoning techniques often do not indicate required outcome in these cases. Bearing in mind that these circumstances have been referred to some cases in disjunctive deductive databases we get answers to queries “in one pass”. The methods for binding propagation, in particular, disjunctive magic sets, have been produced to investigate reasoning only to the part of the A Box corresponding to the query. Query answering algorithms in such systems can deterministically and efficiently make indexing. Considered techniques have proved successful on large data bases, so applying them to Description Logics can enable valid reasoning with large A Boxes.

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SECTION III. Information Technology

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DEVELOPMENT OF A VIRTUAL EXCHANGE PLATFORM RESULTS QUALIFYING MASTER'S WORKS WITH THE POSSIBILITY OF SHARING THE ACHIEVEMENTS AND SEARCH

In recent years, the world is undergoing profound changes due to the impact of information technology on almost all aspects of life. It is connected on one side with an incredibly rapid development of computer technology, communication networks and own information technology, and on the other - to the fact that society is so dependent on the success of the application of information technology that puts more effort (including funds) in their development. It's all about education and science, industry, business and public life.

The science and education, as well as in other fields that require advanced knowledge, there is a constant race against time: to achieve new research results constantly need the most recent data on the results achieved in the world. On the other hand to promote their own achievements scientists also need money fast publications in compliance with copyright. In accordance with the Decree of the President of the Republic of Uzbekistan dated 21.03.2012, № PP-1730 and the adoption of the program for further implementation and development of information and communication technologies in the Republic of Uzbekistan for 2012-2014, and April 3, 2014 PP-2158 "On measures for further introduction of information and communication technologies in the real economy "relevance and importance of the problem is undeniable.

Information systems and university research institutions distinguish huge amounts of structured data, and the low, the distributed nature, heterogeneity, autonomy and different conditions of maintenance, management and policies of access to information sources and services. This raises issues of information interoperability, which can be divided into levels, namely, technical interoperability, syntactic interoperability, semantic interoperability.

Creation and coordination of standard metadata application profiles simplify the integration of various systems, will automate the exchange between the students, masters and candidates, their

processing and transformation, improve the accuracy and efficiency of search. Depth structuring metadata about resources should be determined by the specific system tasks. In the narrow professional systems, it is high in order to support the appropriate processes, the ability to conduct special investigations. However, the high degree of structuring is not required for common tasks of information resources integration and complicates the process. It is necessary to develop an approach to capacity level metadata structuring, which would allow to specialize the general scheme of metadata to the needs of end-user applications, to develop a set of metadata elements for general scientific information and some sections of metadata specific scientific areas, followed by coordinating them with the scientific community and adapting to international standards; to ensure the provision and harmonization of standard classifications of resources and thesauri.

Scientific reserve. In order to systematize the effective exchange and integration of results and ideas of all categories of the university, in particular through some blocks such as exhaust qualification work, which is essentially the scientific work done by a student of bachelor in the final stage of training, using the knowledge of a number of disciplines specialty and has the goal to organize and expand the knowledge and practical skills in solving complex problems, a master's thesis is an independent holistic conceptual scientific research, independent decision of actual scientific problems, based on a set of methodological concepts and methodological skills in the chosen professional activity and a doctoral dissertation is a whole complex of research containing theoretical and practical basis and the results will be developed virtual exchange platform of scientific achievements with the possibility of sharing and finding partners to implement their business ideas, start-ups, comprehensive research.

To this end, the university already has substantial preconditions:

- Accumulated huge amount of scientific information in electronic form in different science fields in the form of works of bachelors, masters and so on.

- Conscious Need research staff of the need to find a high-quality information, and in fielding its own information exchange platform

- Conscious Need research staff of the need to align their existing backlog of legacy arrays of information to any standards (preferably international).

- Base Specialists graduate of potential personnel demand in all sectors of the economy. The organization of training of highly qualified

personnel potential for work in the field of information and communication technologies;

- Abstract studied and created the republic domestic automated control system of the selection committee of higher education institutions of the Republic of Uzbekistan and others.

Statement of scientific problem. Under the platform does not mean the formation of a centralized system without imposing all the same decisions, and the desire of successive practical steps jointly by research teams:

1. formulate a mutually agreed set of conventions, rules and open standards;

2. prepare a set of models and standard solutions for the implementation of application system adapters, infrastructure services that support different levels of distributed data and applications;

3. create a series of general purpose information systems, following these agreements, utilizing these implementations, allowing a modular organization, increasing functionality;

4. to apply these results to solve the relevant problems of scientific institutions.

All aimed at helping academic institutions to address common information problems in achieving the required integration with other academic institutions.

In general it can be said that information systems research institutions distinguish huge volumes of structured and low data, the distributed nature, heterogeneity, autonomy and different conditions of maintenance, management and policies of access to information sources and services. In such cases, isolated and try to solve the problems of general type, including the following:

Relevant topics build a platform designed to help research teams to make a number of steps towards the integration of heterogeneous scientific information and software resources of individual scientific and educational institutions, providing users with a more effective means of integration and retrieval of information, scientific communication, cooperation and collaboration.

The aim of the study is to develop a virtual exchange platform architecture, the results of scientific work achievements with the possibility of exchange.

The purpose of the study is determined by the objectives of:

- The study of international experience in the development of the architecture of the information environment;

- Formation of the mechanism of realization of scientific achievements and results of the classification;
- Development of software core mechanism and main functions;
- Definition of software and hardware tools to meet the requirements;
- Storage structure information input and editing of data exchange platform;
- Development of a virtual exchange platform;
- Start-up and testing of the exchange platform "on-line" mode;
- Filling the bases of scientific achievements data;
- The establishment and maintenance of security and database copyright;
- Commissioning of a virtual exchange platform;
- Conducting training sessions among users of the platform.

Expected results

It is envisaged implementation of the project in three phases:

1. Sbor information, study of foreign experience in the development of architecture platform information environment; the choice of parameters and procedures for determining the mechanism of formation of scientific results; the analysis of results of scientific research and development and their subsequent classification; development of software core mechanism and main functions.

2. Determination of software and hardware tools to meet the requirements and conditions for the compatibility of integration with the Exchange platform; Development of storage structure information input and editing of data exchange platform; the development of virtual technology exchange platform. Running and testing the exchange platform in the "on-line".

3. Creating and ensuring data security and study of algorithm protection of copyright; the commissioning of a virtual exchange platform; content databases of scientific achievements; conduct trainings among the users of the platform.

It is also characterized by the use of different kinds of search engines: they index an incredibly large amount of information on user request is also issued thousands of pages of information. But they provide delivery-related information is not in a position, as they are based on the analysis of unrelated texts.

On the basis of these general considerations emerged the proposal to create a virtual platform for the exchange of results outlet, qualification and master's works with the possibility of sharing achievements that information space on the one hand, focused primarily

on the researcher as a consumer, but on the other - the limited information generated by and circulated primarily in the university.

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STRUCTURED APPROACH TO USE AND COMPUTER REALIZATION OF DIFFERENT TYPES OF DYNAMIC MODELS

Modern controlled electromechanical systems are largely heterogeneous and complex enough, so the use of a uniform methodology for their study raises considerable difficulties [1]. The complexity of the structure in combination with the complexity of their behavior also requires a new solution of scientific problems.

Modern design methods are based on the aggregate block approach, according to which the model is synthesized mainly from standardized components and some of the unique units. To build the model uses two types of blocks - blocks to the inputs - outputs, which came from the theory of control, and power contacts, which are successfully used in the design of mechanical, hydraulic and electrical systems. Complex models, consisting of components of different physical nature and are equipped with digital control systems, require the simultaneous use of different types of blocks. Next, the model is automatically submitted in the form of a large system of equations to be solved numerically. Automatic generation of total system of equations and choice for its effective numerical method for solving. To provide opportunities in the choice of the method of calculations for the structural elements of the mathematical model should be used structurally - oriented approach, which involves the construction of a model at the level of the structural elements in the form of blocks - algorithms involving Count - topologies [2]. When using the structure - oriented approach, the process of building a model of complex electromechanical system [3] can be divided into the following stages.

Analysis and specification of objectives. In constructing the model, analyze class of problems to be solved. The main goal, which is placed at this stage - the collection of information about the specifics of

the simulated processes and the definition of the necessary requirements for the adequacy and accuracy of the model.

Conducting the decomposition system. If necessary, the first level of decomposition is performed on the physical principle of the system. The system is represented as a set of m elements $\Pi_i^{(1)}, (i = \overline{1, m})$ of a certain set of physical subsystems 1 - level. Since the operation of electromechanical its system of physical subsystems, which are derived from the first level of decomposition, interact with each other through various types of communication (mechanical, hydraulic, pneumatic, electric, etc.), Then the construction of the model is given also the description of relations $F_{\Pi_j}^{(1)} (\Pi_1^{(1)}, \Pi_2^{(1)}, \dots, \Pi_m^{(1)})$, $j = \overline{1, m}$, 1-where the number of existing connections between the subsystems of the first level.

The described process can be carried out in stages, until we get the basic physical subsystem for which to conduct decomposition is not appropriate.

Formation of a mathematical model. For each structural element of the simulated system selects one of the possible options for its mathematical description, based on the analysis of the problem. Synthesis of model elements can be carried out in two ways - on the basis of known physical laws or on the basis of experimental data. These mathematical models can have different forms of description: algebraic, differential, integral, algebraic - differential, integral - differential, etc. In general, we obtain a non-uniform structural mathematical model of the system.

Development of structural - algorithmic model. Since the numerical implementation of the structural mathematical model of the problem is reduced to the numerical implementation of the individual structural elements of the model, which, in turn, derived from the basic set of mathematical models of subsystems, then it makes sense to develop for each element of the base set of algorithms for its numerical implementation subsystems models, It enables the synthesis of models of complex electromechanical systems with a certain basic set of scalar patterns algorithms. This raises the important task - to ensure interoperability of algorithmic software modules regardless of their internal algorithmic methods of implementation.

The introduction of the model parameters and the solution of the problem. In the numerical implementation of the structural elements derived mathematical model it is necessary to calculate the required parameters which, in fact, may not coincide with the known physical

parameters of the original model. Then, for the convenience of working with a computer model should be possible for automatic recalculation of the required parameters.

Register simulation results. At this stage, the calculation results are displayed in the form of numbers, graphs, charts. They are displayed on screen, printed, saved in files with certain image formats. For this it is advisable to build the model so that the control parameters in the present model explicitly.

Accuracy control. To assess the reliability of the results accuracy control solutions should be carried out. Since rigorous analysis accuracy is challenging, in most cases it can be limited to the approximate, but the operational methods of accuracy control. You can use the method of comparing analytical and machine solutions with the same source data. The application of the structural method allows to analyze the accuracy of operation of the individual elements of the structure and on the basis of such estimates make assumptions about the accuracy of the solution as a whole.

Analysis of results and refinement of the model. To improve the adequacy of the computer model should be an analysis of the results and, if necessary, to carry out the correction model. When structural - algorithmic method modeling elements of the structural model of the computer, as a rule, meet certain physical elements, which gives the ability to control and adjust the individual fragments of the model.

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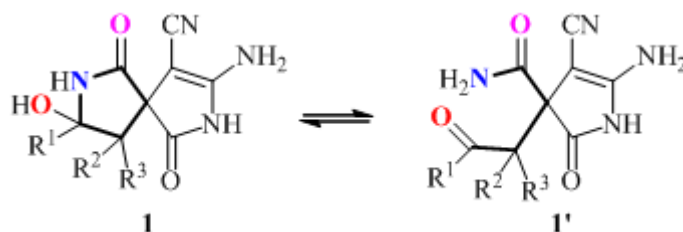
SECTION IV. Chemical sciences

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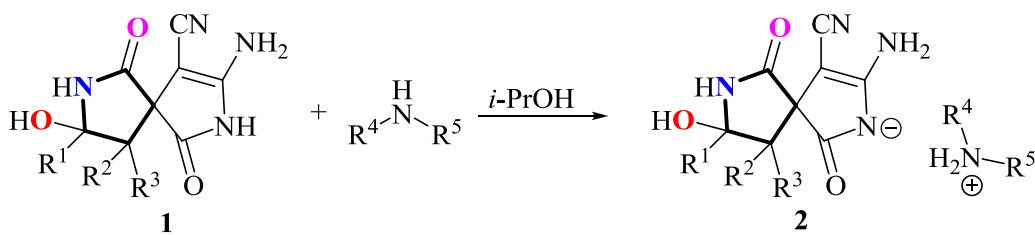
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INTERACTION OF 3-AMINO-8-HYDROXY-1,6-DIOXO-2,7-DIAZASPIRO[4.4]NON-3-ENE-4-CARBONITRILES WITH AMINES

Pyrrolidin-2-ones (lactam) fragment is widespread among natural substances of high biological significance, and as useful intermediates in organic synthesis. To study the behavior of the 5-hydroxylactam fragment was selected 3-amino-8-hydroxy-1,6-dioxo-2,7-diazaspiro[4.4]non-3-ene-4-carbonitriles **1**. Compounds **1** possess not only a conveniently organized system of electronegative heteroatoms permitting them to exist depending on conditions either in cyclic **1** or linear **1'** form but also a number of functional groups extending their synthetic opportunities.



An important stumbling block for exploring their biologic and synthetic activity is their very low solubility in water and in the majority of organic solvents (alcohols, acetonitrile, acetone, 1,4-dioxane, etc.). In order to increase the bioavailability of compounds with 5-hydroxypyrrolidin-2-ones moiety through salt formation and hence increase their water solubility study was conducted spiranes **1** interaction with amines. It found that their interaction in among propan-2-ol at room temperature leads to the formation of ammonium salts of nitrogen dihydropirrol fragment – 3-amino-8-hydroxy-1,6-dioxo-4-cyano-2,7-diazaspiro[4.4]non-3-ene-2-ide **2**.



The structure of synthesized compounds was confirmed by IR, ^1H NMR, ^{13}C NMR and mass spectra. To find the unambiguous position of the anionic center in the obtained salts we studied the structure of a single crystal by X-ray diffraction (XRD) analysis.

Thus, in this study by reacting of 3-amino-8-hydroxy-1,6-dioxo-2,7-diazaspiro[4.4]non-3-ene-4-carbonitriles **1** with amines in the propan-2-ol at room temperature were obtained 3-amino-8-hydroxy-1,6-dioxo-4-cyano-2,7-diazaspiro[4.4]non-3-ene-2-ides **2** having good solubility in water and aqueous solutions certain organic solvents.

The study was carried out under the financial support of the Council for grants of the President of the Russian Federation (stipends for young scientists and postgraduate students SP-2802.2015.4).

Lipin K.V.

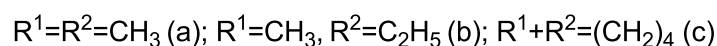
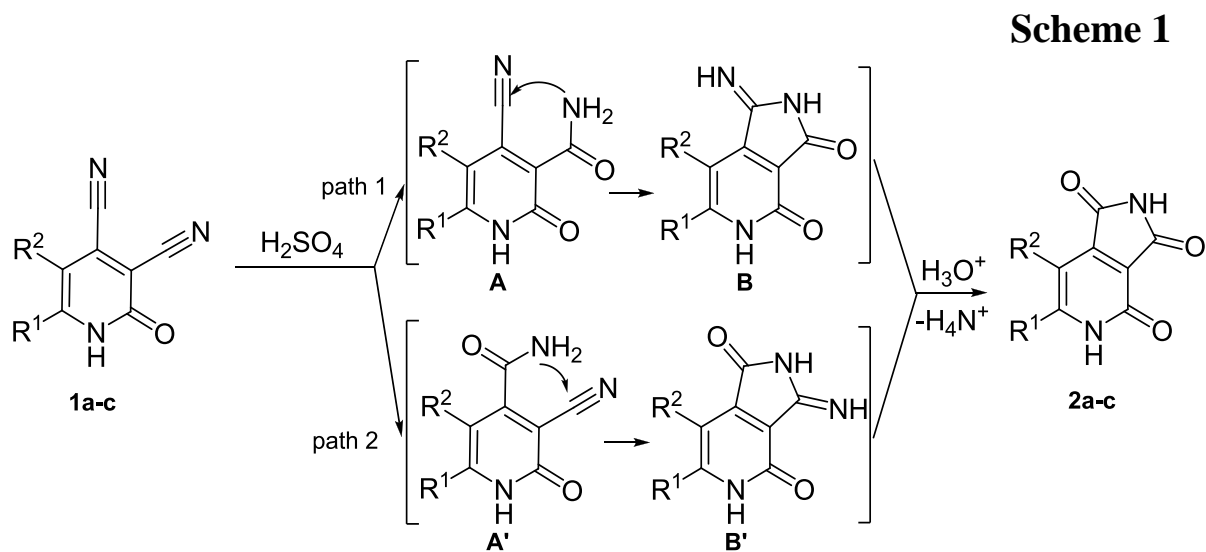
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HYDROLYSIS CYANO GROUPS OF CYANO-2-OXO-1,2-DIHYDROPYRIDINE-3,4-DICARBONITRILES USING ACIDS

The literature describes methods for the preparation of alkyl 2-oxo-1,2-dihydropyridine-3,4-dicarbonitrile. They are prepared by reacting 4-oxoalkane-1,1,2,2-tetracarbonitriles with various acids. In the molecule thereof has two cyano groups which can be converted easily into different classes of organic compounds. The purpose of this research – to study the possibility of such transformations.

From the literature of classical organic chemistry well known that nitriles are hydrolysed in acidic medium. Therefore, we decided to study the interaction of 2-oxo-1,2-dihydropyridine-3,4-dicarbonitrile **1a-c** with acids. Prolonged refluxing in concentrated hydrochloric and

hydrobromic acids not cause any reactions in compounds **1a-c**, only boiling for 1-1.5 hours in concentrated sulfuric acid leads to the formation of 1*H*-pyrrolo [3,4-*c*] pyridine-1,3,4 (2*H*,5*H*) -trione **2a-c** in 58-73% yield (scheme 1).



Formation 1*H*-pyrrolo[3,4-*c*]pyridine-1,3,4(2*H*,5*H*)-trione **2a-c** may start with hydrolysis of the cyanogroup in the third (path 1) or the fourth position (path 2) cycle.

Structures of compounds **2a-c** are considered with IR-, ^1H , ^{13}C NMR-spectroscopy and mass-spectrometry.

Thus, to study the interaction of 2-oxo-1,2-dihydropyridine-3,4-dicarbonitrile with acid, obtained previously unknown 1*H*-pyrrolo[3,4-*c*]pyridine-1,3,4(2*H*,5*H*)-trione, the structure of which is proved by modern methods of analysis.

The study was carried out under the financial support of the Council for grants of the President of the Russian Federation (stipends for young scientists and postgraduate students SP-2782.2015.4).

SECTION V. Biological sciences

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DETERMINATION OF THE OPTIMAL CONDITIONS FOR CULTIVATION OF STRAINS PRODUCING GLUCOSE ISOMERASE

Glucose isomerases is a class of enzymes that catalyze the isomerization reaction, it is intramolecular oxidoreductases subclass, which catalyze the oxidation of one moiety with simultaneous recovery of other parts, because during the reaction oxidized products are not formed, these enzymes are not added to the class of oxidoreductases [1].

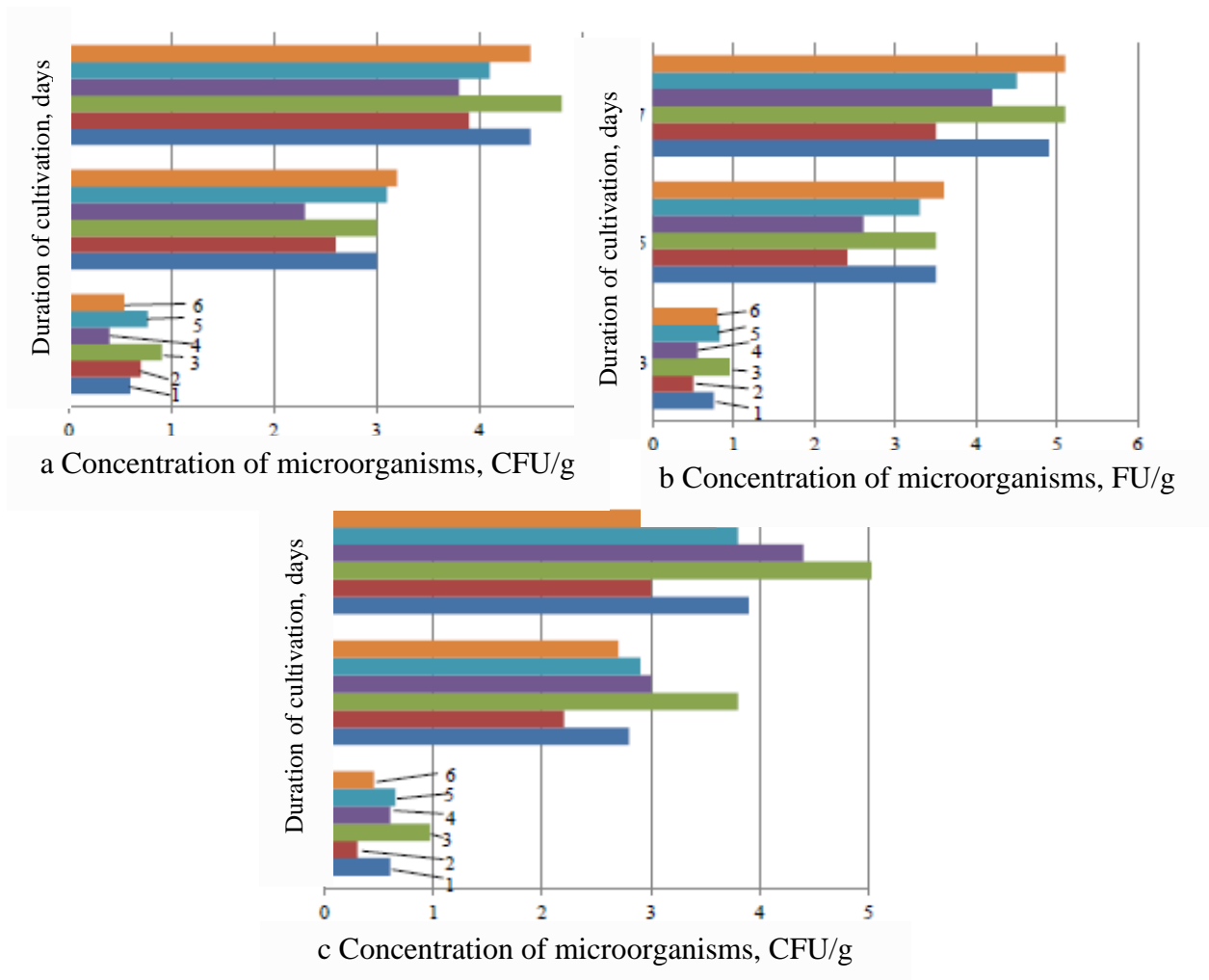
This enzyme plays an important role in the life of animals, plants and microorganisms. Sources producing β -galactosidase are many strains of microorganisms. Biosynthesis of β -galactosidase is a classic example of the induced enzyme synthesis. There is evidence that the inductors for the biosynthesis β -galactosidase can be different, it is noted that in most cases lactose and galactose are the inducers of β -galactosidase biosynthesis. Due to induced enzyme synthesis mechanism, the composition of nutrient medium is very important and especially the carbon sources [2].

Condition of cultivation of strains, producing β -galactosidase, has the significant influence on its biosynthesis. pH of cultural medium has a big influence on the growth of strains. The biosynthetic ability of strains, producing β -galactosidase, can be increased in 1.5-2.5 times in appropriate conditions [3].

Thus the research was devoted to the determination of optimal pH and composition of nutrient medium for microbial strains cultivation.

For choosing the optimal pH for cultivation, the intensity of biomass growth was measured during the seven days of cultivation with pH 6,5, 7,0 and 8,0. The results are on the picture 1.

According to the picture number 1, the optimal active acidity of culture medium for strains *Streptomyces griseofuscus* AC-1318 and *Streptomyces albus* AC-1310 is pH 8,0. For strains *Streptomyces wedmorensis* AC-980, *Bacillus licheniformis* B-3148, *Flavobacteriumjohnsoniae* B-11132 pH 7,0 is more suitable for growth. The strain *Lactobacillus brevis* B-7644 shows better growth with pH 6,5. Also from the picture number 1 we can conclude that the strain *Streptomyces griseofuscus* AC-1318 have the maximum concentration of biomass (5,4 thousand CFU/g) at the end of the seventh day of cultivation with optimal pH.



a – pH 6,5, b – pH 7,0, c – pH 8,0;

Picture 1 – The dynamics of growth of strains, producing the glucose isomerase during the cultivation with different pH
 1 – *Streptomyces wedmorensis* AC-980, 2 – *Lactobacillus brevis* B-7644,
 3 – *Streptomyces griseofuscus* AC-1318, 4 – *Streptomyces albus* AC-1310,
 5 – *Bacillus licheniformis* B-3148,
 6 – *Flavobacteriumjohnsoniae* B-11132

Xylose or xylobiose are using in the cultural medium as an inducing compounds for glucose isomerase production. However the others sources of carbohydrates are also required, such as glucose, sorbitol, mannitol, glycerol, arabinose, starch, lactose. The ratio of the inducing compound, which is xylose to the other source of carbon is changing depend on the type of microbial strain.

Since xylose is an expensive and scarce monosaccharide, often a straw, wheat and rice bran, cereal and cotton husks are used as a source of xylose.

In this study, a mixture of hydrolyzed wheat bran with glucose, sorbitol, mannitol, glycerol, starch, lactose, and arabinose was used as a carbon source. Result of studying the dynamics of growth of the biomass, depending on the carbon source is presented in the table 1.

