SCIENTIFIC RESEARCH OF THE SCO COUNTRIES: SYNERGY AND INTEGRATION

上合组织国家的科学研究：协同和一体化

Materials of the International Conference

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国际会议

参与者的英文报告

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“Scientific research of the SCO countries: synergy and integration”

Part 4: Participants’ reports in English

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这些会议文集结合了会议的材料 – 研究论文和科学工作者的论文报告。 它考察了职业化人格的技术和社会学问题。一些文章涉及人格职业化研究问题的理论和方法论方法和原则。

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These Conference Proceedings combine materials of the conference – research papers and thesis reports of scientific workers. They examines tecnical and sociological issues of research issues. Some articles deal with theoretical and methodological approaches and principles of research questions of personality professionalization.

Authors are responsible for the accuracy of cited publications, facts, figures, quotations, statistics, proper names and other information.

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ECONOMICS

PEDAGOGICAL SCIENCES

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Foreword

We thank all participants of our conference "Scientific research of the SCO countries: synergy and integration" for the interest shown, for your speeches and reports. Such a wide range of participants, representing all the countries that are members of the Shanghai Cooperation Organization, speaks about the necessity and importance of this event. The reports of the participants cover a wide range of topical scientific problems and our joint interaction will contribute to the further development of both theoretical and applied modern scientific research by scientists from different countries. The result of the conference was the participation of 56 authors from 7 countries (China, Russia, Uzbekistan, Kazakhstan, Azerbaijan, Tajikistan, Kyrgyzstan).

This conference was a result of the serious interest of the world academic community, the state authorities of China and the Chinese Communist Party to preserve and strengthen international cooperation in the field of science. We also thank our Russian partner Infinity Publishing House for assistance in organizing the conference, preparing and publishing the conference proceedings in Chinese Part and English Part.

I hope that the collection of this conference will be useful to a wide range of readers. It will help to consider issues, that would interest the public, under a new point of view. It will also allow to find contacts among scientists of common interests.

Fan Fukuan,
Chairman of the organizing committee of the conference
"Scientific research of the SCO countries: synergy and integration"
Full Professor, Doctor of Economic Sciences,
member of the Chinese Academy of Sciences

前言

我们感谢所有参加本次会议的“上海合作组织国家的科学研究：协同作用和整合”，感谢您的演讲和报告。代表所有上海合作组织成员国的广泛参与者都谈到此次活动的必要性和重要性。参与者的报告涵盖了广泛的主题性科学问题，我们的联合互动将有助于不同国家的科学家进一步发展理论和应用的现代科学研究。会议结果是来自7个国家（中国，俄罗斯，乌兹别克斯坦，哈萨克斯坦，阿塞拜疆，塔吉克斯坦，吉尔吉斯斯坦）的83位作者的参与。

这次会议的召开，是学术界，中国国家权力机关和中国共产党对维护和加强科学领域国际合作的高度重视的结果。我们还要感谢我们的俄罗斯合作伙伴无限出版社协助组织会议，准备和发布中英文会议文集。

我希望会议的收集对广大读者有用，将有助于在新的观点下为读者提供有趣的问题，并且还将允许在共同利益的科学家中寻找联系。

范福宽，
教授，经济科学博士，中国科学院院士，会议组委会主席“上合组织国家科学研究：协同与融合”

改善工业综合结构运作的工具
TOOLS TO IMPROVE THE FUNCTIONING OF INTEGRATED STRUCTURES IN INDUSTRY

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抽象。 本文介绍了研究工业综合结构管理问题的结果，并提出了这些协会运作现代化的新方法。 提高综合产业结构的效率，作者在现代管理工具的应用中看到了这一点，例如通过建立网络水平连接来改进关联结构，引入多智能体技术，以及组织关联参与者之间的新交互模型。 研究结果是定义综合结构运作的新指标，建立横向网络行业协会运作模式，建立在集群结构参与者之间互动原则的基础上。

关键词：产业集群；综合结构；多智能体技术；结构效应；智力模型。

Abstract. *The article presents the results of studying problems in the management of integrated structures in industry and proposed new approaches to the modernization of the functioning of these associations. Improving the efficiency of integrated industrial structures, the author sees in the application of modern management tools, such as improving the structure of associations by creating network horizontal connections, introducing multi-agent technologies, and organizing a new model of interaction between participants in associations. The results of the research are the definition of a new indicator of the functioning of integrated structures, the development of a model for the functioning of horizontal networked industrial associations, built on the basis of the principles of interaction between the participants of cluster structures.*

Keywords: *Industrial cluster; integrated structures; multi-agent technologies; structural effect; intellectual model.*

The creation of associations — integrated structures (IS) in industry — is one of the main trends in the economic transformations of Russia and the world. The study of the forms and features of the functioning of integrated industrial enterprises becomes relevant due to the fact that such structures today are the centers of innovation activity in industries. The development of an appropriate methodology that will objectively reflect and investigate the functioning of integrated structures is one of the priorities of modern economics.

One form of integrated associations is clusters. For industry all over the world, such associations represent a promising way of development, which allows them to quickly and efficiently enter markets, increase competition in the industry, introduce and apply innovations. The main advantage of such structures is their flexibility, achieved due to the rapid restructuring of relations within the association, autonomy and independence of participants. These new, emerging and dynamically changing economic structures are largely unexplored objects, which require a critical rethinking of the existing theoretical and empirical base, and the development of a fundamentally new methodological apparatus to study their functioning.

Analysts point out that the key problems in the global industry are obsolete vertically integrated business models and the lack of key competencies" [1]. According to V. Samarukhi and I. Nikolaeva, the authors of the monograph "Formation of integrated clusters in the region" [2, p. 1] is referred to in the network concept of the "industrial complex" by V. Ruigrok and R. Van Tulder. Foreign scientists define them as "a specific type of network", as "a negotiation configuration organized around a root firm consisting of groups of agents that are directly or indirectly involved in the production and promotion of a certain product".

V. Samarukh, based on the theoretical analysis of cluster definitions given by various researchers, identifies two central elements that are present in all clusters. Firstly, the firms included in the cluster must necessarily interact economically (directly or indirectly). Connections are both vertical (chains of purchases and sales along the technological chain), and horizontal (additional products and services, the use of similar specialized costs, technologies or institutions, etc.). In addition, among the cluster relationships, network relations are of great importance, which cause an additional effect for the parties involved in the cluster [2, p.14]. However, in modern conditions the idea of proximity does not necessarily have to be based purely on territorial proximity or physical distance. Technological shifts make it possible to cooperate successfully at a distance thanks to information and communication technologies, i.e. what happens was called in the 90s. 20 cent. "Death of the distances". P. Krugman, one of the authors of the new economic geography, believes that "clusters are not so much the flows of goods and services as dynamic mechanisms based on creating knowledge, increasing returns and developing innovations" [3, p. 142]. Thus, at the present stage, clusters should be considered as a new kind of integrated structures, based on the network principle of interaction of participants.

The cluster model of association of organizations offers a new way of obtaining benefits from such factors as geographic location, cooperation, specialization, cooperation, innovation, etc. At the same time, the cluster model is not an abstract theoretical idea, it lends itself well to operationalization and has a clear "way out "to the practice of management, says V. Samaruha [2, p. 16]. The model is a scheme of interaction between the participants of the association in the process of cluster production.

The cluster model of association of organizations offers a new way of obtaining benefits from such factors as geographic location, cooperation, specialization, innovation, etc. At the same time, the cluster model is not an abstract theoretical idea, it lends itself well to operationalization and has a clear "way out" to the practice of management, says V. Samaruha [2, p. 16]. The model is a scheme of interaction between the participants of the association in the process of cluster production.

To improve the production structure of industrial associations, it is important to reduce the proportion of auxiliary and service shops and services without affecting the normal operation of the main production. This is possible due to the expansion of co-operation of enterprises servicing production based on the creation of specialized repair and tool factories. The transfer of capital and partly small repairs of equipment, the manufacture of tools to specialized factories will either eliminate a number of service and support units, or significantly reduce the number of employees in them. There is a dependence of the additional economic effect on the reduction of costs for the implementation of the main interactions of the participants involved in IP, expressed in a significant reduction in transaction costs. The effectiveness of the organizational structure of an integrated industrial network structure (IINS) can be defined as the ratio of the result of an activity to the cost of the resources spent on its creation.

As an object of performance evaluation consider the specific features of the interaction of participants. Three main types of efficiency are taken into account, which manifest themselves in the aggregate indicators of the entire IS, in the results of the activities of an individual participant and in the whole economy of a region or industry. IINS is able, due to the synergistic effect, to increase the participants' incomes (Дс) as compared to the income of an individual operating enterprise (Ди), changing the structure of financial flows in the form of inflow growth (ПР ↑) and lower outflow (ОТ ↓) by the formula (1):

$$Дс = ПР\uparrow + ОТ\downarrow \quad (1),$$

where $Дс > Ди$.

The cumulative income growth (or effect) of the IINS can be represented as follows (2):

$$ЭФс = Пдв + Пдм + Пдт + Пдд + Пмо + Эпи + Ид \quad (2),$$

where Пдв — additional profit from improving the interaction and controllability of enterprises; Пдм — additional profit from scaling up; Пдт — additional profit from reducing transactions, improving the processes of separation and cooperation; Пдд — additional profit due to diversification of activities; Пмо — additional profit due to increasing the possibilities of modernization and renewal of production; Эпи — savings of current production costs; Ид — additional investment in development. Thus, the IINS allows to get an additional economic effect to all participants by reducing the costs of implementing the main transactions.

It should be noted that today in science a multidisciplinary approach is widely used in solving the problems of the functioning of enterprises, associations, industries and the economy as a whole. The regulation of all processes, their ordering, is replaced by the idea of synergetics about the fundamental possibility of spontaneous emergence of order and organization from disorder and chaos as a result of spontaneous transformations. The decisive factor in self-organization is the formation of positive feedback between the system and the environment. In this case, the system begins to organize itself and is opposed to the tendencies of its destruction by the environment. The formation of self-organization is largely determined by the nature of the interaction of random and necessary factors of the system and its environment. Under suitable conditions, even a small fluctuation can lead to a new structuring of the entire system, that is, to a new order and quality due to accumulating quantitative changes in it. Between the individual elements of the system constantly break old ties and new ones arise. Old elements are destroyed and new ones are created. The changes taking place in the system finally reach an unstable state. A bifurcation occurs, leading to a new state of the system. It is possible to extrapolate all these processes to actions occurring within the network associations in the industry. Network structures today acquire the characteristic features of multi-agent constructions, where there is no hierarchy and subordination, and the processes are regulated by self-organizing interactions in the likeness of the elements of the system.

The formation of complex systems provides evolution at all levels of the organization. A. Shlyapnikov explained the essence of the phenomenon of self-organization in nature [4]. When the system is accelerated, its elements are derived from stable states, and the stability forces oppose accelerations, acting as inertia forces. Resistance according to the ideas of this author is a state that is achieved during the self-organization of the system, and to which it essentially seeks. Thus, today there is a change in the paradigm of economic systems management: from order to chaos, from regulation to self-organization. Synergy in production systems leads to the reorganization of all divisions and interaction conditions.

Let us consider how this direction is implemented in cluster models of industrial structures at the present stage. Ya. Gordon and F. McKann distinguish three types of cluster models by the purpose of their creation [5, p. 516]. The first type is the classic agglomeration models that consider economies of scale, where external effects arise from the development of the local market. The second is the models of industrial complexes, which consider interfirm relations, which lead to a reduction in transaction costs. The third is the network interaction models that focus on social connections and trust, which facilitates cooperative processes and stimulates innovation activity.

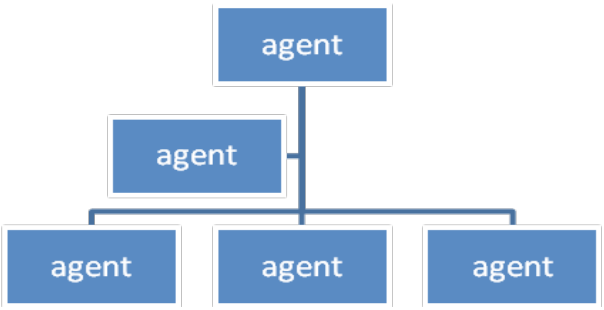

Figure 1. *Traditional hierarchical system*
Source: Developed by the author

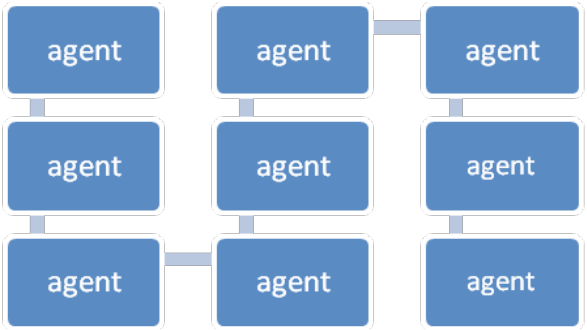

Figure 2. *Multi-agent system*
Source: Developed by the author

O. Granichin and P. Skobelev, researchers of multi-agent technologies, believe that the current stage of economic development is characterized by an increased complexity of processes, and well-structured communities and businesses cannot respond quickly to the challenges of a dynamic external environment [6, p. 55]. The authors assert that the traditional hierarchical structure of economic systems (Figure 1) is replaced by a multi-agent structure (Figure 2), when agents are participants in the process, act autonomously and rationally to achieve the goals of the entire system. Adaptability - the ability to adapt automatically to uncertain and changing conditions in a dynamic environment, becomes one of the key factors for the success of an organization's work in the market.

The process of functioning of such systems is based on the fact that at the micro-level of the organization information and knowledge circulate, agents pick it up and use it. Emergent intelligence arises when new properties of the system appear, and not a single element of the system possesses these properties. The basis for self-organization of the system begins to be stochasticity, - random and unexpected results.

Nowadays, the network form of enterprise organization is considered the most promising, since it allows more flexible and efficient management of enterprise resources. However, in itself, the network form of organization of the enterprise still does not solve the main problems of effective activity. Accordingly, a new instrument, a new determinant, is needed - a condition for the functioning of network integrated structures. Such, in our opinion, is multi-agent. The principle of operation of multi-agent systems is based on the fact that many real problems are best modeled using a set of process participants (agents), instead of using a single (monolithic) agent. [7, p. 160].

The advantages of multi-agent technologies, which allow building self-organizing systems, are particularly evident in the conditions of a priori uncertainty and high dynamics of the surrounding world, allowing you to build adaptive systems that restructure their plans for real-time events. Thus, in classical planning and optimization methods, it is assumed that all orders and resources are set in advance and do not change during the solution of the problem, and the dimension of the problem is significantly limited in order to avoid a combinatorial explosion and an exponentially fast delay in solving the problem. Therefore, multi-agent technologies deserve attention today as one of the most dynamically developing and promising areas in the field of information technology, which can be adapted and implemented into the work of industrial enterprises built on a network principle. Alexander Bogdanov (organization theory), Ilya Prigogine (self-organization in physical systems), Marvin Minsky (psychology and theory of thinking), Arthur Koestler (biology) and a number of other scientists made a great contribution to the development of this area.

As an example illustrating the processes described by us in practice, we can cite the experience of the Irkutsk Aviation Plant, the head enterprise of the engineering cluster of the Irkutsk Region, where today the integrated planning and modeling subsystem of the MS-21 production program is being tested. During the tests, the computer subsystem built an aircraft production program that provides for a 12-fold increase in production volumes. The subsystem takes into account the composition of the product, technological processes, laboriousness of operations, available equipment, composition of shifts and a number of other parameters. It allows you to visualize the generated nomenclature plan, conduct a simulation of its implementation and perform an assessment of the effects of random events and

deviations on the final delivery dates. The enterprise intellectual system consists of two subsystems: integrated planning and modeling, as well as management of the production schedule of the aircraft assembly. She will build daily tasks for the foremen and workers of the aggregate and final assembly and will monitor the execution of the enlarged production program in real time. Over time, it will turn production at this enterprise into a process of interaction between agents.

The intelligent system for adaptive production planning of the MS-21 aircraft is developed and tested by specialists from PLC "Irkut" Corporation" and "Intelligent Solutions" research and production company, which specializes at creating artificial intelligence systems for real-time resource management. This suggests that industrial clusters are moving to new dynamic conditions of functioning today, when knowledge sharing becomes the most important determinant, and multijunction technology is the norm in the work.

All this suggests that the creation of a high-quality management system using the tools of modeling, forecasting and managing the social -economic development of integrated industrial structures is an urgent task [8, p. 188], and the IINS can be the basis for the formation of a national and regional innovation system [9, p. 66]. The emergence of a new technological structure will inevitably be accompanied by the intellectualization of production, the transition to a continuous innovation process [10, p. 47]. Therefore, a very important area of research in industrial economics is the study of new tools and technologies for managing the operation of production.

We studied current problems and trends in the management of organizations and proposed new tools to improve the efficiency of integrated network industrial structures in order to increase efficiency, and also formulated the key conditions for the functioning (determinants) of the ISPS at the present stage. This approach is intended primarily for use in enterprises characterized by high complexity and innovative nature of products, where the result can be achieved only in the interaction of all participants of associations.

The results of our study are the findings that today industrial clusters are a new kind of integrated structures, they base on the network principle of interaction of participants. Network structures are gradually becoming multi-agent structures with multi-agent structures, and a new management tool is emerging - multiagents. We have developed and substantiation of a new modern model of the functioning of the IINS, which we built on the basis of analysis and trends in the work of modern industrial clusters. The developed intellectual structure of interaction of participants of IS, in our opinion, very accurately reflects the processes that are happening today in industry. We identified a necessary condition for the effective functioning of this model, which is defined as the presence of a positive indicator of the structural effect in the communications of agents.

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俄罗斯和德国单一工业城市的战略性社会经济发展
STRATEGIC SOCIO-ECONOMIC DEVELOPMENT OF SINGLE-INDUSTRY CITIES IN RUSSIA AND GERMANY

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注解。单一产业城市的社会经济战略发展是过去几十年的热门话题之一。这个问题在危机时期特别严重。俄罗斯和德国是拥有众多单一工业城市的国家之一。作者确定了俄罗斯和德国单一工业城市战略规划文件形成的类似和独特方面。提出了单一工业城市非战略性发展的统一算法，包括分析失败和实现单一城镇的项目，形成发展领土的目标和活动，制定城市形成企业发展的创新　项目，实施战略并调整公司城镇的战略规划文件。，加强领土的经济安全，提高人民的生活质量。

关键词：单一产业城市，战略，城市形成企业，规划，投资，非放松管制，指标，国家。

Annotation*. The strategic socio-economic development of single-industry cities is one of the hot topics of the last decades. This issue is particularly acute in times of crisis. One of the countries with numerous single-industry cities is Russia and Germany. The author identified similar and distinctive aspects of the formation of strategic planning documents for single-industry cities in Russia and in Germany. A unified algorithm for the non-strategic development of single-industry cities is proposed, including items for analyzing failures and achieving one-company towns, forming targets and activities for developing the territory, drawing up innovative projects for developing the city-forming enterprise, implementing the strategy and adjusting the strategic planning document for the company towns. , strengthen the economic security of the territories, improve the quality of life of the population.*

Key words*: single-industry city, strategy, city-forming enterprise, planning, investments, non-deregulation, indicators, countries.*

Introduction

Relevance. Nowadays, in accordance with the order of the Government of the Russian Federation dated July 29, 2014 No. 1398-r "On approval of the list of single-industry municipalities of the Russian Federation" [1], the number of single-industry cities is 313, with:

- single-industry cities with the most difficult socio-economic situation (including in conjunction with the problems of functioning of city-forming enterprises) - 75 (1 category);
- single-industry cities in which there are risks of deterioration of the socio-economic situation
- 149 (category 2);
- single-industry cities with a stable socio-economic situation - 89 (3 category).