Table 1 – The growth of biomass during cultivation of strains, producing glucose isomerase on the culture medium with different carbon sources

Carbon source	Biomass concentration, g/l					
	<i>Streptomyces Wedmorensis</i> AC-980	<i>Lactobacillus Brevis</i> B-7644	<i>Streptomyces Griseofuscus</i> AC-1318	<i>Streptomyces Albus</i> AC-1310	<i>Bacillus Licheniformis</i> B-3148	<i>Flavobacteri Um Johnsoniae</i> B-11132
Glucose	0,33±0,01	0,52±0,02	0,60±0,02	0,15±0,01	0,55±0,02	0,45±0,02
Sorbitol	0,40±0,01	0,40±0,02	0,55±0,02	0,32±0,01	0,40±0,02	0,21±0,02
Mannitol	0,25±0,01	0,43±0,02	0,65±0,02	0,26±0,01	0,42±0,02	0,33±0,02
Glycerol	0,44±0,01	0,32±0,02	0,48±0,02	0,35±0,01	0,34±0,02	0,40±0,02
Starch	0,38±0,01	0,54±0,02	0,57±0,02	0,28±0,01	0,49±0,02	0,31±0,02
Lactose	0,35±0,01	0,32±0,02	0,58±0,02	0,20±0,01	0,51±0,02	0,26±0,02
Arabinose	0,39±0,01	0,29±0,02	0,47±0,02	0,25±0,01	0,30±0,02	0,18±0,02

The table 1 shows that the optimum carbon source for cultivation of strain *Streptomyces wedmorensis* AC-980 is a mixture of wheat bran hydrolyzate with glycerin, the maximum concentration of biomass was 0.44 g / l during cultivation on this medium. For the strain *Lactobacillus brevis* B-7644 the optimal source of carbon is a wheat bran hydrolyzate mixture with starch (0.54 g / l) for strain *Streptomyces griseofuscus* AC-1318 is a wheat bran hydrolyzate mixture with mannitol (0.65 g / l). The strain *Streptomyces albus* AC-1310 shows maximum, growth during cultivation on the culture medium which consists a mixture of wheat bran hydrolyzate with glycerol (0.35 g / l). For the strain *Bacillus licheniformis* B-3148 the optimal culture medium contains a mixture of hydrolyzate of wheat bran with glucose (0.55 g / l). During cultivation on the culture medium consisting wheat bran hydrolyzate and glucose

the strain *Flavobacteriumjohnsoniae* B -11,132 demonstrates maximum concentration of biomass (0.45 g / l).

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DETERMINATION OF NUTRIENT MEDIUM FOR BACTERIOCINS SYNTHESIS AND STUDYING OF THEIR PROPERTIES

It is well known that lactic acid bacteria produce a wide range of anti-microbial metabolites which include organic acids, diacetyl, acetoin, hydrogen peroxide, antibiotics and bacteriocins[1]. But bacteriocins are the most effective antimicrobial compounds, which are produced by many bacterial strains and they are widely studied presently. Due to prospective of bacteriocins application in pharmaceutical and food industry, in the last 5 years, research activity on the bacteriocins produced by lactic acid bacteria significantly increased.

Thus, now a lot of information about bacteriocins was found including their mechanisms of action, molecular weight, allowing to define bacteriocins to distinct classes, strains which are more susceptible to bacteriocins action, genetic features.

It was found that mechanisms of action of bacteriocins are various, but in general bacteriocins exert their anti-microbial action by interfering with the cell wall or the membrane of target organisms, either by inhibiting cell wall biosynthesis or causing pore formation, subsequently resulting in death [2].

Many researchers concluded that bacteriocins have ability to kill only close related bacteria [3]. While true for the majority of compounds, it is now evident that bacteriocins may take many forms and elicit bactericidal activity beyond species that are closely related or confined within the same ecological niche. From a practical point of view, the antagonistic target range can be further expanded by adjusting environmental conditions so as to weaken cellular barriers that might otherwise exclude bacteriocins from their cellular receptor or target [4]. That is why the adjustment of optimal condition and composition of nutrient medium for cultivation of strains, producing bacteriocins is so important. Choosing of optimal conditions may help to increase the bacteriocins activity significantly.

The results of research show the effect of nitrogen sources such as ammonium sulfate and urea on the bacteriocins antimicrobial activity. The several strains of lactic acid bacteria were used for experiment: *Lactobacillus plantarum* 124-2 B-884, *Lactobacillus acidophilus* 20 B-2707, *Lactobacillus curvatus* CDN B-8948, *Lactobacillus paracasei* subsp. *paracasei* B-2430.

These strains were cultivated on the nutrient medium, g/l: yeast extract – 5,0; disodium phosphate, potassium – 5,0; sodium chloride – 2,0; magnesium sulfate –0,2, sucrose – 5,0. To this medium ammonium sulfate and urea were added consequentially in the amount 1,5 %.

Cultivation was conducted at temperature 37 °C during 18 hours. After cultivation bacteriocins were isolated by the following method: overnight culture cells were pelleted by centrifugation at 7100 rpm during 15 minutes at 12°C. Then, chloroform was added to the supernatant and stirred on a magnetic stirrer during 20 minutes. Then, centrifugation at 10400 rpm for 20 minutes at 12°C was conducted. In the separation of phases, the precipitate was formed. Upper aqueous layer and the organic layer were carefully decanted. The resuspension was done in 5 - 10 ml of Tris buffer 0,1 M with pH 7,0. Other components which included precipitate, surface precipitate and remains

of chloroform and culture medium were mixed again and centrifuged at 12100 rpm for 15 min. The precipitate was separated.

The measurement of antimicrobial activity was done by the diffusion method against *Escherichia coli* strain. For a control the activity of bacteriocins after cultivation of strains on the medium without additional nitrogen sources was also measured. The results are presented in the table 1.

Table 1 – The effect of additional nitrogen sources on the antimicrobial activity of bacteriocins

Strain of microorganisms	Inhibition zone, mm		
	Nutrient medium without additional nitrogen sources	Nutrient medium with urea	Nutrient medium with ammonium sulfate
<i>Lactobacillus paracasei subsp. paracasei</i> B-2430	-	10	-
<i>Lactobacillus plantarum</i> 124-2 B-884	8	10	10
<i>Lactobacillus curvatus</i> CDN B-8948	9	12	7
<i>Lactobacillus acidophilus</i> 20 B-2707	9	11	8

The obtained results show, that the antimicrobial activity increased when strains were cultivated on the nutrient medium containing urea. Thus, on this medium the zone of inhibition of test-culture was ranged from 10 to 12 mm. After cultivation of strains on the nutrient medium containing ammonium sulfate the zone of inhibition of *Escherichia coli* was ranged from 7 to 10 mm. The lowest activity of isolated bacteriocins was observed after cultivation on the nutrient medium without additional sources. By the results, it is possible to conclude that the adding of urea to the nutrient medium can increase the activity of lactic acid bacteria bacteriocins significantly.

On the second stage of experiment the properties of isolated bacteriocins, producing by lactic acid bacteria, were studied. The stability of bacteriocins to the temperature and pH was determined by measuring their antimicrobial activity against *Escherichia coli* by diffusion method. For determination of temperature effect, after isolation of bacteriocins,

they were incubated at the temperature from 20 to 100 °C during 30 minutes. The results of experiments are presented in the table 2.

After analyzing results, we concluded that bacteriocins of all studied strains showed less antimicrobial activity after incubation at temperature 20°C. The strains *Lactobacillus paracasei subsp. paracasei* B-2430 and *Lactobacillus curvatus* CDN B-8948 started to lose their antimicrobial activity at the temperature 70 °C, showing the zone of inhibition of *Escherichia coli* 9 and 10 mm. The decreasing of antagonistic activity of bacteriocins of strains *Lactobacillus plantarum* 124-2 B-884 and *Lactobacillus acidophilus* 20 B-2707 was observed at the temperature 80 °C, zone of inhibition of *Escherichia coli* decreased to 8 and 9 mm. After incubation of bacteriocins at temperature 90 °C and 100 °C, all of them loosed their antimicrobial properties completely.

Table 2 - The effect of temperature on the antimicrobial activity of bacteriocins

Name of strain	Temperature, °C								
	20	30	40	50	60	70	80	90	100
<i>Lactobacillus paracasei subsp. paracasei</i> B-2430	9	10	10	10	10	9	7	-	-
<i>Lactobacillus plantarum</i> 124-2 B-884	9	10	10	10	10	10	8	-	-
<i>Lactobacillus curvatus</i> CDN B-8948	11	12	12	12	12	10	8		
<i>Lactobacillus acidophilus</i> 20 B-2707	10	11	11	11	11	11	9		

Due to results of research, we discovered that the optimal source of nitrogen for obtaining of bacteriocins of strains *Lactobacillus plantarum* 124-2 B-884, *Lactobacillus acidophilus* 20 B-2707, *Lactobacillus curvatus* CDN B-8948, *Lactobacillus paracasei subsp. paracasei* B-2430 was urea. The results of research also show that bacteriocins of lactic acid bacteria strains were not stable at the temperature ranging from 90 °C.

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SECTION VI. Engineering

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STUDY OF PHYSICAL AND MECHANICAL PROPERTIES OF THE SPECIAL CLOTHING’S MATERIALS IN THE EXPERIMENTAL WEARING

Special clothing for oil industry workers is worked out using the textile v.c. 18422 a/X-m chosen based on the labor results, computer graphic and new technologies [1-3]. It’s to be noted, that during the laboratory tests the impact of basic and harmful industrial factors on the special clothing wasn’t determined. In order to find out the protecting properties of designed special clothing, the industrial tests in the process of experimental wear were carried out in JSC “Master Munay-Gaz

Energo” within the 6 months. Conducting of such experiments is necessary to determine the damaged areas of special clothing materials which bring the loss of its protective functions and shortening of the wear term of special clothing owing to the complex impact of harmful industrial factors [4-5].

To determine the durability properties of special clothing materials at the end of the experimental wear, the laboratory tests according to the GOST 28073-89 on the apparatus AUTOGRAPHAG-I were conducted. The data processing and calculations were conducted with usage of the statistic toolkits of STASTICA.

On the basis of conducted experimental wear the topographical areas of the maximal wear of jacket, namely shelves and backs.

So, the basic goal of the present study is the optimization of process parameters: X_1 – wear duration (days); X_2 – washings (how many times), in which the bursting load has an optimal data.

In order to solve the objectives we have used the planning methods for multifactorial experiments, statistic processing of data tested and searching optimization. For this, there were chosen optimization parameters and most important factors, having an impact on the wear duration and washing. Here with the schedule to provide the experiments was worked out and on the basis of experimental data the mathematical model was designed on which the regulated factors’ impact on the output parameters of the process in the stationary area of the factor space was studied.

Wear duration parameters, wash times and chosen levels of their variations presented in the Table 1.

Table 1 – Wear duration parameters, wash times and chosen levels of their variations

Regulated parameters: encoded(natural)	Encoded levels			Variation intervals
	-1	0	+1	
x_1 – wear duration, days	30	105	180	75
x_2 – washing times	4	14	24	10

On the basis of algorithm offered the program of complete two-factor Experiment was worked out in Excel environ.

During the conducting of the experiment the tests to be duplicated and the it’s used the average value of respond \bar{y}_j , therefore by processing of experimental data s_y^2 was used. $t=2,086$ - is the Students

test, taken from the table value, by the number 6 of Degrees of Freedom.

On the basis of complete two-factor experiment the regression's equation comes as:

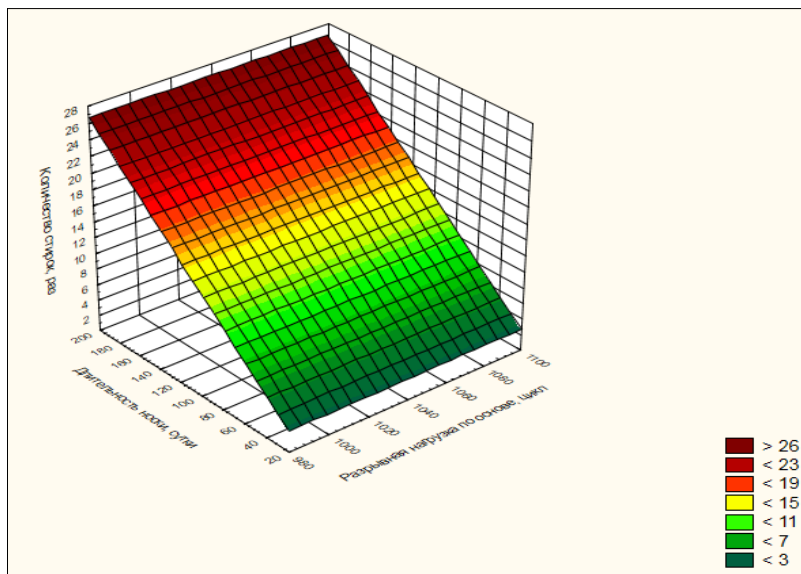
$$Y_R=1047,25-11X_1-21,5X_2 \quad (1).$$

The regression's equation in natural values comes as:

$$Y_R=1092,75-0,146667X_1-2,15X_2 \quad (2).$$

Further, following to the program the calculated values of the respond functions, dispersion adequacy assessment and Fisher's criteria (F-Test) were obtained. The regression equations founded by us are adequate described by experimental data.

In order to get more visual imagination how connected the physical and mechanical properties of the special clothing's wear duration on the other factors, it's designed the volumetric graph, which's presented on the picture 1.



Picture 1 -The dependence of the bursting load on the basis special clothing's shelf from the washing time and wear duration

The surface chart designed is presented in the Picture 1 allows the finding of the best combination of factors, which is hard to determine using the other method with present values.

Thus, on the basis of the studies conducted, the authentic and adequate equations of the regression of controlled parameters of the materials were found out, and they completely well describe the studied parameters of the special clothing materials.

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**THE PROSPECTS OF CREATION OF MULTILEVEL SYSTEM
FOR MONITORING OF THE EARTH'S SURFACE
USING SUPERLIGHT AIRCRAFTS ON SOLAR ENERGY**

Abstract: This paper presents the results of an analysis of existing in the world practice approaches to the creation of high-altitude flight of aerospace vehicles with a height of up to 30,000 meters and proposed alternative design and configuration of the device.

Keywords: aircraft, aerodynamics, solar energy, aerospace shooting, solar panels, batteries.

Development of ultra light atmospheric aerospace vehicles, known as atmospheric satellites (AS) or the classification of UVS International - Exo-stratospheric (ES) [1] for the creation of multi-level monitoring of the territory and providing of regional telecommunication infrastructure system attracts great attention of the world scientific community, and relates to the number of innovative projects.

Traditional uses for these purposes of spacecrafts (SC) provides the first echelon of monitoring, on the altitude 300-600 km, however requires the allocation of significant financial and material resources, and the system does not provide continuous monitoring. In addition, an estimated cost of shooting one km² with a spatial resolution of 1 meter up to \$ 20. [2] The frequency of this survey can be 1 every 4-6 days.

In recent years, in addition to the space satellites, attempts to create a second tier based monitoring atmospheric devices on solar and batteries with heights of the flight up to 30km and the time of flight of how months to several years, which have a much lower cost and greater efficiency. The estimated cost of shooting 1km² with a spatial

resolution of 1 m. Up to \$ 5. The frequency of the shooting like this is constant.

The third echelon of monitoring from 1 to 10 km is provided by aerial photography on the basis of the piloted means or large UAVs (radius of flights to 500 km, permission the 10-50th). The cost of aerial photography makes more than \$1000 for sq.km, without inclusion of cameral works on creation of or thophotomaps.

The fourth echelon of monitoring is occupied by UAVs with flight altitude to 1000 m with the permission the 5-10th, the cost of such shooting will make more than \$500 sq.km, besides cameral works can make 200% of flight cost.

Echelon	Altitude	Cove- rage	Reso- lution	Periodicity	Cost per 1 km2	Orthophoto creation costs
1.Space surveying	from 300 km and above	to 30km	to 1m	in 4-6 days	to 20\$	10% of shooting cost
2.Atmosph eric satellite	to 30km	to 30km	to 1m	constantly	to 5\$	10% of shooting cost
3.Air pho- tography	to 10 km	to 10km	to 0,5m	perhaps daily	to 1000\$	20-30% of shooting cost
4.UAVs up to 1000 m	to 1km	to 1km	to 0.5m	perhaps daily	to 500\$	to 200% of shooting cost

The table shows that the atmospheric satellite occupies a leading position among all levels of aerial photography on the basic parameters: the cost and frequency.

To monitor the vast territory of the Republic of Kazakhstan is now given the important role to aircrafts of second echelon with heights of up to 30km and covering more than 1000 km2. The ability to create such devices appeared only in recent years, thanks to advances in science and the rapid development of innovative technologies in the field of ultra-light and strong materials, and new solar batteries.

Based on an analysis of published material on the subject, it is possible to draw the following conclusions:

In almost all studies, the authors agree that the structure and characteristics of atmospheric satellite must meet certain conditions set out in Table 1.

Table 1

№	Characteristics	Requirements
1.	Cruising speed	Defined as a result of calculations
2.	Flight time	240 hours and more
2.	Flight altitude	up to 30,000 m
3.	Payload	Not less than 20 kg
4.	Maneuverability	Low
5.	Stalling angle	Not less than 20°
6.	Tolerance of roll	to 45°
7.	Permissible overloading	Positive 4g, negative -1g
8.	Area and wingspan	Defined as a result of calculations
9.	Solar batteries	efficiency 23% and more
10.	Rechargeable batteries	Weight density 350 W/kg
11.	Brushless motors	efficiency 92-96%
12.	carbon fibre and glass-fibre plastic	the SW 4.5 g / cc

These characteristics are necessary but not sufficient, because in addition to meeting these requirements, it is necessary to find a structural solution capable of ensuring the operation of the atmospheric satellite in extreme aerodynamic (jet stream), thermodynamic (temperature difference) and radiation conditions. At the same time one of key conditions is the task of support an optimum aerodynamic configuration of the atmospheric satellite.

The aircraft existing today on solar batteries flying at the heights of 10000-23000 meters have a traditional configuration and big wingspan that leads to need using the big console and as a result increasing risk of their fracture in turbulent flows [8,9].

In 2004, NASA published the results of a small wing span aircraft unconventional configuration. Comparison results of the aerodynamic researches of this aircraft with parameters of similar class of air plane are widely used in aviation are presented in Table 2 [10].

As can be seen from table an experimental plane FMX-4 on its flight characteristics superior to the most popular types of light airplanes. Its supporting structure is a spatial farm of aluminum tubes 0.3 mm in thickness, thereby providing a significant gain in weight.

Table 2.

Model	Takeoff weight, kg.	Weight empty, kg.	Payload, kg.	Wing span, m	Wing area, sq. m.	Aspect ratio
Cessna 152	750	520	230	9,8	14,1	6,8
Piper PA-38	750	505	245	10,2	11,2	9,3
Alarus CH 2000	760	490	270	8,64	12,3	6,1
Diamond DA20-C1	745	525	220	10,7	11,2	10,2
FMX-4	525	285	240	4,5	23,4	1,86

In this paper, as a basic configuration for atmospheric satellite settlements was chosen and built a 3D model of the truss designed aircraft with modified diamond-shaped and deltoid airfoils having geometrical and aerodynamic twist. Calculations were performed using complex software Solid Works. Figure 1 shows the solid model and the supporting structure of the aircraft as well as the traditional and truss configuration.

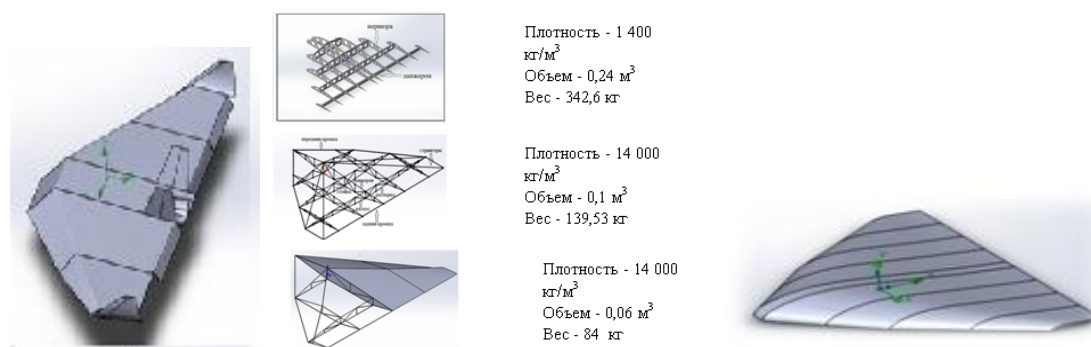


Figure 1. Solid-state model and the constructive solution of the bearing design

To determine the optimal configuration of air foil by values of aerodynamic characteristics were compared the calculated aerodynamic parameters in 15 different polygonal airfoils.

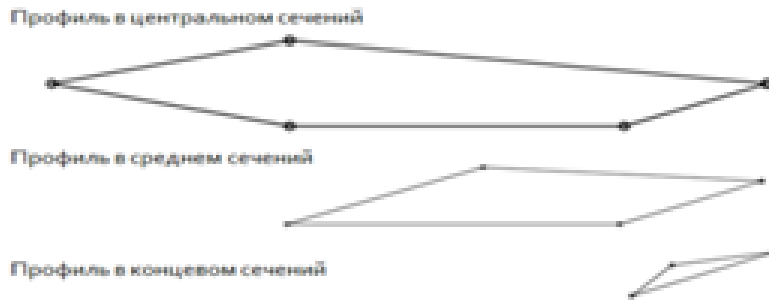
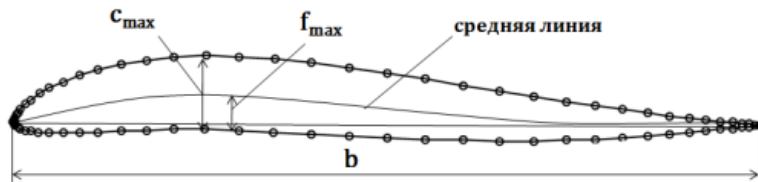


Figure 2. Airfoil of truss design with geometrical and aerodynamic twist



b – хорда профиля
 c_{\max} – наибольшая толщина
 f_{\max} – наибольшая кривизна

Figure 3. S-shaped profile for tailless aircraft

Results of comparison and one of priority airfoil are given in the figure 4.

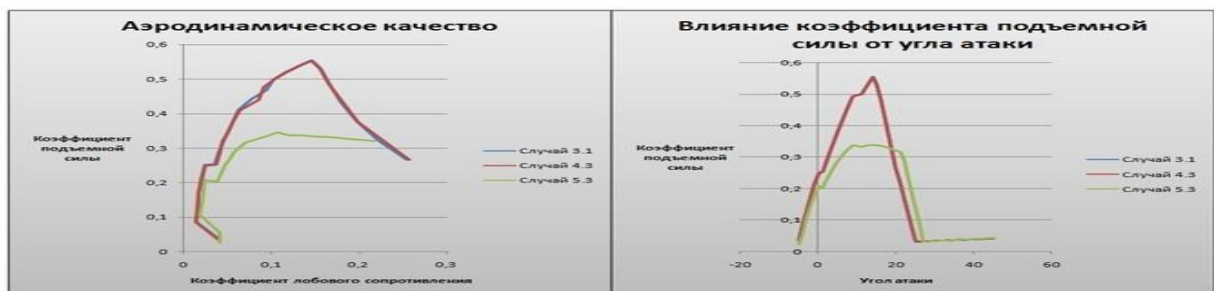


Figure 4. Comparison of aerodynamic characteristics of optimum airfoils.

The calculations which are carried out as a first approximation showed that one of possible configurations of the atmospheric satellite is the configuration of the aircraft with small wingspan (about 25 m) on basis of carbon truss design with shell-wall thickness 0,1 mm.

It is shown that under these conditions, the atmospheric satellite should have a wing area about 200 square meters, and the gross weight must not exceed 400kg, which will provide demand of atmospheric satellite by solar energy. It is shown that the selected configuration of atmospheric satellite at a cruising speed 70m / s (252 km / h) is able to raise to echelon 30 km weight in 400 kg. Assembled and modeled 3D model of chosen design, calculated overall performance of selected configuration of atmospheric satellite.

SUMMARY

The results of the analysis of existing in the world practice approaches to the creation of high-altitude aerospace, proposed alternative design and configuration of the device. Make calculations have shown the effectiveness of the proposed scheme

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SECTION VII. Medical sciences

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DETERMINATION OF THE BACTERICIDAL AND ANTIOXIDANT ACTIVITY OF COCOA BUTTER AND ITS ENZYMATIC HYDROLYSATES

Gingival inflammation and dental caries are now considered as the main diseases of the oral cavity in both children and adults, even though a great number of methods are used for their prevention and treatment [2]. The most of traditional preventive measures, such as limiting of using of foods and drinks containing sugar, the removal of dental plaque, and others are not effective in most cases [3].

Microorganisms of oral cavity such as the *Streptococcus mutans* and *Candida albicans* have significant role in the development of caries.

According to literature coconut oil contains lauric acid which is able to destroy cell walls, permeate to cell membrane and destroy it, to inhibit enzyme synthesis, to kill bacteria [4]. Due to this studying and evaluation bactericidal and antioxidant activity of coconut oil and its hydrolyzates is an important goal.

Preparation of samples and research were conducted in aseptically conditions. The analyses of coconut oil was implemented using enzyme lipase from pig gastric Type II with activity 100-500 u / mg of protein. Olive oil was used as the substrate. (Sigma-Aldrich, USA), the fermentation was conducted at a temperature of 37 °C, pH 7.7 for 4 hours, 8 hours, 14 hours, and 24 hours [1].

The bactericidal activity was determined using reference strains of the following microorganisms: *E. coli*, *St. aureus*, *C. albicans*, *B. subtilis*, *Ps. aeruginosae*, *Str. mutans*. Cultures were grown at 37 °C for 24 hours. Daily culture was diluted in ratio 1:1000 with sterile 0.9% sodium chloride solution.

Results of studying the bactericidal activity of enzymatic hydrolysates of coconut oil are shown in Table 1 and Figure 1.

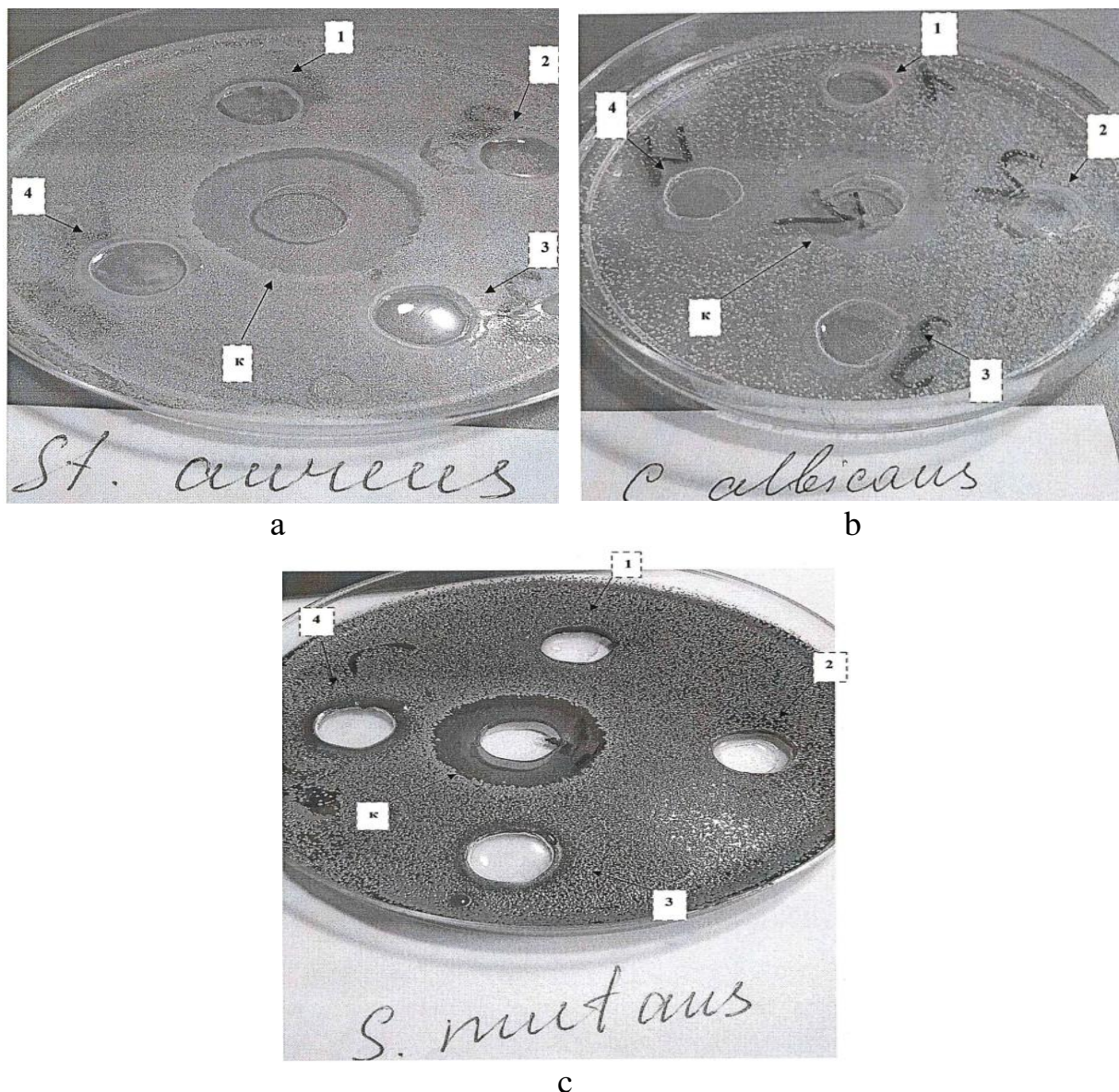
Table 1 – Results of studying of bactericidal properties of coconut oil enzymatic hydrolysates

№	Name of strain	Inhibition zone of test-culture, mm				
		Sample № 1	Sample № 2	Sample № 3	Sample № 4	Control solution of chlorhexidine, 0,5%
1	<i>E. coli</i>	0	0	0	0	19,0
2	<i>St. aureus</i>	12,5	0	12,0	13,5	25,0
3	<i>C. albicans</i>	13,5	0	0	15,5	22,0
4	<i>B. subtilis</i>	0	0	0	0	22,0
5	<i>Ps. aeruginosae</i>	0	0	0	0	20,0
6	<i>Str. mutans</i>	0	0	14,5	15,0	20,0

Note: the sample №1 – hydrolyzation during 4 hours, the sample №2 - hydrolyzation during 8 hours, the sample №3 hydrolyzation during hydrolyzate 14 hours, the sample №4 - hydrolyzation during 24 hours

According to results presented on the picture 1 and in the table 1, the coconut oil hydrolysate sample №1 causes inhibition zone of strains *St. aureus* – 12,5 mm and *C. albicans* – 13,5 mm. The strain is not active in the relation to strains *E. coli*, *B. subtilis*, *Ps. aeruginosae*, *Str. mutans*.

The coconut oil hydrolysate sample №2 was inactive in the relation to strains *E. coli*, *St. aureus*, *C. albicans*, *B. subtilis*, *Ps. aeruginosae*, *Str. mutans*.



Picture 1 – Inhibition zone of control strains on the nutrient medium:
 a – *Staphylococcus aureus*; b – *Candida albicans*; c – *Streptococcus mutans*;
 1 – sample №1; 2 – sample №2; 3 – sample №3; 4 – sample №5; κ – control

The hydrolyzate of coconut oil sample №3 causes inhibition of the following strains: *St. aureus* - 12,0 mm, *Str. mutans* - 14,5 mm. The sample was inert in the relation to the strains *E. coli*, *C. albicans*, *B. subtilis*, *Ps. Aeruginosae*.

The hydrolyzate of coconut oil sample №4 causes growth retardation in the zone of direct contact with the control strains: *St. aureus* - 13,5 mm, *C. albicans*- 15,5 mm, *Str. mutans*- 15,0 mm. In the relation to the strains *E. coli*, *B. subtilis*, *Ps. aeruginosae* the sample was inert.

Thus the only hydrolysate of coconut oil which had high bactericidal activity against strains, playing the main role in the caries development (*Streptococcus mutans* and *Candida albicans*), was the which was obtained during 24 hours of hydrolysis. The inhibition zones were 15,5 mm against of *C. albicans* and 15,0 mm against *Str. mutans*.

Antioxidant activity of coconut oil and its enzymatic hydrolysates was measured according to the method described by Kao (1995). The initial solution of β -phycoerythrin was prepared by dissolving of 1 mg of component in phosphate buffer (0,2 M, pH 7,0). The initial solution was stored in the fridge. The working solution was prepared by mixing 300 l of a stock solution and 13.4 ml of phosphate buffer immediately before using. A solution of 2,2'-azobis (2-amidinopropane) dihydrochloride (AAPH) was prepared before the test. For this purpose 60 mg of AAPH was dissolved in 5 ml of phosphate buffer. A solution of 6-hydroxy-2,5,7,8- tetramethylchroman-2-carboxylic acid (Trolox) was prepared by dissolving 5 mg in 200 ml of 0.2 M phosphate buffer as a stock solution (100 microns). For obtaining a working solution 1 ml stock solution was mixed with 9 ml of phosphate buffer. The stock solution was stored at 2 °C. Phosphate buffer was prepared by mixing solutions 0,75M NaH₂PO₄ and K₂HPO₄ 61.6: 38.9 v / v. The mixture was then diluted 1: 9 with distilled water and the pH adjusted to 7.0. Working solution (0.2 M) was stored at 2 °C.

For evaluation of antioxidant activity the samples were diluted in 100 times and the control buffer was mixed with the reaction mixture. The level of safety from β -phycoerythrin oxidation was measured by determination of relative fluorescence at 595 nm and at 535 nm for 70-minute period.

In this analysis, the total capacity of absorption of oxygen radicals (Trolox-equivalent) is directly proportional to the area under the curve of the kinetic constructed relative fluorescence values and time. In order to correct any possible deviations the value of the analyzed samples was expressed in the reference to the amount and concentration of Trolox and values were expressed as Trolox-equivalent (Cao et al., 1995). All reactions were performed in a 48-well plate. In each well 20 l of the respective sample was mixed with 160 l of working solution containing β -phycoerythrin. Immediately prior to measurement AAPH 20 ul was added to each well to initiate the reaction. The plate was covered and placed in the analyzer. In the analysis of the ability of compounds to protect phycoerythrin β -oxidation was monitored by the decay curve. Quantitative measurement was achieved by determining the net

protection area under the decay curve of β -phycoerythrin in the presence AAPH.

For counting of value expressing oxygen radicals absorption, the next equation was used

$$\text{ORAC} = X \cdot K \cdot (S_{\text{sample}} - S_{\text{blank}}) / (S_{\text{trolox}} - S_{\text{blank}}),$$

where X - the sample volume,

l; K - the dilution factor;

S represents the area under the curve corresponding to the index;

sample - sample, blank - control.

The results of measuring of cocoa butter antioxidant activity and its enzymatic hydrolyzates antioxidant activity are shown on the Figure 2.

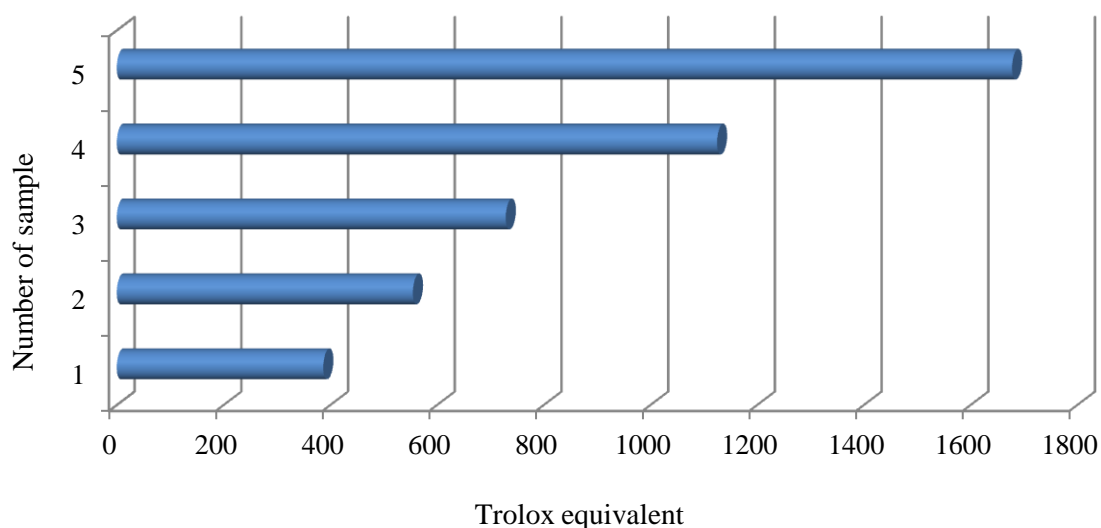


Figure 2 - The results of the determination of antioxidant activity of coconut oil and its enzymatic hydrolyzates: 1 - Control (coconut oil); 2 – hydrolyzation during 4 hours; 3 - hydrolyzation during 8 hours; 4 – hydrolyzation during 14 hours; 5 - hydrolyzation during 24 hours

According to the data presented on the picture 2, the hydrolysate of coconut oil, which was hydrolysed during 24 hours, had the maximum antioxidant activity (trolox equivalent 1678). The minimum activity had the coconut oil which was not hydrolysed (trolox equivalent 387).

According to the obtained results, the fermented hydrolysate of coconut oil obtained during 24 hours of hydrolysis was chosen for the next research, related to the determination of concentration for inhibition of *Streptococcus mutans* and *Candida albicans* growth and development.

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FEATURES OF MOTOR-SECRETORYCAL VIOLATIONS IN GERD IN COMBINATION WITH DIABETES TYPE II AT PERSONS OF YOUNG AGE

GERD today has become one of the key [1, 3, 4] problems of modern medicine. Despite substantial progress in studying this disease, a significant portion of the key issues associated with it, remain without answers [2, 3, 6, 10, 11]. This significantly aggravates the problem of uncontrollable growth in her combined pathology, among which one of leading places occupies sugar diabetes type II [4, 5, 8]. The latter significantly modifies pathogenesis of GERD, its clinical course, and that, in turn, pathogenesis and peculiarities of a clinical course of diabetes [6, 7, 9]. Especially important is the study of this problem for young persons who have just begun the formation of these diseases and because of their timely and comprehensive diagnosis and differentiated therapy can significantly improve the prognosis of this combined pathology and to improve the quality of life of patients, which will

contribute to the solution not only medical but also a social component to this problem. Given that the pathogenesis of GERD one of the leading places occupies the motor-secretory disorders, the aim of our work was the study of their characteristics in patients with GERD associated with diabetes type II.

Materials and methods. For the study we have taken two groups of patients. The first consisted of 28 patients aged from 19 to 35 years old, suffering from GERD without associated pathology. The second group included 24 patients aged 22 to 35 years old suffering from GERD associated with diabetes II type. The control group consisted of 15 practically healthy persons of the same age and gender. On the state of secretory disorders was judged by the data of intragastric pH-metry defined by the apparatus IAG-2 (made in Ukraine). Status of motor-evacuation disorders was judged with the help of gastrokinesography determined on gastrokinesograph (made in Ukraine) and ultrasonic research method with a water load, which was determined by the width of the lower third of the esophagus, the diameter of the diaphragmatic aperture, the thickness of the wall of the esophagus and the duration of gastroesophageal reflux (about time flowing liquid from the cavity of the stomach into the esophagus) that runs on the machine ULTIMA pro-30 (made in Ukraine). Statistical data processing was performed using Microsoft Excel 2007 and Windows STATISTIKA 6.0, and used parametric and non-parametric tests for statistical evaluation of the results.

The results of the research. In result of the conducted researches it was established that the patients of the second group (GERD combined with diabetes type II) are authentic secretory disorders, in which the average pH in the corpus was $1,38 \pm 0,09$, and antrum of $4.3 \pm 0,52$ at the rate of 1.72 ± 0.12 and $7,3 \pm 0,44$ respectively. At the time, as in patients with isolated GERD the average pH value in the rule was $1.10 \pm 0,08$, and in antrum $5,2 \pm 0,61$. When analyzing the state of the motor-evacuation disorders, it was noted that patients of the second group in 83% of cases prevailed of bradygastria, and the first group of patients in 71% of cases of tachygastria. The duration of gastroesophageal reflux by ultrasound was noted in most patients of the second group, in comparison to patients of the first group. Simultaneously, they also recorded the highest rates of esophageal diaphragmatic aperture and lower third of the esophagus, which was 1.97 ± 0.17 cm of 2.71 ± 0.15 cm, respectively, at the rate of $1.52 \pm 0,13$ cm, $2,12 \pm 0,11$ cm. At the same time, patients of the second group, these figures stood at 1.79 ± 0.15 cm, of 2.43 ± 0.14 cm, respectively.

At the same time, patients of the first group were observed a clear correlation between the severity of motor-secretory disorders, the indicators of blood sugar and duration of diabetes history.

Insights

1. It is shown that GERD patients with diabetes type II secretory marked reliable changes in which to front out reducing alkalizing function of the antrum, lower as compared to control individuals, and patients with isolated GERD, during that time, as indicators of aggression of gastric juice in them, although exceeded the reliable rate, but was lower than in patients with isolated GERD

2. It was found that patients with GERD with concomitant diabetes II type is observed reliable motor-secretory disorders, among which there is a reliable tendency for bradygastria and gastrostasis that in comparison with individuals suffering from GERD without concomitant pathology, which comes to the fore authentic tachygastria and the decrease in the reverse peristalsis

3. A clear correlation between the degree of the ability of the secretory, motor-evacuation disorders and glucose levels in patients with GERD, associated with diabetes mellitus II type

4. The data shown indicate different pathogenetic mechanisms of motor-secretory disorders in GERD with diabetes type II compared with isolated GERD that requires a variety of differentiated approaches to their correction.

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SECTION VIII. Agricultural science

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THE INFLUENCE OF FERTILIZER DERIVED FROM SEWAGE SLUDGE ON THE YIELD OF THE WINTER WHEAT

To obtain high yields the winter wheat grain at crop harvested late after its predecessors requires the introduction of high doses of mineral, especially nitrogen fertilizer, which is not always justified from an economic and environmental point of view [1].

This study describes the results of previously developed fertilizer produced using biotechnology methods (sewage sludge processing poultry farms using microorganisms of the consortium) on the black earth soils of Western Siberia.

As an experienced cultures to evaluate the efficacy of developed fertilizer selected zoned cold-resistant varieties "Sceptre" and "Zimushka" winter wheat. Sowing of wheat produced closed drills with seeding rate of 6.0 mln. germinating seeds per hectare (~ 260 kg / ha). The experience was laid on plots of 50 m². The test was performed in triplicate.

Applying fertilizer increases the quality of wheat crop structure indicators (table 4.2.3).

Maximum weight of 1000 grains of wheat was observed in the variant of the experiment, which used - designed organic-fertilizer application rate of 150 g/m² - 44 g, and organo-mineral fertilizer "Universal" (consumption g/m² 150) and 44 g of the variety "Sceptre" and 45 and 44 g for the "Zimushka" varieties respectively.

Confirming the data presented in the study [2], we conclude that the change in the mass of 1000 grains, depending on the variants of the experiment is characterized by the biological characteristics of winter wheat varieties and environmental conditions however the relative size of the grain is stored.

Table 4.2.3 – Changing the productivity and performance of winter wheat from the use of organo-mineral fertilizers, t / ha

Variant	Yield, t / ha	Increase, ± t / ha	Weight of 1000 grains, g	Natural g, g / L	Protein %	Starch %	Ash%
Sceptre							
Designed fertilizer (Flow rate of 100 kg / m ²)	4,15	0,89	40,00	770,00	14,15	68,54	1,70
Designed fertilizer (Flow rate 150 g / m ²)	4,63	1,25	44,00	783,00	15,02	67,00	1,63
Designed fertilizer (Flow rate 200 g / m ²)	4,13	0,92	41,00	772,06	14,25	63,34	1,54
Organic and mineral fertilizers "Universal" (Flow rate 150 g / m ²)	4,23	1,12	44,00	783,00	14,76	68,55	1,73
Control (Without fertilizers)	3,18	-	39,00	758,00	13,20	63,70	1,94
Zimushka							
Designed fertilizer (Flow rate of 100 kg / m ²)	4,33	1,05	42,00	784,00	14,56	70,70	1,90
Designed fertilizer (Flow rate 150 g / m ²)	4,42	1,15	45,00	789,00	15,10	71,54	1,62
Designed fertilizer (Flow rate 200 g / m ²)	4,13	1,13	43,00	786,00	14,58	70,79	1,70
Organic and mineral fertilizers "Universal" (Flow rate 150 g / m ²)	4,53	1,11	44,00	787,00	15,00	69,03	1,69
Control (Without fertilizers)	3,17	-	41,00	769,00	14,32	66,64	2,01

The experiments set options for grains obtained from the fertilizer had unequal nature, the rate of which varied between 758-783 g / 1 for the variety "Sceptre" and large grains observed in nature "Zimushka" variety - within 769 - 789 g / 1. On average variant of the experiment with the introduction of the developed organic-mineral fertilizer application rate of 150 g / m² and organo-mineral fertilizers "Universal" (consumption of 150 g / m²) have the highest rates for the variety of nature "Sceptre" and "Zimushka".

Thus, as a result of studies found a significant positive impact of the developed organic fertilizer on yield "Sceptre" and "Zimushka" varieties of wheat in the application rate of 150 g / m².

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SECTION IX. Historical Sciences

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IMAGE OF A WOMAN IN CINEMATOGRAPHY OF THE THIRD REICH (1933-1945)

Annotation: The article presents character types of women in German cinematography of 1933-1945s in consideration of ideological principles of the Nazi regime. Besides, for each character type the article gives examples of some films, showing peculiarities of given character and its designated specific propaganda goal.

Key words: Cinematography of the Third Reich, character types, image of a woman.

In cinematography of the Third Reich special attention was paid to the subject of women. Nazi cinema-policy was oriented at creating in Germans' mind an image of an Aryan woman and mother in the course of Nazi ideology. At annual conventions of NSDAP Nazi functionaries in their speeches focused on special destiny of a woman in the Nazi community: "...in Germany this became a done deal that a woman reigns supreme as a mother, a faithful companion of her husband and an equal partner of people's community", "...the woman's mission is to be beautiful and give birth to children", "Bringing a child into the world she fights for the whole nation" [1]. However, giving a closer look at character types in Nazi films, we can notice that they were not limited to the image of perfect mother and there was a wide variety of them. Hence, the goal of our research is to determine the character types of women in the context of Nazi films.

Demonstration of woman's image in the contents of the Third Reich films corresponded to the priorities of Nazi aggregation. Let us turn to these character types.

Character type "a socialite". It can be particularly clearly observed in the following films: "The Court Theater", "The Model Husband", "Marriage Round Dance", "Women are better Diplomats", "Strange Love", etc. Such character type made it possible to demonstrate using appearance for mercenary motives: "her charm was just an instrument for gaining power" [2, p. 120]. In films the above-mentioned character type manifests itself as confrontation between man's and woman's nature, where a man still bears the palm. Besides, the central figure is a woman who deals with man's problems using her feminine wiles.

Character type "a vamp" complements "a socialite" type in many aspects, which, undoubtedly, contrasts with the image of an ideal woman, promoted by national socialists. It is brightly demonstrated in such films as "Music in the Blood", "Stradivari", "A Love Song", "I Withhold Evidence", "Dance on the Volcano". In the story lines of films the function of "a vamp" is to act as an arbiter of destinies of people of different status (the military, play actors).

- Character type "a female victim". The theme of a victim in Nazism was cross-cutting; it pervaded all spheres of life. In cinematography a female victim was possessed by fanatical love or family honour, but at the same time obeyed a man. The models of female victim's life journey were such films as "The Unknown Woman", "Jew Süß", "Fräulein", "Angelica".

Researcher and specialist in German studies A.V. Vasilchenko notes that “this character type (a female victim) corresponded to some extent to National Socialist notion that a woman must find her high calling in this self-sacrifice” [2, p.101]. The background for the victim’s journey was the social situation (marginality, refusal to build a career for the sake of family welfare, losing a loved one, etc).

Character type “Fräulein” (an unmarried woman)” was typical for the National Socialist ideology. Fräulein was some kind of a setting for men. The main qualities of this character type are fidelity, decency and innocence. However, along with this, implicit and explicit borrowing of masculine profile takes place. Defloration became general reckoning for such actions. The character type is presented in the following films: “The Knights of East Africa”, “Farewell Waltz”, “Lords of the Earth”, “Rivals of the Air”, “Mary the Floater”.

- Character type “a sporty girl” (films “La Habanera”, “Olympia”) was popular due to the principles of Nazi authorities concerning a necessity of youngsters’ physical education. It should be noted, that in 1930s the sporty girl image defeated the type of a socialite. It was the sporty girl image that made it possible to instill in the youth courage, adroitness and strength of character.

- Character type “mother” was poorly presented in the Nazi cinematography. It was a secondary role (films “Stormy Flight to Claudia”, “Two women”, “Hitlerjunge Quex”). Besides, two key ideas can be observed: 1. An Aryan woman has special qualities of maternity, love and care according to the Nazi formula “Kinder, Kirche, Küche” (“children, church, kitchen”). 2. Under stress of life circumstances an Aryan woman will find a way to return back to her family.

To sum up, having analyzed the determined character types, presented in cinematography of the Third Reich, it can be observed that they show ideological narrative which corresponds to the Nazi worldview.

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SOCIAL GOVERNMENTAL POLICY OF FRG DURING THE L. ERHARD LEADERSHIP

The era of Adenauer finished in October, 1963. The founding father of the “economic miracle” Ludwig Erhard planned to become the Chancellor’s successor. It was hard for the community, which had got strongly attached to the leader who had just left the office, to adjust to new realities. Many of those who knew Erhard supposed, [6, p.134] that as a Chancellor he would have managed to do hardly anything from what Adenauer had done and put into effect. Nevertheless, the activities, which Erhard performed as a Minister of Economy, helped him to gain prestige [2, p.211]. Relatively speaking, his previous activities made it possible for him to take the office of a Chancellor later on.

Erhard’s promises, given in parliamentary elections in 1965, were quite generous. Socio-political gifts, presented to electors, could not be commensurate with those public expenditures which were growing faster than national income, which resulted in budget challenges. This made the government take not really popular measures [5, p.218].

Erhard did not want to experiment with social policy. The point at issue was that the new Chancellor talked about so-called “mature community” which is contrary to unified socialist community. In other words, the governmental policy was still oriented at socio-market economy as it was during Adenauer’s leadership. Political activity of Erhard and his government involved attempts to encourage the middle class, since it was the middle class which the internal market was oriented at, because they were the target consumers of national goods which, in their turn, gave a socioeconomic impetus to the country [2, p.211-212]. Generally, the country’s welfare depended on the internal potential and national resources.

Here are some measures which Erhard managed to put into action pursuant to the act, approved as early as in the mid 1950s. Among them there is an increase of payments to war victims and children’s allowance, which was already below poverty line. Moreover, income tax was reduced which helped to liquidate financial challenges that people faced every so often. Tax-free minimum wage was established; rent subsidy rate was increased [1, p.430]. These measures raised the government’s prestige, which was, undoubtedly, very important in the

activities, held by the government and supported by the governing coalition CDU/CSU, since they were interdependent in the political arena.

Erhard managed to do what his predecessor had not done – he declared “the end of after-war time”, which, relatively speaking, should not have been done. It appears that Adenauer understood that, and he knew that such declarations would lead to rethinking of the past and would finally provoke civil conflicts [1, p.431], as it actually happened.

It was the declaration that prompted people to rethink the past and the citizen’s responsibility for the actions, performed by the Third Reich government. Pandora’s box was opened. There were lots of debates on this question, criminal proceedings were initiated, investigations were carried out, etc [4, p.188]. However, such measures did not pave the way for strengthening of public order, otherwise, they only disunited people.

Social status of citizens in the country, headed by L. Erhard, was at sufficiently high level this time. In this regard, the requirements for the government differed from those before. Social policy transformed – now it served not as relief aid but as a warranty of dignified and self-sustainable life.

Birth rate fell as a result of the new “post-material” style and way of living, where a small family was the upmost, [2, p.217] the everyday life of whom was formed not by norms of morality but by finances. People increasingly spent their leisure time at home. People started talking about “politics in the kitchen”. All of this became possible due to development of technology. Events were broadcasted live, it became a public boom, number of TV sets in FRG in 1960s increased by four times. This contributed to equalization of life of western Germans.

By mid 60s the economic growth rate had decelerated. For that matter Erhard and his government had a tough time, production in FRG tangibly dropped. This led to rise in unemployment (about half a million people became unemployed), and, as a result, people’s distrust of the ruling establishment.

However, a standard of living continued to be very high. The situation in labour market made it possible to hope for the best, since a balance in the employment sector was struck [3, p.588-589].

What caused major political impact for Erhard’s government was the Fiscal (Budget) Crisis. In 1966 in order to handle the difficult financial situation the Cabinet drafted a new federal budget statement, stipulating harsh austerity measures. However, after some time political differences between CDU/CSU and FDP (the opposition) locked the

budget question and turned it into the crisis of “the Chancellor” [1, p.432]. As a result of this L. Erhard resigned office.

In conclusion, it can be understood, how distinct the policy of L. Erhard and his government was. He attempted to achieve a social goal, particularly, to leave behind the gap between the rich and the poor, and he tried to maximally develop the middle class. Time showed, that he had not managed to do it, but, nevertheless, he had made an attempt to work in this direction.

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SOME THOUGHTS ON THE STUDY OF THE EVOLUTION OF POLITICAL PROCESSES IN UZBEKISTAN IN 1989-1991

As is known, in the second half of the 80s of the twentieth century, the deepening socio-economic crisis in the former Soviet Union had assumed a systematic character. As a result of the stagnation increased in every area, the widespread social and political disorder in the countries of socialist camp and the erosion of bipolar world order, the collapse of the USSR became an objective reality.