Based on the above, the share of single-industry cities of the 1st and 2nd categories in their total number is 72%. This factor confirms the high relevance and importance of considering the issue of the strategic development of such cities.

In foreign countries, there is also a significant number of such cities. For example, according to experts in Germany, approximately 300-500 settlements of Germany, where one enterprise dominates to some extent [2].

Scientists, researchers and government officials are taking measures to develop such cities. For example, in Germany, the positive results of their development are achieved thanks to the consolidation of the efforts of business and government in matters of the strategic development of the territory. In particular, enterprises for the automotive industry are opening [3], large-scale investments in transport infrastructure, implementation of "all in the city" projects [4], development of the labor market [5], etc. are funded.

There are also positive examples of socio-economic development of cities in Russia. The source of stability is the consolidation of the efforts of business, government and science for the development of such cities, improvement of the methodology of formations of their development strategies, regular consideration of issues on the development of single-industry towns at meetings of the Strategic Development Councils and in project offices, as well as at All-Russian scientific conferences.

Based on the high proportion of Russian single-industry towns with risks of deterioration of their socio-economic situation, cyclical presence of crisis situations in the country and the world, a high proportion of such settlements in other countries, positive experience of their development, the author considers it important to offer a unified algorithm of non-strategic social and economic development single-industry cities.

Scientific development. Theoretical approaches to the socio-economic development of single-industry towns are developed in the works of many scientists,

in particular, E.G. Animitsa, V.S. Bochko, N.V. Vlasova, I.D. Turgel, A. Neshchadina, A. Prilepin, O.S. Ioffe, P.E. Animitsa, N.V. Zubarevich, S.G. Zvorygina, O.M. Roy, S. Kadochnikova, M. Murtazina, N.S. Ivashina, N.A. Ulyakina, V.N. Leskina, A.N. Shvetsova, A.N. Maslova, T.V. Uskova, N.V. Voroshilova, E.A. Gutnikova, S.A. Kozhevnikova, V.K. Zausaeva, E.V. Dubinina, K.N. Zaitseva, V.M. Ishimova, V.M. Kapitsyna et al.

Purpose of the study. Identify similar and distinctive aspects of the formation of strategic planning documents for single-industry cities in Russia and in Germany; to propose a unified algorithm for the non-strategic development of single-industry cities.

1. Methodological approaches to the strategic planning of single-industry cities in Russia and in Germany

The fundamentals of strategic planning of the territories of the Russian Federation are regulated by the Federal Law of June 28, 2014 No. 172-FL "On Strategic Planning in the Russian Federation" [6]. The mentioned law establishes a conceptual apparatus, in particular, the concepts of "strategic planning", "system of strategic planning", "strategy of socio-economic development of municipalities", etc. are presented. In addition, the law presents the principles of strategic planning, discloses strategic planning documents and other aspects of strategic planning.

In accordance with the above law, in each region of the Russian Federation, guidelines have been approved for the development (updating) of strategies for the socio-economic development of municipalities. For example, in the Sverdlovsk region - this is the decision of the Government of the Sverdlovsk region of 30.03.2017 No. 208-PP. Single-industry cities form strategies in accordance with the approved documents.

It can be noted that between the regions of the Russian Federation, despite the unified federal law, there are differences in the formation of strategies of municipalities. In particular,

- Republic of Altai [7], Leningrad Region [8] - a model layout of the development strategy of the municipality is presented;
- Voronezh region [9] - attention was focused in the methodology that each target indicator is interconnected with the purpose of the strategy;
- Krasnoyarsk Territory [10] - the mechanism for implementing the strategy is disclosed in more detail (the sections are presented: organizational, managerial, regulatory, financial and economic);
- Chelyabinsk region [11] - the use of a point estimate in the method of monitoring the implementation of the strategy of socio-economic development of municipalities; diversification of the types of analysis of the socio-economic development of the territory (STEP - analysis, analysis using the "5 forces" model

of Michael Porter - “the power of competition”, “the power of substitutes”, “the power of customers”, “the power of suppliers”, “the power of barriers” - and others types of analysis);

- The Republic of Bashkortostan [12] - a list of recommended indicators is presented, the form of presentation of investment projects is indicated, attention is paid to the development of the municipal finance sector when formulating a municipal development strategy (the main directions for the development of municipal finance should be reflected, as well as measures to improve budgetary security municipalities: measures to increase the income potential of municipalities, municipal support mechanisms for investment activities of small and medium businesses, mechanisms for organizing collaboration with banking institutions, funds and development institutions, etc.);

- Republic of Sakha [13] - concentrated on the formation of the budget forecast for the development of municipalities;

- The Republic of Tatarstan [14] - approved a single pattern for the formation of an action plan for the strategy of socio-economic development of municipalities.

Thus, the methodology for forming the strategies of municipal entities of the constituent entities of the Russian Federation has a number of similar and distinctive features.

In theory, the methodology for the formation of strategies for the development of municipalities was presented by scientists: A. Tatarkin. [15], Bochko V.S. [16], Silin Y.P., Animits E.G. [17], I. Turgel [18], Roy O.M. [19], Vlasov N.Yu. [20] and many others.

Also in the author's works “Conceptual model of leveling institutional failures of single-industry territories” [21], “Theoretical bases for improving the institutional system of a single-industry territory” [22] are: theoretical foundations for institutional planning of cities, a map of the institutional system for a single-industry territory territories, model of leveling institutional voids of single-industry territories, etc.

In Germany, there are also various methodological approaches to the formation of strategies, in particular, Kuno Schedler and John Philipp Siegel “Strategisches Management in Kommunen” [23].

The monograph presents typical stages of the strategy processes, mechanisms for formulating, implementing and evaluating strategies, presents tools for strategic management, and more.Methodical approaches to the formation of documents to improve the quality of life of the population of cities are presented by German scientists in the collection “Lebensgualitat aus Burgersicht” [24].

In the work “Systemische Strategieentwicklung: Modelle and Instrumente für Berater und Entscheider (Systemisches Management)” [25] proposed a methodology for the formation of a system strategy, mechanisms of strategic management.

In general, the methodological approaches presented by scientists in Germany and Russia have common targets (improving the quality of life of the population, increasing investment development, creating new innovative enterprises, etc.). At the same time, there are differences in specific issues, such as, a list of recommended targets, model layouts of a list of activities, directions for the development of cities.

2. Positive experience in the formation of strategies for the socio-economic development of single-industry cities in Russia and Germany

As a positive experience in the formation of strategies for the socio-economic development of single-industry towns, we consider the single-industry towns of the Sverdlovsk region: the Krasnoyarsk urban district, the Kachkanarsky urban district and the urban district of Karpinsk (Table 1).

The key goal of the strategies of the above cities is to improve the quality of life of the population.

The main objectives of the strategies: the creation of territories of advanced development, the growth of incomes of the population, the overcoming of the mono-profile nature of the economy of the territory and its diversification, the creation of comfortable living conditions.

The draft strategies are aimed at developing the social sphere, improving the infrastructure of the city, improving the ecological situation, increasing the investment attractiveness of the territories, and developing new methods.

The main results of the strategy are based on targets.

At the same time, it should be noted that, in the main, measures of the strategies of socio-economic development of single-industry cities are aimed at diversifying the economy of the territories. The author believes that in order to increase labor productivity, preserve and raise the average wage of the city, increase the investment and innovative development of the territory, it is also necessary to develop the city-forming enterprise of the single-industry city.

In addition, when drawing up strategic planning documents for single-industry towns, state support from development institutions is taken into account. This issue is presented in detail in the author's article "The Choice and Formation of Institutions for the Development of a Single-Industry Territory" [26].

Among the single-industry towns in the Sverdlovsk region, only the strategy of the Karpinsk city district included measures for the development of the city-forming enterprise: the acquisition and modernization of equipment, research and development in the OJSC Karpinsky Electric Machine Building Plant.

The emphasis in shaping the strategies of the social and economic development of single-industry cities in Germany is made on the development of human capital [27], on the formation of a favorable investment climate, **on the develop-**

ment of city-forming enterprises — introducing innovative products, large-scale scientific research and design developments, as well as on the optimal interaction of business, science and authorities [28].

As in Russia, the strategic planning documents of Germany take into account state support from structural funds. Support is provided in the following areas: support for small and medium-sized businesses, **innovative and technological development**, the establishment and consolidation of technology centers (business incubators), the conversion of former industrial zones, support for employment and advanced training [29].

As a positive experience in the formation of strategic planning documents in Germany, the Ruhr Development Program (Entwicklungprogramm Ruhr, 1968) and the Action Program Ruhr (Aktionsprogramm Ruhr, 1984) can be cited.

One of the priorities of the Ruhr development program are:

- social policy: social guarantees for the unemployed, additional payments to enterprises for retaining labor force and its retraining, etc .;

- improvement of the basic infrastructure: expansion and improvement of the regional transport network, reconstruction of cities and the formation of a socially oriented urban environment (construction of neighborhoods with affordable housing, restructuring of suburban neighborhoods, the creation of social infrastructure and others);

- improvement of the ecological situation of the territory;

- **development of the industry of the territory (emphasis is placed on the creation of new jobs)** [29].

The Action Program Ruhr presents a comprehensive transformation of territories (including cultural development and urban planning) as a single goal of strategic planning. The program established seven main areas of development: reducing unemployment, developing new technologies and introducing innovations, building housing and sports facilities, protecting the environment, maintaining the status of the energy center of Germany[1], stimulating investment activity, and developing culture.

Thus, in the strategic planning documents of single-industry towns in Germany, emphasis is placed on the support and development of traditional industries.

3. Unified algorithm of non-strategic development of single-industry cities

Taking into account the experience of the formation and development of single-industry towns of Germany and Russia, the author has compiled a unified algorithm for the non-strategic development of single-industry towns (Fig. 1).

[1] By the end of the 1970s, about 16% of the capacity of power plants, more than 20% of oil refineries and 80% of German heavy coal enterprises were concentrated in the Ruhr region.

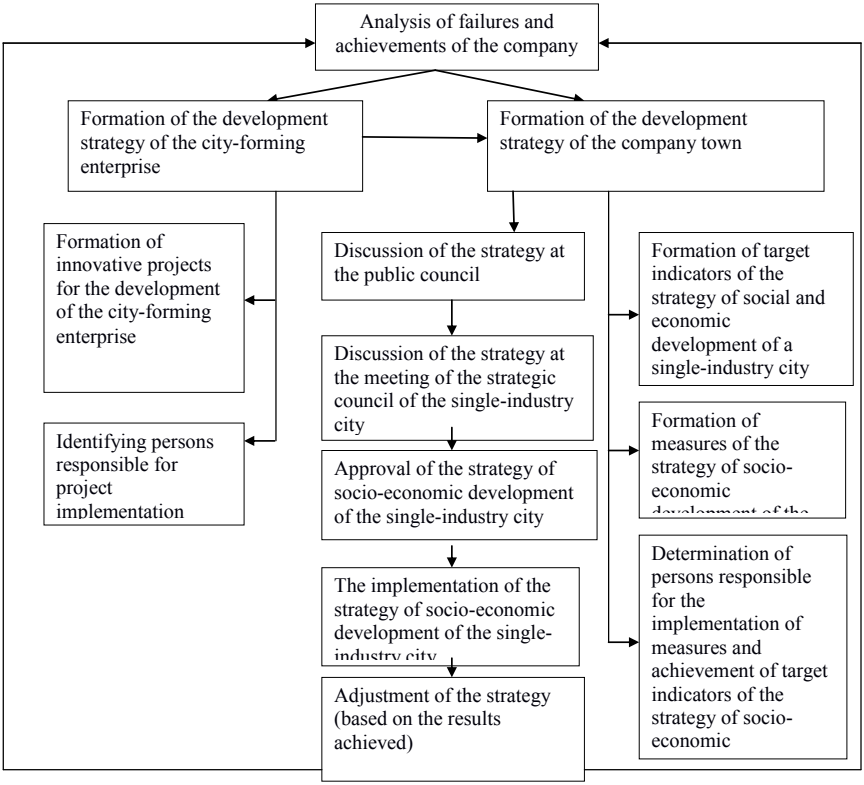

Figure 1. - *Algorithm of non-strategic development of single-industry cities*

The algorithm includes items for analyzing failures and achieving a single-industry city, setting targets and measures for developing the territory, drawing up innovative projects for developing a city-forming enterprise, a mechanism for implementing and correcting the strategic planning document of a single-industry city. The proposed algorithm allows to increase the efficiency of the formation of strategic planning documents, strengthen the economic security of territories, and improve the quality of life of the population.

Summary

Thus, based on the positive experience of the development of single-industry cities in Russia and Germany, the author believes that when forming strategic planning documents for single-industry cities, it is necessary to include measures for the development of city-forming enterprises. This decision will improve the economic security of the territories, strengthen the role of the city-forming enterprise in the economic and social life of the city / region, strengthen the competitiveness of the territory, improve the quality of life of the population, and increase the efficiency of the formation of strategic planning documents for the single-industry city.

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公司的会计政策，作为创建高质量企业报告和有效业务管理的工具

THE ACCOUNTING POLICY OF COMPANY AS AN APPARATUS FOR CREATING HIGH-QUALITY CORPORATE REPORTING AND EFFECTIVE BUSINESS MANAGEMENT

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注解。 本文认为，需要将会计政策相互联系，并提供可靠和完整的公司报告。 公司报告披露有关公司的财务和非财务信息。 它在确保业务透明度方面发挥着重要作用。 作者将公司的会计政策及其公司声明作为企业管理系统的重要组成部分。 本文介绍了高质量企业报告的模型。

关键词：会计政策，公司报告，非财务报告，会计，管理制度，绩效指标，业务透明度。

Annotation. *The need of interconnection of accounting policy and reliable and complete corporate reporting is justified in this article. The corporate reporting discloses financial and non-financial information about the company. It plays an important role in ensuring business transparency. The authors examine the accounting policy of the company and its corporate statements as the important elements in the system of corporate management. There are presented the model of high-quality corporate reporting in the article.*

Key words: *accounting policy, corporate reporting, non-financial reporting, accounting, management system, performance indicators, business transparency.*

Currently, an important role in practice has corporate management of an economic entity [1]. Corporate management forms the principles of organizing and controlling the process of developing and making business decisions. Corporate management is a controlling mechanism for regulating corporate responsibility, implemented through the following groups: board of directors, audit committees, top managers, internal and external auditors and regulatory bodies in order to satisfy and protect the interests of investors [2]. The presented groups are the basis of corporate management and reliable corporate reporting. The corporate manage-

ment system determines how owners control the work of top managers, as well as the responsibility of these persons to owners for the results achieved. It should be noted that there is no unified model of effective corporate management, that is, for each particular company it is developed based on the characteristics of the legal and economic environment of functioning. But at the same time, there are three components of corporate management, which can be used by all companies:

1. The general system of management of the economic entity and control decisions. In this case, the general meeting of shareholders form the main decisions, and the board of directors manages the company and controls the activities of managers. Managers, in turn, develop solutions for the operational management of the company, based on the adopted strategy.

2. Principles of distribution of rights and obligations between the participants of corporate relations. The main and ultimate goal of this component is to increase the value of the company through the rational formation of relations between the participants.

3. Rules and decision-making procedures, the formulation of company goals, tools to make the most rational management decisions, and indicators to monitor the results of its activities, which will increase the confidence in the company and internal and external users.

The above elements of corporate management will help to effectively build a management process and improve the reliability of information that is provided to all participants of corporate relations and external interested users.

At the stage of creating corporate relations in an organization, one of the most important documents is its accounting policy [3]. In practice, in our opinion, insufficient attention is paid to the formation of this document. The mechanism of its approval is most often of a formal nature, and the head of the organization underestimates the importance of accounting policies in the investment process and effective business development. It should be noted that the accounting policy is a multifunctional element in the corporate management system of a company, allowing it to control its stable financial position. On the basis of corporate accounting policies, the most optimal ways and methods of accounting for the organization’s activities are modeled, a base is created for the effective functioning of the company in a strategic perspective.

Another important element in a company's corporate management system is its corporate financial reporting. In modern conditions of corporate operation, reliable corporate reporting is a key factor in making decisions for investors and managers [4]. Indicators such as the quality of corporate management, the share occupied by the company in the market, customer loyalty, the value of the company's brands form the first impression about the effectiveness of the company's activities. Good corporate reporting is one of the sources of fund raising and making informed de-

cisions on property issues will help avoid conflict between agent groups.

Also, corporate reporting serves to create a trusting relationship between owners, potential investors and company management [5]. As a result, the owners retain their share in the company, as in favorable times, and in times of crises and setbacks that can occur with companies in which the best management system operates. Thus, the effectiveness of corporate management depends on the relationship between various categories of investors and on an effective system for monitoring the results of a company's operations.

In our opinion, corporate reporting should be considered from the standpoint of the influence of the external environment of the company on it. Indeed, the company, through its corporate reporting, is able to manage the external environment and vice versa. We believe that the company in the course of its operation and the external environment can influence each other, and also interact with each other. At the same time, the components of the external environment of the company are: a society that forms an opinion on the company's activities; partners - those with whom the company has business contacts (investors, consumers, suppliers, employees, etc.); state represented by government agencies that regulate the activities of the company on the basis of federal laws. In this case, one of the important components of corporate reporting - social reporting - is a tool for managing the external environment of the company. Elements of corporate management will be:

1) the general budget of the company, which reflects the planned indicators of its activities for the upcoming period;

2) the strategy of the corporation, which characterizes the model of the corporation in the medium or long term;

3) corporate mission, which includes a plan for the functioning of the corporation in the external environment.

With such a relationship between the company and its external environment, corporate reporting reflects the achievement of the objectives of the company. Each report that forms corporate reporting is focused on satisfying the information requests of various user groups (Fig. 1).

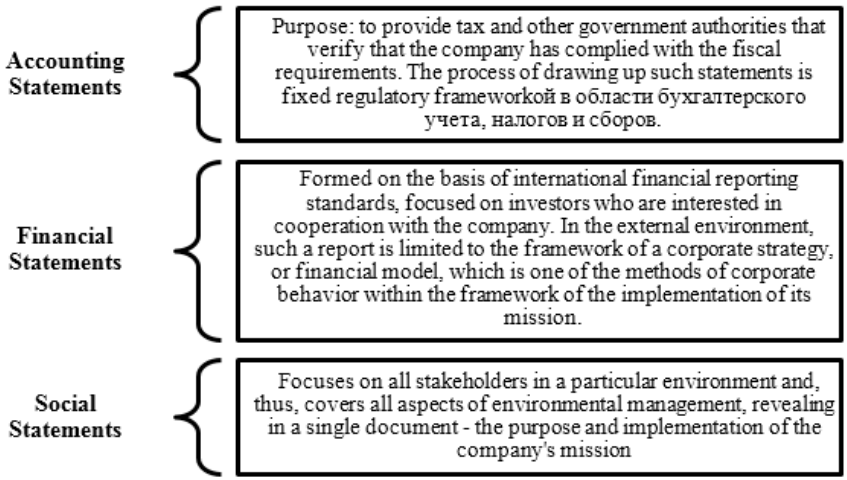

Fig.1. *The main components of corporate reporting*

At the same time, in our opinion, it is non-financial reporting that can be an important element of the management system, a tool for dialogue with stakeholders, and increasing business transparency.