The issue of independence became a main direction of the social and political processes in Uzbekistan at the end of the 80s - in the early 90s. However, nowadays we can meet some sources, which state that the path of independence started from the date of adoption of the Law "On the Fundamentals of the State Independence of the Republic of Uzbekistan" (August 31, 1991). In fact, the way of Uzbekistan's independence started before the official announcement.

The first official idea of independence of Uzbekistan was reflected in Islam Karimov's speech at the meeting of the Council of Ministers of the Uzbek Soviet Socialist Republic on June 24, 1989, entitled "We cannot live henceforth as of old and time itself will not allow this" [1, p. 32-45]. This fact can be fully conscious by detailed scientific analysis of the content and essence of the speech.

It will not be wrong to assert that Islam Karimov's governing work in Uzbekistan started with such noble and good practices as protection of fundamental interests of the country and the rights of citizens, restoration of crushed rights of Uzbek people. In particular, it was evident in crucial conditions, when as a leader he got at the roots of "Ferghana events", stopped the political repression entitled "Cotton case", "Uzbek case", lawless trials and bent every effort to the justification of unfair convicted persons, took upon his shoulder the entire responsibility for the fortune of nation, strengthened the trust of the people of today and the future, finally called to unite all healthy forces on the path of national progress, whereas the soviet totalitarian regime was still in power.

Therefore, the most recent pages of history of Uzbekistan are inseparable with the name of this politician. The independence of Uzbekistan was a great historical event as logical consequence of hard struggle, bravery and self-sacrifice. Thus, this period is a high priority objective for large-scale, thorough researches. As we look at the way of the independence for 1989-1991, political leadership of Islam Karimov can be noted in the following vital processes in Uzbekistan:

- The growth of national consciousness;
- The Uzbek language got an official status;
- The implementation of the institute of presidency;
- The establishment of the new executive power - Cabinet of Ministers in a form and content of democracy;
- The adoption of the Declaration of Sovereignty of the Uzbek SSR;
- The constitutional reforms and the processes of drafting the Constitution of independent Uzbekistan;

- The preparation and adoption of new state symbols;
- The restoration of national values and holidays;
- The transfer of the state-owned enterprises, institutions and organizations of Uzbek SSR subordinated to the Union center, to the jurisdiction of the republic;
- Providing wise and brave politics during the August Coup in 1991;
- The termination of any contacts with the Union center, including the CPSU;
- The transfer of the military and law-enforcement bodies subordinated to the Union center, to the jurisdiction of the republic;
- The adoption of the Law “On the Fundamentals of the State Independence of the Republic of Uzbekistan”, and the official announcement of political sovereignty.

The independence has created a solid foundation for the completely new restoration of the national state, the implementation of the reforms firmly dedicated to the modernization and renewal in every area of the country. Today, Uzbekistan has reached the remarkable achievements in political, social, economic, spiritual, educational and security, in short, all sectors of society. The country's first President Islam Karimov noted that “Indeed, Uzbekistan, which was one of the most backward republics of the former Soviet Union with low economic potential and standard of living, a raw materials appendage supplying mainly cotton, in a historically short period of time has become a modern state with a stably developing, diversified economy, and it is an objective reality causing the admiration of many leading international analysts and experts.” [2, p. 4].

For this reason, it is required to consolidate these achievements, deeply study the historical processes, lying on their basis, especially political and social processes in 1989-1991. In this respect, the first President of Uzbekistan Islam Karimov’s words “it is necessary to equip the rising generation with the lessons of history, historical truth” [3, p.163] are noteworthy.

In our opinion, it is not enough for science only the recognition of that the cornerstone of independent Uzbekistan had been laid in 1989-1991. Clarifying the essence of socio-economic and political situation on the eve of independence in the context of universal values still remains an important issue. Therefore, new approaches for the study of the processes of this period are needed.

First. After a deep analysis of the political, economic, social, spiritual and educational reasons for the degradation of former Soviet state, we can scientifically justify that the collapse of the system was the result of activities contrary to the laws of social development. Unfortunately, in many of the currently existing scientific literatures causes of the crisis are searched not from the internal systemic problems, but from interpersonal relationships or external factors.

Second. The political processes that took place in Uzbekistan on the eve of independence should be compared with the other former Soviet republics. Otherwise, it will be difficult to express an objective reality and understand the road of Uzbekistan's independent development is a unique democratic experience. The study of the causes of the fact that the former Soviet republics, which had almost an equal opportunity in 1989-1991, are now in various stages of development, is extremely important for the future.

Third. When revealing the specifics of the socio-political processes in 1989-1991, it should be given an attention to the fact, that the first time in the history began the practice of building a democratic, law-governed state and civil society in Uzbekistan and historical dreams of the Uzbek people came true. The ideological-political importance of the adoption of the Law on the state language (October 21, 1989), Declaration of sovereignty (June 20, 1990) led for the restoration of national identity and pride in Uzbekistan.

In addition, the legal system of independent Uzbekistan was founded in these years. Introduction of the institute of presidency, election of the head of the republic in the Supreme Council, responsibility and accountability of the president to the Supreme Council - all these mean that Uzbekistan has moved from a single Communist Party leadership to the presidential management. The case that the laws, decrees and resolutions adopted in these years in Uzbekistan were in compliance with the interests of the people, but in conflict with the legislations of the USSR means a legitimate struggle for the independence. The Realization of the ideas of independence through reflecting them in laws was a characteristic of the Uzbek model.

Fourth. On the eve of independence Uzbekistan has gradually walked out of the single economic complex of the former Soviet Union, and made bold step towards economic independence and creation of the society of property owners, founding of a socially oriented market economy. This issue also feels the need for a separate study. In this, it cannot be overlooked, that allocation of homestead and private plots of land to the population was the beginning of the process of privatization

in the republic. The transfer of the state-owned enterprises, which were subordinate to the Union center, to the jurisdiction of Uzbekistan was an example of the high level of political will and care of people.

Sum up, it should be noted, that political processes of the eve of the independence are required to carry out the research work systematically in this issue. Only in this case we can more insightfully understand the conceptual idea of contemporary Uzbekistan - "What we were yesterday, who we are today, and what new frontiers we must achieve tomorrow".

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SECTION X. Economics

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SELF-LEADERSHIP, SELF-DEVELOPMENT, ENGAGEMENT AS THE MECHANISMS OF THE MODERN EMPLOYEE PROACTIVITY

In modern business commitment of a team of creative professionals, ready to initiate continuous improvements and reformations, to the process and innovations is becoming the main asset of sustainable development of an organization. Therefore, nowadays researchers focus on the problems of activating the entrepreneurial proactive employee behavior and highlight his proactivity level as the key difference between “stellar” and average performers, between “passengers” and “drivers” of organizational reformations (Kelley, 1998; N. Li, J. Liang, J.M. Crant, 2010). The results of extensive empirical studies in different countries and fields show that proactivity of managers and rank-and-file employees is becoming the core determinant of modern organization’s success (Crant, 2000).

Nevertheless, the fascinating phenomenon of active, continuous and goal-oriented initiation by the worker of their personal growth and development of the organization remains understudied. First and foremost, it is connected with **the processes of transition from the employee’s internal readiness to joint achievement of the company’s goals – to real proactive steps** (Esaulova, 2015). Therefore, searching mechanisms of encouraging a worker for efficient development of their potential which appears as priming behavior, which in its turn serves as an efficient mechanism of (self)-development of an organization, is of academic and practical interest (Komarov, Molodchic, 2012; Esaulova, 2015).

M. Crant (Crant 2000) describes proactivity as the employee's ability to take initiative for improving current conditions and creating new ones. This involves not passivity and adaptation but active change of situation. M. Frese & D. Fay (Frese & Fay, 2001) regard proactivity as the key aspect of employees' personal initiative which manifests itself as the ability to send out signals about potential issues and opportunities, to look ahead and think long-term, to anticipate future problems and solutions to them, to find alternative knowledge and to have fallback plans of actions for achieving the company's goals. S. Covey (Covey, 2004) describes proactivity as taking actions in accordance with the worldview and priorities regardless of conditions and circumstances – completely understanding underlying values and goals. In fact, *proactivity of the modern employee* may be described as *process-oriented proactive personal fundamental mindset or attitude of an employee on their personal fulfillment which makes it possible to go beyond conventional scope of employment, and connected with personal responsible activity which provides conscious transition to voluntary actions for the benefit of the company.*

Based on the results of previous research, we emphasized the mechanisms of self-development, self-leadership and engagement as internal drivers of actual expansion of the employee's proactivity

Self-leadership. In line with the studies carried out by C.P. Neck, C.C. Manz, G.L. Stewart, A. Bryant, A. Kazan, etc, we consider self-leadership as an intrinsic driver of the employee's self-fulfillment by achieving personal goals through active involvement in reaching the goals of the organization. Efficient self-leadership practice shows enormous potential in development of individual and group colleagues' performance, in expansion of personal and team efficiency (proactivity, initiative, focus on innovation) (Cural & Marques-Quinteiro, 2009), in formation of persistent long-term motivation towards success and achievements (Esaulova, 2015), towards high intra group compatibility, based on respect for each team member in terms of explicit interests of others, and activation of leadership in every worker (Bryant & Kazan, 2012).

Self-development is a driver of self-improvement and self-modification in the process of professional activities, which is formed during activity development and makes itself felt in profoundness, rapidity and stability of mastering new methods and techniques of performing the work, in confidence in your professional opportunities, in high flexibility to changing business conditions, in ability to perform

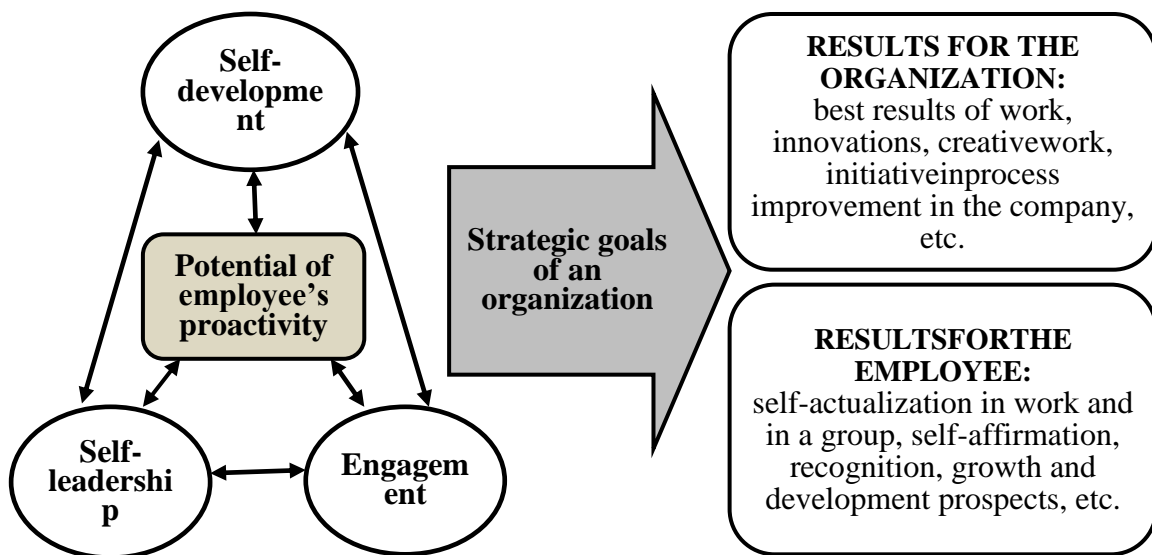
increasingly difficult tasks, to confidently go beyond your work duties, to establish efficient interpersonal relations (Esaulova, 2015), etc.

Mechanisms of self-leadership and self-development are directly and deeply related to individual interests and ambitions of a worker. Serving as the dominant of personal and professional growth, they can completely depend on his or her individual self-realization strategy, for instance, to achieve success by all means irrespective of any exact organization. Therefore, engagement, as the element connecting personal and organizational goals, serves as the third mechanism of efficient proactivity.

Engagement is a source of energy which mobilizes hidden and disclosed reserves of an employee through deep emotional bond with the activity, work team and organization at large. The scope of research carried out shows a direct positive connection between an employee's engagement and high performance of an organization, achieved as a result of the worker's personal interest in effective operation, their positive attitude to the management team and work conditions, their genuine interest in the company's success and personal willingness to exceed established standards (Lombardi, 2011). It is the engagement that is the reason for sustainable identification of employee's individual priorities, goals and wishes with the company's needs and interests in order to achieve business-results.

The continuous and dynamic process of interrelated synergetic cooperation among self-leadership, self-development and engagement forms a high potential for self-determination of employees' proactive conduct in the operation of an organization, thus providing the effect of expansion of their internal energy towards achieving the organization's goals (Picture).

Combining these mechanisms into the structure of the potential of (self)initiation of personal and organizational development makes it possible to create a coherent structure of internal sources of worker's proactivity. In this structure entrepreneurial, mainly economic motivation of self-leadership, is supplemented by creative and intellectual nature of self-leadership and confirmed by axiological and emotional component of engagement, guaranteeing co-directionality of vectors of employee's and organization's development.



Picture. Organizational and personal results of expansion of an employee's proactivity potential

The new image of an employee as an equal partner of an organization, who voluntarily contributes to its success, is the image of a person, willing to develop and realize their own potential for the purpose of improving the company's business. Using the suggested approach, companies can choose proper measures, aimed at formation of preferred colleagues' behavior models, which depending on objective priorities may be efficient, innovative, proactive and creative.

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**ANALYSIS AND MODELING OF EFFECTIVE MANAGEMENT
SYSTEM OF THE INDUSTRIAL ENTERPRISE
DEVELOPMENT**

Actual problems of Russian enterprises are increasing the competitiveness and improving manageability. The role of the organizational development of the enterprise cannot be overestimated. Leaders are the companies, which are watching the market and carry out the necessary organizational changes in time. They adapt to the needs of the market and bring maximum utility. That is, it can be concluded that the quality of the enterprise organizational development is the key to its success in the market.

The degree of development of any enterprise is determined by its potential and management system. The potential of enterprises can be considered as a basis of its development. However, practice shows that enterprises similar in their original characteristics, which operate under the same conditions, achieve different results. Some enterprises are successful and generate significant profits; others have average totals, and the third enterprises can be forced to leave the market. Exactly management brings success to the enterprises. Management contributes to enterprises development. It can help organizations even with a middling product take a leading position in the market. Focused transformations that constitute the content of the process of organizational development are the most important factor in ensuring the efficient operation of industrial enterprises. Especially it concerns the process of assessment and improvement of management systems [1]. Consequently, the study of the enterprises development has a special relevance.

The object of this research is closed joint-stock company "Medhim" - the manufacturing installation of pharmaceutical branch located in Syzran of the Samara region of the Russian Federation. Relevance of a subject causes the statement of a research goal, which consists in carrying out the analysis of the current system of organizational development of CJSC "Medhim" and the development of recommendations for its further design.

In this article in order to achieve the designated goal, the methodological foundations of organizational development of enterprises were investigated. The comprehensive analysis of JSC "Medhim" was conducted, and the evaluation of the existing system of organizational development of the enterprise was done.

To determine the level of organizational development and further analysis different models are used. For example according to the model of L. Greiner and Izedis CJSC "Medhim" is on the third phase - the stage of development. In order to move from the third stage of development to the next, the company needs to overcome the crisis of this transitional period - the crisis of control. The model suggests growth through delegation.

Based on the model of Kruglov & Shishkov [2] the authors of this article can say that CJSC "Medchem" is the company of intermediate level between stages 2 and 3. Production process, finance management, the process of personnel management, sale processes and development as well as marketing are the managed processes. The basic processes are

mainly on the 2nd level, some reaching the 3rd level (development and production, financial and support processes).

The most developed process in the enterprise is quality assurance. The quality control is the part of the end-to-end procedures of guarantee quality. Management of non-conforming products aimed at preventing the recurrence of nonconformance. The planning process carries out the method of the balanced scorecard. Management and staff are involved in process improvement. The company is annually carried out certification of workplaces to confirm the worker's high qualification and reduce the risk of spoilage.

Marketing is among underdeveloped processes on the enterprise. Transformation within the further system design, organizational development should begin from this business process. In the company, the results of market analysis are used to adjust the strategy. Customer base is clearly maintaining. The consumer surveys are conducted and their data are used to improve processes of the company. Nevertheless, there is absolutely no plans for PR and advertising campaigns. The lack of information about the company in the media adversely affects its image, and influences the demand for goods. The company needs to conduct large-scale advertising campaign before the output of new products.

Therefore, a design objective will be pulling all the business processes of CJSC "Medhim" to the level of development of the quality assurance process. This eventually will allow CJSC "Medhim" to improve its level of development to the 4th level. It should be noted that at this level of development, the marketing process would occupy a key position in the management of the company. In the management "logic of quality" is built. Management of the company from the position of improving customer service, increasing their satisfaction, considers the results of basic processes. There should be no processes of level 0-1.

Naturally, organizational change should not cover all of the enterprise immediately. It is preferable to implement the design step by step. The best results such approach will bring in only if the preparation of the plans and actions of each change in the preparatory phase is.

In addition, it should be noted that the analyzed enterprise is currently still under development, so the profits resulting from activities of CJSC "Medhim" are not high enough. The company mainly invests in the development of its own production and scientific-technical base (own laboratory, a major overhaul of the administrative building).

The authors of the article analyzed the external and internal environment of the enterprise. According to this analysis, the enterprise not very high depends on environmental factors. This indicates a high internal potential of the company, the ability to work in a dynamic environment with strict conditions. Held PEST-analysis revealed that most of the factors that affect the company are a clear characteristic. They are not specific to the chemical industry, but also in general for all sectors of economy (implementation of sanctions against Russia, the ruble exchange rate volatility, high interest rates, etc.). Economic and political factors have the greatest influence on enterprise activity. In general, the influence of positive factors exceed the negative impact.

Based on the analysis authors of the article offer the following package of strategic actions and main directions for organizational development of CJSC “Medhim”:

1. Creation of the marketing department (selection in separate service).

2. Using the production capacity for the production of new products

Within these directions it is planned the conquest of new markets (both regional and international), as well as increasing the volume of production and sales (using the full capacity utilization). The effectiveness of the company significantly decreases without a skilful marketing organization. The second direction of development involves the creation and production of new products for the pharma industry.

Then the authors of the article compared the main options for new industries, analyzed the development of the chemical industry in Russia. In addition, production capabilities of JSC "Medhim" were analyzed. As a result, it was concluded that the organization of production of sulfuric ointment is advisable to the enterprise.

According to the data from administration of Syzran, in the creation of a modern complex of extraction and processing of kashpirskie shale it is possible to obtain sulfuric ointment, phenol, benzene, toluene, thiophene.

The oil shale Deposit in Kashpirskoe currently has reserves of 11.5 billion tons and is one of the biggest in the world. The power of all mines in Kashpirskoe in 1930-1970-ies reached 400,000 tons per year, but production did not exceed 100 000 t/year. Currently there is only a small mine with a maximum production of 30 t/year [3]. All the products of mine is the production of ihtiola. But in the future it is possible to recover the industry to develop a wide range of chemical, pharmaceutical intermediate and finished products. The Minister of economic development, investments and trade of Samara region A.V.

Kobenko noted that the main clusters of the region are oil production, refining and petrochemicals. In the short term the development of new fuel and chemical products will be open. The demand for them in the Samara region and Russia in general is growing.

The authors examined the technological scheme of production of sulfuric ointment. It was revealed that it is necessary to purchase a homogenizer to CJSC “Medhim”. The cost of a typical equipment of homogenisator is RUB 1000000. It accepted on the price lists of the manufacturer “Progress”. The full cost of technological equipment includes the cost of transportation (RUB 19 459) and the cost of installation and commissioning work (RUB 100 000). The total amount is RUB 1 119 459. It was further calculated current costs for the production of sulfuric ointment. The raw materials costs consist of costs for sulfur, petrolatum, purified water, and emulsifier T-2. Per 1 kg of sulfuric ointment the raw materials cost is RUB 74,76.

The results of calculation of the amount of annual current expenditure for the production of sulfur ointment are presented in Table 1.

Table 1 - Estimated annual current expenditure

Expenditures	Amount, RUB
Materials:	
Engine oil	23 652,00
Natural gas	515 417,00
Raw materials	403 704,00
Service maintenance	5 000,00
Salary of additional staff	394 416,00
Contributions to the state budget funds	95 616,00
Depreciation deductions	44 778,00
Total current expenditure	1 482 583,00

Based on demand and production capacity of equipment and technological process of production of sulfuric ointment, the output of finished products was predicted. Supposable it will be equal to 450 kg per month.

The selling price of finished goods is determined based on the average of competitors' prices and below them. The value of the selling price of sulfuric ordinary ointment 33% is proposed at 259,18 RUB/kg.

Thus, the additional annual income of the production of sulfuric ointment can be calculated by multiplying sales volume by the selling price and 12 months. The additional annual income will be $450 \cdot 259,18 \cdot 12 = 1\,399\,572$ rubles/ year.

Based on the calculations it is possible to display the total amount of expected capital investment of the two directions of organizational development: creating the marketing Department (a separate service) will amount to RUB 36 900; the introduction of a sulfuric ointment will be RUB 1 119 459. The total amount of capital investment will amount to RUB 1 156 359.

The deadline for the implementation of activities is estimated at 4 months. Where appropriate, the first step to carry out the creation of the marketing Department. These specialists will be responsible for promoting sulfuric ointment.

From obtained data, it is possible to calculate the efficiency of these measures. To determine the efficiency of the proposed activities several estimates of integrated indicators were used (Table 2).

Table 2 - Integral indicators of economic efficiency

Indicators	Value
Net present value, RUB	3 805 118
Profitability index of the investment, RUB./ RUB.	4,29
Payback period, year	1,02
Average rate of return, %	98

The calculated integral indicators say about the effectiveness of the proposed activities. Thus, the projected directions of development of CJSC “Medhim” will contribute to its overall organizational development.

Formation and monitoring of organizational development management is a strategically necessary moment. Before to change something in the system it is necessary to assess its condition and know the vector of strategic development. Quality of management in the organization influences the investment appeal of the organization and the dynamics of its development, the degree of competitiveness and the success of the enterprise as a whole.

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**TARGETED PROGRAMS PRODUCTS
AS THE BASIS OF HEALTHCARE DEVELOPMENT
IN THE RUSSIAN FEDERATION**

The purpose of the health care system is the provision of affordable and quality healthcare and improving the health of citizens of the Russian Federation.

At the present stage of development of state and municipal government, new approaches to the development of the social sphere of the Russian Federation, in particular health care are necessary.

The Constitution of the Russian Federation (hereinafter - the Constitution of the Russian Federation) in Art. 114 obliges the Government of Russian Federation (hereinafter - the Government of the Russian Federation) to develop and implement a unified state policy in the field of health, social security.

In accordance with the RF Government Decree of 02.08.2010 number 588 "On Approval of the Procedure for the development, implementation and evaluation of the effectiveness of state programs of the Russian Federation" - the state program is the strategic planning document that contains a set of planned activities, interconnected by problems, the implementation deadlines, performers, resources and tools of public policy, within the framework of ensuring the implementation of key government functions to achieve the priorities and public policy objectives in the field of socio-economic development and national security of the Russian Federation [4].

At the present time in Russia the program-target method of solving social and economic problems is used. This method consists in solving specific social and economic problems. In our opinion, the development of this method in the health system will allow to implement the program for improving the healthcare system, to solve the problem of narrow-profile.

The transition to the program-target budgeting in health care allows to timely adjust state or municipal task, to reallocate funds taking into account the progress of the job, to form a clear system of criteria and indicators for assessing the performance of health authorities and health care institutions, to provide an objective assessment of the results of the program, to optimize the structure and health management [2].

Positive prospects for the introduction of budgeting, result-oriented are described by many theorists and practitioners. [3]

In general, increasing the efficiency of the healthcare system is possible by means of the following areas:

- Increase the efficiency of management of the organization, which requires an increase in motivation, professionalism, training of medical staff, optimization of the organizational structure, implementation of quality assessment methods;

- Improving the efficiency of care processes, which includes the process automation and the use of telemedicine, regulation and standardization of medical care, introduction of new methods of diagnosis and treatment of diseases, re-engineering and process improvement;

- More efficient use of equipment and medicines, which implies increasing the impact of the use and performance of medical equipment, introduction of the clinical and economic standards of health services, improving the drug supply for citizens;

- Improving the economic efficiency of the institutions, which involves the control and optimization of costs, improvement of financing, performance evaluation based on the results and volume of medical services, infrastructure and resource provision.

The basis of resource management in modern healthcare is in efficient use of existing resources and reproduction. Therefore, modern healthcare management paradigm is to focus on the intensive development of the production of medical services based on innovative technologies [1].

For example, the program of state guarantees of free citizens healthcare provision for 2016 (hereinafter - the Program) establishes a list of types, forms and healthcare environment, the provision of which is free of charge, a list of diseases and conditions under which medical care is provided to certain citizens free of charge, average standards of care volume, average standards of the financial cost per unit of health care volume, average per capita financing standards, procedures and structure of formation of tariffs for medical care and how to pay, as well as requirements for the territorial program of state guarantees and free provision to citizens of healthcare, terms of determining the procedure and conditions of medical care, the criteria of accessibility and quality of care.

The program is formed taking into account the orders and the provision of medical care on the basis of standards of care, as well as taking into account the characteristics of the sex and age composition of

the population, the level of morbidity and structure of the population of the Russian Federation, based on medical statistics.

In accordance with the Program, government authorities of the Russian Federation entities develop and approve territorial programs of state guarantees of free medical care to citizens in 2016, including the territorial program of compulsory health insurance, established in accordance with the Russian law on mandatory healthcare insurance.

Thus we can see that the legal act has a target-oriented character. The purpose of this document is to consolidate the main provisions of the state policy for the planning period in the health system. In particular, it defines the methods and ways to improve medical maintenance of citizens, determining the order of the limitations on the admission of foreign drugs to the Russian consumer market, provided the indexation of medicines prices.

Thus, as we have noted previously the target-oriented approach of the healthcare system solutions helps to solve specific tasks in the current state of development.

One of the positive aspects of this program is the mobility and adaptation to the modern economic opportunities of federal and regional budgets.

We believe that this trend has perspective character, as it allows to solve not only common problems, but also special.