Non-financial reporting is a formally published report of a company, which contains economic, social and environmental performance results for the reporting period. In most cases, key information is disclosed in terms of: personnel, environmental protection, product quality management, innovations, ethical principles of doing business, corporate social responsibility strategies, corporate management, risk management [6], the company's participation in the development of the region, a brief description of interaction with stakeholders.

In world practice, depending on the purpose of the report and the terminology used in a given country, a non-financial report can also be called a social report, an environmental report, a report on corporate social responsibility, a report on sustainable development, a report on corporate citizenship and a triple-sum report [7]. Today, the business community has recognized and actively uses the term reporting in the field of sustainable development, focusing on the fact that this is an adequate, competent, understandable presentation of the company's performance, a reflection of those indicators that can satisfy the information needs of stakeholders.

Figure 2 presents the non-financial reporting functions, the implementation of which will allow companies to strengthen their business reputation, ensure the development of interaction with stakeholders, increase competitiveness, and contribute to improving the image of the business environment.

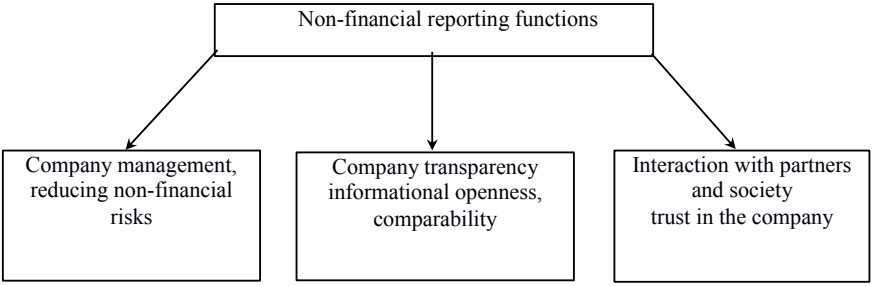

Fig. 2. *Non-financial reporting functions*

The main provisions, which, in our opinion, should contain a non-financial report, and which will allow to increase the transparency of business, are presented in Figure 3.

Fig. 3. *Key points of the non-financial report*

It can be concluded that non-financial reporting is becoming the norm of corporate behavior for Russian companies for which increasing information transparency, disclosing the advantages of responsible business practices, justifying its impact on the growth of tangible and intangible assets of companies, on the development of regions and society, on improving competitiveness are relevant.

In turn, the preparation of effective corporate reporting is impossible without the development of effective accounting policies. The company's accounting policies should be designed so that users of financial statements can com-

pare financial data for a number of reporting periods in order to determine the organization's trends and financial condition, as well as assess its performance and the ability to generate cash flows. The development and application of accounting policies for management purposes will allow the generation and transformation of accounting information in such a way that it maximally meets the information requests of managers and owners of the organization, thereby facilitating the prompt adoption of correct management decisions. Corporate accounting policy in the interests of management is developed based on the information needs of the organization and the specifics of its activities. It is an effective control tool [8], an indicator of the quality of accounting procedures, a mechanism for the rational organization of business activities and corporate management. Thus, it is possible to propose a specific model for the formation of high-quality corporate reporting in conjunction with accounting policies (Figure 4).

Fig. 4. *Model of high-quality corporate reporting in conjunction with accounting policies*

Thanks to this model, in our opinion, companies will be able to adhere to the main goal of corporate reporting - this is getting external interested users transparent, reliable and truthful information about the results of the company.

Let us define the composition of high-quality corporate financial statements. The consolidated financial statements already contain obligatory financial indicators characterizing the state of the company's business. These indicators are formed in accordance with International Financial Reporting Standards (IFRS) or with General Accepted Accounting Principles in the United States of America (GAAP). The report also includes additional financial information. This information primarily includes a financial review of the manual. It reveals information about the characteristics of the main results of the company, its financial position, as well as uncertainties that need to be paid attention to in the preparation of statements [1].

The financial review of the manual may include the following information:

- about the main factors that determine the financial results, as well as about changes in business conditions, the consequences of these changes for the company;
- investment and dividend policy;
- about sources of financing;
- about resources that were not reflected in the consolidated balance sheet.

In addition, the report should reflect the forecast of financial condition, financial results and cash flow, subject to the implementation of the chosen strategy, taking into account the risks involved.

It should be noted that in the management system of the company an important aspect is the use of various performance indicators to analyze the financial stability of the company. In accounting policies it is necessary to give disclosure of these indicators, and in corporate reporting these indicators will characterize the efficiency of the company during the reporting period. Possible groups of performance indicators of the company are presented in Figure 5.

We believe that in the corporate accounting policy of the company it is necessary to prescribe types of indicators, methods and methods of their calculations, sources of information for calculations. For each organization its own method of calculation due to the specifics and type of activity can be offered. The disclosure of these indicators is necessary for the purposes of the management of the company [1].

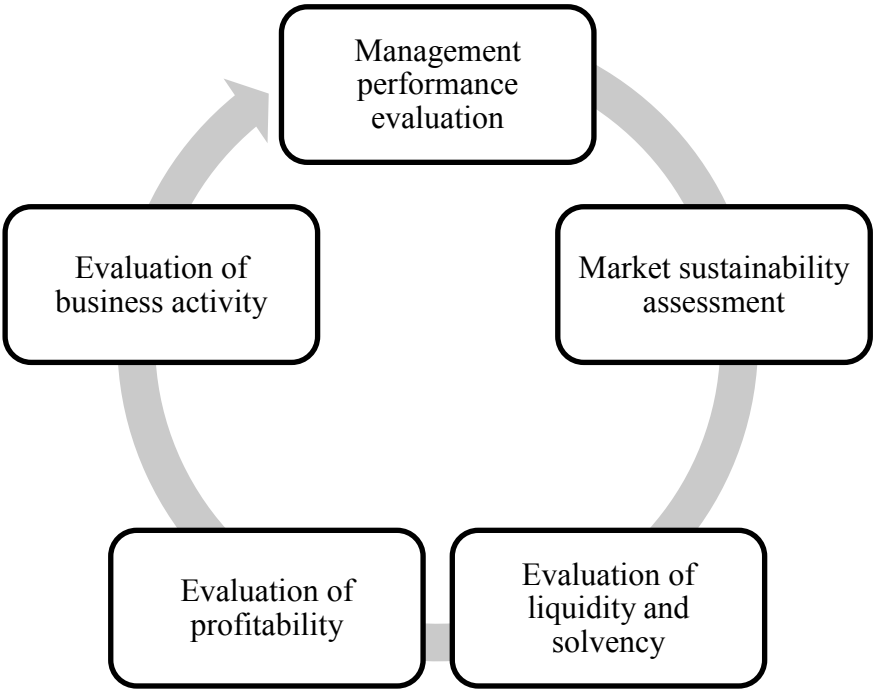

Fig. 5. *The main groups of indicators of financial stability*

After analyzing the need for the connections of corporate reporting and accounting policies, we can conclude that a well-designed corporate accounting policy is the basis for the formation of reliable corporate reporting of the company. In turn, both of these components are tools for effective business management, the development of which depends on the external environment. Each organization in its activities seeks to get the most out of the business while using all its capabilities. Therefore, from a practical point of view, it is assumed that one of the important components of corporate reporting - social reporting - is a tool for managing the external environment in which the company operates. Accounting policy for this purpose develops methods and methods of accounting that meet the requirements of the legislation, on the one hand, and the requirements of interested users, on the other. And corporate reporting, in turn, provides all the necessary information, with the help of which it becomes possible to analyze the performance of the organization and make the right management decisions.

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FLB-p位置理论与实践的矛盾
CONTRADICTIONS OF THE THEORY AND PRACTICE OF FLB-P'S PLACEMENT

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注解。 本研究的主要内容是试图确定FLB-p在俄罗斯联邦政策框架内扩大国内投资者基础的有效程度。

关键词：FLB-p，FLB投资，个人债券。

Annotation. *The main content of this study is to try to determine the degree of effectiveness of FLB-p as a tool within the framework of the policy of the Russian Federation to expand the base of domestic investors.*

Keywords: *FLB-p, investments in FLB, bonds for individuals.*

Federal loan bonds for the public (FLB-p) is a new financial instrument issued by the Ministry of Finance of the Russian Federation to save and increase the money of citizens.

The first issue of a new type of federal loan was made on April 26, 2017. The state, represented by the Ministry of Finance, argued that FLBs would become one of the best tools for increasing capital of the widest circle of the population.

In the information messages posted by the issuer, it was emphasized that FLB-p is not considered as the main instrument of state borrowing and their issue is not aimed at covering the state budget deficit. According to estimates of the Ministry of Finance at that time, the volume of FLB-p issues should not exceed 30 billion rubles a year, which is less than 2% of the state internal borrowing program (in fact, the total volume of emissions amounted to more than 40 billion rubles).

The real objectives for issuing these bonds are:

- expanding the base of investors within the country;
- the development of the domestic financial market and the revival of trust to the securities issued by the state;
- increasing the level of financial literacy of the population.

Speaking of increasing trust to government securities, it is worth remembering in connection with which it was lost. The loss of confidence is associated with still fresh memories among the public about the State Short-Term Bonds (SSTB) issued by the Ministry of Finance of the Russian Federation in the form of registered discount bonds, the income on which sometimes reached 200%. There was a big stir around them. The total amount of these bonds was sold in the amount of 272.6 billion rubles. [1] However, as it turned out, these bonds were nothing more than a financial pyramid, a "bubble" that burst during the 1998 economic crisis. Then all bonds at once lost almost 3 times in price, and payments on treasury bonds were frozen until February 1999.

Many may ask, what is the difference between FLB-p from those SSTB? An important feature of the new "national bonds" from the "classic" will be their impossibility of circulation in the secondary market, which means there is no risk of loss associated with changes in market conditions. The Ministry of Finance of the Russian Federation denied a rumor that the purchase of these bonds was a more risky move than a bank deposit, while noting that they would bring greater benefits to the owner, about 20% higher than the annual income from a bank deposit. Also, from the very name it becomes clear that only individuals can purchase these bonds, and it will be possible to buy them only through agent banks, and not as in the case of SSTB, which both individuals and legal entities could buy, and only through an auction that initially required large capital.

In addition, it is worth noting that these bonds can be inherited by individuals, as well as the percentage of the agency commission decreases with an increase in the purchase amount from one and a half percent to half percent, depending on the total value of the purchased bonds.

At first glance, from the above-stated, FLBs are in fact quite an attractive tool for investing money of the population. They are quite reliable, because the guarantor is the state and the return on them is comparable to the return from a bank deposit. However, the results published by the Ministry of Finance of the Russian Federation on the issue and sale of these securities make us think about the success of the program to expand the base of domestic investors and increase confidence in government securities.

According to the results of the first three issues bonds were sold for more than 43 billion rubles. However, is it possible to judge the success of the program only on the basis of these data? [2]

Initially, the plan of the Ministry of Finance was to expand the investor base in the country at the expense of those citizens who do not invest their own funds, but keep them, make investing in securities for them in the same ordinary and simple way of investing as bank deposit. The official goal was to teach people not to be afraid to invest. In our opinion, for the most part, it was not achieved.

Judging by the published data of the Ministry of Finance of the Russian Federation on the results of the emission of the first three issues, it turned out that the average age of most investors is 55 years and older, and the size of the average check varies from 1 million rubles from Sberbank to 1.3 million rubles from VTB. This means that buyers of bonds were people of pre-retirement and retirement ages, who have considerable savings and are already oriented in the financial environment. Whereas, it was noted that this product is mainly aimed at young citizens who live in the digital environment and actively use modern technologies. These data allow us to conclude that the goal was not achieved. [3]

There can be various reasons for this. However, we tend to attribute to the main ones the underestimation by the Government of the real level of income of the population and the distrust of the masses, given the experience of SSTB to government bonds.

The first reason is explained by the fact that the minimum purchase amount of bonds in the size of 30 thousand rubles is too heavy for a large number of citizens of the Russian Federation. At the request of the Central Bank of the Russian Federation in the second quarter of 2017 (just before the first issue) a population survey was conducted, during which it became clear that 59% of the population does not have any savings. Consequently, under the concept of "a wide circle of the population", most of the citizens do not fall. This is not taking into account those people who have these savings, but either in insufficient quantities or for other purposes. If we count them, then the percentage of citizens who are not able to afford to buy this type of bonds will greatly increase. [4]

The second reason lies in the low level of confidence in government bonds among the general population. And not without reason.

As history shows, the issue of bonds for individuals in Russia almost never earned large profits to the population. We can recall at least the same short-term bonds mentioned above or the practice of issuing bonds for the population in the USSR. Of course, the latter, at first, were quite profitable, because the state guaranteed payment of them at a rate of 12% per annum. In addition, it should be borne in mind that this was the post-war period, and the issue of these bonds was a necessary measure, because the state was trying to restore the economy. However, later this practice was used unreasonably. The population was obliged to buy government securities on a compulsory basis, not to mention the fact that shortly thereafter, bonds began to be issued instead of wages, and their profit dropped to 3–4% per annum, and repayment was delayed for more than 20 years. As a result, many owners of these bonds have not received their money. [5]

Of course, the FLB-p emission considered under this article is unlikely to lead to the events described above. However, already now there is a non-optimistic tendency of permanent reduction of payments on FLB-p coupons with each new issue.

Summarizing all the above, we conclude that the state program to expand the investor base did not take place, because the statistics indicate the banal inability of most citizens to acquire FLB-p, and those who are able to buy them are already financially educated and have investment experience in other financial instruments.

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评估堪察加半岛渔业综合企业竞争力的特点
FEATURES OF THE ASSESSMENT OF THE COMPETITIVENESS OF ENTERPRISES OF THE FISHING COMPLEX OF THE KAMCHATKA TERRITORY

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注解。 文章确定了鱼业企业和组织竞争力的特征，分析了企业所用竞争优势：评分法，波特五力法，SWOT分析法。 正在审议的专题的相关性是，渔业综合体的所有企业和组织或多或少都面临着国内和国外市场竞争等问题。 因此，对竞争力的分析和评估将有助于在战略，运营和战术层面做出有效的管理决策。 该研究的目的是评估提高渔业综合企业竞争力的措施的有效性。

关键词：渔业综合体，竞争力因素，竞争优势评分，波特五力法，SWOT分析。

Annotation. *The article identifies the features of competitiveness of enterprises and organizations of the fish industry, analyzes the competitive advantages of enterprises where they used: scoring method, Porter's five-force method, SWOT analysis. The relevance of the topic under consideration is that all enterprises and organizations of the fishery complex are more or less faced with such a problem as competition in the domestic and foreign markets. Consequently, the analysis and assessment of competitiveness will contribute to competent management decisions at the strategic, operational and tactical levels. The aim of the study is to assess the effectiveness of measures to improve the competitiveness of enterprises of the fisheries complex.*

Key words: *fishery complex, factors of competitiveness, score of competitive advantages, Porter's five-force method, SWOT analysis.*

For enterprises and organizations of the fisheries complex of the Kamchatka Territory, it is important to identify competitive advantages at a given time and strategically plan them in perspective, focusing on the main competitors, the socio-economic development strategy of the Kamchatka Territory, consumers and suppliers. An integrated approach will allow enterprises to be cost-effective and socially viable in foreign and domestic markets [1].

Not all market players are competitors. Choosing the right competitors and developing appropriate programs against them will help to significantly increase the efficiency of the company.

The Kamchatka market of fish products is quite extensive, it employs more than 41 enterprises that are located in the territory of the Kamchatka Territory. But more than 50% of the products of enterprises producing fish products and sell them to both the external and domestic markets. The competition between them consists mainly in the quality and price of their products, as well as in winning new market shares.

Primarily, the assessment of the level of competitiveness of an enterprise was carried out on the basis of a comparative description of the activity of the enterprise and its strongest competitors for a number of factors [5]. Table 1 presents the factors of enterprise competitiveness, the reputation rating scale is displayed in points, where 1 is bad, 2 is satisfactory, 3 is good, 4 is excellent.

Table 1 - *Factors of enterprise competitiveness*

Factors	Co., Ltd "Ribkholkam"	P. Co. « Kolkhoz Oktyabr»	Fishing Artel "Krasniy Truzhenik"
Share of the market, %	15	15	16
The time of the enterprise, years	20	24	24
Reputation	4	4	4
Profitability, %	12	14	15
Level of technologies	medium	high	high
Assortment	wide	wide	wide
Quality of production	above the average	high	above the average
Expense for advertisement	lmited	temperate	temperate
Level of production fame	known	well-known	well-known

The strongest competitors for Co. Ltd "Ribkholkam" are P. Co. « Kolkhoz Oktyabr» and the Fishing Artel "Krasniy Truzhenik". There are a lot of factors influencing the competitiveness of an enterprise. Their actions are often multidirectional, so determining the level of competitiveness of an enterprise; you should use the following method of scoring competitors (Figure 1).

***Figure 1** - The score of competitors*

Based on the research conducted above, it can be concluded that competition in the fishing industry is very intense. This is due to a large number of enterprises, with low consumer costs in the transition from products of one company to another, when companies that are dissatisfied with their market share try to capture a competitor's share, with difficulty leaving the industry, which forces them to start implementing aggressive strategies.

Product differentiation manufacturers assign 4 points.

Let us consider the pressure factor from suppliers:

- the level of concentration of suppliers (5 points). The number of suppliers of raw materials and materials in the settlement of Ozernaya (where the enterprise is located) is rather limited; therefore, any changes on their part will have a significant impact on the enterprise and, accordingly, will affect the final consumers.

- the level of prices and the quality of raw materials and materials (2 points). With a relatively high level of prices, the quality of the supplied raw materials is generally satisfactory.

Therefore, the assessment of pressure from suppliers is 3.5 points.

The ability of suppliers of Co. Ltd "Ribkholkam» to dictate the terms is generally high.

Consumer pressure will be assessed based on an analysis of the following factors:

- level of consumer concentration (2 points). The number of potential consumers of the industry's products and, in particular, Co. Ltd "Ribkholkam» is calculated both in the domestic and foreign markets, which is sufficient for the enterprise under study.

- access to information about products (2 points). Information about the products of Co. Ltd "Ribkholkam», which is available to the end user, is extensive. The main channel for the dissemination of information about products is advertising in the media, the Internet (television, press).

- the level of consumer demand (2 points). In assessing this factor, it is necessary to distinguish between consumer (or potential) demand for the products of Co. Ltd "Ribkholkam» and effective consumer demand.

The above defined - assessment of pressure from buyers 2 points.

An analysis of the 5 forces of Porter's competition showed that the most significant factor affecting Co. Ltd "Ribkholkam» are suppliers who are able to dictate their conditions and have a negative impact on the functioning of the company, the value of this factor is 3.5 points. The second place is taken by the factor of intra-industry competition; its value is 2.1 points, which indicates the average level of intensity of competition. The rivalry of existing companies in the industry is quite tough; the struggle is both for market share and for improving the competitive advantage of price-quality.

Summary of SWOT-analysis of the company Co. Ltd "Ribkholkam» are presented in table 2.

Table 2 - *Summary of the analysis of external strategic factors*

External strategic factor	weight	Score	Windowed estimate
Possibilities			
Awards	0,02	3	0,06
Local producer	0,09	4	0,36
Regional possibilities	0,11	4	0,44
Demographic tendencies	0,08	3	0,24
Amount of producers	0,15	5	0,75
Economical stability	0,12	3	0,36
New technology	0,02	4	0,08
Change of populace income	0,1	4	0,4
Threats			
Competitors	0,17	5	0,85
The decline in production	0,005	3	0,015
Degradation of product quality	0,025	4	0,1
Suppliers	0,065	3	0,195
Price change	0,015	2	0,03
The emergence of new products	0,02	2	0,04
New laws	0,01	2	0,02
Total:	1		3,94

A comparative analysis of the activities of Co. Ltd "Ribkholkam» with its main competitors made it possible to identify the following weaknesses that negatively affect the level of competitiveness of an enterprise:

- low level of product profitability, due to the high cost of raw materials and materials, the cost of production is large and exceeds the dynamics of revenue growth from sales;

- the level of popularity of products, and accordingly, the market share occupied by Co. Ltd "Ribkholkam» is not large.

Therefore, in order to increase the competitiveness of fish products, the management of the enterprise needs to solve the following main tasks:

- improving the quality of fish products;

- reduction of production costs by 4.5-5%, causing the possibility of reducing prices by 3-3.5%;

- improving the effectiveness of advertising, product promotion, sales promotion;

- the development of new markets (for example, access to the domestic Russian market with finished fish products: canned food, preserves).

In order to solve the first task, improving the quality of fish products requires the purchase of new equipment for the packaging of finished fish products (canned food and preserves), which will make it possible to increase the shelf life of finished fish products and preserve its taste. This event will also provide an opportunity in solving the second task, saving costs and reducing the cost of finished products. Reducing the level of production costs will give the opportunity to Co. Ltd "Ribkholkam» to have in stock a range of products of different price categories, which will allow covering various groups of customers. After analyzing the situation which Co. Ltd "Ribkholkam» is in, it can be concluded that the enterprise needs to take measures to strengthen the promotion of goods to the market, increase marketing efforts, and expand the sales market, which will enable solving the third task.

The results of the study allowed us to draw some conclusions and suggestions to improve the competitiveness of products, which is understood as a complex multidimensional product description, reflecting its ability to meet the requirements of this market in the period under review, to be more attractive for consumers than competitors' products, to profitable realization of this product at a certain point in time in a particular market.

In conclusion, it should be noted that the increase in the economic efficiency of the fish industry can be achieved by innovation in the fish processing industry. In particular, technological innovations will lead to the preservation and expansion of its market sector not only due to high quality products, but also through new developments, including deep processing of raw materials.

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农村城镇社会经济发展规划的特点
THE FEATURES OF PLANNING OF SOCIAL AND ECONOMIC DEVELOPMENT OF RURAL MUNICIPALITIES

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注解。 研究了俄罗斯联邦农村居民点社会经济发展的趋势。 概述了影响战略规划有效性的新因素以及实施国家和市政村可持续发展方案的结果。 需要解决的问题在国家一级具有监管和组织性质。 提出了改进区域规划的领域。
关键词：社会经济发展，农村住区，市政方案，农村可持续发展。

Annotation*. The tendencies of social and economic development of rural settlements of the Russian Federation are researched. New factors affecting the effectiveness of strategic planning and the results of the implementation of state and municipal programs for the sustainable development of the village are outlined. The problems that need to be addressed are of a regulatory and organizational nature at the national level. Areas for improving regional planning are proposed.*
Keywords*: socio-economic development, rural settlements, municipal program, sustainable rural development.*

The main condition for the preservation and multiplication of the successes of the agro-industrial complex of Russia is the effective socio-economic development of rural settlements, small villages and the improvement of the quality of life of the population.

Russia in the historical past was an agricultural state and only after the revolution of 1917 did the urban population prevails in it. (Table 1) [1]

[1]ttp://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/population/demography/

Table 1

Dynamics and structure of the population of the Russian Federation

years	Population, mil. people	Including		In per cent to the total	
		Urban mil. people	Rural mil. people	Urban	Rural
1917	89,9	15,7	74,2	18	82
1970	129,9	80,6	49,3	62	38
1980	138,1	96,1	42,0	70	30
1990	147,7	108,8	38,9	74	26
2001	146,3	107,1	39,2	73	27
2018	146,9	109,3	37,6	74	26

In Russia, there are more than 150 thousand rural settlements where almost 38 million people live. Every fourth citizen in our country is a village resident. The significance of such a resource for the development of a country as a rural population living in rural settlements, given their natural, demographic, economic, cultural potential, is very great. Sustainable development of rural areas, preservation of labor resources, plays a key role in achieving food security of the state.

In the Russian Federation, there are more than 20 thousand municipalities, 80% of them are rural settlements (Table 2). The outlined trend of a decrease in the number of the rural population, which in recent years has decreased by 1.6 million people (4.1%), has affected the closure and conservation of rural settlements. Over the previous year, the number of rural settlements in the Russian Federation decreased by 329 units (1.8%).

Table 2

The number of municipalities in the Russian Federation[2]

years	Units in total	including			
		Settlement units	%% of the total number of municipalities	of them rural settlements units	%% from the number of settlements
2017	22327	19690	88,2	18101	91,9
2018	21945	19310	88,0	17772	92,0
%% 2018 к 2017г.	98,3	98,1		98,2	

Considering the importance of providing the country with food for preserving the rural population, socio-economic development of rural settlements at the state level, the Russian Federation adopted the Strategy for Sustainable Development of

[2]http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/munStat/

Rural Territories of the Russian Federation for the period until 2030[3] and the Federal Target Program "Sustainable Development of Rural Territories for 2014–2017 and period until 2020 "[4].

The State Program "Sustainable Development of Rural Territories" provides for a complex system of co-financing budgets of various levels and attracting extra-budgetary resources. Most of the funds should be transferred from the federal budget - 252 billion rubles (almost 59% of the total amount of funding), 139 billion rubles (32.5%) will transfer solidarity budgets, and other extrabudgetary sources will be 38 billion rubles (about 9%).

The analysis of the implementation of the adopted regional and municipal programs in the constituent entities of the Russian Federation made it possible to identify for them the general trend in the socio-economic development of rural settlements that has emerged from the first years of their implementation. First, significant changes in the improvement of social services for the rural population did not happen, but only began to restore slowly the destroyed infrastructure of the village. Secondly, monetary resources were mainly directed to solving current issues of engineering arrangement of rural settlements, since for many years it was not modernized, since the municipal program included activities that did not have a prospective development, and to solve urgent issues. Thirdly, housing construction from rural areas is faced with problems characteristic of the whole country regarding the availability of funds for these purposes. Fourth, the directions for solving the issues of sustainable development of rural settlements in the constituent entities of the Russian Federation and municipalities did not always provide solutions to the issues provided for in the federal target program, thereby reducing the level of the planned rates of improvement for the country as a whole.

The goals set in the state and municipal programs for sustainable development of rural areas partially solved the task of slowing the departure of the rural population, mainly youth, to the cities, but the village did not receive any fundamental socio-economic development. This is evidenced by data on the decrease in the number of rural settlements in the Federal Districts of the Russian Federation for 2018. (tab.3). In the scientific literature, the researchers[5],[6] note that despite the

[3]Order of the Government of the Russian Federation of 02.02.2015, No. 151-p (as amended on January 13, 2017) "On approval of the Strategy for Sustainable Development of Rural Territories of the Russian Federation for the Period up to 2030" // Collection of the legislation of the Russian Federation.

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work carried out by the authorities on the socio-economic development of rural settlements, there are a number of problems that do not depend on the national, geographical, economic characteristics of a particular locality, but require the solution of regulatory and organizational nature at the national level.

Table 3

Dynamics of growth (decrease) in the number of rural settlements in the Federal districts of the Russian Federation in 2018 as a percentage of the previous year

Federal districs	Municipalities in total	including	
		Settlements	Rural of them
Central	95,4	94,6	94,9
Northwestern	99,0	98,7	98,4
South	99,5	99,4	99,3
North Caucasus	93,3	92,8	93,2
Privolzhskiy	99,8	99,8	99,7
Ural	100	100	99,7
Siberian	99,8	99,8	99,8
Far Eastern	99,7	99,6	100

The main problem is the economic condition of a rural settlement, characterized by low financial security for the normal functioning of social institutions: schools, kindergartens, institutions, health care, and culture, development of physical culture and sports, as well as repair and renovation of engineering infrastructure, vehicles and other municipal property. This situation has arisen as a result of the destruction of the usual way of life and the lifestyle of the rural population, mass unemployment and negative antisocial phenomena. The most important problem of rural settlements should include the provision of housing both at the expense of the budget funds of young people and arriving specialists, and using the possibilities of mortgage lending. These problems are exacerbated by the demographic condition in rural areas, which includes a sharp decline in the rural population, due to the relocation of families to urban settlements, especially youth, high mortality and low birth rates.

Comparison of the amount of social payments and taxable money incomes of the population on average per inhabitant showed how large the range was in the RF, only between urban and rural residents, but also between subjects of the Russian Federation (tab. 4).

The highest social payments and taxable cash income of the population among the studied territories are observed in the municipal districts of the Krasnoyarsk

tal research. 2016. № 4-3. Pp. 595-601; URL: http://fundamental-research.ru/ru/article/view?id=40222 (appeal date: 01/19/2019).

Territory (251371 rubles per 1 inhabitant). They exceed the same indicator in the Altai Territory located next to it (138526 rubles) by 55 percent, and with the Krasnodar Territory (181628 rubles), where climatic conditions are much more favorable, the difference is 38 percent. Significant disparities in the incomes of the population are also observed among the regions located on the territory of one Federal District.

Table 4.

The amount of social payments and taxable cash income of the population in 2018. [7]

on average per resident ruble.

Federal districts (FD) and subjects of the Russian Federation	**Municipal districts**	**Urban districts**	**Excess payouts in city districts in %%**
Central FD Belgorod region	196202	273528	139,4
South FD Krasnodar region	181628	320927	176,7
Siberian FD			
Altai region	138526	206435	149,0
Krasnoyarsk region	251371	299013	118,9
Far East FD Amur region	241958	296073	122,4

The current trends in the socio-economic development of rural settlements, with their sustainable continuation, will concentrate the able-bodied population in several large areas, and villages with a retired population will remain the ballast of budget financing, without further development prospects. The past years, after the adoption of strategic documents on the sustainable development of rural territories of the Russian Federation, have shown the need to revise the mechanism for their implementation and to supplement the regulatory state regulation of the processes of determining the status of rural settlements and intraregional migration.

In the Russian Federation since 2014 there were changes in the principles of territorial planning, reinforcing the role of regions in the socio-economic development of the country.

The main new areas of regional planning include:

- gradual transition from short-term plans to medium-term and long-term plans and programs for sustainable development of territories;
- formation of a unified methodology for the development of regional and municipal medium-term and long-term programs for the sustainable development of territories;

[7]http://www.gks.ru/free_doc/new_site/population/urov/urov_munst.htm. The date of appeal 07.03.2019.

• wide public discussion of the developed project documents with the involvement of representatives of business, science, culture and the public;

• formation of the goal of sustainable socio-economic development of the territory based on the financial capacity of budgets.

Some areas of regional planning require additional adjustments, but if they are strengthened with accumulated experience in the use of targeted program planning for solving regional problems from foreign practice, the effect from managing state and municipal programs will increase.

First, it is necessary to change the organizational forms of management of state and municipal programs, since their main task is to maximize the centralization and coordination of the activities of program participants[8]. Currently, if the state program includes funding for activities from the federal, regional, municipal budgets and settlement budget, then its implementation and monitoring the effectiveness of the event held is entrusted to the executive authority at the appropriate level of government. If the program's activities are not fulfilled, there is a threat of failure to meet its deadlines, and only the participant in the program who permits this failure knows about it. The created special body for managing the state program can assume the functions of not only the general management of the program, but also the development and execution of program activities; information support and control. Special program-oriented governing bodies of state programs can operate in parallel with federal and territorial administrative and economic bodies. Such an approach to the management of state and municipal programs somewhat complicates the management process, but, as the practice of foreign countries has shown, makes it focused on the functioning of software systems.

Secondly, in the foreign practice of forming programs of state and municipal administration, a special role is assigned to interregional interaction. For this purpose, various tools are used to achieve coherence and coordination of actions by the participants in solving a single common target, regardless of the location of the region or municipality[9]. In this case, the responsibility for the implementation of measures will increase, since the mutual obligations of the participants in the joint project will be fixed in the contracts or agreements.

Thirdly, the exclusion of accidental hit of objects for financing measures for the sustainable development of rural settlements. Often this is a consequence of the fact that planning entities do not always establish restrictions on the inclusion in the state or municipal program for the sustainable development of rural settlements. For example, in the Irkutsk region, the prerequisite for selection in municipal programs for the sustainable development of rural settlements is the avail-

[8]Management of regional programs in the USA and Canada. / Ed. L.I. Evenko, L.A. Bagramova - M .: Science, 1983. - 396 p.

[9]Sokolova L.G. Inter-municipal cooperation: history of development, organization, perspectives / L.G. Sokolova, M.A. Mikhailov. - Irkutsk: BSUEP Publishing House, 2012. - 219p.

ability of investment projects in the agricultural sector included in the regional program of a rural settlement. You can also use the method of ranking rural settlements according to the indicators of the intended direction of the state program. [10]

Thus, it can be stated that the improvement of methods of program-target management, applied in domestic practice, can improve the implementation of state and municipal programs, not only for a single subject of the Russian Federation, a municipality or a separate settlement, but also groups of settlements that are not related territorial attachment, and united by a common social or economic problem.

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混合世界时代的数字经济，与发达国家和俄罗斯相比
DIGITAL ECONOMY IN THE ERA OF THE HYBRID WORLD, IN COMPARISON OF DEVELOPED COUNTRIES AND RUSSIA

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注解。 数字经济是一个刚刚开始发展的独特项目，因为它在世界范围内和俄罗斯仍然具有基本的地方表现形式。 数字经济的建设仍然存在很大的不确定性，这是由一系列因素决定的：缺乏描述和理解现代经济变化的工具，关于现象本质的错误概念决策 ，生产关系的本质等等。

关键词：数字经济；数字化；不确定；信息和通信技术（ICT）；混合世界

Annotation*. The digital economy is a unique project that is just beginning to develop, as it still has rudimentary local manifestations both in world practice and in Russia. There is still significant uncertainty in the construction of the digital economy, which is determined by a system of factors: the lack of tools for describing and understanding the changes taking place in the modern economy, ill-conceived conceptual decisions regarding the essence of the phenomenon, the nature of production relations and much more.*

Keywords*: Digital Economy; Digitization; Uncertainty; Information and Communication Technologies (ICT); Hybrid world*

Today in the world there is no single understanding of the phenomenon of “digital economy”, but there are many definitions. According to A. Keshalava. There are several definitions of the digital economy that characterize the practical plane of a given concept. So the top level definition is: “digital” (electronic) economy is an economy that exists in the conditions of the hybrid world, i.e. the necessary actions in the real world can be accomplished through the virtual [1]. The functional definition of the concept: “digital” (electronic) economy is an economy that is designed to best meet the needs of all its participants based on the use of data, including personal. The implementation of this economy is possible through the development of information and communication and financial technologies, as well as the availability of infrastructure.

According to the author, the digital economy is a natural consequence of technological progress. The development of technological infrastructure and the use of large databases caused a large-scale digital transformation of society - three waves were recorded (Fig. 1).

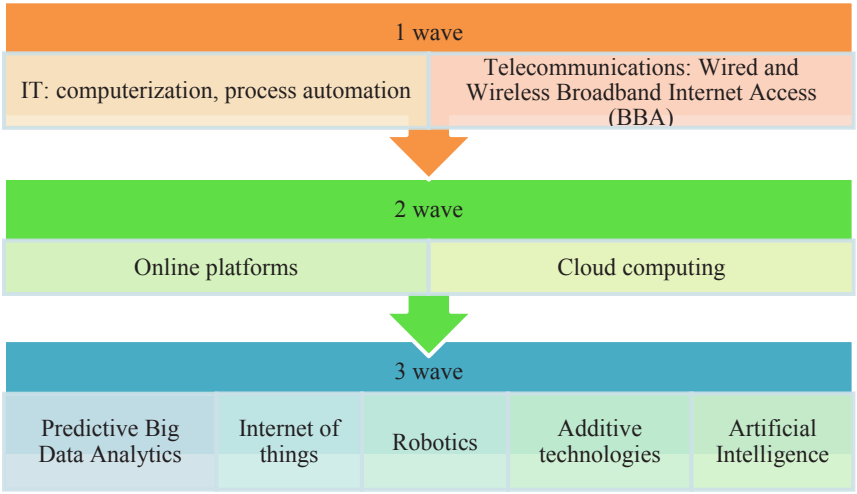

Figure 1 - *The waves of digital technology [2]*

The author identifies four key features of the digitalization of countries:

1. Economic activity is carried out on the Platforms (hardware-software complexes), which realize the possibilities of direct interaction between consumers and manufacturers;

2. Personalized service models are associated with the development of Big Data, targeted marketing, 3D printing and many others;

3. The development of a shared economy, i.e. joint ownership of some goods and payment for providing data .;

4. The development of technologies has significantly influenced business processes to single enthusiasts, which as a result has created new types of interaction, namely C2B (customer to business) and C2C4 (customer to customer).

Many developed countries, realizing the inevitability of forthcoming changes, began to move in the direction of "digitization" of the economy. The first to declare this course were the USA and China, which are informal leaders of the digital economy in the world. After them, the development programs were developed by the UK, EU countries, Australia and other countries.

Note that despite the presence of a substantial base of strategic documents on the digital economy of foreign countries, the development programs do not reflect the following information:

- the concept and strategic vision of the digital economy;
- a definition covering all aspects of the digital economy;
- a description of the impact on the existing economy (except for increasing labor productivity);
- a description of the main qualitative changes that should occur in other areas.

Therefore, it can be concluded that none of the leading countries contain a holistic concept of the digital economy.

In the countries leading the digitalization process, there are two opposing points of view. So the United States declares the market path at the heart of the digital economy, and China the planned path. The rest of the countries have some intermediate options. The digitization of the USA and China is a new stage of globalization, because for these countries this process is beneficial and allows one to realize the potential of its advantages in the field of ICT.

As part of the US strategy, the following blocks of the process of building a digital economy are distinguished:

- the formation of conditions for the development of the digital economy (regulatory framework);
- the formation of digital economy platforms precisely in the prepared industries;
- promoting competitive platforms with a view to their gradual integration;
- distribution of effective solutions to the entire economy.

This strategy is profitable and justified for the United States due to the fact that:

- the state has a significant economic and technological advantage over other countries;
- in building the infrastructure of the digital economy of the United States can rely on high-tech multinational corporations such as Google, FaceBook, Amazon, Intel and others;
- the country has a critical mass of private companies that realize the spontaneous development of the digital economy in order to realize its potential for the benefit of themselves and the country.

However, the US strategy on the digital economy has a certain drawback from the point of view of Russia - the long process of forming a mature digital economy.

China adheres to the opposite strategy - the planned development of the digital economy. China's strategy includes two unrelated, but parallel directions:

- digitalization of production based on the introduction of industrial Internet;
- use of the Internet to further expand markets.

Within the framework of this strategy, the following main components can be distinguished [2]:

- total digitization of production and logistics;
- development of a regulatory framework;

- digitalization of control systems, the creation of digital platforms;
- integration of digital platforms and ecosystems into a single space.

Such a program has its positive results, but it does not allow to form a mature digital economy. This strategy also has drawbacks and is therefore not acceptable for introduction into the Russian economy.

The author notes that in any transformation of the economy, the key place is occupied by companies and their development strategies. So large international consulting companies issue special brochures dedicated to digital transformation. These materials reflect the positive cases of their business practices, analyze the maturity stages of digitalization of companies, and also present the main steps that need to be done by companies starting digital transformation. Most of these cases were developed by foreign companies, a small number of Russian projects.