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THE CLASSIFICATION OF CAUSES AND FACTORS OF ENVIRONMENTAL KUZNETS CURVE

The environmental Kuznets curve (EKC) is a reduced form function, which shows the net impact of GDP or income on the chosen environmental indicators. According to Panayotou (1997), economic growth acts as an omnibus variable or a surrogate for a variety of underlying influences, the separate effects of which are obscure. As can be seen from the description of the empirical research presented in the previous chapter, that at the beginning of every study, the researchers gave their theoretical explanation why the analysed function might have a particular form. They agree that the development trajectory for pollution is likely to reflect both market forces and changes in government regulation. As a result, it is reasonable to expect that the economies would pass through “stages of development,” in which at least some aspects of the environmental quality first increase and then decrease. As summarised by Čiegiset *al.* (2008), EKC is a development trajectory for a single economy that grows through different stages over time. That is, *ceteris paribus*, in their process of development, individual countries experience income and emission situations lying on one and the same EKC.

Grossman and Krueger (1995) raised three main hypothetical causes, which impacted the EKC shape. The scale of economic activity led to the increase of pollution, but altering of the composition of economic activity and the techniques of production changed the path of pollution. The positive effect of composition and techniques might outweigh the negative effect of scale. These three causes can be mentioned as the classical ones. Selden and Song (1994) made the assumption that industrialization and agricultural modernization might lead to increased pollution, while other factors might cause its decrease. They emphasized the role of the following factors: positive income elasticity for environmental quality, the changes in the patterns of production and consumption, the increasing levels of education and environmental awareness and the development of more open political

systems. Holtz – Eakin and Selden (1995) defined that endogenous variables might be the composition of output, regulations and taxes, patterns of urbanization, etc., and some country – specific factors, including climate, geography, resources, land area, etc., which were mentioned as exogenous variables of emissions. Roberts and Grims (1997) pointed out that the wealthy countries specialized in services, while energy–intensive industries tended to concentrate in some poorer countries. They also mentioned that firms and countries around the world were discovering that it was cheaper to avoid environmental pollution than to clean it up later. They believe that effective international environmental standards and enforcement mechanisms would help in managing the environmental issues which depend on industrial structure of a particular country. Unruh and Moomaw (1998) suggested that the changes in CO₂ emissions trajectories could be based on some shocks or special events in the socio–economic systems. The shocks appeared to provide a sufficient incentive for new policy initiatives, both at the private and public level. Another important aspect which was mentioned by the authors was the speed at which these systems or policies could alter their trajectories. The authors believed that EKC demonstrated a response to the historical event rather than the income effect. The research demonstrated that the actual behaviour of individual pollution trajectories depended on a combination of internal policy decisions and exogenous factors. Hence, the policy choice and prices of resources were the principal causes of these transitions. Wealth could be an influential factor that allowed the countries to move rapidly. Dinda (2005) highlighted several factors which could be responsible for shaping the EKC, which included income elasticity of the environmental quality demand, scale, technological and composition effects, international trade, the market mechanism and regulation. Panatyotou (1997) identified the different types of effects that income has on the environmental quality, or rather different effects of economic development that are transmitted through the income variable. He highlighted the scale of economic activity, the composition or structure of economic activity and the effect of income on the demand and supply of pollution abatement effort. Dasgupta and Maler (1994) argued that the EKC is almost certainly something of a mirage, but since the environmental commodities are presented as luxury goods, which have more demand with increasing income levels, the EKC could explain the relationship between economic growth and the environment. They noticed that poor countries could not buy clean technologies because they were expensive and tended to absorb the environmental risk. Such

findings are in part related to the research on income elasticity of the demand for luxury goods. Lieb (2004) summarised different influential theoretical studies of the 20th age and systemised possible causes of the EKC. He defined the theoretical causes and the arguments of the EKC form as follows: demand for environmental quality, substitution between pollutants, technological progress, increasing returns to scale in abatement, migration of dirty industries, shocks, income distribution, structural change and shocks. In the latest studies, theoretical causes are defined in groups: equity of income distribution, international trade and pollution haven, structural change and technological progress, institutional framework and governance and consumers' preferences (Kaika, Zervas 2013). Following the above logic, researchers used various additional proxy variables to prove empirically their positive or negative impact on the relationship between pollution and GDP. To empirically analyse whether or not additional factors are important researchers have expanded the quadratic and cubic equations by adding some additional variables. The latest studies suggested to group these variables into economical, demographic and governance areas (Buehnet *al.* 2013; Gassebner 2011; Lamla 2009).

Based on the empirical studies, general theoretical causes and factors affecting the relationship between the environment indicators and economic activity might be divided into several topics:

1. Scale of economic activity.
2. The structure of economy.
3. Technological development.
4. International trade and the pollution haven hypothesis.
5. Income inequality of income distribution.
6. Political–governance factors.
7. Social–demographical factors.
8. Historical events or shocks.
9. Country–specific factors.

All these causes are interrelated, when some particular cases are analysed, it is difficult to identify which one is the main. The scale of economic activity, composition of economy and technological development are impacting the environment through the economic growth and are often mentioned by researchers as the main ones. If the scale of economy activity leads to a negative impact, technological development and change in the structure of economy have, in general, a positive impact and outweigh the negative impact by economic growth.

The main economic indicator, capturing human activities, is GDP. The structure of economy can change because of changing consumer preferences, as well as because of different rates of technological progress in different branches of the economy and policy—induced price increases for polluting inputs in production in general these changes occur in the country's course of economic development. Rostow (1960) was first, who suggested dividing the process of economic development into five stages, which every nation passes regardless of its social and political structure. In the EKC studies, the course of the economic development is divided into three stages: primary sector changing from agriculture to industrial economy and to service economy. It is assumed that society shifts from the more material and energy – intensive manufacturing sector towards the more environmentally friendly services sector in the course of economic growth (Panayotou 2003). In 1993, Ekins forecasted that the term 'sustainable development' might be realised as the mere development of and implementation of eco—technologies.

The main sources of pollution are associated with the sectors of energy, transport, industry, agriculture, and waste disposal, while forestation has a positive effect on the greenhouse gas level. The economic structure and, specifically, industrialization are very important factors, which might negatively affect the quality of environmental indicators. Researchers used various indicators referring to the economic structure the capital—abundance ratio (K/L) (He and Wang 2012), the percent of the total output of goods and services provided by the industrial sector (Baodong, Xiaokun 2011). The energy sector is defined as the most robust determinant of GHG emission. Researchers used various indicators to evaluate the importance of energy sector's particularities – the high share of electricity production from coal and oil sources in the total electricity production (Lamla 2009). Many studies emphasize the significant effect of technology and structural changes on CO₂ emissions overtime (Lindmark 2002; Kander 2005; Lantz, Feng 2006; Tolet *al.* 2009). Hence, the technological progress is linked to economic growth and green growth might be based on environmental friendly technologies.

International trade impacts the economic growth, leading to the above mentioned consequences. This cause is interrelated with the scale, the technique and the composition effects. The scale effect likely increase in pollution resulting from the economic growth generated by increased market access. The technique effect refers to the changing techniques of production that are likely to accompany liberalized trade.

The composition effect refers to the changing composition of an economy that may occur following an episode of trade liberalization as countries increasingly specialize in activities in which they enjoy a comparative advantage (Cole 2004). Trade possibly contributes to increased emissions at a decreasing rate as income rises, but only over certain periods of time (Panayotou *et al.* 2000). Its effect is also related to the comparative advantage of international trade (Pollution Heaven hypothesis), which may lead to the migration of dirty industries out of rich countries into middle or poor income countries. The possible cause of the EKC in developed countries is that dirty industries migrate out of rich into middle income countries (where the infrastructure is sufficiently developed in contrast to poor countries). Copeland and Taylor (1994; 1997; 2005) analysed the North–South trade model to examine linkages between pollution and international trade and showed that free trade improves the developed countries' environment while the developing countries' environment exacerbated. Bilateral trade regressions results show that poorer, non–democratic nations are not US pollution havens (Kahn 2003). In a similar study, the Southern Africa Customs Union was analysed if it may serve as a pollution haven for USA and UK over time but there is a general shift of manufacturing from the latter to the former, which does not include only the pollution–intensive industries (Nahman, Antrobus 2005). Peters *et al.* (2011) noted that the net emissions transfers from developing to developed countries have increased in 2008 which implies that the transfer of emissions through international trade often exceeds the reduction of emissions at a single developed-country level. In the European Union case, imports of energy–intensive goods from poorer countries seem to increase when more stringent environmental standards are applied in the EU indicating the increase of such industries in developing countries (Cave, Blomquist 2008). Researchers used the ratio of total export and import to total GDP, foreign direct investment to evaluate the impact of international trade (Lau *et al.* 2014; Ren *et al.* 2014, Shahbaz *et al.* 2013, Jayanthakumaran, Liu 2012; Onafowora, Owoye 2014; Wong, Lewis 2013; Kearsley, Riddell 2010; Narayan, Narayan 2010). In related theme, the substitution between pollutants covers the arguments that the downturn of the EKC for one pollutant might also occur because it is substituted with another pollutant.

The effect of income inequality for the environment is explained by the notion that, when citizens achieve relatively high standard of living, they are keen to value higher standards of preserving natural environment. Rising income impacts people to support the

environmental policies and vote for policies which should improve environment. Income distribution refers to the differences of preferences for environmental quality could depend on the income level. According to Cantore and Padillia (2010), there is a robust correlation between income inequality and emissions distribution and, possibly, the differences in GDP per capita between rich and poor regions are significant determinants of emission distribution among countries. In such kind of studies researchers used the additional variable Gini coefficient of income inequality (Coondoo, Dinda 2008; Bimonte 2002; Heerink *et al.* 2001; Magnani 2000; Torras, Boyce 1998). However, results indicate that the income elasticity of the willingness to pay is close to unity for all income groups implying that becoming richer does not necessarily leads to cleaner environments (Martini, Tiezzi, 2010). The richest households are not most in favour of strict environmental regulations. In fact, the middle classes are most supportive of strict environmental policies. On the other hand, new generations, which have not been used to habituating natural environment might give the preferences to luxury human made capital rather than natural environment.

Political–governance factors covering the development of more open political systems, regulations, effective international environmental standards and enforcement mechanisms might lead to prevention of environmental degradation resulting from the continuing economic growth. These factors are strengthening through political institutions with economic growth and represent the mixed economy, where market externalities are corrected by political forces. Governance factors cover the governance and the quality of institutions. Researches used such variables as composite index measuring quality of political rights and civil liberties (Lin, Liscow 2013), other variables measuring whether or not the party of the chief executive has a left – wing orientation as well as the form of government – dictatorship or democracy as well as democracy index (Wong, Lewis 2013; Gassebner 2011; Mills, Waite 2009), the level of corruption (Cole 2007), the ratio of government environmental staff to total number of governmental staff (He, Wang 2012) and others.

Data associated with age, sex, birth, death, income, nationality, religion, race, or other factors, education, location and other features representing a multicultural society with dominant personal characteristics define the social – demographical situation of an economy. They are defined as socioeconomic characteristics of population expressed statistically. Education level and income

inequality are the factors that positively affect the environmental quality. Researchers suggested that there were some relevant relationships between the demography and the productive structure of the economy and environmental degradation (Franklin, Ruth, 2012). The researchers highlighted the ratio of youth dependency and elderly dependency; average years of schooling in the adult population; the level of urbanisation, the levels of education, patterns of urbanization and others might impact attitude to the quality of the environment (Onafowora, Owoye 2014; Buehn 2013; Franklin, Ruth 2012; Lantz, Feng 2006; Managi, Jena 2008; Cole, Neumayer 2004; Lantz 2002; Shukla, Parikh 1992).

According to Lieb (2004), the shocks are at the root of the EKC, when the future path of pollution cannot be predicted. Shocks can lead to reduction of pollution. Shocks might result from price changes, policy measures or technological innovations. The appropriate policy measures include the removal of energy subsidies, the introduction of more secure property rights over natural resources and the internalization of externalities. The authors believed that EKC demonstrated a response to the historical events rather than the income effect. Another study results indicate that the rising oil price during the 1970s might have been more important for the turning point of the EKC for CO₂ than income (Unruh, Moomaw 1998).

Country – specific factors, capturing climate, geography, resources, land area, etc., have an impact on the level of environmental degradation and are widely used as additional factors in many studies.

Based on performed studies general theoretical factors effecting the relationship between environment indicators and economic activity might be grouped in several topics. Systemised theoretical factors and proxy variables referring a particular cause are presented below.

The executed systemic analysis of empirical studies, where the EKC analysis was extended to include some additional variables, has led to the notion, that different locations and different time series may be significantly impacted by special factors.

Table 1. Theoretical causes and proxy variables effecting EKC

Theoretical causes and factors	Proxy variables	Researchers and date
Scale of economic activity	GDP or income per capita, per unit of area	All researchers used economic growth as the main factor impacting environment.
The structure of economy	Capital–abundance ratio, industry value added as percentage of GDP, capital–labour ratio, the percent of the total output of goods and services provided by the industrial sector	He, Wang (2012); Baodong, Xiaokun (2011); Tsurumi (2010); Hettige <i>et al.</i> (2000); Shen (2006); De Bruyn <i>et al.</i> (1998).
Technological development	Energy efficiency; R&D expenditure (or time trend); energy consumption; nuclear energy consumption; the high share of electricity production from coal and oil sources in the total electricity production	Onafowora, Owoye (2014); Saboori, Sulaiman (2013); Shahbaz <i>et al.</i> (2013) Turner, Hanley (2011); Iwata (2011); Luzzati, Orsini (2009). Brajer <i>et al.</i> (2008); Wagner (2010); Okada, Samreth (2010); Marrero (2010); Lamla (2009); Lantz, Feng (2006); Richmond, Kaufmann, (2006); Lantz (2002); Lindmark (2002); De Bruyn <i>et al.</i> (1998); Suri, Chapman (1998).
International trade	Ratio of total export and import to total GDP, foreign direct investment, imports of energy intensity goods in developing countries	Lau <i>et al.</i> (2014); Renet <i>et al.</i> (2014), Shahbaz <i>et al.</i> (2013), Jayanthakumaran, Liu (2012); Onafowora, Owoye (2014); Wong, Lewis (2013); Kearsley, Riddel (2010); Narayan, Narayan 2010, Cave, Blomquist (2008); Aldy (2005; 2007).
Income inequality of income distribution	Gini coefficient of inequality in income distribution	Coondoo, Dinda (2008); Bimonte (2002); Heerink <i>et al.</i> (2001); Magnani (2000); Torras and Boyce (1998).

Political–governance factors	Composite index measuring quality of bureaucracy, corruption in governance and democratic accountability; composite index measuring quality of political rights and civil liberties; whether or not the party of the chief executive has a left–wing orientation; what form of government – dictatorship or democracy; the percentage of environmental staff over that of total government staff	Lin, Liscow, (2013); Wong, Lewis (2013); Fosten <i>et al.</i> (2012); Gassebner (2011); He, Wang (2012); Cole (2007), Lomborg, Pope (2003); Mills, Waite (2009); Michael, Nieswiadomy (2005); Neumayer, (2004); Bhattarai, Hammig (2001); Barrett (2000).
Social–Demographical factors	Population density; youth dependency and elderly dependency ratio; average years of schooling in the adult population; the level of urbanisation	Onafowora, Owoye (2014); Buehn (2013); Franklin, Ruth (2012); Lantz, Feng (2006); Managi, Jena (2008); Cole, Neumayer (2004); Lantz (2002); Shukla, Parikh (1992).
Historical events or shocks	Price of natural resources, particularly, energy	Agras, Chapman (1997; 1999); Unruh, Moomaw (1998)
Country–specific factors (endowment)	Climate, geography, resources, land area, resource availability etc.	He, Wang (2012); Grossman, Krueger (1995); Holtz–Eakin, Selden (1995); and many others

Source: made by authors

The author of this dissertation decided to create the technique to estimate the relationship between economic growth and environmental degradation and empirically test the extended EKC model in the EU countries. This attempt was inspired by other studies, where additional factors, such as energy price and technological level (Fosten 2012), trade openness and population density (Ahmed, Long 2012), as well as the role of the political institutions (Lin, Liscow 2013) were tested. Since climate change is considered to be one of them a in

environmental issues in today's world, a short look at this issue was made in the following section.

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THE IMPORTANCE OF PREPARATION FOR INTERNATIONAL BUSINESS NEGOTIATIONS

Negotiated communication has created new challenges, as business becomes global, and the distance between the two parties do not allow to negotiate fully - to use all the bargaining power remotely. Existing e-mail bargaining systems can perform many functions, but cannot to determine the context of the negotiations when dynamically changes the negotiation issues. Innovations use can be beneficial not

only to support the negotiation process, but also in preparation for the negotiation phase. In order to save the time and knowledge resources it can be used for the collection and analysis of algorithms in the online space to help prepare for negotiations, learning more about the other side of the negotiating organization, its current situation, relationships and organizations represented negotiating expertise and experience. Creativity, innovations as an integral part of the negotiators' ability to act as the possible existence of a negotiated solution to the various problems of interference, information gaps or potential in compatibilities. Creativity is especially important in international negotiations because of them there may be complex, difficult to reconcile situations where negotiators have to deal with situations in a creative way.

In order to prepare for a negotiation properly it is necessary to form effective negotiating team whose analytical work and skills could help to achieve the highest outcome of the negotiations. This is particularly important in the context of preparing for, and intercultural negotiations, which require an understanding of other cultures, other languages, in the possession of the knowledge, knowledge of the negotiation context and others. In terms of experience in the market is complicated to know new businesses, business context of your own and other countries, it can take a lot of time, so in this case without expert help, it would be difficult to achieve effective results in the negotiations.

In shaping the negotiation strategy it is the need to become familiar with the negotiation context. In phase of preparation for the negotiation is necessary to know better the other side of negotiations. Knowing technical communication capabilities of the other party it is possible preparation of effective negotiation support tools.

Modern technology allows to facilitate a variety of business processes, and communication in that the number. Negotiating communication has created new challenges, as business becomes global, and the distance between the two parties do not allow to negotiate fully – to take full advantage of the bargaining power remotely.

In this section will be reviewed innovations influence on the talks. Published in the literature can be found different treatment of the concepts of "innovation", "innovation", "invention" and "creativity." The word "innovation" comes from the Latin word in novare which means renewal or a new entity and is seen as development of new ideas and their implementation in practice (Jakobsen and Rebsdorf, 2008).

The invention relates to researchers and inventors, the creation of technical ideas, patents and research results of the technical world. Innovation belongs to the industrialists and businessmen commercial world in which are important factors of the economic growth potential, and innovation defines the efforts necessary on development of already available item up to practical - commercial exploitation and recognition of the element entered into the market (Jakobsen and Rebsdorf, 2008). Teresa Amabile treats innovation as the successful implementation of new and adaptable ideas (Amabile, 1996; Amabile et al., 2006).

As for the "creativity" can be said that it is an integral part of innovation. There are approaches that it cannot be separated concepts of "innovation" and "creativity" (Jakobsen and Rebsdorf, 2008). De Pauwet *al.* (2010) argues that creativity, which is used for research purposes, is specialized at solving a problems, and creative thinking is involved in the process of identifying disturbances of problems, gaps in information, missing elements; creativity make guesses or formulating hypotheses about these deficiencies, perform tests, and distribute the results. Creativity can be considered as a multidimensional concept (Kim, 2006; Han *et al.*, 2013) consisting of different components. De Pauw *et al.* (2010) suggests the following components of creativity:

- Fluency: fluent generation of ideas;
- Flexibility: Generating ideas of various categories;
- Originality: Rarity - The strangeness of each idea;
- A more comprehensive description: An Update of relevant information.

Most creative researches are associated with creative thinking. There are distinguished characteristics of the creative person, creativity development opportunities within a reasonable period of time, and social environmental factors creating the environment for creativity (Simonton, 2000). Model for the realization of creativity can be described in the following order:

- ***Fixation phase of problem tracking and identification or needs.*** The need or problem tracking can take place unconsciously, but after it is determined and fixed, analytical thinking and creative processes can start;

- ***Preparation.*** In the preparation phase is searched and analyzed factual information about the situation.

- ***Incubation (suspension).*** In incubation phase idea is matured, until the idea highlights in full systemically (other authors call it enlightenment waiting);

- ***A systematic description of ideas.*** In this phase is invoked creativity when the other phases can be used for analytical thinking;
- ***Figuring out a solution.*** In this phase are generated possible courses of actions on implementing the idea;
- ***Evaluation.*** In the evaluation phase the ideas results are estimated.

Negotiators' ability to create alternatives is intrinsically linked to successful negotiations (Thompson, 2005). Therefore, the outcome will depend significantly from creativity of the negotiator (De Pauw *et al.*, 2010). In order to determine how does creativity influencing on his results as negotiate or it is important to define the negotiating context. Various characteristics can limit a possibility to transfer desired expression. Negotiation context can act an individual expression of negotiators creativity and can cause both positive and negative effect on the outcome of negotiations. Negotiating context may be defined as integrative or distributive. In the context of integrative negotiating increases the relative merits of all the negotiating parties, and in the context of distributive negotiating is going on the division of pie, that is to say each side of the negotiating fights just because of higher benefits for themselves.

In the context of integrative negotiating (as opposed to distributive) negotiators can provide more creative solutions that can meet not only the interests of both sides, but also to increase the total value of the agreement (Galinsky and Mußweiler, 2001; Park *et al.*, 2013). With a mutually agreed unique and complex context of negotiating, negotiators may be more revealing their creative powers in processes of negotiation. INSPIRE (InterNeg Support Program for Intercultural researchs) is the first system which was designed to lead negotiations in internet (Kersten and Noronha, 1999; Kersten *et al.*, 2013), this system deals with negotiations as a process resulting in the relevant context. The process includes the preparation for negotiations, negotiating, and the agreement (Kersten and Noronha, 1999):

1. Preparation includes understanding the negotiation issues, challenges and opportunities, leading towards the construction of function.

2. Negotiations includes assistance for offers, evaluation of the offer based on the function values of benefits and provides a graphic representation of dynamics of the negotiations.

3. The agreement covers the calculation of the potential proposals that dominate in compromise or renegotiation.

Examination the effect of innovations to negotiations results it is not ice able their un deniable influence on communication of negotiating ideas. Interferences of inter cultural communication can have a signify can timpact on the negotiate on result. Therefore, it is necessary to look at influence of cross-cultural communication on negotiations, to examine cross-cultural communication procese sand their potential impacts.

In preparation for negotiations phase is necessary to know better the other side of negotiation. Knowing capabilities of technical communication of other party in negotiations it is possible to prepare effective negotiation support tools. Having experience in another culture of the business sphere it is possible to avoid misunderstandings that could undermine the smooth functioning of information exchange. In view of cross-cultural negotiation principles it is appropriate to foresee the potential of other negotiation side steps. The better we know the other side of negotiations the more accurately we know its needs, available alternatives, resources, and so on. In negotiation communication work many dynamic variables, therefore during forming negotiating team it should be taken into account the experience of members in different cultures also. Negotiation's success often depends on the effectiveness of the preparation - the better will be known another side of the negotiating and bargaining context, the better results will be achieved. Preparation, as the element of formation negotiation power is most frequently mentioned in scientific literature. Preparation involves earning, know ledge and competencies, ambitious exodus, various s compromises predictions. It is very important to know own resources and the other side of negotiation, to know your limit sand strength hes. This can be achieved by looking at the situation from outside and finding solutions that are acceptable for both sides. Preparation also include es the search of objective criteria and setting priority parameters for the other side. Equally important are the anticipation of different bargaining situations and preparation of relevant response sin order to achieves mo other inter action and better performance. Therefore, in this part of the article we will review the scientific literature, which deals with preparation for international negotiations. Research in this field mainly examines e-support of negotiations, cross-cultural difference sin the use of negotiation strategies by taking into account the behavior cross-cultural context, of the other side of the negotiation.

In the scientific literature, the preparation process of then ego tiations so far was investigated by Lewicki *et al.* (2001), River *set al.*

(2003), Christopher (2005), The Sloan Brothers (2013); Goldwich (2009), Mandel(2012), Fords(2012), Foster(2003) Evaluation of Children and others.(2007) Suvanto (2013), Lynch(2003) Pathways(2013), Novak and Hall (2001), Fisher and Shapiro(2005); Delrojo (2007) Kosecka *et al.*(2012), Escape (2004); Easypola (2008), Dawson (2010); Iragorri (2003) and others. In examining the preparation for negotiations there search esob served strategy on negotiation, adaptation types of negotiation behavior and uses of specific egotiating tactics. Among the researchers that examine negotiation strategies (Herbst *et al.* 2011, Mint-Wimsatt and Graham 2004; Ganesan 1993), thought-Wimsattand Graham(2004) are dominating the use of a few general negotiation strategies in the context of the four cultures (America, China, Japan and Korea). Analysis of research about the types of behavior in negotiations (Brooks and Rose 2004; Dabholkar *et al.* 1994, Herbs *tet al.*2011, Hilland Watkins 2007) stated that the authors distinguish competitive behavior and cooperating behavior depending on the orientation to profits of negotiation parties. Dabholkar *et al.*(1994) presents the differences between competing and cooperating behaviors, depending from each party of negotiations orientation top rofits, the duration of the business s relationship, according to which the type of behavior is being determined. In studies dealing with tactics (Reid *et al.*2002; Reid, Pullin sand Plank 2002; Herbst *et al.*2011), Reid *et al.*(2002) are presented results, illustrating the use of aggressive tactics by dealers. The authors found that the dealers commonly used tactic, creaingan at mosp here of “aggressive competition” (among potential buyers), followed by the "time pressure" (as a mean to get adis count from the seller), “the threat to apply elsewhere” (another tool to simulate the competition). Reid *et al.*(2002) analyzed the different communication tactic sin different buying situations. The authors found that more complicated the purchase situationis, the more the negotiating parties are trying to get more in for mation to reduce un certainties. However, the bargaining situation be come s more complex less in formation the negotiating parties are trying to give to another side. In several studies, the authors examined the electronic support systems that can help in pre-negotiation phase (Herbst *et al.* 2011). Good preparation for negotiations has extensive influence on the outcome (Keeney and Raiffe 2001). It should be noted that researches o fan electronic negotiations support systems carried out in 1970 and 1980 cannot deal with the technical challenges of these days (Herbst *et al.*2011).

Intercultural context of negotiations can be an important in process of preparing for the international business negotiations. Intercultural context of negotiations can be conditioned by the legal environment, organizational values, and cultural values. It is necessary to take into account the following variables, because otherwise it would be difficult to understand the objectives, strategies, tactics, and relationship of the other side of the negotiations. However, negotiations between representatives of different culture and international context of the negotiations have been insufficiently tested.

Specialized literature of intercultural dimensions have studied Hofstede and his colleagues (2010), Hall and Hall (1994), Tsang (2011), House *et al.* (2004), Javidan and House (2001); Ashkanasy *et al.* (2004), Gelfand *et al.* (2004) and Healy *et al.* (2004) and Javidan (2004), Emrich *et al.* (2004) and den Hartog (2004) and Schwartz (2006), Trompenaars (1997), Smith *et al.* (1996), Steenkamp (2001) Pruskus (2010, 2004), and others. In an overview of the literature we noticed that a lot of studies are conducted about the cross-cultural differences and the use of various tactics in negotiations.

During the negotiations can occur the numerous misunderstandings among the parties of the same culture. In the case of cross-cultural negotiations it is necessary to know the basic elements of the incompatibility of the negotiating parties. In further research it is appropriate to investigate in more detail the differences of preparation for negotiations among different and nearby cultural representatives. It should also be appropriate to investigate the integration of online search engines into negotiation support systems.

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**THEORETICAL ASPECTS
OF THE IMPACT OF HIGHER EDUCATION
ON THE ECONOMIC DEVELOPMENT OF THE COUNTRY**

The world practice testifies to the increasing role of system of the higher education in various areas of social and economic activities. Social contents which is shown in a possibility of development of spiritual powers and abilities, creative potential of the personality and social progress in general has education.

The education system as a subject of economic researches is poorly studied area both with scientific, and from the practical point of view.

Despite the available interesting results of researches on the matter, lack of single methodical approaches to an education impact assessment question on development of an economic system remains a serious problem. Such assessment is necessary from the point of view of more rational use of resources in the national economy and in an education industry, in particular, and also from a line item of assistance of activities of an industry of formation of implementation of strategic objectives of society at this stage. With respect thereto the task is set to reveal and systematize methods of scientific knowledge of a problem by means of which it is possible to construct the concept of an impact assessment of the higher education on economic development. It is supposed to perform such task on the basis of the analysis of the previous theoretical and practical researches taking into account relevance available problems and the prospects of economic development of society at the certain level (the state, the region, the entity) and a stage (the present, a short-term long-term outlook of prospect)[1].

The early economic researches connected with system educations, were performed only at the beginning of the XX century and on an extent long time had periodic unsystematic character:

- it is historically caused by the fact that the branch of education as branch of the non-productive sphere was considered as minor branch in comparison with the industry.

- benefit from education is shown only through a certain period, therefore, long time simply need wasn't serious to analyze an economic basis of functioning of an education system.

- education system very specific industry, here work regulation processes are complicated. approaches to cost determination, etc. are specific.

Recently interest in economic researches increased in an education system, especially abroad. There as on soft his interest in the following:

- it is noticed that in economically favorable countries expenses for education are big, therefore, there is an interdependence between the economic growth and expenses for education. The nature of this dependence and quantitative assessment should be determined by the scientist.

- development of scientifically technical progress and, therefore, the knowledge-intensive productions is impossible without educational development.

- the education level to some extent creates behavioral aspect of society more precisely, economic behavior of the specific person and his social requests.

The first attempts to give a scientific impact assessment of education on certain economic events were made by the academician S. G. Strumilin. By calculations of the academician the national income increment for the cost account on education averages 23% [2].

V. A. Zhamin who dealt with problems of reflection of cost of training of workers in a national income and a public product is considered one of followers of the academician Strumilin. Its calculations show that 27% of a national income were created due to investments of capital in national education. Efficiency of investments in training of qualified personnel is 9,3 above, than general investments to the sphere of production of goods.

It should be noted that in the works V. A. Zhamin, L. B. Daynovsky, S. G. Strumilin education was considered in specifically - the economic plan: determination of needs for specialists of a certain profile, placement of educational institutions, economic return on preparation etc., all this accurately depended on standard ly planned targets that was determined by a planned form of managing. Later, in the nineties, in the conditions of transition of the country to the market relations on economic development A. K. Asaturov, S. A. Dyatlov successfully were engaged in education impact assessment questions.

A. Asaturov closely researched a ratio of the demand and supply in the labor market of specialists with secondary vocational education at the regional level. Results of a research showed obvious discrepancy between requirements of the market and the offer from educational institutions. According to S. Dyatlov, the economic benefit from

education is determined by a ratio of the direct cash incomes gained from education, and the expenses connected with its acquisition[3].

In the sixties the twentieth century group of the American researchers (Becker G., Fischer M., Schulz T.) I laid the foundation for the theory explaining interrelation of investments into the person with labor productivity level and the income. Among the American researchers T. Schulz was one of the first in this area. In the early sixties our century he has calculated the size of "the human capital".

Becker G., Schulz, T., Fischer M. in a general sense characterize "human capital" as a certain fund which provides to work the fixed income. In 1992 the economist Mr. Becker for works on the theory of "human capital" was conferred the Nobel prize on economy. The researcher Goylo V. S. still in the seventies of the twentieth century, having analysed Becker and Schulz's works, closely I researched the concept of "human capital" and "investments into the person".

The huge contribution to the researches concerning efficiency of educational potential was brought by the Russian specialist in economic problems of education V. A. Martsinkevich. In the works the researcher considers use of work of certain specialists in development of production and the equipment, in particular, on the example of the USA, and also questions of the demand and supply on highly qualified specialists. The most reliable and direct indicator of cost efficiency of education, according to Martsinkevich, is the indicator reflecting distinctions in the income of persons with various education level. In the nineties the twentieth century dependence of the income from the educational potential of the person was researched by the Russian scientific Dyatlov S.A.

Important issue, according to Martsinkevich, is interference and a ratio of an education system and the labor market. Martsinkevich noted that inflow of pupils to an education system is very sensitive to dynamics of the market, but is late for the period of study duration that conducts to an imbalance between the demand and supply in the labor market. The author allocates two levels of interrelation in this aspect: quantitative compliance, that is between requirements of industries of economy and the directions and levels of an education system, and also high-quality compliance - nature, content and results of education.

In the USA use of the indicators characterizing efficiency of education is based on a basis of the actual distinctions in compensation of workers with the different education level as these distinctions characterize the production value of the general and vocational

education got by people. Martsinkevich V. I. in the works paid attention that else from 1980th years the education system took the place in system of national priorities of the USA as one of factors of forming of competitive advantages of the country. The same thought was developed in the works by M. Porter. Fatkhutdinov R. A., researching strategic importance of innovative development, estimates importance of activities of the higher education for development and deployment of innovations in any field of activity that finally promotes forming of competitive advantages at this or that level.

Results of researches of works of the scientists dealing with education impact assessment issues on economic development show that use of evaluation criteria is caused by availability of those purposes which are allocated by authors as estimative characteristics of development of an economic system at the level and a stage, interesting researchers[4].

The choice of criteria for evaluation of influence of education by researchers was performed from the following line items:

1. The marked-out criteria shall correspond to content of purposes which relevance is dictated by requirements of society at this or that stage of development depending on a type of economic system.

2. The choice of criteria is caused by availability of developed techniques in economic, statistical, mathematical theories.

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SECTION XI. Philosophy of Science

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MODERN TRENDS OF THE DEVELOPMENT OF SCIENCE IN UZBEKISTAN

By the initiative of the First President of the Republic of Uzbekistan Islam Karimov special attention had been given to the development of science which served to improve the scientific and technical potential of our country, to increase integration of science and production, modernization of the economy and the welfare of the people. The decree of Islam Karimov "About additional measures on stimulation of introduction of innovative projects and technologies in production" of July 15, 2008 serves as an important guide to action in the introduction of achievements of science and new technologies. From the first years of independence, special attention was paid to the question of sciences to a new socio-economic realities, organization of the starting conditions for creation of high-tech products that face the needs of the domestic economy and can compete on the world market, the formation of scientific personnel of a new generation with innovative thinking, was accompanied by the adoption of several legal documents. This is the order of Islam Karimov "On measures to improve coordination and management of the development of science and technology" dated August 7, 2006, "On additional measures on stimulating implementation of innovation projects and technologies in production" of July 15, 2008, "On measures of on further improving system of training scientific and scientific-pedagogical personnel of high qualification" of November 2, 2010 and others.

Today is an important fundamental and applied research in the fields of science, technology, culture and education on the most pressing socio-economic issues, ensures effective operations of its scientific institutions, coordination of scientific research and development, timely introduction of scientific achievements and high technologies in practice and also trains highly qualified scientific personnel, which contributes to the intellectual, economic and spiritual potential of our country.

Currently, the Academy of Sciences of the Republic of Uzbekistan is comprised of 32 research institutions, including 23 major researches Institute, a research center and specialized design-technological Bureau, 4 museums, Karakalpak branch with two research institutes and Khorezm Academy of Abdullah.

The independence of our country has provided young scientists the opportunity to actively participate in solving science world topical issues. A vivid confirmation of the creation at the National University of Uzbekistan named after Mirzo Ulugbek high technology Centre with the participation of the University of Cambridge (UK). Among the developers of innovative projects, the share of young specialists is growing steadily. In order to support gifted youth Council of young scientists has developed a targeted strategy of development of scientific and innovative activities aimed at enhancing young people embarking on the path of scientific endeavors.

During the years of independence, the Academy was able to go a long way of updates and a great success, winning international prestige. "Uzbekistan is a heart of Central Asia. This sacred land has raised such great thinkers who have made invaluable contribution to world science as Imam Bukhari, Imam Termizi, Abu Ali Ibn Sino, Abu Raykhon Beruniy, Mirzo Ulugbek. The noble work carried out by the Uzbek leadership, including reviving and preserving for future generations the rich cultural heritage of their ancestors, is one of the important factors increasing the potential of your state, its authority on the world stage".[1]

During the years of independence the science of Uzbekistan has received a new stimulus, more government support due to which in some areas the results have been of global significance. There are the following such as the solar energy industry, genetic engineering, unique in astronomical discoveries. On recognition of the scientific achievements of the country is the fact that on the eve of the 21st anniversary of independence of our Motherland in the Astronomical Institute of the Academy of Sciences of the Republic of Uzbekistan came the news of the opening of the Japanese scientists of a minor planet – asteroid No. 22948, which the international astronomical Union assigned the name of Maidanak.

In a report published in the circular of the Harvard minor planet center, noted that the Maidanak astronomical Observatory, world-class located in Uzbekistan. In General, foreign astronomers in different times were named in honor of our country and the great ancestors of the Uzbek people made a great contribution to the development of world

science, five outdoor small planets – Uzbekistan, Avicenna, Ulugbek, Beruni and Khorezmi. Another planet was discovered in 2009, by scientists of Uzbekistan in the Maidanak Observatory. At the suggestion of the First President of Uzbekistan Islam Karimov, it was named Samarkand after the city, which since ancient times is the center of world astronomy. In recent years among young people has increased significantly, the pursuit of higher education. [2]

According to the report of "Global innovation index" in 2012 by the international business school "Ensad" of France – one of the best five business schools in the world- and the world intellectual property organization, among 141 countries of Uzbekistan has occupied 35-e a place on the development of human capital and 2nd place for the development of the education system, which is another international recognition. Today great attention is paid to development of science and educational potential of the country, which since ancient times is one of the centers of world civilization. In our country only in 2012 under the State scientific and technical programs conducted fundamental 392, 892, applied research, 353 of innovative scientific and technical development, implemented 8 international scientific and technical programs. Thanks to the participation of our scientists in 36 foreign joint research projects attracted grants from international research funds in the amount of 6.56 million and 669 thousand euros.

All this is accomplished by establishing international standards of two-stage system of higher education - undergraduate and graduate, to improve conditions and material stimulation of scientific workers. But I haven't used all the features of the full use of scientific potential of Uzbekistan. This is primarily due to the fact that the current still a two-tier system of certification of scientific personnel (candidates and doctors of Sciences) did not meet modern, internationally accepted requirements to the training of scientific and scientific-pedagogical personnel of higher qualification. Taking into consideration, when it coordinated the most effective aspects of the current system and the experience of developed countries such as USA, UK, Germany, France, South Korea.

As noted by the Director of the European centre for nonlinear and complex systems by Giulio Casati (Italy), the development of this branch of science of Uzbekistan, like many others, is at the highest international level. The close cooperation of Uzbekistan with the international scientific community will promote expansion of mutually beneficial contacts of scientists from different countries, exchange of

experience and information, which in turn will improve the quality and depth of research.

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SECTION XII. Philology

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METHODOLOGY OF WORK WITH SONG MATERIAL IN THE LANGUAGE TEACHING

Music is one of the most effective methods of affecting feelings and emotions of any person. It is inalienable part of our life, we all have musical preferences, and swingeing majority of people listen to the radio or songs of favorite authors regularly. Music is the part of culture of every nation, what it ensues from, that if to listen music of people of the studied language and thereon language, then it is possible deeper to get to know his culture, way of life, traditions, world view.

Musical evidentness, created and functioning in society, in the ideological and artistic quality, examined: as an objective information generator, as mirror of life and culture of people; as ideological and artistic information generator; as a language and linguistic information generator, as representers of the language and speech system.

Usage of music on the lessons of Russian very topically for a number of reasons. Firstly, students at once become familiar with the culture of country of the studied language. Secondly, during work with this original linguistic-cultural material good pre-condition is created for

all-round development of personality of studying, because specially neat songs stimulate the vivid thinking and form good taste. Thus unlike educational texts, that, foremost, inform a reader (or listener), i.e. affect his intellect and memory, music as cross-cultural material renders affecting emotions of man and his general artistic memory. This reception has a great number of advantages :

- Many teenagers live by music, therefore the use of songs on lessons substantially promotes motivation;
- The amount of songs is so enormous, that it is not hard to choose necessary song material on the studied topic;
- By means of songs it is good to work off a pronunciation, intonation;
- Mainly songs are written with the spoken language, with their help it is possible effectively to study this style of speech [1, c.84].

About connection of art and educating to the foreign languages G. Blell and K. Hellwick: "Music and art are freely interpreted, dint in cultural consciousness, excite creativity and cause individual language reactions". The same authors describe fundamental functions, uniting music and foreign languages: physiological (cooperant memorizing); psychological (assisting weakening, unloading); emotional (defiant feelings); socially-psychological (strengthening a dynamics in a group); cognitive (assisting cogitative processes); function of unconscious studies (difficult linguistic structures are learned by heart at unconscious level); communicative (assisting communication).

Examining a concept "music" in the context of the course educating to Russian researchers differ. The methodical understanding of this word is wider than his traditional volume of value in this case, somehow:

- simply music, т. of e. instrumental execution of different pieces of music;
- singing, т. of e. vocal execution of works, both with instrumental musical accompaniment and without him, т. of e. acapella, solo and choral singing;
- video clips with the records of popular songs on the different languages of the world;
- information from the world of musical industry, including the articles, reviews, musical rating, interview, announcements, advertisement, fragments of broadcasting about the world of music;

- information from the world of musical industry : photos of musical ensembles and separate performers; musicians; composers; producers; musical instruments; interiors of modern video studios and concerto halls and etc.

The study of music and songs of countries of the studied language gives an wonderful opportunities for development of cognitive interest and forming of socio-cultural competence.

Table of contents of educating to Russian as foreign on musical basis includes:

- linguistic component: musical material as basis of educating to the second language; speech material: the small folklore forms and modern child's songs, created specially for studying Russian;
- psychological component: speech abilities, providing the use of the offered speech material in the process of educating to the listening comprehension and talking;
- methodological component: training exercises and communicative tasks, providing forming of speech abilities [2, c.124].

To use sounding music on the lessons of Russian expediently in different cases, so, for example:

- to create a certain mood and corresponding atmosphere of communication;
- to set the pace of the job processing;
- to take off tensions;
- to provide the emotional switching from one type of activity to other;
- to assist creation of educational situation by means of unverbale informative supports;
- to add a national colour to the situation of communication (at development of receptive and productive types of speech activity);
- to extend the spectrum of cross-cultural and socio-cultural knowledge, etc.

There is a row of receptions works with music, by means of that the achievement of these aims is possible. So, for example:

1. To create a necessary atmosphere, take off tension, prepare to perception of information of employment, then to beginning of lesson music must sound in a cabinet, for this purpose it is important correct to pick up the piece of music, to get a necessary effect; and the best of all to combine different styles and genres so that fragments changed each other fluently.

2. To create an atmosphere the determined location of historical epoch : for this purpose it is possible to combine music with corresponding evident images, and it is possible studying to suggest to write 5-10 words on an association with sounding music; listening music to make off the begun suggestions; listening music, to choose one of offer variants of answer; listening music to fill a table (for example description of country, region, man and ton of д).

3. To stimulate the figuratively-associative thinking: it is suggested studying to write 5-9 words or word-combinations, characterizing feeling and emotions, caused by this music, it is also possible to describe a place with that students associate this music, or it is possible to present and describe the picture created by this music.

4. To extend knowledge of socio-cultural character, countries musics and ton of д. related to history of development. In this case it is possible to use the specially made pot-pourris from the pieces of music of different countries, but approximately the same historical period, and it is suggested studying to guess a country, epoch on fragments from the pieces of music; to guess a melody, performer etc. [3, c.68].

Songs on the lesson of Russian revive teaching, cause positive emotions, serve to the best mastering of lexico-grammatical material. Songs must be authentic, accessible in an informative and language plan, emotional, problems and actual, and also songs must answer the age-related features of students.

The use of songs on the lessons of Russian enriches students knowledge of cross-cultural character, gives an opportunity to know countries about a culture, assists development for the children of interest in the study of language, activates educational activity, assists development of ear for music and are the method of expansion and enriching of dictionary of students.

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COGNITIVE APPROACH TO METAPHOR TRANSLATION

The integration of cognitive linguistics and translation is necessary in the class. The specific use of translation in dealing with metaphors demands closer attention. Conceptual metaphors and their linguistic rendering are never the same across languages. Linguists consider metaphor to be one of the difficulties of translation studies. The problem of its translatability has been regarded the center of scientific metaphor research. There are great differences in metaphoric systems of languages. Metaphor is always based on national mentality. Different languages have different concept building. G. Lakoff claimed translation is impossible if two languages have radically different conceptual systems. But since people can learn different languages, those languages can't have different conceptual systems. The major difference between the cognitive view and classical one is that in cognitive linguistics metaphor is a main resource for thought processes. According to the question of translatability it is difficult to preserve an exactly equivalent metaphor while translating. The cognitive perspective of metaphor gives the possibility to interpret metaphor in a more holistic way. Translatability becomes connected to the level of conceptual systems in culture and source. There are two main approaches in modern studies. Metaphor is a figure of speech in traditional linguistics and metaphor can be transformed into non-metaphor without loss of meaning. Metaphor is a major instrument of cognitive process in cognitive linguistics and its translation is connected with semantic equivalence. There are three different ways of metaphor translating in classical approach. Metaphor is not translated. (Dagut) Metaphor is translated. (Mason) Metaphor is translated in interlinguistic and intercultural limits. (Newmark) According to the third point there are the following ways of translating metaphor: substitution for another metaphor; changing for comparison; addition of an explanation and translation by paraphrase. The cognitive approach to metaphor demands intercultural ties of translation. Cognitive linguistics offered practical means of translation and they look like the traditional ones. The problem of metaphor keeping in translation is connected with theories on role of form of original text. There are two ways in theory of translation: the keeping of the form of original text (F. Schleiermacher, M. Heidegger, G. Steiner) and the neglecting of it. The first theory

supporters think demetaphorization of original text is the depletion of its initial expression. The second theory proposes metaphor elimination in translation. The process of translation is the process of violence for original text. Usually there's no spirit of original culture in translated texts without keeping of the metaphor. That's why neglecting of source form of metaphor leads to weakening semantic power of the original text. And the rejection of metaphor in translation worsens the cultural context and denies its aesthetical power. Many other scientists consider the objective of translation is to give the meaning of original without strong binding with its form. While teaching translation theory it is necessary to give students all theoretical issues of metaphor translating and show the practical ways of its realization. Some linguists (E. Nida) designate two types of translation: formal (translator follows the form of original) and functional equivalence (translator brings the meaning of the text closer to the reader). One modern theory (K. Rise) neglects the form of original (translator must transform original text for cultural comfort of readers). Translating metaphor in the classical, componential sense would mostly lead to aberrations. Conceptual and linguistic dimensions of cross-cultural metaphors should function as variables. Different cultures and languages databases would benefit of techniques in corpus linguistics.

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**THE STATUS OF ABBREVIATED TERMS IN MEDIATION.
PROBLEMATIC ISSUES OF TERMINOLOGY
HARMONIZATION¹**

The work on standardization of terminology undergoes three major stages including the study of the structural and semantic features of the terms, the systematization and the use of the terms. In the stage of systematization, the researchers involved in the project "Systematization and Standardization of the Mediation terminology in Russia" worked on balancing the system of mediation related concepts and a corresponding system of mediation terms (terms denoting specialists and other parties in mediation, official documents, types of conflicts eligible for mediation settlement, types of mediation processes, etc.).

The problematic issues identified in the existing mediation terminology (MT) include the undefined status of the terms from other professional terminologies which are used in mediation with or without semantic change; excessive synonymy complicating the uniform design of mediation documents and the problem of abbreviations that is specific for MT (73.6% of the terms are represented by multi-component structures, some of which are acronyms, some are often shortened occasionally (only in documents), and some are used exclusively in unabbreviated form both in written and oral mediation).

The aim of this study is to shed some light on to the status of abbreviations in MT. To achieve this goal the database "Multi-aspect database of Mediation Terminology" including 859 mediation terms was compiled. The database uses the data (term extractions) from the "Electronic Monitor Corpus of the Mediation Language" (EMCML) [2]. The database (that presents every term as classified according to the structural and semantic type it represents) was used to carry out the frequency analysis of the mediation terms occurrence in texts and mediation sessions. Let us consider results in the following sections: occasional abbreviations in mediation, acronyms and the abbreviated terms with ambiguous status.

¹ *The authors express their gratitude to the Russian Foundation for Humanities (project No. 15-04-00392 Systematization and standardization of the mediation terminology in Russia)*

The first analysis of the extracted terms identified 339 abbreviated units. However, not all 339 abbreviations presented as letter and syllabic shortenings can be considered as full-scale abbreviations. This is due to the fact that in written mediation any multi-component term can be shortened for the economy of graphic means. In this case a text contains a mark with the full form of the abbreviated term when first mentioned. As this shortening is occasional, even with the time abbreviations do not become recognizable within the discourse and are used as full multi-component terms in oral speech (e.g. *MD / Mediation Device, MS/Mediation Services, MF/Mediation Function, ME/Mediation Equipment, MC/Mediation Committee, CA/Compromise Agreement, AM/Administrative Matter, DRB/Dispute Resolution Branch, MCD/minor civil dispute, EDR/Effective Dispute Resolution*). They are characterized by low level of reproduction.

Thus, we do not refer to these two- and more- component terms which are occasionally shortened in mediation documents as to full-scale abbreviations and they are excluded from the selection. These terms are not used in the spoken language, but are found in legal documents. Due to their occasional status these terms are considered irrelevant for determining the criteria for systemizing the use of abbreviations in MT.

The next considered group is represented by acronyms which take up 6.05% (52) of the MT. The acronyms are stable forms that function as independent words, characterized by high frequency reproduction (e.g. *BATNA/Best Alternative to a Negotiated Agreement; EATNA/Estimated Alternative to a Negotiated Agreement; WATNA/The Worst Alternative To A Negotiated Agreement, ATNA/ alternative to a negotiated agreement, MATA/Mediation and Training Alternatives, MARS/Mediation Arbitration Resolution Services, GRIT/Gradual Reduction in Tension, ZOPA/Zone of Possible Agreement, MIAM/Mediation Information and Assessment Meetings; MIAM Mediation Information and Assessment Meetings*). These terms were formed by abbreviation of multi-component terms, however the frequency analysis of the term use in the compiled corpus displays that in 88.46% of oppositions "full multi-component term /acronym" the acronym is marked as "high frequency of use in written mediation" and "high frequency of use in oral mediation", while 80.77% of full multi-component terms are characterized by "extremely low frequency of use" in both oral and written mediation.

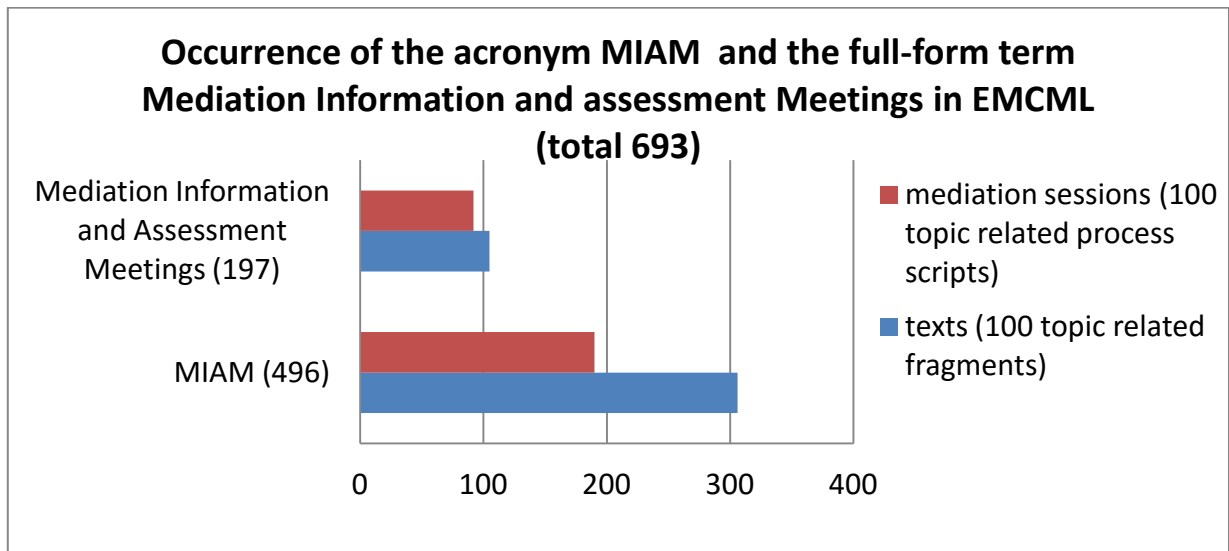


Diagram 1. The results of the frequency analysis of acronym/full-form term occurrence in EMCML (MIAM/ Mediation Information and Assessment Meetings)

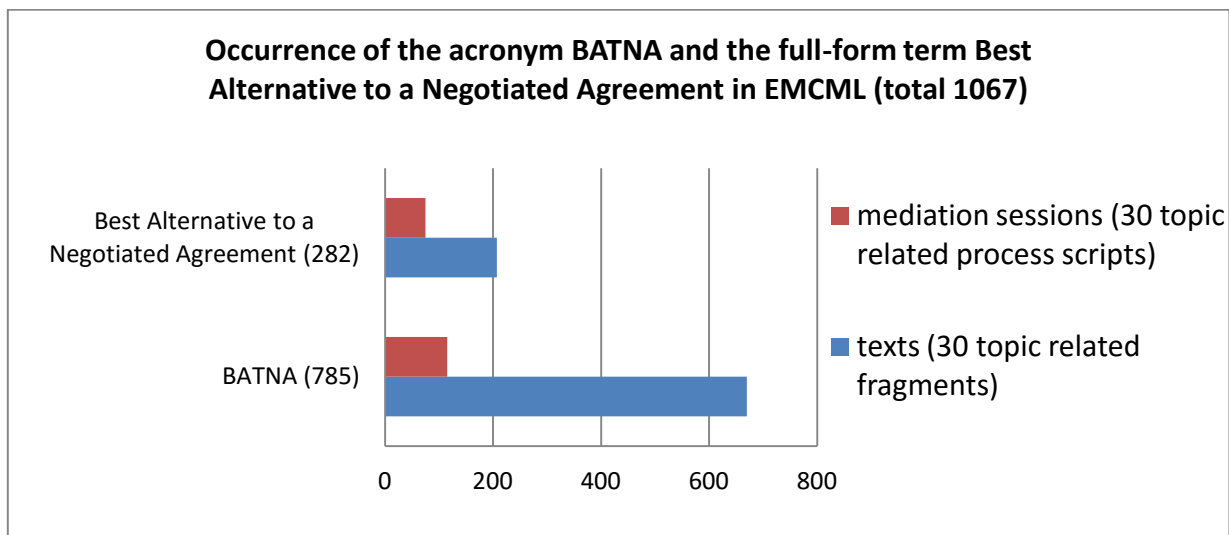


Diagram 2. The results of the frequency analysis of acronym/full-form term occurrence in EMCML (BATNA/ Best Alternative to a Negotiated Agreement)

Thus, the 52 identified acronyms are two-form terms, and both forms (abbreviated and non-abbreviated) are regarded as equal. However, an acronymized term must be transcribed at first mention either in a text or during a mediation session (if parties are not familiar with it).