The mentality of managers is an obstacle to the digital transformation of large Russian companies. Such companies use IT systems for the purpose of accounting and planning, and not for the formation of new business models and access to international markets. State-owned companies are accustomed to working outside the competitive field, which leads to the impossibility of digital transformation without specifying the state.

Although there is currently a shift in the economy of the world in relations between companies in the market. The Internet of Things conducts the transfer of companies, consumers, products, services and processes into a single world of all market participants, due to the emergence of new “digital ecosystems” that unite all platform participants.

Digital transformation is most often characteristic of medium-sized companies whose owners are trying to take the business to a new level and new sales markets. There are already companies in the Russian economy that apply digital transformation, and operate in the banking sector, education, communications, services and information technology. However, these companies operate in conditions of increased risk, because of which they lose to foreign competitors, because there is no ecosystem of the digital economy.

For example, many foreign countries have a whole ecosystem of startups, in which new ideas are born, testing which will provide commercial solutions. Subsequently, these technologies can be acquired by large international companies for the purpose of global replication, or new innovative world-class IT companies are being formed.

For the implementation of the digital transformation of Russian enterprises and movement in a given direction, the support of management and the formation of special IT-units are necessary.

In Russia, there are no conditions for the spontaneous formation of a mature digital economy due to the technological lag and lack of a critical mass of economic entities. Consequently, the state needs to stimulate and direct the development of the digital economy.

An important distinctive feature of the Russian economy is that the "lion's share" of GDP is created by public corporations (or companies with a significant share of state participation). In most industries, companies with state participation make up 80% of the market as a whole.

For example, when comparing the values of the main indicators of the digital economy of Russia and the developed countries of the world and their contribution to the country's GDP for 2017 (table 1), it shows that in all the main indicators of the digital economy Russia lags behind the developed countries of the world. The United States is a leading country in the development of digital technology, while not transmitting digitalization to other countries. The largest exports of ICT are found in India and China. ICT imports from India are also the greatest. The United States adheres to the position that investment is the basis for the accelerated development of the country, taking into account the largest volumes of government spending on digitalization. The costs of private business and households also prevail here among a number of countries reviewed.

Therefore, the author sees as a rational step for Russia in the formation of industrial digital platforms that will be subordinate to the relevant ministries or corporations. These platforms will be prerequisites for the formation of an infrastructure basis for the rapid development of the digital economy and certain technologies.

Table 1. *Analysis of the contribution of the digital economy to the GDP of some countries of the world,% of GDP*

Indicator	USA	China	EU countries	India	Brazil	Russia	Gap to the leader
Digital household spending	5,3	4,8	3,7	3,2	2,7	2,6	2,7
Digitalization Investments	5	1,8	3,9	2,7	3,6	2,2	2,8
State spending on digitalization	1,3	0,4	1	0,6	0,8	0,5	0,8
ICT export	1,4	5,8	2,5	5,9	0,1	0,5	0,9
ICT import	-2,1	-2,7	-2,9	-6,1	-1	-1,8	0,3
The amount of the digital economy	10,9	10	8,2	6,3	6,2	3,9	7

According to the author, the key prerequisites for the formation of a digital economy include:

- growth of indicators of innovative activity of enterprises and organizations;
- the presence of a technological and process reserve capable of creating the foundation of a digital economy;
- a significant number of people employed in research and development;

- active development of the legal framework for the protection of intellectual property, etc.

And the main factor of production in the economy of the country will be human and information capital, the role of a key factor is assigned to human capital. So the founder and president of the Davos Economic Forum K. Schwab is convinced that the main production factor is human potential, not capital, which is caused not only by the forthcoming fourth industrial revolution, but also by demographic problems, geopolitical changes and new sociocultural norms. Consequently, the shortage of competent personnel will act as a deterrent to limiting innovation, competitiveness and economic growth.

These problems predetermine the revision of the notion "high qualification" within the framework of the questions of the fourth industrial revolution. Traditional skilled labor involves advanced education or specialized education, as well as certain abilities in the profession and expert environment. The accelerating development of technology in the framework of the fourth industrial revolution predetermines special attention to the ability of workers to adapt and master skills and approaches in various environments.

Due to the emergence and introduction of new technologies in the areas of production, finance, management, social environment, there is a huge amount of positive effects and consequences for the economy:

- labor productivity growth;
- increasing the level of capitalization;
- improving the quality of life of the population;
- the creation of new markets;
- increased resource utilization;
- increasing competitiveness;
- safety enhancement.

In general, the digital economy for each individual country acts as a necessary regulator, which allows you to maintain a competitive level, analyze and change the parity of shares in the global economy while maintaining sovereignty.

Building a platform for the digital economy of Russia should be based on interaction with key areas: transport, telecommunications, energy, and data processing. It is the development of these areas that will allow the formation of an infrastructural and technological basis, which is replicating to other areas, Russia will be able to quickly develop a mature digital economy.

Due to the targeted construction of a number of industrial platforms of the digital economy with a single architecture and standards, a single digital space will be formed in the future, uniting all industries and industries. This approach will contribute to a significant increase in the transparency, manageability and flexibility of the country's economy. In addition, this point of view is most appropriate for Russia today, but it is also not without its drawbacks. The advantages and disadvantages of this approach are presented in Figure 3.

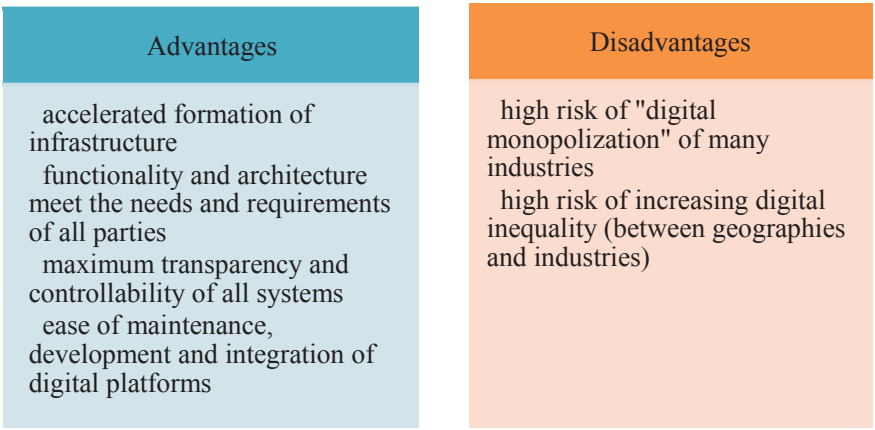

Figure 3. *Advantages and disadvantages of the approach of industrial platforms of the digital economy with a single architecture and standards*

Consequently, based on the experience of developed countries, it can be concluded that most digital economy programs are implemented in social areas, such as medicine and smart city. Such projects have no significant economic effect, but at the same time have a number of arguments:

- for an open society of the Western type is characterized by public approval and support of any large-scale development program. Therefore, the development of the digital economy began with social projects;
- the use of digital technologies in large industries will be realized independently, as it has economic feasibility. Social projects depend on government support;
- many developed countries have a significant technological reserve, which allows to realize the digital economy in a certain form. Thanks to the implementation of social projects, feedback is formed with a significant number of non-expert users, which in general makes it possible to change technologies from the point of view of users, making them more accessible to wide sections of the population;
- digital technologies in the industry (for example, the introduction of the Internet of things in production) solve a rather narrow range of tasks, while social projects are diverse and complex. Most modern technologies need a “social stress test,” especially from a management system point of view.

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中俄保险市场合作的机遇与前景

OPPORTUNITIES AND PROSPECTS FOR COOPERATION BETWEEN THE CHINESE AND RUSSIAN INSURANCE MARKET

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注解。 文章讨论了中俄保险市场发展关系的潜力。 结果表明，双方在保险和再保险领域的合作发展应旨在实现共同利益。 在目前保险和再保险市场的情况下，俄罗斯公司面临着金融安全，自我保护和进一步发展的任务。 特别注意寻求进入亚洲市场的必要性。 与外国公司形成新的合作形式，以考虑到伙伴共同利益的集合协议形式建立再保险能力，是国内再保险发展的重要载体。

关键词：保险市场，经济制裁，再保险能力，共同利益，联合项目，潜力，资金池。

Annotation*. The article discusses the potential for the development of relations between the insurance markets of China and Russia. It is shown that the development of cooperation between the parties in the field of insurance and reinsurance should be aimed at meeting mutual interests. In the current situation in the insurance and reinsurance markets, Russian companies face the task of financial security, self-preservation and further development. Particular attention is drawn to the need to seek access to Asian markets. The formation of new forms of cooperation with foreign companies, the creation of reinsurance capacity in the form of pool agreements that take into account partner mutual interests is a vital vector in the development of domestic reinsurance.*

Keywords*: insurance market, economic sanctions, reinsurance capacity, mutual interests, joint projects, potential, pool.*

Russia's access to a strategic partnership with China is the most important foreign policy achievement of recent years. The partnership between the Russian Federation and the People's Republic of China has demonstrated its viability and long-term nature and outlined new horizons. China is Russia's most important strategic partner, thanks to links with which it can more successfully engage in integration processes, its foreign policy can become less one-sided, and its front with the West will acquire the character of a fundamental dispute over the future of the world [1].

Describing the Chinese-Russian relations, the Minister of Foreign Affairs of the People's Republic of China, Wang Yi, noted political mutual trust, mutual cooperation in the economy, mutual support in international affairs. Chinese-Russian relations are a model of relations between large states in the modern world and serve as a boon for the peoples of the two countries, play a significant role in maintaining peace and stability in the region and throughout the world [2]

For several decades, China's economy has seen steady growth. China has the second largest economy in the world and is the largest global trading power. According to the World Bank, China does not leave its position in 2018 and still ranks second in the world in terms of GDP, remaining one of the most leading economies in the world. The total GDP growth in China in 2018 was 6.6%. The volume of the PRC economy in monetary terms in 2018 amounted to 90.03 trillion yuan, which is about $ 13,457 trillion.

Russia in the economic sense does not occupy a leading position, lags far behind China and is only 12th in the world market. The absolute indicator of Russia's GDP is $ 1.577 trillion. or 103.6 trillion rubles. According to Rosstat, the growth of the gross domestic product of the Russian Federation in 2018 was 2.3% [3].

Over the past twenty years, the ratio of the economic potentials of the two countries has changed significantly in favor of China. However, Russia has enormous influence in the sphere of world security, having a strong military power, rich natural resources, and an impressive territory.

The advantages of the economic power of China have a dual influence on the development of relations with Russia.

The existing differences in the economic situation are a definite challenge for Russia, at least for its producers. The natural Russian response to this serious challenge should be the economic recovery, strengthening the competitiveness of the economy.

Faced with the growing hostility of the West, Russia is developing its own strategy in the international space, looking for alternative options in response to the economic sanctions of the US and the EU. Against this background, Russia is increasingly focused on cooperation within the framework of the SCO, participation in which has already brought many lucrative contracts for the supply of energy raw materials and modern weapons, the construction of power plants and factories, and has enormous potential.

Russian trade with China has been growing for several years now. According to the Federal Customs Service of the Russian Federation in 2018, the Russian-Chinese trade turnover reached $ 108.3 billion, an increase of 24.5% compared with 2017.

At the same time, Russian exports to China reached $ 56.1 billion, having increased compared to 2017 by 44.05%. Russia's imports from China in 2018 amounted to $ 52.2 billion, which is 8.69% higher than the 2017 level. The balance of trade was positive, in contrast to 2017.

In 2018, the share of China in the foreign trade turnover of Russia increased and reached 15.74% against 14.89% in 2017. The country was able to keep the 1st place in the share in the Russian trade.

China's share in exports is growing (12.46% against 10. 9% in 2017) and imports of Russia (21.93% against 21.17% in 2017), according to which the country ranks first in the previous year [4].

Currently, the partnership between the two countries has made some progress and is considered more advanced compared to other countries on the world market. The arsenal of areas of mutually beneficial cooperation between Russia and China is significant. One of the promising areas of partnerships, where there is intensification of bilateral cooperation, is the strengthening and deepening of interaction between the financial markets of China and Russia.

The Chinese insurance market is one of the largest in the world in terms of the amount of insurance premiums collected and the number of contracts concluded.

According to the State Committee for the Control and Management of Banking and Insurance Activities of China, the insurance market of China in 2018 grew by 4, 0% to 560 billion dollars (3, 8 trillion yuan). The total volume of assets of insurance companies grew by 7.2% and reached 2.65 trillion. dollars (18 trillion yuan) [7].

The data in Table 1 indicate a rather high rate of growth of premiums of Chinese insurers, despite their decline in 2017. In 2017, the total premiums collected by Chinese insurers increased to 3.7 trillion yuan, and the annual growth rate of insurance premiums adjusted for inflation was 16.4% compared to 25% in 2016.

Table 1. *Dynamics of insurance premiums for 2015 - 2017*

Country	Insurance premiums			% Change without inflation		% Change adjusted for inflation	
	2015	2016	2017	2016	2017	2016	2017
Russia, million rubles	1023819	1180632	1277585	15,3	8,2	7,7	4,4
China, million yuan	2428252	3095911	3658101	27,5	18,2	25,0	16,4

Source: Swiss Re Institute sigma №3/2018

Table 2 presents data on the volume of insurance premiums collected in Chinese and Russian insurance markets in US dollars. According to the Swiss Re agency in the rating of insurance countries, China ranks second, ahead of the Japanese insurance market. The share of the Chinese market reached 11.07%. Russia ranks 29th with a share of insurance equal to 0.45%.

Table 2. *Insurance premiums, in millions of dollars. USA*

Indicator	2016	2017	Changes in % in 2017		Share in business,%	Share in world market premium,%
			Without inflation	With inflation		
Russia						
Total	17 607	21898	24,4	4,4	100,0	0,45
Life insurance	3 217	5683	76,6	48,2	26,0	0,21
Other insurance	14 390	16215	12,7	-5,4	74,0	0,73
China						
Total	466 131	541446	16,2	16,4	100,0	11.07
Life insurance	262 616	317570	20,9	21,1	58,7	11,95
Иное страхование	203 515	223876	10,0	10,2	41,3	10,02

Source: Swiss Re Institute sigma №3/2018

Life insurance is a priority in the business of Chinese insurers, which is very popular in China. In 2017, annual life insurance premiums on the Chinese market grew by 21.1%. The segment's share in total premiums is 58.7%, and its share in the world market is 11.95%.

The achieved level of insurance relations can be estimated by the share of insurance premiums in GDP, the so-called penetration rate. In 2017, China's penetration rate was 4.57%. In Russia, this indicator is at the level of 1.4% and lags significantly behind the Chinese. The relatively high share of insurance in China's GDP is explained by the high rates of development of insurance and the economy as a whole.

Even more clearly about the level of development of insurance relations is the indicator of the amount of insurance premiums per capita (insurance density), which in China in 2017 amounted to $ 384. In comparison with the United States, Japan and other Western European countries, the indicator is not high enough. However, it is almost three times higher than in Russia, where the indicator under consideration is at the level of $ 152 [5].

The analysis showed that the Chinese insurance market is developing rapidly and has significant potential. In the future, the demand for insurance in China will grow, given the powerful development of the entire economy. Thanks to the entry of China into the WTO, a progressive opening up of the market followed, removing a number of restrictions on the presence of foreign insurance capital in the Chinese insurance industry, which, however, did not result in crowding out of national companies or, especially, a series of takeovers and bankruptcies. In a growing market, there is enough work and space for both Chinese and foreign insurers who serve the interests of international corporations in the PRC. Through the sale of shares to foreign investors, as well as through access to the US and other markets, Chinese insurance companies use foreign capital for development.

In order to improve the quality of services, the development of new technologies, business optimization, Chinese insurers create alliances, joint companies, entering into partnerships with foreign companies. Communications in the East Asian region are becoming more intense, which causes an increase in the need for cross-border insurance services and operators.

One of the concrete manifestations of this process was the efforts to form an alternative (western) center for international reinsurance based on Chinese, Singaporean, South Korean and Taiwanese companies.

Cooperation in the field of insurance between our countries is also developing successfully and has all the possibilities to reach a new level.

Currently, the key problem of the Russian insurance and reinsurance markets is capacity shortage.

The reinsurance market of Russia does not have sufficient resources, reinsurance capacity and therefore largely depends on foreign markets.

According to the Bank of Russia, the amount of reinsurance premium transferred for reinsurance in 2017 amounted to 109.6 billion rubles, including 87.6 billion rubles to foreign companies, only 22.01 billion rubles to Russian companies. The leaders in terms of reinsurance premiums received from the Russian Federation are the United Kingdom, Germany, Switzerland, the USA, and France. The volume of reinsurance falling on the Chinese market amounts to only 2.2 billion rubles, and the volume of incoming reinsurance is even less - 219 million rubles [6]. Until recently, western companies were the main insurers and investors of most major infrastructure projects. As a result of the introduction of sanctions on both sides against a number of companies, sectors of the economy for Russian insurers and reinsurers when placing large risks, the western reinsurance market was unavailable .. Russian companies had a problem of economic protection of their property interests.

In order to fill the deficit of reinsurance capacity, a state reinsurer was created - the Russian National Reinsurance Company (RNRC).

It is not easy to assess the demand for reinsurance of sanctions risks due to the confidential nature of the information. However, it is possible to imagine their scale, it is enough to cite as an example only the estimated cost of the Kerch bridge project in the amount of $ 4 billion.

Obviously, the RNRC should not be limited to the provision of reinsurance capacity for domestic reinsurers. An equally important task for the national reinsurer, as well as for other subjects of the domestic market, should be the task of developing and expanding international business, finding access to the markets of developing countries.

The share of RNRC in the outgoing reinsurance market with the volume of premiums in 2017 is 7.0%, which is expected to increase in 2018 to 10% of the total amount transferred to the reinsurance premium.

In the conditions of insufficiency or complete absence of reinsurance capacities for the placement of large risks, Russian reinsurers face the urgent task of finding alternative reinsurance markets. In this situation, Chinese companies could become one of the main reinsurers of the risks of the Russian insurance market. It is a mistake to assume that the Chinese market will suddenly replace the traditional European market. This is a long-term task. In addition, the reinsurance capacity of the Chinese market may not be available for sanction risks due to the participation of US capital in the capital of Chinese companies. In this regard, the need for Chinese capacity should be formulated more broadly than the placement of specific risk groups.

The demand for Chinese reinsurance capacity is also due to the need for insurance protection of export-import operations, a joint activity of Russian-Chinese companies. In addition, large joint Russian-Chinese investment projects need the formation of insurance protection mechanisms. It is insurance of joint projects that is seen as the most realistic opportunity, which will be the beginning of the reorientation of the Russian reinsurance market to the eastern financial market.

In the current situation in the insurance and reinsurance markets, Russian companies face the task of financial security, self-preservation and further development. Alliances and cooperation with foreign companies, the creation of reinsurance capacity in the form of pool agreements that take into account partner mutual interests can become a vital vector in the development of domestic reinsurance.

The Russian insurance market has never been completely isolated from the international market. The most important link has always been reinsurance, ensuring geographical and economic diversification of risk. But access to international reinsurance is obtained only by the most reliable Russian insurers, who have gained a solid reputation in the eyes of policyholders and international partners.

For the Chinese insurance market is characterized by strict government regulation, which has become a key factor in its development and a strong support. De-

spite membership in the WTO, the Chinese market remains fairly closed to foreign insurers. Some mitigation is allowed only after the adoption of appropriate policy decisions at the highest level. For example, on January 1, 2016, the Insurance Regulatory Commission of China (CIRC) obliged its companies to transfer risks only to counterparties with a rating not lower than BBB according to Standard & Poor`s. After the intervention of the Russian financial regulator, an understanding was reached in the joint movement in this area. The parties agreed to work on the issue of mitigating the rating requirements for Russian participants imposed by insurance market regulators.