The results of the discussion paper initiated by the National Alternative Dispute Resolution Advisory Council in 2003 were presented in the report "ADR Terminology Responses to NADRAC

Discussion Paper" [2] and show that accredited mediators also point to a special status of acronyms in mediation. In particular, it is necessary to determine the ambiguous status of the acronyms which are differently referred to by different filed specialists. For example, the terms ADR/PDR (Alternative Dispute resolution/ Primary Dispute resolution) are considered to be absolute synonyms by most ADR associations, however, some experts believe that they have a similar but not identical meanings (not all the ADR-procedures are resorted to before attending court, there are court-ordered programs which are entered by parties who tried litigation but that was not successful) and should have definitions which would specify that difference.

The analysis of the use of abbreviations in English MT allowed us to differentiate occasional shortenings that can be found only in written mediation and mediation acronyms which are widely used in all types in mediation processes. Today, Russian MT is dynamically developing. It uses English MT as a source terminology to find Russian equivalents or to coin new Russian terms to represent the mediation concept domain in the Russian language. That is why harmonization of Russian MT is one of the most important steps for its standardization. The data on the frequency of use of acronyms in English MT was required to develop a clear understanding about the prospective use of equivalent Russian terms. The translation of MT into the Russian language must be carried out in accordance with the corresponding rules of use of these terms in the source language. According to the analysis, highly reproductive abbreviations in mediation eventually obtain the status of acronyms, and as a result their full -form terms are used only as definitions to help interpret a concept to those parties that are not familiar with it. This principle should be transferred to the Russian language, i.e. researchers and translators working on standardization of Russian MT and particularly on translation of English mediation acronyms must find equivalents (or coin new terms if necessary) that can also be used as acronyms in Russian. Descriptive translation is unacceptable, as in this case an English term and its Russian descriptive "equivalent" will have critically different component structure. This will further hamper the process of internalization and harmonization of the terminology that implies mutual borrowing of the terms in the national languages to fill in the gaps in national terminology.

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METAPHORIC REPRESENTATION OF THE CONCEPT *ISLAMIC THREAT* IN CONSERVATIVE MEDIA DISCOURSE

One cannot overestimate the importance of metaphor in rhetoric associated with Islam. Metaphor is not only capable of showing the similarity of objects and phenomena, but creates the resemblance, presents these objects or phenomena in a new light [1]. J. Lakoff and M. Johnson, who have done a vast amount of research in the field of metaphor, argue that it is an inherent property of human thought [3].

In this article we aim to examine the extensive use of metaphor in negative *Other*-presentation [2] – in our case *Others* are Muslims – and negative presentation of Islam. A selection of one hundred and ten articles from conservative media containing words *Islam*, *Islamic*, *Moslem*, *Muslim* was the source of our corpus. Journalists used a wide range of metaphors, from traditional, like metaphors of war, fire, disease to relatively novel ones, like metaphors of hunting, slavery and color. One of the most common metaphoric source domains is war. Metaphoric representation of Islam as a destructive force is directly related to the conceptualization of Islam as a religion, encouraging wars. The conservative media is full of reports of explosions, bombings, murders attributed to all sorts of Muslim terrorist organizations and groups. The use of the military metaphor through the metaphor of fire can be demonstrated in the following example:

(1) Once again, it is Islam that is *the spark for war*. It is *the teachings of Islam* that demand constant fighting and killing. *All the killing and all the war* is explained to the people as *the "will of Allah."* [6].

The metaphoric use of the verbs “explode” and “trigger” is directly related to warfare and the use of weapons, thus the attention of the target audience is focused on the behavior of the Muslims, who often do not just come out of mosques, but, rather, having received the

appropriate “information charge”, rush out in search of prey. Even insignificant events can “pull the trigger”, i.e. provoke mass hysteria among Muslims, just like a weapon, always ready to fire:

(2) Men often *explode out of the mosque* looking for someone to kill to ease their Islamic rage against an infidel world. It does not take much to *trigger mass hysteria* and Islamic mobs screaming, “Death to the world” [5].

A mosque is portrayed as a bomb that can explode at any moment, and radical Muslims are “fragments”, carrying death to “infidels”.

One of productive source domains for metaphors is mythology. Consider the following example:

(3) *The Islamic Pandora's box has been opened* and no amount of energy spent trying to push *the true face of Islam* back in will be successful [5].

According to classical Greek mythology, Pandora, because of her curiosity, could not resist the temptation and opened a jar containing death, hunger and disease, releasing them into the world. In the given example, Islam is explicitly named Pandora's box, and after the events of September 11, it was opened - the adherents of Islam have shown the world its true face (*the true face of Islam*). The metaphor of the true face identifies Islam with the person who preaches the destruction of those who disagree with dogmas of Islam.

In the following passage the danger of Islamic ideology is represented using the mythological metaphor:

(4) Many of these young people live in a kind of cultural *limbo*, stranded between the repressive culture of the Asian subcontinent and the debauched and degraded culture of Britain. And *the terrible message of the jihad is a siren song* for those who have been abandoned in a *psychic desert* and who search for a meaning to their lives. [7].

The author sees many young followers of Islam as having no spiritual foundation in their lives; they exist in a kind of limbo - an afterlife condition hypothesized by Medieval Roman Catholic theologians. Metaphorically limbo can be interpreted as a state of uncertainty; a young man's consciousness is viewed as a kind of psychic “desert”. According to the author, Islamists take advantage of these morally immature young people, trying to ensnare them. The metaphor of a siren song originates in Greek mythology. Sirens are beautiful but dangerous creatures who try to lure sailors with their enchanting voices to shipwreck on the rocky coast. The idea of jihad is often as irresistibly attractive to young Muslims as a siren song. This metaphor allows the

author to convey the idea that jihad can possess qualities attractive for Muslims, but, in fact, brings them nothing but death.

Human health is frequently used as a source domain for metaphor. The metaphor of illness and death is one of the most common in articles on Islam. In this type of metaphor Islam is conceptualized as cancer, Muslims as sick people. Here is an example of conceptualization of Islam as a mental illness, in this case - hysteria, which, according to the author, is inherent in the followers of Islam:

(5) *Islamic hysteria* is in full voice to bend the world to Islam's will. [5].

Some journalists explicitly call the Islamic mindset pathological:

(6) *The Pathology of an Islamic Mind*. [5].

Those who escaped from the captivity of Islamic ideology are the lucky ones: they were able to avoid insanity. Their minds are free from the “*maddening storm clouds of Islam*”:

(7) The lucky ones will escape the insanity, and for them it is like being re-born. Their minds now clear of the *maddening storm clouds of Islam*, they will attempt to start a new life away from Islam. [5].

Islam accepts the pathology of consciousness in his followers as the norm, and reasonable, mentally healthy people are destroyed:

(8) Only in Islam is the *abnormal mind accepted* and the *normal mind is killed*. [5].

The next example highlights the destructive influence of Islam to which the Muslim mind is exposed at an early age, its integrity violated (*mind is twisted*). However, the process can be reversed if one chooses to reject Islamic beliefs and “the patient recovers”:

(9) *The Muslim mind is twisted early in life* and while there is hope that it can be made whole again, those who do recover must be willing to abandon friends and family because they will no longer be welcome. [5].

In the following examples we find the metaphor of disease, namely, a metaphorical representation of Islam as cancer. According to this model, the Islamic threat is identified not only with the bygone “red” menace of the Cold War, but also with cancer whose metastases are omnipresent:

(10) Indeed, like the Red Menace of the Cold War era, the Green Peril is perceived as a *cancer spreading around the globe*, undermining the legitimacy of Western values and political systems. [4].

(11) Like the patient who has just learned his body is *riddled throughout with cancer*, most Americans have just discovered that while they were living their busy lives, concerned with family and work - a

cancer has been growing and metastasizing in their midst - and that *cancer is Islam* [8].

Since cancer is a terminal disease, by using this metaphor, the author of the publication objectifies his point of view on the problem of Islam taking over the western civilization: it is seen as a malignant and irreversible process; it threatens the existence of the whole world. A combination of the metaphor of disease (*cancer*) with the metaphor of war (*to undermine*) in example (11) makes the statement even more expressive.

Conceptualization of fanatical Muslims as people suffering from fever is reflected in the mentioned passage. Under the influence of imams, especially after Friday prayers, Muslims are as if in a state of fever; the use of the phrase “*lose touch with reality*” implies that Muslims are in a state of delirium, unable to adequately perceive reality:

(12) Muslims *lose touch with reality* after being brought to a *fever* pitch by the imams and mullahs, especially during Friday prayers [5].

The way we construct our worldviews is inseparable from metaphor. Therefore, in this article we sought to understand how the conceptualization of Islam in conservative media discourse is realized through several basic metaphors: metaphor of war, metaphor of disease and death, mythological metaphor. All of these metaphoric frameworks had the effect of representing Islam in a negative light. Thus, a great deal of rhetorical action was mobilized in the creation of a new concept – *ISLAMIC THREAT*.

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SECTION XIII. Jurisprudence

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THE RIGHT TO FREEDOM OF THOUGHT

The right to freedom of thought is generally recognized under international law. The Universal Declaration of Human Rights of 1948 contains the following statements. Firstly, everyone has the right to freedom of thought, conscience and religion; this right includes freedom to change his religion or belief, and freedom, either alone or in community with others and in public or private, to manifest his religion or belief in teaching, practice, worship and observance (Art. 18). Secondly, everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers (Art. 19). [12]

The similar rule is included in the most of current state constitutions and laws. Under Section 2 (b) of the Canadian Charter of Rights and Freedoms, everyone has freedom of thought, belief, opinion, and expression, including freedom of the press and other media of communication. [2] The Constitution of Russian Federation states, everyone shall be guaranteed the freedom of ideas and speech. [8] According to Article 47.1 of Constitution of Azerbaijan, everyone may enjoy freedom of thought and speech. [9]

At the same time the content of the right under consideration is discussed in legal theory and practice. [1, p. 7] The most difficult questions are about realization of this right. If thinking process is implicit, is it possible to limit the freedom of thought and break the right? If it is impossible, why this right is fixed in formal sources of law and protected? To answer these questions, it should analyze the mechanism of realization of the right to freedom of thought.

The United Nations Human Rights Committee explains, “The right to freedom of thought, conscience and religion (which includes the freedom to hold beliefs) in Article 18.1 [of the Universal Declaration of Human Rights of 1948 – S.O.] is far-reaching and profound; it encompasses freedom of thought on all matters, personal conviction and the commitment to religion or belief, whether manifested individually or

in community with others...” [11, p. 13] N. Ramoutar writes, “Freedom of thought, belief, opinion, and expression means that everyone has the right to think and believe whatever they please. Everyone has the right to express their thoughts without the fear of being punished or silenced.” [3] According to Article 18 of the International Covenant on Civil and Political Rights of 1986, “Everyone shall have the right to freedom of thought, conscience and religion. This right shall include freedom to have or to adopt a religion or belief of his choice, and freedom, either individually or in community with others and in public or private, to manifest his religion or belief in worship, observance, practice and teaching.” [5]

Sentences just given shown that, as a rule, the right to freedom of thought is understood to be the right to express person’s opinion. J.B. Bury writes, “A man can never be hindered from thinking whatever he chooses so long as he conceals what he thinks. The working of his mind is limited only by the bounds of his experience and the power of his imagination. But this natural liberty of private thinking is of little value.” [1, p. 7]

At the same it should be noted that express an idea or opinion, a person formulate it, and to formulate an idea, it is important to have information about an object of thinking. So, realization of the right to freedom of thought depends on access to relevant information.

It is should take one fact into account. Information can be useful or harmful. This factor is interrelated with the freedom of thought. For example, limitation of access to political information breaks citizen’s right to freedom of thought because one can not formulate any opinion about government policy. M.H. Halperin and D.N. Hoffman write, “Full information about policy proposals and debate over alternatives ensure popular consent.” [4, p. 132] In the authors’ point of view, secret operations are an anathema to a democracy. [4, p. 139] For this reason they should be permitted, if at all, only in the most extenuating circumstances. [4, p. 139]

J. Ober writes about interrelation between information and human dignity. “Self-governance requires ready access to reliable information and stability over time. Dignity ensures that relevant information is made public”. [7, p. 827-828]

Another situation takes place when information is harmful. N. Ramoutar writes, “There are certain limitations of everyone's freedom of thought, belief, opinion, and expression in order to prevent harm to individuals and groups of people. These include “laws against pornography, laws against hate propaganda, and laws against hatred

which targets specific groups”. [3] In the author’s point of view, such bans limit human right to freedom of thought. But it should be pointed out that the laws against popularization of harmful information can also protect this right. The explanation is simple. Aggressive hate propaganda can entail formulating criminal and inhuman ideas in people’s consciousness. For example, such propaganda was used by Pol Pot in 1975-1978 to make teenagers cruel for protection dictatorial regime. Most of them knew nothing about human rights and culture. S. Krkljes writes, “Khmer Rouge soldiers, young peasants from the provinces, mostly uneducated teenage boys who had never been in a city before, swept through town.” [6] In contrast, laws against hate propaganda, popularization of human rights and dignity give reliable information to people, protect their right to freedom of thought, and prevent crimes and damage.

N. Ramoutar writes, “James Keegstra was a social studies teacher in Alberta. He was convicted of willfully promoting hatred by teaching his students that the Holocaust had never occurred. This case was brought to the Supreme Court of Canada. The court came to the decision that Canada's hate laws did infringe on the Charter guarantee of freedom of expression. The majority of the court however thought that the infringement could be justified which would protect people from hate propaganda.” [3] In such situation incorrect information about historical facts was spread between students, and they could formulate wrong opinion. Their freedom of thought could be broken.

Moreover, concealment of important information may be qualified as a crime. Under Article 237.1 of Russian Criminal Code “Concealment or distortion of information about developments, facts, or phenomena endangering human life or health, or the environment, committed by a person who is duty-bound to supply the population and the bodies authorized to take measures of removing such danger, by said information, shall be punishable.” [10] In such situation lack of information is dangerous for citizens.

On the base of analysis the following conclusion may be made. The right to freedom of thought includes freedom of access to reliable information for formulating correct opinion about facts, persons, and circumstances. Illegal limitation of access to important information, its misrepresentation or popularization of harmful ideas can break the right. These statements are true for all spheres of human relations.

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SECTION XIV. Educational Sciences

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INTERACTIVE LEARNING IN THE EFL CLASSROOM THROUGH BOARD GAMES

***Abstract:** Interactive technologies in Education is an organization of the learning process in which the student and the teacher interact and complement each other through the learning process.*

Taking a different and strong personality-oriented version to use, interactive approach creates prerequisites for quality learning. It allows teachers to create training programs that have additional help to students in mastering the curricula and the development of cognitive activities.

***Key words:** Board games, interactivity, interactive learning, EFL.*

INTRODUCTION

In education interactivity is most commonly defined as any form of communication between students and teachers, learners and learning resources. Interactivity is a very important element of the teaching and learning process. Learners should be encouraged to participate actively in the learning process .

Pedagogy differs several models of training:

- 1) passive - the student is in the role of "object" of training (auditory and visual);
- 2) active - the student is in the role of "subject" of training (individual work, creative assignments and tasks);
- 3) interactive - The learning process takes place in a constantly active interaction between all students. The student and the teacher are equal subjects of training.

The use of interactive training models requires modeling life situations, using role-playing games, joint problem solving brainstorming or other games and excludes the dominance of any participant in the learning process or any idea. This is the basis of humane, democratic approach to learning.

The student is a full participant in the learning process and his experience serves as a major source of educational knowledge. The educator does not give ready-made knowledge and inciting participants to independently search for a solution.

Implementing board games in the EFL classroom.

Board games is a fun and interactive way of learning in the classroom and beyond. They are widely used in language learning, they motivate students and facilitate their training in a foreign language. Gaming develops students' imagination, works as a group therapy in class and helps students to express their experience and practice their language skills.

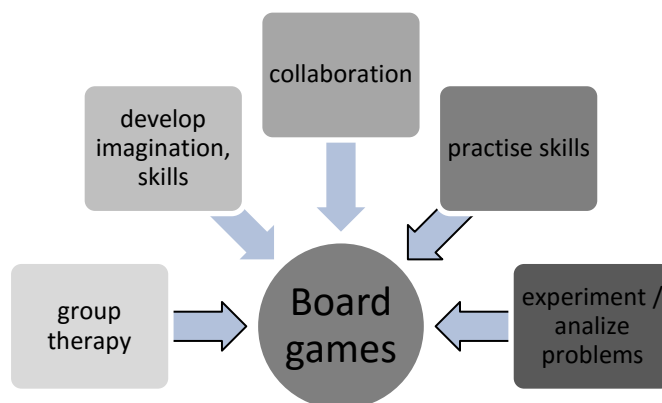


Figure 1: Aims of Board games in the classroom

Board games could be played by whole class or in a group. The language classroom has a sufficient number and variety of board games - restrictions can be of any kind, as well as lack of materials, supplies or financial reasons. It is time consuming for teachers to create 10-15 pieces of board games for the lesson, so the best decision is to involve students in that process. This, no doubt, will increase the sense of responsibility and this way students will become more motivated to use something they have created.

Games could be made on different topics – grammar, vocabulary, topics of interest.

Particular board game that is very useful in the foreign language education in a standard Bulgarian classroom is Scrabble. This popular U.S. game is very helpful when comes to the vocabulary practice of the students. This game is suitable for all ages and the teacher itself control the level of difficulty. Scrabble requires strategies, defenses, counters, and organization in order to be successful. You can add variations with

Banagrams, Scrabble Slam, Hangman, and your own vocab-development rules!

The standard set of Scrabble contains of a panel (board) and pulls with letters. Students can be divided into teams to make their own boards and pulls of any material (work in a team, stimulating creativity). Once they have done this, the sets can be used many times in the classroom.

The aim of activities based on games is to facilitate learning, promote self-initiative and self-confidence and develop social skills (using the foreign language). Based on learning games students develop gaming strategies and learn rules. What is more, they feel the freedom that they are at the center of the learning process.

Conclusion

Board games are safe environment in which one test, absorb, train, rehearse knowledge, skills and strategies necessary for development. This environment is subject to certain rules to be adopted voluntarily by the players. It may represent an imaginary situation, space, terrain, fictional or virtual world. The game is fun as players poses challenges that are difficult to overcome.

Interactive instructional strategies provides opportunities for students to strengthen their observational skills, listening skills, communication skills, and interpersonal skills.

Acquisition of key competencies depends on the activity of the student. Therefore, one of the most important tasks is to introduce into the educational process of active methods, which combine to give the opportunity to organize online training. From an object impacts the student becomes the subject of interaction, they are actively involved in the learning process, in accordance with their individual routes. Joint activities means that everyone makes it his own special contribution to the progress of the exchange of knowledge, ideas and methods of activity.

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**QUALITY MANAGEMENT AS A METHOD
OF OPTIMIZATION OF HIGHER EDUCATION
INSTITUTION ACTIVITIES**

Category “quality of education” represents a complex characteristic, corresponding to the entire activity of a higher education institution, including a planning stage, a basic stage of educating and educational process control, as well as self-evaluation and further actions, determined by its results. Analysis of quality evaluation results helps to find out the most effective ways and directions of optimization of activities, and to define the level of competitive capacity of both certain educational institutions and national education systems.

Consequently, the essential and important task is to provide an adequate level of quality of professional training of specialists and to search mechanisms, enhancing the quality of education in the context of education system improvement. It can be achieved by efficient and effective management of educational process quality.

Quality management is a part of the general system of educational institution management, which raises its operation. Such integrated management system determines the structure of organization, the roles and responsibilities, planning, functioning, policy, rules, convictions, goals and processes for achieving these goals. Therefore, we can see formation of an approach of system management of higher education institution activities in consideration of national and international regulatory requirements, current achievements in science and technology. The approach is intended to comply with demands of the parties concerned (consumers (applicants, students, participants), employers, staff, community, government).

Using such an approach by educational institutions will make it possible to quickly adjust to changes in internal and external environment, to regularly implement innovative technologies in all spheres of activities, to be flexible, to focus on quality cutting down the expenses. All of this is oriented at solving the task of providing competitive capacity, relevance of which is determined by globalization and integration processes, by creating common global economic area, by reducing the resources and increasing their value.

Development and implementation of quality management systems (QMS) for higher education institutions is a policy decision, aimed at continual improvement of performance and forming the foundation for initiatives, oriented at sustainable development. The optimal quality management system model, generalizing the experience and achievements of leading organizations worldwide, is the model, proposed by the standards of International Organization of Standardization ISO 9000.

Using a QMS, developed on the basis of the nationalized standard GOST R ISO 9001 of 2015, has a range of advantages:

- consistency in complying with demands of consumers as well as with statutory and regulatory requirements during rendering of services;
- orientation at raising consumer satisfaction;
- minimization of risks concerning possible negative implications for the environment and the goals of an organization;
- an opportunity to show compliance of a QMS with specified requirements [1].

Availability of the listed advantages depends largely on implementation of the process approach. It involves identification of processes, necessary for rendering of services, setting a sequence and interconnection among them, continuous management for the purpose of raising consumer satisfaction.

Development of quality management systems in compliance with requirements of the standard GOST R ISO 9001 involves the process approach, including E. Deming Cycle “Plan – Do – Check – Act” (PDCA), and risk-based thinking.

Carrying out the activities in accordance with the PDCA-cycle will help to provide the processes of higher education institution with necessary resources, to exercise resource management, to discover and pursue opportunities for improvement. The PDCA-cycle can be applied not only to certain processes but also to a quality management system.

Risk-based thinking, in its turn, will give an opportunity:

- to determine factors, which can cause deviation from the planned results of processes and the quality management system;
- to minimize negative implications by using preventive mechanisms;
- to maximize the use of emergent opportunities.

Risk management in an education system is a critical and relevant task. The reason for this is a great number of risks, which complex and long processes of life cycle are exposed to. Such developments in

GOST R ISO of 2015 as complex use of PDCA-cycle and risk-based thinking will make it possible to manage the processes and the system as a whole, to use opportunities and prevent undesirable results. Generally speaking, this approach will help to consider processes from the perspective of how much they add to the value, to achieve effective process operation, and to improve the processes based on evaluation and analysis of data.

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SECTION XV. Architecture and Construction

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DESIGN ISSUES OF DESIGNING "GREEN" BUILDINGS: ANALYSIS OF EXISTING EXPERIENCES

Despite the large number of examples, when designing "green" buildings professionals face a number of technical problems that restrict the use of "green" roof, and thus avoid their mass distribution. At the device of 'green' roofs having the following risks:

- Significant weight roofing pie, which increases the load on the load-bearing structure of the building;
- The possibility of leaks when damaged waterproofing, including germinating plant roots, as well as the possibility of destruction of building structures due to the growth of plants;
- Increased fire risk due to the possibility of ignition of peat contained in the composition of the substrate;
- Significant material costs, both during device operation and at the facility;
- Low corporate culture construction and complexity of maintaining a "green" roof.

Today there are many roofing systems for a device operated roofs of various functional purpose (pedestrian areas, roads, parking lots, roof gardens). Depending on the functional characteristics of the designed object is different composition roofing pie. Modern "green" roofing system must contain the following layers (Figure 1.)

1. the cover plate of the building;
2. waterproofing membrane with included protivokornevymi additives;
3. rigid insulation;
4. special drainage layer, sometimes with integrated reservoir for water;
5. landscape fabric or filter, which delays the plant roots or vegetation and at the same time water passes;
6. engineered plant medium (substrate), which generally may not include a ground;
7. the plants specially selected for the landing on the roof (preference is given to fibrous and shallow root systems)

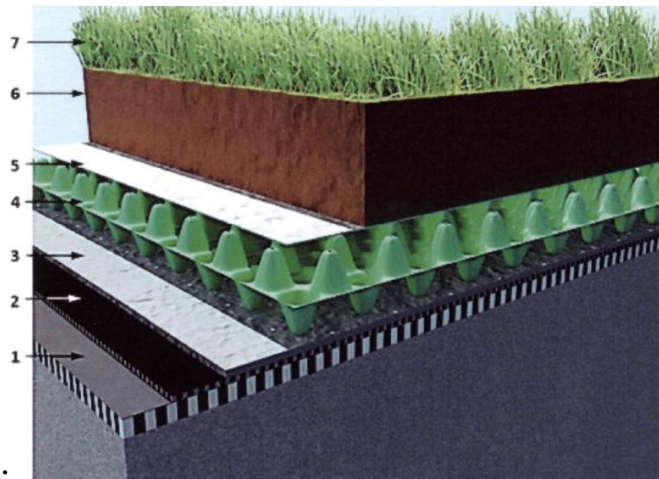


Figure 1. Schematic of the device roofing pie "green" roof.

When designing "green" buildings to be considered an adverse effect on the plant as a building structure (bearing and fencing), and on human health, as well as plant growth conditions close to the extreme.