Today, the Chinese insurance market is already represented by the leader of the insurance market of the Russian Federation - the insurance group SOGAZ, which received state registration of the representative office in 2016 and was registered in China as a foreign reinsurer. Partnerships of another leader of the Russian insurance market, Ingosstrakh, and Chinese companies have been developing since 1994. Among the main business areas that the company's representative office in China accompanies are incoming and outgoing reinsurance, cargo insurance, and travel insurance.

CIRC has approved the presence of the Russian National Reinsurance Company as a reinsurer authorized for cross-border reinsurance transactions with counterparties in China.

Based on the above, we can conclude that the necessary political, legal and economic foundations have been created for effective bilateral cooperation between Russia and China in the field of insurance and reinsurance. Defining the main directions of optimization of the strategic partnership of Russia and China in this area, one should take into account the need to implement the concept of joint development. It is necessary to strengthen the direct cooperation of insurers, to actively expand cooperation in the field of insurance / reinsurance of construction, installation, property and other risks in joint projects in the field of engineering, aerospace, agribusiness and other industries. The existing obstacles relate to instrumental and specific issues, the elimination of which will be facilitated by communication and coordination of joint efforts. Working together, you can provide a strong and viable mechanism for cooperation and interaction aimed at meeting mutual interests.

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注解。 由于创新，信息技术以及现代教育方法，技术和方法的引入，本文致力于解决与社会迅速发展有关的特殊教育的紧迫问题。 然而，国家特殊教育体系发展的所有当前趋势和矛盾都具有深刻的社会文化根源和明确的“历史时代”。 创造现代特殊教育条件将确保每个具有发展特征的学生享有平等机会，并为他接受优质教育创造最佳特殊条件。

关键词：学生，发展特征，特殊教育，社会化，社会适应，文化，人文。

Annotation*. The article is devoted to the urgent problem of special education in connection with the rapid development of society, thanks to innovations, information technologies and the introduction of modern methods of activities, techniques and approaches to education. However, all current trends and contradictions in the development of national special education systems have deep socio-cultural roots and a well-defined “historical age”. The creation of modern special educational conditions will ensure equal opportunities for each student with developmental characteristics and the creation of optimal special conditions for him to receive a quality education.*

Keywords*: students, development features, special education, socialization, social adaptation, culture, human humanity.*

The meaning of practical education is that, by satisfying its natural needs, a person should be prudent and observe the measure dictated by the need for self-preservation. Back in 1994 A.G. Asmolov expressed the tendency of chronology of education development, that “the existing pedagogical technologies will be replaced by “semantic pedagogy”, which aims to organize the pedagogical process based on an understanding of the psychological mechanisms of transforming culture into the world of the individual” [1, p. 131]. A.G. Asmolov offers “variable, developmental, semantic education, the purpose of which is to form such a picture

of the world in joint activities with adults and peers, which would provide an individual's orientation in various life situations, including situations of uncertainty" [2, 4]. And we often meet with special educational needs that have a sociogenic character, and they differ in children of different categories, because they are specific to violations of their psychophysical development, which determines the specific logic of the educational process, which is reflected in the structure and content of education.

Special education is an international term used to refer to educational institutions intended for persons with physical or mental retardation, as well as people with extraordinary mental abilities.

The creation of special educational conditions allows to make equal opportunities for each student with developmental characteristics and create optimal special conditions for him/her to receive a quality education.

Special education contingent needs special assistance, support and conditions of study. In this regard, the process of training and education of children with peculiar psychophysical development is carried out by providing them with remedial services, taking into account their needs and possibilities for social adaptation and integration in society. These are: individual education, a special school, and distance learning, and training in a hospital setting.

The special education system has a differentiated structure and is implemented in Russia by the management of three ministries: the Ministry of Education, the Ministry of Labor and Social Protection and the Ministry of Health.

Back in the 90s, it could not cover even a third of the population in need.

Today, certain changes have occurred with the adoption of legal documents, defining the rights of persons with disabilities and the regulatory framework of state policy towards them. The Government of the Russian Federation approved standard regulations on special (correctional) and recreational educational institutions for students, as well as adopted the procedure for their upbringing and education. The principles of variability instructing of students, the principle of complicating the material, the minimum size of the "step" in the transition from one level of complexity to another and many others take root. All this causes resistance to the development of differentiated education and upbringing of children with peculiar psychophysical development. After all, "the task of pedagogical science, along with the conceptual justification of traditional learning, is the development of innovative learning technologies. And innovative learning is interpreted as focused on the formation of personal readiness for fast-moving changes in society, readiness for an uncertain future through the development of creative abilities, various forms of thinking, and the ability to cooperate with other people" [3, p. 87].

It should be noted that the existing system of special education in Russia has a

bidirectional structure: *horizontal and vertical.*

The horizontal structure takes into account the nature of the disorder, the peculiarities of the cognitive activity and the levels of the psychophysical development of the child. At the moment there are eight main types of special schools:

Ist view (for deaf children); Type II (for hearing impaired and late-impaired children); Type III (for blind children); IVth type (for visually impaired children); Vth (for children with severe speech disorders); VIth (for children with disorders of the musculoskeletal system); VIIth species (for children with learning difficulties, i.e. mental retardation); VIIIth species (for children with mental retardation).

Vertical - is based on 5 levels of general education programs, taking into account age features:

1st level from 0 to 3 years - the period of infancy;

2nd level from 3 to 6-7 years old - pre-school period;

3rd level from 6-7 to 15-16 years - compulsory education;

4th level from 15 years to 21 years - the period of vocational training, secondary education;

5th level- adult education.

At the moment, many problems of integrating education remain unresolved, i.e. inclusion, co-education of students with different educational needs; there is insufficient training and psychological support, there are no technologies for the organizational involvement of parents in the socio-educational process of education, etc.

In my scientific work through a comparative analysis of the formation and development of special education in China and Russia, in the course of a detailed study of the problem, I would like to identify and consider the prospects for the development of special and inclusive education. As an object of research, key trends in the development of modern higher education are highlighted, and the current state of the world and Chinese special and inclusive higher education will be the subject of the research.

To achieve this goal identified the main tasks:

1. To explore the comparative experience of achievements in the implementation of special and inclusive vocational education in various countries of the world.

2. To discover the "pain points" of Chinese pedagogical practices.

3. To suggest forms and methods for overcoming problem areas.

4. Outline the development prospects, trends of improvement and development of inclusive education.

And, in conclusion, “all modern trends and contradictions in the development of national special education systems have deep socio-cultural roots and a well-defined “historical age”. The choice of the path of development of this particular

institution of the state will "..." depend on political attitudes, value orientations, economic possibilities of the state and cultural norms of the society [5, p. 121]. And according to S.I. Hessen's “path of infinite development” opens in the recognition of the multiple goals that a person faces and the choice of adaptive-adaptive behavior [6, p. 170].

In connection with all the above, the most important tasks of special education are:

1. Ensure equal treatment of all children.
2. Create conditions for successful socialization.
3. Provide a full-fledged quality education.

After all, t*he semantic formation of special education lies in human humanity:*

- every person is able to feel and think;
- he/she has the right to communicate and to be heard, and his value significance does not depend on his abilities and achievements;
- all people need support and friendship;
- genuine education is carried out in the context of real relationships;
- and making progress in what people can do, and not in what they cannot;
- the diversity of the world enhances the person comprehensively.

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UDC 378.1

通过文化和教育活动适应学生
ADAPTATION OF STUDENTS BY MEANS OF CULTURAL AND EDUCATIONAL ACTIVITY

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注解。由于社会的快速发展，由于创新，信息技术，现代活动方法，技术和教育方法的引入，一年级学生，甚至更多的外国人，可以在一个快速变化的社会中共存，管理适应并实现其内在的创造力和专业潜力。这项工作致力于适应外国学生的问题，并对他们最重要的课外教育活动：文化，教育和休闲活动。因此，强调中国学生的社会和职业适应性作为研究对象，选择通过文化，教育和休闲活动形成中国学生社会和职业适应的教学条件作为研究对象。研究。

关键词：大学，文化和教育活动，文化和休闲活动，学生，社会化，社会和职业适应，教育活动，教育文化，教育条件，学生，个性。

Annotation*. Due to the rapid development of society, thanks to innovations, information technologies, the introduction of modern methods of activities, techniques and approaches to education, first-year students, and even more foreigners, can coexist in a rapidly changing society, managing to adapt and realize their inner creative and professional potentials . The work is devoted to the problem of adaptation of foreign students and the most important for them extracurricular educational activities: cultural, educational and leisure activities. Therefore, the social and professional adaptation of Chinese students is highlighted as the object of the study, and the pedagogical conditions for the formation of the social and professional adaptation of Chinese students by means of cultural, educational and leisure activities are chosen as the subject of the study.*

Keywords*: university, cultural and educational activities, cultural and leisure activities, students, socialization, social and professional adaptation, pedagogical activity, pedagogical culture, pedagogical conditions, student, personality.*

With each new century, a culture of pedagogical activity is formed. The basis for this is the development of society, its activation of culture, including a system of social relations aimed at the production and reproduction of cultural values in the process of training and education. Pedagogical activity is directly related to the general culture of a person, representing a special sphere of society. It carries out the purposeful formation of the individual, controls the processes of formation and development, is responsible for the adaptation and socialization of the individual, performs the functions of cultural inheritance. The forms and methods of pedagogical professional activity are always based on a specific, historically formed sociocultural complex, a peculiar level of spiritual culture that helps to establish and realize itself, its role in the system of professional and personal positions, serving as an integral indicator of creativity. Here is the breadth of outlook, and the degree of social activity, and the nature of emotional susceptibility, and orientation of the individual.

The rapid development of society in terms of information technology puts forward relevant time requirements for the educational environment of the higher school of professional education and, in particular, for first-year students who need to coexist in a rapidly changing society, managing to adapt and realize their inner creative and professional potentials. Such atmosphere is very difficult for foreign students with a different mentality, cultural traditions and beliefs [1, 2, 4].

Taking into account all the above and the goal of the educational process in an innovative environment i.e. is to develop an individual personality, ready for a responsible choice, and professional education in relevant areas of life activity acts as a means of self-realization, self-expression and self-affirmation of the personality, as well as a means of sustainability, social self-defense and individual adaptation, it was decided to pay attention to the cultural, educational and leisure activities of first-year students, which could contribute to their development (adaptation) in the environment of the university [3, 5].

Therefore, social and professional adaptation of Chinese students was singled out in their scientific work through cultural, educational and leisure activities, and the pedagogical conditions for the formation of social and professional adaptation of Chinese students in Moscow were selected as the subject of the study.

The aim of the study was to build and develop a model as an instrumental technology for the social and professional adaptation of Chinese students who come to study in Moscow through the organization of their cultural, educational and leisure activities.

To achieve this goal we put forward the following tasks:

1. To determine the specifics of cultural, educational and leisure activities in the process of social and professional adaptation of Chinese students in Moscow.

2. To build an organizational and pedagogical model of social and professional

adaptation of Chinese students in Moscow by means of cultural, educational and leisure activities.

3. To develop and experimentally test the technology of social and professional adaptation of Chinese students in Moscow by means of cultural, educational and leisure activities.

4. To offer practical recommendations on the social and professional adaptation of Chinese students in Moscow by means of cultural, educational and leisure activities.

The study conducted included the development of a phased program of support for the adaptation of foreigners "Moscow through the eyes of Chinese students." The program was designed for 10 months and divided into several stages:

- introductory (September-October);
- creative (November-December);
- responsible (January-February);
- rewarding (March-April);
- perspective (May-June).

Each stage contains several cycles of meetings (8-9), various goals and forms of work, role-playing games, trainings, tests, cases and diagnostics, visits to museums, galleries, theaters, etc.

Based on the hypothesis that by providing support and accompaniment to foreign first-year students, revealing to them the diversity of the spiritual and cultural life of Russians, it is possible to overcome language barriers, remove alarming clips to an unfamiliar world for them, as a result, to carry out more successful education, professional formation and development of students in high school as future professionals. Therefore, at the first meeting-classes the curators' phones were provided, as “hot-emergency buttons” for all cases of vital activity in the city, conversations were held on the expectations of immediate prospects and problems of the organization of life related to food, accommodation in a hostel and transport. At the same time, an organizational-pedagogical plan was prepared with a clear algorithm of actions, the use of personality-developing psychological-pedagogical methods, which would give: a painless and stress-free stay of students in an academic environment; increase the level of their cognitive activity, performance and self-esteem; will develop personal needs and value orientations, as well as harmonious interpersonal relationships.

Due to the fact that pedagogical activity is an integral part of the educational process and it directly depends on how much education contributes to the development of a student’s professional identity, we consider pedagogical activity as part of a cultural code. And in the dissertation research we build a program on cultural, educational and leisure activities of foreign students because we consider it to be the most important pedagogical tool for social and professional adaptation of first-year foreigners.

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应用kirlianography评估学生的创造潜力

APPLICATION OF KIRLIANOGRAPHY IN THE ASSESSMENT OF THE CREATIVE POTENTIAL OF STUDENTS

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注解。 在学生圈工作之前和之后，54名学生对他们的各种心理 - 情绪和心理活动进行了Kodian 200 X射线和彩色胶片的Kirlian摄影方法的检查。 揭示了他们之间的差异以及休息时人的Kirlian照片。 处于创造性心理活动状态的学生手指的Kirlian光芒与一个以反射活动占主导地位的工作状态下的心灵手指的Kirlian光芒完全不同。

关键词：Kirlian摄影，心理情绪状态，创造性，反射活动。

Annotation. *The Kirlian photography method on the Kodak 200 X-ray and color film was examined by 54 students with their various psycho-emotional and mental activity, in comparison before and after the work of the student circle. Revealed their differences between themselves and with Kirlian photographs of a person at rest. The Kirlian glow of the fingers of students in a state of creative mental activity was radically different from the Kirlian glow of a psychic's fingers in a state of work with a predominance of reflex activity.*

Key words: *Kirlian photography, psycho-emotional state, creative, reflex activity.*

Relevance of the topic. The main task of any school is to prepare a highly professional specialist and a moral citizen of society. In the medical profession, especially professionalism is not possible without the ethical foundations of education. The latter forms an understanding of the life and health of the patient, as a universal value.

P. Gariaev discovered the so-called DNA solitons, which are oscillations depending on the degree of awareness of the text being read [2]. Information does not exist outside of the material carrier, in which act as charge carriers [1, 5]. The discovery of the method of high-frequency photography (Kirlian-effect) by spouses Kirlian in the 1960s [5] made it possible to visualize changes in the electromagnetic radiation of a person depending on his psycho-emotional state [6], which needs further research.

The purpose of the study was to use the Kirlian photography method to analyze changes in the creative and mental state of students during extracurricular elective classes of interest.

Material and research methods. Material and research methods. Examined 12 college students aged 16-17 years, 42 students of 2nd-4th courses of the National University and Medical Academy. For register the Kirlian luminescence have been the device 'REK-1' developed by the Ukrainian Research Institute of Mechanical Engineering Technologies (Dnipropetrovsk). Researches were held on X-ray and color Kodak 200 films. The interpretation the obtained of images on Kirlianograms were held on P. Mandela's diagnostic criteria for luminescence types [8] and the criteria have developed by them for computer processing of scanned Kirlian images with the construction of brightness histograms and calculating the corona area of the glow around the fingers [6].

Research results and discussion. Normally, the corona of radiation around the fingers is represented by an internal oval, the middle layer of radiation in the form of uniformly located streamers (Fig. 1). The outer layer of the corona is luminescence - thin, evenly spaced, more or less branching rays outside the streamers. When psycho-emotional disequilibrium appeared deposition in the crown of the glow, some students encountered the so-called "beams of fear" (endocrine type of glow according to P. Mandela) (Fig. 2, 3).

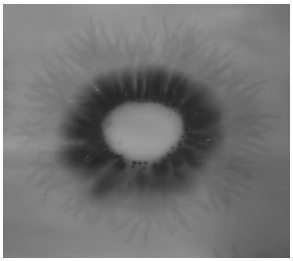


Fig. 1. *Norm*

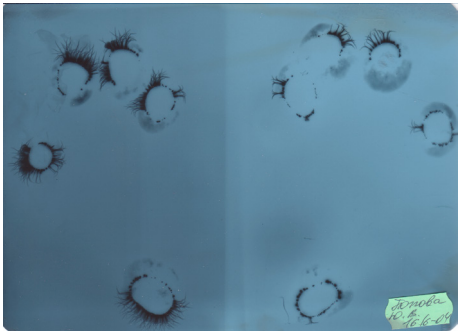


Fig. 2. *Endocrine type of glow*

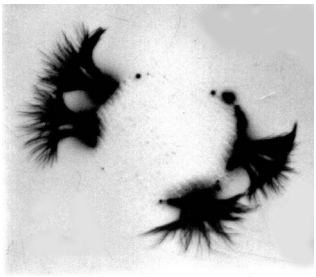
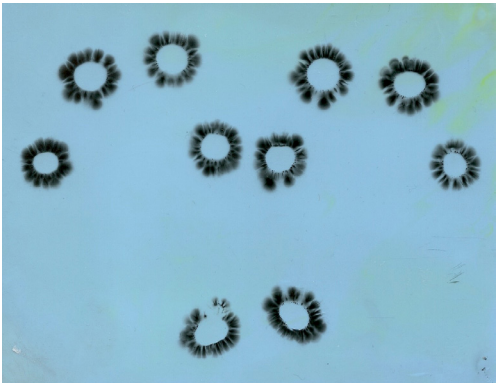
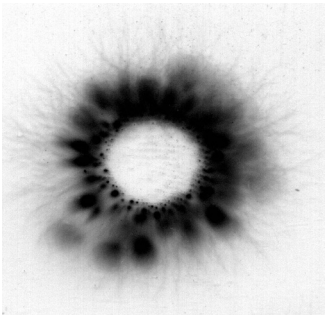


Fig. 3. *Bundles of fear*

If there is physiological or informational intoxication in the cell, organ, body as a whole (energy activity on any negative factor), point and circular elements appear at the ends or in the area of streamers. Visualization of external energy objects was observed in the form of additional structures near the glow corona (Fig. 4).





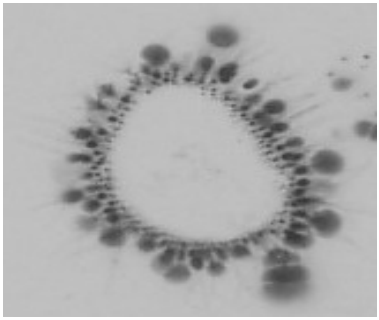


Fig. 4. *Toxic type of glow according to P. Mandela*

Comparing results obtained by describing defects before and after the creative work on the pupils' faculty classes in terms of interest, they revealed positive dynamics in the energy supply of the body, which positively affects the preservation of children's health (Table 1).

Table 1. *Changes in the types of Kirlian-glow fingers of students*

Types Kirlian glow	Until elective footwork		After classes	
	Total, people	%	Total, people	%
Endocrine	23	43	5	10
Endocrine and toxic	20	37	11	20
Normal	11	20	38	70

The creative and psycho-emotional activity of students during the work of the student circle was visualized in the form of the appearance of additional color structures in the crown of the glow or outside of it on a color film (Fig. 5).

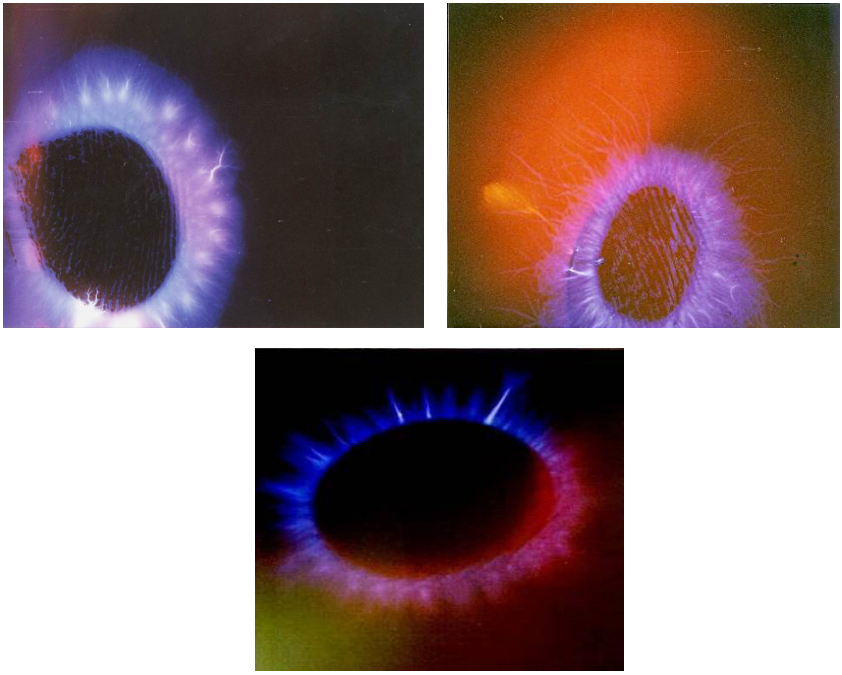
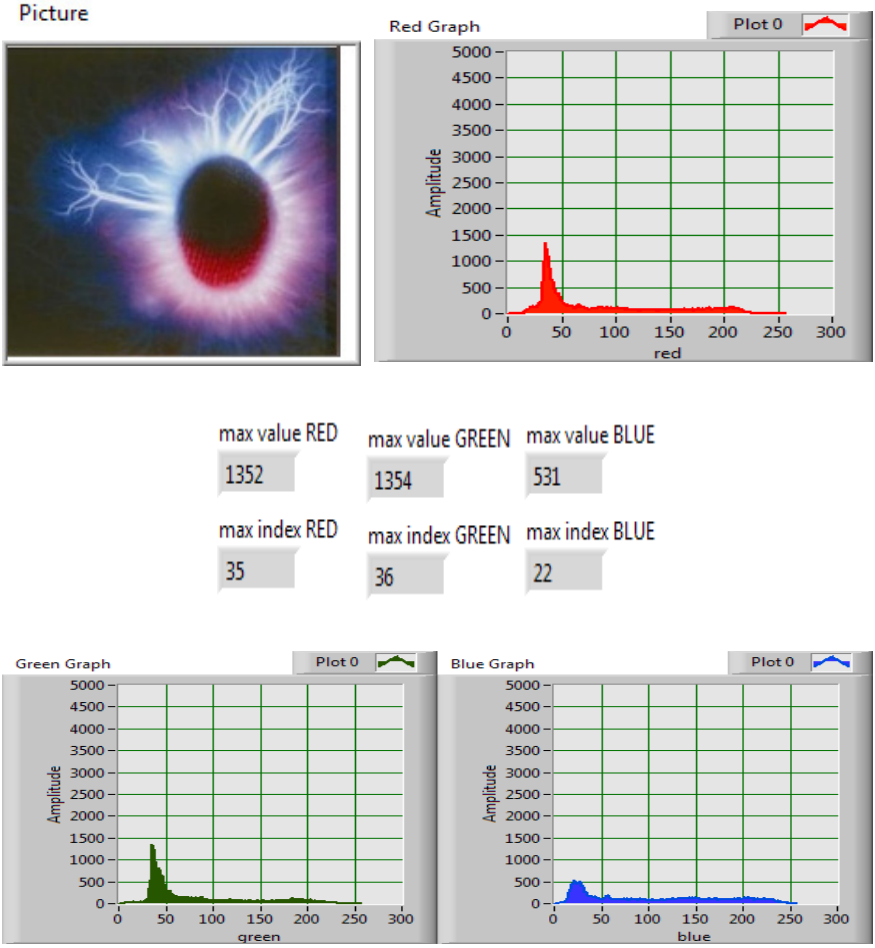
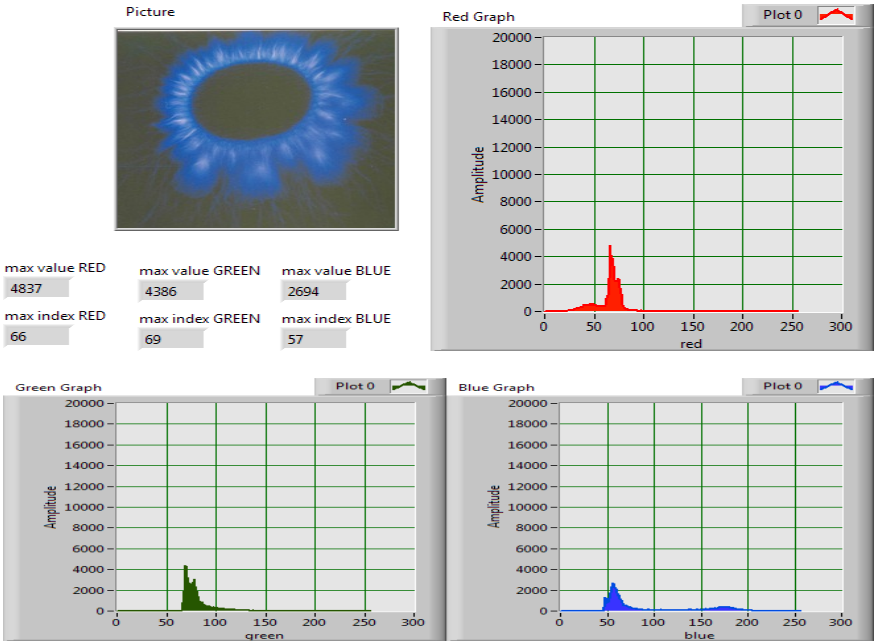


Fig. 5. *Examples of kirlianograms with psycho-emotional and mental activity of students*

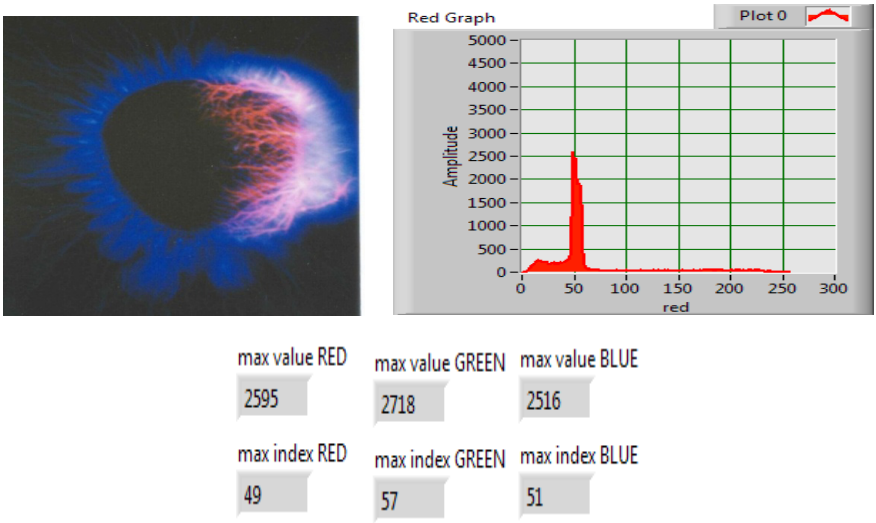
The Kirlian glow reflects both the physiological reflex reactions of the body and the state of the mental, spiritual and mental spheres of a person with various mechanisms of energy activity. The pictures below show examples of histograms of the brightness of the students 'Kirlian glow of the hands (with a gradation of components in three main colors) in a state of creative mental and spiritual activity in an optional lesson, in a state of emotional calm, which differ from each other, as well as from the reflex activity of a psychic during his work (Fig. 6).

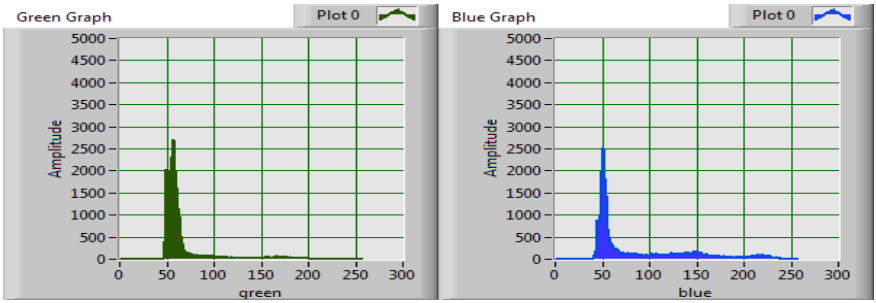


Kirlianogram of a finger at primentalno-spiritual activity



Kirlianogram of a man's finger at rest





Kirlianogram finger psychic while working

Fig. 6. *Kirlian photographs and their histograms of the brightness of the glow with a gradient in color at rest and with different types of human energy activity*

Comparing results obtained by calculating the corona area of the glow around the fingers with the data from psychological tests for different types of thinking and with the results of electroencephalograms has revealed no correlation between them among students with high-energy responses. These Kirlian photographs have revealed the potential mental and psycho-emotional activity for students, which could not be obtained by standard methods.

Conclusion. The application of the results of kirlianographic research in the pedagogical process is appropriate for assessing the potential of the mental and creative activity of students.

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混合学习技术在技术大学的教育过程中（作为技术指导单身汉的物理教学的例子）

BLENDED LEARNING TECHNOLOGY IN THE EDUCATIONAL PROCESS OF A TECHNICAL UNIVERSITY (AS EXAMPLE OF THE PHYSICS TEACHING OF THE TECHNICAL DIRECTIONS BACHELORS)

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注解。文章阐述了降低技术大学工程师教育质量的问题。作者建议重建传统的教育过程。教育标准生效，学习物理的小时数减少，但同时课外独立工作的小时数增加。但是，这些时间实际上并未实现。教育社区的目标是将独立学生的工作转变为受控制的自我教育过程。为此，有必要利用混合教育技术为学生在大学的信息教育环境中学习创造条件。使用这种教育技术的经验改善了学生的教育活动的结果。教育实验的结果证明了这一点。

关键词：信息教育环境，基于胜任力的方法，混合学习，“倒置阶段”模型，模块评级培训。

Annotation*. The article states the problem of lowering quality of education of engineers in technical universities. The author suggests reconstructing of the traditional approach to the educational process. The educational standards come into force and the number of hours to the study physics is reduced, but at the same time the number of hours for extracurricular independent work increases. However, these hours are not actually worked out. The aim of the pedagogic community is to turn the independent student's work into a controlled process of self-education. To do this, it is necessary to create conditions for students to study in the information educational environment of the University using blended educational technology. The experience of using this educational technology has improved the results of educational activities of students. The results of the pedagogic experiment prove it.*

Keywords*: Information educational environment, competency-based approach, blended learning, "inverted class" model, module-rating training.*

As the technical progress intensifies, modern artificial civilization becomes global, new techniques and technologies appear in the society, the role of engineer activities become more important. The cooperation of science and innovative engineering can make the production activities easier, improve the quality of its results. By the way, the world community notes critical condition of modern engineering education what threats the development of the society.

The solution of the problem of reducing quality of modern engineer education is connected to the introduction of 3++ Federal state educational standards of higher education in the educational process. The competency-based format of the new standards is connected to abrupt reduction of number of classroom hours and the turning of a large number of hours to extracurricular independent work, using an electronic educational resource.

It is possible to improve the quality of the educational process only with the deliberate introduction of credit and modular system that is non-linear learning scheme as well as score-rating systems of knowledge and the popular today, competence-based approach to learning. Structural units called "competencies", in fact, are a reflection of the future professional competence of the graduate hence they should provide such knowledge, skills, abilities and personal qualities that would allow a student to fare well in his/her labor activities.

Growing role of the information in modern society and the development of electronic technologies stimulate the introduction of electronic education resource to interfere education. FSES requirements connected to individual extracurricular student's studies can be realized by the "inverted class" model what is the technology of blended education.

Blended education involves combining traditional learning with e-learning. In turn, the model "inverted class" uses the advantages of blended learning technology to increase its productivity.

The most effective way to "invert" the education is to use information educational environment (IEE) of a university, for example, to use Moodle-2 - a system of education management. IEE is a self-organizing system of open type which includes information educational resources and pedagogic technologies.

"The information educational environment of the University is a pedagogical system that combines information educational resources, computer-based education, educational process management tools, pedagogical techniques, methods and technologies aimed at the formation of an intellectually developed socially significant creative person who has sufficient level of professional knowledge and competencies.[1]"

We consider IEE as a completed set of educational situations which change each other in turns and form the system of psychological, pedagogic and didactic conditions and impetuses which make the individual to take conscious decision, to correct and realize the model of self-development in professional and personal aspects.

[1]Nazarov S. A. Pedagogical conditions of designing personal-developing information-educational environment of technical University: abstract. dis. ... cand. of ped. sciences'. - Rostov-n / D, 2006. - P. 17.

As the number of curricular hours is reduced and the most of studied material is transferred to extracurricular individual work, use of the "inverted class" model helps to make teaching physics complete and controlled self-teaching process.

That is the reason why the lecture, practical and laboratory materials are posted in e-IEE. Specialists make the plan of steps for students to self-educate. Thus, the material of the lecture is studied in advance by students in extracurricular time, they make lecture notes and then write the test on the studied lecture. What is IEE in fact depends on the teacher's choice as he/she may decide to use different materials. It can be text files, lecture presentations, video recordings of the whole lecture, or its fragments, as well as video demonstrations of various physical phenomena, allowing to understand complex theoretical material more profoundly. Students are motivated to do their individual studies by use of rating control system. A student gets points for having lecture notes or lose them if he/she does not have notes. (The second variant is more advisable as it helps to estimate extracurricular student's studies without putting into summary rating too much figures.)

During the lecture itself, which is not a lecture in usual sense, a teacher explains the education material focusing on the difficult parts, he/she pays more attention to practical aspects of theory. It significantly helps to save time because students work with ready-made lecture notes and without being interrupted by hand-writing. Free time can be used to make tasks based on the studied material. It is advised to make some calculations, solve a problem, make an analytical task which helps to systematize theoretical information etc... It is recommended to divide the lecture time to change periods of theory explanations with periods of cognitive activities of the students by means of fulfilment of practical tasks. This kind of lecture (which we call convergent) helps to learn physic knowledge of higher quality. It is proved by pedagogic experiment results.

Все виды деятельности студентов на лекции подлежат обязательному оцениванию и учету полученных баллов в суммарном рейтинге студентов. A teacher has to take additional work to check the results of students' activities. It is advisable to assess the results with e-tools if technical infrastructure permits.

The "inverted class" model of blended learning technology is effectively used in the workshop on solving physical problems. Informational educational environment presents the basic formulas, examples of task solving both in text and video variants. The tasks for individual self-study are obligatory presented. The next stage in the individual extracurricular study of solving tasks is the fulfilment of control tasks, limited in time and assessed by the system. The points for this kind of work are added to the total rating of the student, which affects the final mark. The control tasks are individual for each student, because they are generated by the system completely randomly. This fact as well as the limitation on the time and date of task fulfilment almost exclude the possibility of cheating for each group of students. In addition, individual fulfillment of this task allows during the class practice to learn how to solve more complex tasks, get high scores on the final control of the studied topic.

Solving problems in the classroom with the teacher is associated with the solution of more complex problems. It is the analysis of tasks that were not understood throughout the individual study of the topic. We believe that here it is better to work in groups and use level differentiation. Modular-rating technology involves start and final control during every class practice lesson. A large number of control measures does not only discipline students, stimulating their cognitive activity, but also allows them to get higher educational results.

Start of usage of blended technology in educational process needs preparations to be made. Let us start with the fact that according to educational standards of competence format, it is advisable to use the technology of modular training, the feature of which is the presentation of educational material in relatively complete units – modules. Each module, both the first (section of the course) and the second (separate topic of the course) orders, begins and ends with control (start and final). IEE is presented by educational and control material modules (in printed form) to work during class-time. Training materials of modules include lectures, methodical recommendations for the solution of tasks, methodical instructions to make laboratory works of appropriate level of difficulty. Control materials of the modules contain differentiated tasks for start and final control in the classroom to solve physical tasks, questions for the laboratory work presentations, tasks for individual work during the classroom lecture. On the one hand, it takes plenty of time to create these materials , but on the other hand, the use of these materials makes the educational activities and the organization of the learning process more effective.

A large number of control measures needs the rating system of control to be adopted by the educational process. The system should be developed and adjusted to the credit rating system. A mandatory stage is the testing and adjustment of module-rating training, as in the real educational process there is always a number of factors that can not be taken into account during the elaboration of the system..

Many University teachers has faced the reduction of hours to study the discipline so that they has to exclude quite a number of topics from the working plan. Technology of blended education allows to avoid it. It suggests adding the topics into more information educational environment and make the conditions for students to study in individually.

The results of the pedagogic experiments showed that the "invert class" model of blended education technology for bachelors education in technical field with help of information education environment of a university is effective. Statistics methods show that the students from experimental groups have presented higher results in studying general physics programm. We state that the reason of the results is that the students from the experimental group had been learning physics on more advanced level, the most of knowledge was understood without teacher's help what stimulated the profoundness and solidity of learning of categories such as "to be aware", "to know theory" and "to use practice" of professional competences.

在媒体教育空间的表现艺术治疗基础上发展学生的个人自我
DEVELOPMENT OF PERSONAL SELF-DETERMINATION OF STUDENTS ON THE BASIS OF EXPRESSIVE ARTS THERAPY IN THE MEDIA EDUCATIONAL SPACE

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注解。 本文考虑了利用现代媒体技术在创作过程中发展人格价值语义规范的可能性。 描述了一个四阶段的媒体传播机制，它考虑到感知的类型和信息的使用方式，促进青少年个人能力的形成和发展。 通过使用系统活动方法将艺术和媒体技术整合到教育过程中，提出了通过表现艺术使用多式联运治疗原则的实践经验。

关键词：媒体教育，个人能力，价值语义规范，青少年创造性自我实现，表现艺术联合治疗，多元综合方法，艺术形象。

Annotation. *The article considers the possibility of using modern media technologies for the development of value-semantic regulation of personality in the creative process. A four-stage mechanism of media communications is described, which promotes the formation and development of adolescents' personal competencies, taking into account the typology of perception and ways of working with information. The practical experience of using the principles of intermodal therapy by expressive arts through the integration of arts and media technologies in the educational process using a system-activity approach is presented.*

Keywords: *media education, personal competences, value-semantic regulation, creative self-realization of a teenager, intermodal therapy by expressive arts, polyartistic integrated approach, artistic image.*

Modern media technologies are often used in the educational system. However, the place of their application is limited to auxiliary functions of the educational process. In this case, media technologies are the final product that describes the information necessary for the educational process. In our work, we approached the use of media technologies from a different perspective. In the conditions of active infor-

matization of society, including the improvement of the education system, the idea of self-realization acquires a new role in the personal development of a teenager.