Plants planted on the roofs of knowledge fall into unfavorable for their normal growth medium, since the influence of climatic factors varies with elevation vegetation arrangement. This is due to increasing wind loads, increase the impact of solar radiation, intensive drainage of soil, sharp fluctuations in temperature.

Speaking about the normal operation of the building, it is important to note that the planting, serves as an additional aggressor for building

structures. It must be viewed as a burden to change their standard values over time (changes in the geometry and shape of the plants in the process of growth, the increase in mass of plants and plant substrate), and given the temporary change in load (related to seasonality). Additional effects on the structure has high humidity of the soil substrate required for the normal development of the plants, but at the same time changes the operating conditions of structures.

Due to the continuous development of the root system of the plant may be inconsistent insulation materials, resulting in a change to the quality indicators of the internal environment of the building, so to reduce health structures bearing skeleton of the building, construction output down, as well as the creation of emergency situations.

Taking into account the above aspects, it is necessary to calculate the carrier core of the building, laying as a load value that meet the needs of the adult plant, thereby reserve the bearing capacity of the structure.

Among the climatic factors that have a significant impact on the possibility of planting the device, integrated into the development should be allocated:

Wind

Wind has a significant influence on the formation of a microclimate environment (temperature and humidity specifications, the state of air pollution). Thus, speaking about the environmental comfort of the environment should take into account the simultaneous effects of temperature, humidity, wind speed.

Depending on the altitude level, a change of wind speed, and therefore a considerable increase of wind load (constant pressure and ripple) at the upper floors of the building.

This raises the need to limit the elevation at which it is possible to organize "green" roof. This is in compliance with the conditions of comfort for both humans and plants. Biouroven is within an average of 1-5 floors, are the conditions for an integrated landscaping devices are considered optimal and do not require additional structural protection measures.

By arranging the landscaping at considerable heights (6-15 floors) necessary to provide a device of shelter facilities. In this case the plant should be located in a windless zone. In order to ensure ventilation, and reducing wind load in wind protection wall may be provided lumens.

Upon reaching a height of 20 floors and a roof unit open landscaping it is considered impossible. In this case it is necessary to resort to the creation of private gardens.

- **Solar radiation.**

Due to changes in elevation also increases the detrimental influence of solar radiation. At the level of the upper floors of its value in times exceeds the indicators within biurovnya. Consequently, there is a need to use sunscreens. They can be provided as the design and planning solutions.

The conceptual basis of the work is an environmental approach to the formation of green space in the structure of the building (integrated landscaping). In this regard, choosing vegetation for green buildings, we must be guided not only the ornamental aspects, but primarily environmental. In this sense, the formation of "green" buildings should take into account its location (sum of anthropogenic impacts should not exceed the regulatory requirements).

In this regard, the selection of plants should be in relation to their ecological characteristics (their absorption - smoke, dust, fumes, chemicals, etc.) and their resistance to climatic factors (light resistance (and to the environment requirements), frost resistance, moisture resistance, wind resistance (constant pressure and pulsation)), as well as their biopozitivnymi properties, such as phytoncide, production of oxygen toxicity, as well as factors related to soil processes (rotting, formation of bacteria in the soil).

SECTION XVI. Psychological science

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SPECIAL ASPECTS OF MODERN TEENAGER SAGGRESSIVE BEHAVIOR

Aggressive behavior is important problem of our society. Aggression and aggressive behavior are causes for serious anxiety in our world. They are perhaps one of the most important and widely discussed issues in modern life. The increase of various deviations in personality development and human behavior are caused by tense and unstable social, economic and environmental situation prevailing currently in our country. Anxiety, cynicism, violence, and the increasing aggressiveness of children are particularly worrying. The growth of aggressiveness reflects one of the human problems of our society. Modern teen enters the world, extremely complex in nature and trends of the socialization that is related to the oversaturated nature of information which deeps like impact on the psyche of the teenager, who has not got yet equal view of life and protection mechanisms; related to the speed and rhythm of scientific change, instituting new requirements to students; related to the ecological and economic crises, difficult political and ideological and moral difficulties afflicting our society; related to the break of continuity of generations, to the strengthening of spiritual impoverishment and to the introduction of alien values and traditions; related to the fall of the educational and cultural level of considerable part of younger generation, wich are cause of children hopelessness and irritation. Aggressive ness is one of the common ways to solve complex (frustration) situations, causing aggressive actions used to overcome difficulties and relieve tension, not always adequate situations.

The main period of adolescence in child development is reflected in its names: «the transitional period», «life changing», « hard», « critical». They fixed the complexity and importance occurring in this age of development processes related to the transition from one period of life to another. In everyday life, in the family and at school you can

hear often such kind of talk: he had been an obedient boy, and he has become willful and even rude; he had been calm and he has become unbalanced; he had been shy, too shy – he has become independent and strong, etc. The limits of adolescence approximately related to the education of children in 5 – 8th grades of secondary school and cover the ages up 10 – 11 to 14 - 15 years, but the actual entry into adolescence may not coincide with the transition into 5th grade but may occur a year earlier or later.

The emergence of aggressive behavior of teenagers is a complex process involved by many factors. Aggressive behavior is influenced by the family, peers, and media.

Children learn aggressive behavior, both through direct reinforcement and through observation of aggressive action, parents trying to stop a negative relationship between their children, can inadvertently encourage this behavior, which they want to liquidate. Parents, who apply extreme penalties and who don't control the children occupations, may find that their children are aggressive and disobedient.

A specific feature of aggressive behavior in adolescence is its dependence on peer groups on the backdrop of the collapse of the authority of adults. Meaningful concept of pupils of 6-11 grades with aggressive actions is distinguished by poverty and originality of value priorities, by lower level of formation of life orientations, by a tendency towards external locus of control; by preference of material values compared to non-aggressive peers, whom the severity value "happy family life" is characterized for.

O. I. Shlyakhtina showed that the aggressiveness of teenager has been determined by his status in the group. The highest level of aggression is observed in leaders and outcasts. Leaders strengthen its leadership through aggressive actions, and outcasts by the group show the dissatisfaction of their position.

The teenager, who couldn't safely overcome a new phase of development of his psychosocial condition, who deviated in his development and behavior from the accepted norms, got the status of "difficult". There are risk factors: physical weakness, particularities of the development of character, the lack of communication skills, emotional immaturity, adverse un essecarily environment.

V. S. Rotenberg and S. M. Bondarenko believe that deviant behavior of adolescents, including un provoke able attacks of violence, in some cases, may be the "wild" demonstration of incorrectly oriented searching activity. The need to search is very sharp during the mental, physical and sexual maturation, if it is incorrectly oriented, that is often

the cause of deviant behavior. They think that incorrectly oriented need of search may occur not only in unprovoked aggression and sudden antisocial actions; but also some recurrent mass youth movements like the hippies or punks, are also based on unmet need in the search. The devaluation of moral, ethical and spiritual values, which often occurs in informal (rockers, punks, fans, Satanists, etc.) is predisposing ground for self-injurious behavior.

Aggression of teenager is expressed as a goal in itself, satisfying the need for self-realization and self-affirmation (in this case, it is possible to speak about the aggressive personality), as a means of achievement of another important goal, as a means of psychological discharge, as a way of protective adaptive behavior. One of the most controversial sources of study to aggression — is the media. Science still have not figured out the extent of the influence of the media on aggressive behavior in spite of years of research using a variety of methods and techniques.

The study of aggression with the help of the test of Bassa Durkiis showed that 83% of pupils had the level of aggression above average value, 72% of pupils had the level of hostility above the average. 83% of pupil had the high values of scales: suspicion and guilt. The same high level of verbal aggression the 86% of pupils had, 80% of pupils had a high level of irritation and 64% of pupils had the level of negativism, 57% of pupils had the physical abuse. A little part of adolescents have high values on scales of indirect aggression and resentment (31% and 26%, respectively). The L. G. Pochebut Test high rates identified the following scales: verbal aggression of 40%, physical aggression of 29% , 22% of pupils have the subject aggression, 14 % have emotional aggression, 45% have the self-aggression. According to the questionnaire of Bass-Perry the 32% of pupils have the high level of anger, 29% have the physical aggression, 28% have the hostility and 32% of adolescents have the aggressiveness.

To summarize, we can conclude that adolescents clearly revealed the manifestations of aggressiveness, hostility, irritation, and negativity. The same high rates for such types of aggression: physical aggression, verbal aggression, subject aggression and self-aggression. Boys are dominated by negativism and verbal aggression (which are almost the same), and girls have verbal aggression. Physical aggression at this age is not the dominant form of aggression already of boys. It should also be noted that, in spite of age, all forms of aggressive behavior are more visible in boys than in girls.

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FUNDAMENTAL THEORIES OF PROFESSIONAL WORK MOTIVATION AND THEIR PERTINENCE FOR STUDY OF FACULTY MOTIVATION IN CROSS-CULTURAL CONTEXT

Higher education institutions play crucial role in the development of community and country. In the modern context, faculty members are core element and main driver of higher education institutions. In this sense, it is vital to study the problems of professional motivation among faculty not only in one particular country but in cross-cultural context to get the better picture of the situation on international level. The motivation of professional activity is considered as set of the motivational properties and conditions of the personality in the course of his activity inducing and regulating the activity caused by specifics of professional tasks. In other words, motivation is a structured system of motives that can determine activities and behavior of an individual [1].

Currently there is a plethora of different theoretical classifications of motives in professional and personal areas. Despite the fact that none of them are focused on higher education institutions, the value of those theories cannot be undervalued. One of the most known theories is the “Hierarchy of Need” developed by A. Maslow. Division of person’s needs on five levels provide the structured overview and deeper understanding of internal needs [2].

In his work, F. Herzberg researched the factors that cause satisfaction and dissatisfaction with work. Herzberg allocated factors of "preserving" connected with the needs of avoidance of inconveniences

and discomfort. The first received the name of "hygiene factors", the second – "motivators". Hygiene factors involve behavior of administration, control, material remuneration, stability, etc. The favorable condition of factors of "preserving" leads to decrease in feeling of disappointment. F. Herzberg referred achievements in professional activity to motivators, recognition of these achievements, responsibility, career and professional development [3].

D. McClelland identified three groups of needs: need for the power, need for success, and need for participation. The need for the power is acquired, develops on the basis of training, life experience and means that the person aims to control actions of other people, having on them significant effect. The need for success (achievement motivation) is general for most of people. However extent of its development in different subjects is various. The need for participation expressed in aspiration to cultural friendly relationships with people around. People with the high need for participation aim to establish good relations within existing community, expect to get approval and support from the colleagues, and also from the persons with higher social status.

On the basis of Maslow and Herzberg's theories, T. Tomashevsky, a Polish psychologist created the classification of labor activity motives. Tomashevsky especially marks out motives of benefit. The first group of motives of benefit is a material benefit to which earnings, availability of housing and other material requirements belong. The second group is a social benefit to which professional pride belongs. According to the author, the worker shall see accurate dependence between own contribution to professional activity and the earned reward. Proceeding from it, in the course of a labor activity there shall be feedback between the worker and the administration that in the course of work the employee could estimate adequately achieved results. In the absence of feedback between a management and workers, workers can have a resentment which growth will lead to decrease in productivity of work and reduction of efficiency of other incentives [4].

Additionally, the division of motivation into external and internal has been carried out by Edward L. Deci and Richard M. Ryan. According to researchers, the internal motivation is the aspiration to do something for its own sake, for the sake of an award which contains in the most of activities. The external motivation is a motivation at which the factors influencing behavior of the personality are out of "I" persons or out of behavior. Also motivating factors of professional activity can conditionally be divided into personal motives, socially and culturally caused motives as the conscious reasons of choice of profession, the

latent motives and deep experiences generating aspiration to the chosen profession, and the features of temperament which are directly influencing the personality in professional activity.

Set of these reasons forms a motivational contour which brings the personality into a profession. In each case action of one factors can be felt stronger, another might be weaker, and third – maybe not to be felt at all.

In the course of professional formation of the person there is a change of motives of professional activity. At the same time development and change of motivational structure of the subject of activity in the course of development of specialty goes in two directions: change of level of professionalizing that is followed by change of system of professional motives or transition of personal motives into labor motives.

The model developed by V. Gerchikov is based on division of personnel based on the prevalence of one of five types of motivation. At the same time prevalence of this or that type doesn't exclude a possibility of manifestation and other motivational lines [5]. Instrumentalists predominantly seek material benefits. The size of earnings and other benefits received as remuneration for work might be the strongest driver for development and influence on the extra-work if necessary.

Professionals are interested in the content of work (interestingness, creative nature) of work; an opportunity to prove that he / she can cope with a difficult task which is not feasible to everyone. Orientation to professional enhancement and the developed professional advantage distinguishes. The salary is considered by such worker only as the indicator whether its professionalism is appreciated enough by company top-management.

Patriots are highly concern with all issues important to the company's well-being. Real progress in implementation of project and public recognition are crucial for them. They are usually ready for extra-work and self-sacrifice for the sake of company. Masters are highly independent workers; they value sovereignty in work and usually perform on the top-management level. Being in charge and lead people can be the strongest motivation for those types of people. This type among hired employees is very rare; it is basic for entrepreneurs, for those who process own business. The lumpens (term used in USSR to identify people with lack of initiative and willingness to do anything) choose the tactic of avoidance. They usually minimize the labor efforts and prefer to observe rather than take a part in the activity. This kind of

motivation is not rare and can be seen in different organizations, as well as in higher education institutions.

Considering the variety of theoretical theories of motivation proposed by the researchers from different cultural background, who observed different cultural peculiarities in the context of professional milieu, it is evident that there are some differences in perception even on theoretical level. At each stage of professional growth there is a change of proponent mechanisms of determination and the purposes of a labor activity. If at the initial stages of professional activity the main motive is the purpose to master a profession and to adapt to its requirements after training, later it might be turn to the aspiration to change content and conditions of professional activity. In this sense, the theoretical basis of the issues of professional motivation led to the better understanding of the situation in general and provides the opportunity to develop adequate model of professional motivation among faculty members which evolve cultural context and national peculiarities.

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SECTION XVII. Political science

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POLITICAL DEVELOPMENT OF THE REPUBLIC OF UZBEKISTAN IN THE PRESENT STAGE

From the first days of his sovereign development the Republic of Uzbekistan followed a way of democratization, creation of market economy and spiritual revival of the people and proved to the whole world efficiency and a solvency of the model of transition to the new course of political development. Uzbekistan is one of the few states which managed to avoid serious shocks in political, social and economic spheres after independence finding. Similar situation is explained, first of all, by the fact that in Uzbekistan the way of democratic development and cooperation with the progressive world was initially chosen deeply thought over and comprehensively weighed concept of independent development based on.

As the President of our Republic I.A. Karimov noted, «From the very first days independence, having refused the old, become obsolete totalitarian Soviet system, we declared creation of the open democratic state with socially oriented market economy and formation in the country of civil society.

Completely repaid five principles were put in a basis of construction of the new state and society:

the first – deideologization of economy and its priority over policy. In other words, in the beginning economy, and then policy;

the second - the state at a transitional stage from old system to new has to become the main reformer, that is undertake functions of the initiator of reforms in the field of the state, public and economic updating of the country;

the third - rule of law, or equality of all citizens before the Law;

the fourth - implementation of strong social policy, responsibility of the state on support of vulnerable layers and national groups in the social plan;

the fifth - a phasing in carrying out and realization of reforms, refusal of various models of a shock therapy. In other words, development of the country has to go on an evolutionary way, but not on a revolutionary way which as the mankind history testifies, always brought to the people violence, blood and deprivations» [1]

According to these principles in Uzbekistan the strategy of political reforms of the purpose, which found the reflection also in the Constitution of the Republic is carried out. It is possible to find reformatory problems and legal bases of their realization in each article of the Constitution.

For years of independence in Uzbekistan measures for providing to citizens of equal opportunities for realization of democratic constitutional rights and freedoms are systematically carried out.

Today, within implementation of the concept of further deepening of democratic reforms and formation of civil society in the country which is put forward by the President I.A. Karimov on November 12, 2010 year large-scale reforms on deepening of democratization processes and liberalization of our society are carried out.

In this plan «Our Constitution is the legal and legislative base of creation of the independent, sovereign democratic state, the statement of a priority of a private ownership in multistructure and market economy and ensuring with a guarantee its protection, and also formation in the country of civil society where interests, the rights and freedoms of the person become the supreme value». [2]

The main feature of processes of reforming of all spheres of life of our country is its continuity, also constant emphasis to democratic and system updating of fundamental bases of development.

As a result of implementation of processes of political development on the basis of «the Uzbek model» of creation of new society, and also use of progressive, creative foreign experience the Republic of Uzbekistan managed to ego-trip as the modern, sovereign self-sufficient state with big prospects.

As a result of all this Uzbekistan gained to itself big authority and the international recognition on a global scale. Having become the full subject of the world community, Uzbekistan began to conduct the foreign policy activity on the principles which reflect in themselves all democratic requirements of the modern international relations. Thus, Uzbekistan, having been a part of the world community, enriched it with new conceptual bases and also approaches of maintaining by dialogues between the countries.

As the President I.A. Karimov noted: «Uzbekistan, at the same time participating in integration processes at various levels - global and regional, nevertheless, adheres to one important principle: approchement with one state does not mean removal from another. We against strengthening of partnership with one subject happened due to

weakening of partnership to others. Therefore integration of Uzbekistan into world community process multivector». [3]

Carrying out the foreign policy on the basis of these principles, Uzbekistan became the author of implementation of a set of effective initiatives of stabilization and strengthening of safety in our region and global scale. Here it is pertinent to notice that all positive changes which take place in implementation in our country of democratic reforms are reflected also in foreign policy. Therefore to go on the way of peaceful development, strengthening of mutually beneficial relations with all members of the world community, the aspiration of harmonization of interests is the main priority of our country in foreign policy activity.

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ANTI-CORRUPTION EDUCATION: PROSPECTS OF DEVELOPMENT IN RUSSIA

Corruption is one of the most pressing social issues of our time, the solution of which is extremely important for many countries of the world. This fully applies to Russia, a high level of corruption of which is recognized by its political leaders, local and foreign analysts, relevant international institutions. Corruption in modern conditions becomes a factor that threatens national security and constitutional Russian Federation ranks [1; 3, p. 102]. It adversely affects the various aspects of social life, including economy and politics.

Among the mechanisms for preventing and fighting corruption in Russia, for a long time priority in the state anti-corruption policy was given to improving the legal sphere, regulating economic relations, strict punishment of the perpetrators of acts of corruption, etc. [4] But experience has shown that the majority of laws and measures to combat corruption, in practice, has not given the necessary positive results.

The reasons for this unsatisfactory state of affairs is largely connected to the culture, mentality and traditions of corrupt practices in government. Therefore, an important task in preventing and combating corruption is the formation of an anti-corruption culture in society. Therefore, the reduction of corrupt activity of citizens is possible due to the formation of an anti-corruption culture in society, including negative attitude of citizens towards corruption and willingness to oppose it [2, p. 20]. In Russia, it is necessary to create favorable conditions for the development of social (that is, political, economic, legal, moral) culture of citizens, low level of which eliminates the effect of the anti-corruption legal, judicial, administrative and other reforms.

Experts believe that to change this situation, form anti-corruption awareness of citizens and enhance their anti-corruption motivation- it is necessary to implement a set of measures of educational, training and informational character aimed at clarifying citizens the essence, danger and all the negative effects of corruption on society, spread among the citizens of the ideas of intolerance to manifestations of corruption, the formation of high anti-corruption of justice, bringing the benefits of law-abiding behavior, etc. [5] i.e. must be a full-fledged anti-corruption education.

Anti-corruption education reveals a number of theoretical, social and educational issues that need to be considered in more detail. This applies both to the understanding of theoretical issues related to corruption and the use of learning resources in school and higher education.

The system of anti-corruption education, along with the expertise on corruption and liability for corruption offenses, should also include a statement of universal and humanistic ideas of law, national legal values, high moral principles in public life, patriotism, defense of active citizenship.

The program of anti-corruption education should be implemented in the elementary school - the incarnation of programs aimed at the formation of the moral foundations of personality, the formation of the foundations of legal culture and civics. The types and forms of

education organization: Lessons and class hours, contests and games, extracurricular activities and conversations.

Middle and senior secondary school classes are included in the system of anti-corruption education through general subjects, participation in school government, in the social and meaningful design, civil actions, etc.

Two approaches may be involved in the anti-corruption education - formal and informal.

A formal approach involves direct introduction into the educational process of special courses on anti-corruption, the formation of anticorruption outlook of students, conducting extracurricular activities and lessons on anti-corruption laws, anti-corruption education of the behavior, the formation of the foundations of morality and ethics.

The implementation of this approach by the appointed action is possible due to the school component. Its application is possible in the middle and upper classes. It is proposed to use active and interactive teaching methods.

As part of the formal (lessons) approach a special place in the formation of anticorruption outlook and behavior of students take social sciences - history and social science (including economics and law foundations). Knowledge of cultural, historical and civic education, play essential role in solving the problems of education of respect for the moral and spiritual values [6].

In an informal approach, the implementation of anti-corruption education programs is possible through workshops, a series of business games, competitions (essays, drawings, projects), civil forums on anti-corruption, creation of computer information and legal programs, through the implementation of social projects, conducting civic actions, a month of anti-corruption, youth forums, the publication of newspapers and bulletins, school and inter-school newspapers, film-making, preparation of stands, sociological research by students, online questionnaires. The proposed method connected with the implementation of anti-corruption education is quite efficient and does not require large expenditures for their implementation. Dissemination of information about the goals of anti-corruption education is provided through the media, the "Internet" network, by volunteers and with the help of the advisory work of the authorized bodies.

Anti-corruption education for adult audiences may have two levels: basic and professional.

The basic level is not aimed at specialists, but at the citizen, and involves the promotion of legal behavior and learning skills for recognition of the corrupt nature of certain actions. But the most important component of the anti-corruption education base - the formation of civic responsibility and uncompromising attitude towards corruption. In other words, the mission of the basic anti-corruption education is to educate people in the civic ethics and the formation of ideas about public control as a necessary form of social activity, without which anti-corruption standards of transparency and accountability of the state simply do not work.

The need for professional-level of anti-corruption education is under a reasonable basis. The results of the implementation of many anti-corruption measures demonstrate that the machine of state and local governments are in e need of qualified personnel, specializing in anti-corruption issues. Recognizing the need for further training of officials, emphasizes the increase in funding and scope of educational programs for public officials, officials who are responsible for participating in the fight against corruption, approved by the President of the Russian Federation in the National plan for countering corruption.

In Russia, as part of professional development of anti-corruption education in the training of state and municipal employees, more attention should be paid to the development of legal consciousness, enhancement of value of the moral and ethical principles of social education activity and creation of conditions to ensure the openness of information.

It should be the introduction of special subjects, the contents of which will reflect the fundamentals of professional conduct, the code of ethics of state and municipal employee. For example, deontology - the science of the profession. Special course designed on the basis of this discipline, will include the rules and principles of conduct of professional entities.

We should pay attention to the preparation of a substantial part of state and municipal employees, in terms of training and development of normative legal acts and regulations meeting the requirements of anti-corruption expertise.

In this case we are talking about the training of specialists in the field of rule-making, taking into account the features of anti-corruption expertise, which in the future will form the staff of public authorities and local self-government.

These measures will form the legal thinking and prepare students for practical work.

Despite the fact that the focus of anti-corruption policy is to exclude or minimize the conditions conducive to corruption or corrupt practices challenging, it does not remove the relevance of continuous improvement of methods of detection and suppression of corruption offenses.

Here, the basic anti-corruption education and professional acts as a separate area of the state anti-corruption policy, which will allow to fully use the preventive measures in the fight against corruption.

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SECTION XVIII. Ecology

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THE IMPORTANCE OF STUDYING THE FAUNA OF SPIDERS (ARACHNIDA: ARANEI) FOR AN UNDERSTANDING OF THE CURRENT STATE OF BIOLOGICAL DIVERSITY OF KAMCHATKA

One of the most pressing problems facing modern society is the conservation of biological diversity as an important factor of stability of ecosystem functioning.

It is becoming increasingly important research in areas where nature is preserved in pristine condition, as these areas can serve as a benchmark for the comparative analysis of biodiversity. An example of this is the territory is Kamchatka Nature Park "Volcanoes of Kamchatka", part of the UNESCO World Natural Heritage Site. Relatively slight modification of the biota of Kamchatka person compared to many much more development of the territory allows us to consider this region as an acceptable natural patterns (standard) to study the general explained sector, mountain-belt and the local landscape patterns of organization of nature as an example of its biological components, such as spiders.

The fauna of spiders (Arachnida: Aranei) is one of the basic components in a comprehensive assessment of the biological diversity of natural areas. The importance of the work on the study of this group of animals is determined, first of all, that it is characterized by a very wide variety of ecological relationships with the environment, so common in almost all terrestrial habitats. The high level of species diversity and environmental heterogeneity spiders unit allow you to use them as a model group when assessing the overall level of regional diversity of terrestrial invertebrates and biota as a whole. The study of the environmental aspects of spatial complexes spiders can help identify regional centers of biodiversity in the landscape field Kamchatka. No less important part of the scientific research are monitoring work, giving valuable information on seasonal and long-term dynamics of the processes occurring in ecosystems.

Spiders may well be an indication of strengthening or weakening the effect of various environmental factors in ecosystems, including man-made. In this regard, of particular importance not only to the study of the ecology of individual species of spiders, but also the structure of their relationships in the community and interaction of communities against each other.

Kamchatka, until recently, been poorly studied in arachnological relation to the region of Eastern Palearctic [Marusyk et al., 2010]. To date, study of the fauna of spiders Kamchatka has about 300 species belonging to 148 genera and 17 families [Nenasheva, 2014]; process inventory of Kamchatka's spiders fauna continues as faunal diversity of spiders in the region, presumably much higher.

Inventory of the fauna of one of the most important groups of arthropods in undisturbed landscape complexes of the Nature Park "Volcanoes of Kamchatka" has created additional prerequisites for the evaluation of the structure and history of the formation of the fauna of Kamchatka - one of the most interesting (due to a significant number of endemic and relict species) within the Russian Federation, which, in we believe that due to the fact that Kamchatka is a territory, the border between the Palearctic and Nearctic faunas [Nenasheva, 2015]. The first and quite successful experience in conducting monitoring studies spiders communities in several typical forest ecosystems natural park provided an opportunity to identify the main patterns and seasonal dynamics of species and different-year spiders communities. This will continue to develop and update methodological approaches to more detailed studies synecological spiders. These unique data on autecology spider species in Kamchatka, many of which, until recently, were not investigated or poorly investigated in the future will provide an opportunity to clarify a special place and role of spiders among other arthropods.

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