Self-actualization of the personality of a teenager occurs in the process of awareness of the value of his actions on the basis of the activity approach, in which the desire for self-actualization is laid. In the works of psychologist K. Rogers, one of the founders of humanistic psychology, the law of congruence is presented: "the main motive of a person's behavior is the desire for self-actualization. It consists in the realization by the person of his abilities in order to save life, make himself stronger, and life more satisfying "[9, p. 77]. In the process of enculturation, the students' creative activity is based on the sociocultural factors of the media activity itself, directly related to the psychology of communication. At the heart of communication are the management skills of the emotional-sensory state and the development of the ability to empathy, i.e. conscious empathy of the manifestation of the emotional state of another person through actions, speech, facial expressions, gestures, etc. Therefore, media activity can be viewed from the point of view of the development of communication, the perception of cultural codes, the characteristics of traditional behavior of different peoples, the ability to express one's thought, to accurately convey the idea, the acquisition of constructive skills communication, ability to listen and hear another person.

The creative self-realization of a teenager is the process of embodying a teenager's personal potential, which is determined by his activity and is aimed at self-knowledge and self-determination, which is realized in the creative process. Therefore, the goal of creative self-realization is seen in this work as meaningful, effective, structured and planned self-development, which, according to M.R. Ginzburg, "fills the future with meaning, structures it and, by definition, makes a person the subject of his own becoming" [3, p.45].

Creativity and self-realization are closely interrelated. We use media technology to create the final media product from emotional and sensory perception to creating a media product, which develops critical thinking, at the stage of reflection and is a means of creative self-expression of students in the form of a media project.

The value-semantic orientation underlying the creative development of a personality implies the ability to be oriented in reality, set a goal, define tasks for the realization of this goal, and solve them step by step. Understanding of reality occurs due to the person's skills in orienting himself in the space of culture in the broad sense of the word, when the language of culture through the cultural text becomes the basis of people's communication with each other, regardless of time and space.

However, the acquisition of these skills is quite a long process, the beginning of which is laid in childhood and is formed as compassion, empathy in an object

of culture that can be represented not only by a work of art, but also by any object from the cultural space in which the child develops. It is during this period of childhood that stereotypes are formed that in the future will determine perception, and as a result, human behavior. Therefore, it is necessary to present as widely as possible the diverse aspects of cultural reality, so that new information through comparison with the already mastered, new acquired experience is included in the knowledge system, through the selection, saturation and classification of the presented material.

“The main position of intermodal therapy with arts is that the art process is a creative process, including the creation of an art form (drawing, dance or musical work), filling it with content, the author’s behavior during creation, the final product reflects the individual development, problems, interests, personal qualities and personal strength. Art is also used as a form of communication and symbolic language, giving external forms to internal content ”[8 p.49].

Being in the creative process, using imagination, a person creates a new reality that can be comprehended and used by other people. Imagination is the bridge through which a person can look into his unconscious, and through expressive arts establish a connection with it.

One of the many mechanisms for the disclosure of the potential of the child is a "polyartistic integrated approach."

Psychology has introduced its own “polyartistic integrated approach” to the knowledge of a person’s inner world.

Despite the fact that the educational space is not a therapeutic environment, at the same time correction and harmonization of personality, which occur in the process of building a creative image while integrating various types of art, are urgently needed in the educational process. Creative self-expression contributes to the formation and expansion of personal competencies. In the educational context, comparing two concepts, namely the concept of intermodal therapy with expressive arts, based on K.Rogers' person-centered teaching approach, and the “ polyartistic integrated approach” in the field of arts of B.P. Yusov, we find a lot in common. “They are aimed at the active creative activity of the child. The basis of the pedagogical concept of K. Rogers is the freedom of choice and the ability to organize oneself in the educational process, the development of creative activity of students is possible under the condition of the free choice of a culturally formed personality. In the pedagogical concept of B. P. Yusov, the main thing is cultural education through art and the acquisition of creative experience. In the pedagogy of art, the task is to learn how to read artistic images of both your own creations and other authors ”[7].

The use of principles of intermodal therapy in expressive arts based on the use of media technologies in extracurricular, additional education and elective courses

as a component of the variable system of the educational process and associated with the zone of proximal development (ZPD) contributes to the development of value-semantic regulation of personality. The teacher and the student, in this case, become the subjects of a single process, in which the meanings are concentrated, which allow to practice knowledge. All this leads to mastering one's own intellectual abilities and solving problems in the emotional-volitional sphere. Vygotsky L.S. in his concept of the development of higher mental functions, emphasized that, firstly, the activity approach is based on ideas, and secondly, human mental abilities "are the result of the transformation of external objective activity into internal mental activity through successive transformations" [5].

B.P. Yusov wrote about the importance of building a creative environment conducive to the development of "objectification" as a "vector of the future". "Central to the phenomenon of Culture is not the logic of information and professional-art views, but the concept of image. The image is a form-factor of art and science, of invention. Artistic images are the most concentrated and generalized expression of culture, its universal world language, the subject and product of artistic creativity and productive imagination ... "[11, p. 48]. The difficulty for the modern younger generation is that in most cases children are active users of someone else's creative product, with minimal development of their creative imagination. In modern life, it is important to learn how to convey one's own thought using various cultural languages, which requires the development of personal competencies that are impossible without an understanding of one's feelings and emotions.

Having individual peculiarities of perception, each person determines for himself the most comfortable way of obtaining information, including when working with it through an image with certain properties. Developing the approach of A.N. Leontyev, the modern theory of psychology proposes to consider the image as a certain multidimensional substance between the voltage nodes of the information perception system.

In the work of Vasilyuk F.E. "The structure of the image" presents a model of the image of consciousness "Psychoseotic Tetrahedron" [1]. "The image of consciousness appeared before us as a structure that has not three generators (meaning - personal meaning - sensory fabric), but five dimensions. Four of them - meaning, object, personal sense, sign (word) - can be used, using Leontyev (A.N. Leontyev) stylistics, to be united by the term "guides", meaning that they, being representatives of the world of culture, external world , the inner world of the individual and the world of language in the mental image, are a kind of magnetic poles of the image. At each moment, the lines of force of the internal dynamics of the image can be directed primarily to one of these poles, and the resulting dominance of one of the dynamic measurements creates a special type of image. The last, the fifth, which forms consciousness, is the sensory fabric "[1, p. 18]. Representing the

further development of the theory of A.N. Leontyev on three parts of the structure of individual consciousness: the sensory fabric of consciousness, meaning and personal meaning, F.E. Vasilyuk regards sensory tissue precisely as "a certain substance of dynamic plasma", which "is something unified, and at the same time not at all homogeneous, but rather differentiated, condensing near the image poles and obtaining here strong characteristics specific to each pole. Far from the thickening zones, it is easy to assume the presence of interferences of sensory tissues coming from different poles "[ibid.].

The modern diverse world provides a variety of cultural languages, having mastered that, a teenager can learn to convey his own thought. At the same time, in order for not borrowed, but his own thought was formed, he needs to learn to recognize and rely on the images that arise from it on the emotional-sensual level.

Only in constant dialogue with the world and with oneself does a personality develop, a cultural memory is formed, a predetermining ability to inherit cultural tradition, assign values of the past and translate them into one's own life practice "[10].

The use of an intermodal approach to the integration of arts and media technologies in the educational process using a system-activity approach, applied in media studio, expands the possibilities of the pedagogical process, saturates it with emotional demonstrations, and allows to immerse more deeply into the multicultural space. Such an approach shapes and develops creative thinking skills, activates children's communication skills, forms critical thinking and develops an artistic and aesthetic view of the world, the ability to interpret cultural codes, use them to implement their creative projects. Thus, the application of the principles of the expressive art of intermodal therapy in the media education process contributes to the formation of the mechanisms of value-semantic regulation of students.

The practical work of our open world media studio is based on the creative independent media activities of adolescents, taking into account the zone of proximal development based on the interrelation of intermodal and polyartistic approaches.

Thus multimedia space allows you:

- first, to synthetically present a complex of knowledge through the prism of emotional-sensory perception. The emphasis in the educational process is made on the development of self-regulation skills through the generation of meanings and awareness of the value foundations of students in their activities. This allows the teacher to create conditions in the media education space that contribute to the development of self-awareness and communicative competence and, as a result, self-realization of adolescents in society;

- secondly, to vary the learning process for each specific audience, taking into account the peculiarities of perception, work with information and the degree of preparedness. Such an approach allows learners of different types of information

perception to acquire the ability to form their own position, to develop creative competence and readiness for retraining.

In the studio, the development of self-awareness and mastering the means of self-regulation is realized on the basis of the four-stage mechanism of self-realization of adolescents, which is presented below.

At the first stage, the methods of interaction with cultural texts are mastered. The possibility of a different reading expands the area of perception and understanding, which leads to the restructuring of the stereotypes of the sample used (not necessarily, but possible). At this stage, hermeneutical analysis occurs, i.e. comparison of the cultural text with traditions and reality; penetration into the logic of the media text through the comparison of artistic images in a historical and cultural context. Such a reading generates a new display, forming an individual point of view on the image.

The second step involves the study of the stability of the image through the reading of its symbolic structure, the selection of related images with a single symbolic code. In the process of this action, a mastery of the iconic cultural space and symbolic environment takes place. Further comparison of cultural spaces leads to a new reading of cultural codes, which contributes to the formation of beliefs.

The third stage is the awareness of one's own convictions and the formation of a creative position, based on a creative approach to artistic projects.

The fourth step is extremely important, since it is here that the cognitive system transitions from “I-he” to “I-I”, as mentioned above.

The presented four-stage mechanism of media communications contributes to the formation and development of personal competencies.

However, due to the peculiarities of perception and processing of information, work with adolescents is built individually, taking into account the specific type of media perception. The implementation of the pedagogical model of the creative self-realization of the personality of a teenager in the media education space [4], and the pedagogical technology of activating the creative self-realization of the personality of a teenager in the media education space [ibid] allows finding the motivation of the creative process for teenagers of different types of perception and ways of working with information. In educational practice it is extremely rare to meet students with a pronounced type of perception of information. Usually one of the types of information is dominant, and the other/others are not manifested or not fully disclosed. The typology itself was developed by the team of authors and put into practice in the open world media studio and in other organizations. It is interesting to note that the age indicator is almost the same in the Information type and Analytical type. It is possible that these are adolescents who come to the media studio for introspection and mastering their own resources through creative media processes. Interestingly, the Synthetic type is quite rare. It demands from

the teenager not only self-discipline, creative skills, ability to psychologically assess the situation, but also work experience, and later management of the creative team. Obviously, this skill develops in some older teens.

Teens in the work on the script transform the emotional stress of finding the important, essential in creating the script through understanding the logical links of the details of the image. So a teenager in writing a script based on his own work, becoming a subject of activity, turns out to be a creator of the new and at the same time gains experience in arbitrary work with the motive and conditions in which it is given. The use of several art-modalities at once allows the authors to find a form for realizing their potential.

Teens in creative work transform the emotional stress of the search through the understanding of the logical connections of the image details.

In our work we use a whole group of different tasks and methods based on the principles of the intermodal approach, which allow us to vary the classes for each specific audience, taking into account its features, degrees of preparation and needs at a given point in time. Such an approach to the formation and development of value-semantic regulation in a student allows a person, using his creativity and critical thinking, to determine for himself an algorithm of actions and independently control the process of achieving goals, including when creating a personal creative product.

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通过培训形成学生对教育学院压力技能的抵制

FORMATION OF THE STUDENTS' RESISTANCE TO STRESS SKILLS IN COLLEGES OF EDUCATION BY MEANS OF TRAININGS

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注解。 本文介绍了作者通过培训为教育大学的学生形成压力容忍技能的概念，重点是考虑到对44.03.05教育学教育（有两个培训简介）方向的学生的要求越来越高，表现出来 增加个人对选择个人路线和学习节奏的责任。 从我们的观点来看，培训是一个交际平台，其结果是成功地自我呈现学生的个人成就，减少情绪压力；提高对外部和内部社会环境极端因素的负面影响的反对程度。

关键词：软技能；灵活的技能；强调；抗压力；抗压技能；教育学院；个人路线；学习的步伐。

Annotation. *The article presents the author's concept of forming stress tolerance skills for students of a pedagogical university through training, the emphasis is on taking into account the increasing requirements for students enrolled in the direction of 44.03.05 Pedagogical education (with two training profiles), manifested in increasing personal responsibility for choosing an individual route and pace of learning. From our point of view, training is a communicative platform, the result of which is the successful self-presentation of student's personal achievements, reducing emotional stress; increasing the level of opposition to negative influences from extreme factors of external and internal social environment.*

Keywords: *soft skills; flexible skill; stress; stress resistance; stress resistance skill; pedagogical university; individual route; pace of learning.*

The higher education system today is focused on meeting the personal needs of everyone who would like to realize their ambitions in an era of uncertainty. We characterize the current generation of students from the standpoint of activity, mobility, loyalty, and even “fearlessness” in making their decisions.

According to the studies of T.A. Kryukova, conducted with students of various specialties, it was revealed that in the middle of the semester psychological tension, anxiety about passing exams is reduced to a minimum. Students feel confident, activity is increasing, and, despite the problems, they have a cheerful and optimistic attitude (75% of students have technical universities and 90% of pedagogical universities). In most cases, they assess their condition as favorable. They feel awake, rested, full of strength and energy, as a result of which there is a high performance and low fatigue [10, p.227].

90% of students are characterized by the inability to distract from work, lack of time for rest and entertainment, inability and unwillingness to perform everyday and tedious work, inability to prolonged and sustained concentration, impulsivity, emotionality, slight depression in solving life difficulties, another characteristics are active and focused efficiency, emotional stability, predictability in behavior. But the situation of "exams" - whether at the university or any life tests - leads to changes in the nervous, cardiovascular, immune and other systems [11, p.55].

Today, a feature of the construction of the educational process in a pedagogical university, taking into account the realities of life, is the integration of project and research activities. Students willingly join in different types of activity, but more often they are lurked by their underestimation of their own capabilities, which creates tension, emotional instability, stress.

According to N.I. Konyukhov, “stress” is a mental state of general arousal, mental stress during activity in difficult, unusual, extreme situations; nonspecific reaction of the body to dramatically changing environmental conditions. Stress can have both a positive, optimizing effect on activity, and a negative one up to a complete disorganization (distress) [2, pp.125-127].

For example, in the first year of student life, the main cause of stress may be changes in activities that are significantly different from school activities that they had previously mastered. The student needs to adapt in a new place, to new requirements, he is surrounded by a new environment and people he does not know. In addition, the strength of communication with the usual circle of communication is lost. Most students find it difficult to realize that childhood has already ended.

Another cause of stress in the life of a student can be life in another city, isolation from the home environment, remoteness from parents. This also includes the limited finances, time, inability to rationally manage this resource.

Usually students lead a very active lifestyle. Their main time is spent on training, then on preparing for exams, the rest of the time is spent on chatting with friends and relatives, as well as on other personal matters. Consequently, another important cause of stress in students is irregular nutrition and not enough sleep.

Other subjective factors affecting the appearance of stress in students include: illness or death of family members (death of a loved one and/or domestic animals); conflicts with groupmates and close people; relocation; problems in personal relationships; health problems [1, p.9].

A special place in the life of the student takes the stress associated with studying in the walls of the school.

N.I. Konyukhov believes that "academic stress" is a condition that is characterized by abundant body tension, a decrease in emotional and intellectual potential, leading in the long run to psychosomatic diseases and inhibition of a student's personal growth [4, p. 150].

The reasons for academic stress include: overly serious attitude towards life, study; shyness, timidity, shyness; fear of the future, thoughts of possible troubles and problems; bad, restless sleep; pessimism, the tendency to celebrate in life mostly negative traits; disappointment in the chosen profession [9, p.202].

In the analysis of the work of domestic and foreign scientists revealed some of the body's reaction to the occurrences of stress. G. Selye identified three stages of stress:

1) a specific reaction to the impact (anxiety stage): the body faces a certain disturbing environmental factor and tries to adapt to it, the body is mobilized by the reserve forces;

2) the most effective adaptation (stage of stability): there is an adaptation to new conditions. The stress resistance of the organism increases due to the expenditure of the body's reserves, but they are not unlimited;

3) violation of the adaptation process (exhaustion stage): if the stress factor continues to act for a long time, hormonal resources are depleted and adaptation systems fail, resulting in a process that takes a psychopathic character and can end in illness and even death [6, p.112] .

V.V. Suvorov singled out such symptoms of tension as: rapid heartbeat, pain in the heart; problems with the gastrointestinal tract; muscle tremor; headaches, fatigue [12, p. 195].

Anyway, the problem of solving stress should be stress resistance. O. B. Polyakova sees "stress tolerance" as "a set of personal qualities that enable a person, in particular a specialist, to successfully resolve stressful situations, to endure stress, i.e. significant intellectual, volitional and emotional loads (overloads), which are caused by the peculiarities of his life activity, in particular his professional activity, without any special harmful consequences for the activity, people around him and his health "[8, p.248].

In general, stress resistance depends on: heredity; temperament; personal experience; level of social adaptation; motivation; intellectual assessment of the situation; subjective attitude to the situation [12, p.217].

The ability to regulate activities, recognize external and internal stimuli, the ability to turn them into their own advantages, all this determined the stress tolerance components as a flexible skill:

- the ability to predict the development of life situations;
- the ability to control emotions, developed volitional qualities of the individual, mastering the skills of self-regulation;
- the ability to withstand a longer and stronger stress;
- flexibility of adaptation processes in response to stressors appearing at different times;
- the ability to be realized and grow personally.

Under the flexible skill of stress tolerance, we understand a certain set of properties and qualities of a person's personality, which ensure successful adaptation and socialization in a professional environment by reading and recognizing negative factors and perceiving them as professional tasks that require a quality and informed decision.

The team of authors believes that such a gap can be reduced by using active forms of interaction between the subjects of the educational process (for example, training) within the framework of the implemented direction and training profile, the productivity of the interaction of which is determined by the high level of formation of stable soft skills.

Flexible skills are, from the point of view of Lippman L.H., Ryberg R., Carney R., Kristin A., "unspecialized career-important superprofessional skills that are responsible for successful participation in the workflow, high performance and are cross-cutting, that is, not related to a specific subject area "[7].

Actual for our research is the point of view of D. Tatarschikov, who understands "soft skills" as unified skills and personal qualities that contribute to improving work efficiency and interaction with other people, referring to these skills as "personal development management, the ability to provide first aid, competently manage their time, convince, negotiation skills, leadership, etc. "[13].

We share the point of view of E. Gaiduchenko, A. Marushev, who by "soft skills" understand the skills that make it possible to find a common language with other people, to establish and maintain connections with them, to be able to tell their thoughts. In other words, "soft skills" are the skills of effective communicators and leaders and are necessary both in everyday life and in professional activities [5].

We consider group training as one of the active forms of forming stress resistance skills among students of a pedagogical university. Group training is a specially created process involving small groups whose participants (mentally healthy people), with the assistance of the facilitator, are included in a peculiar experience of intensive communication focused on helping everyone in solving various psychological problems and in self-improvement (in particular, in developing self-awareness).

30 people took part in the group training (academic group of students). While working on the selection of exercises, we paid attention to the existing categories of people who are under stress and have signs of avoiding it:

- "stress-resistant people" find it difficult to adapt to any changes, it's difficult for them to change their behavior, attitudes, and attitudes. If something went wrong, they are already under stress;
- "stressful people" are generally ready for changes, but not for instantaneous or global ones. These people tend to adapt to their surroundings gradually, without sudden movements, but if this is not possible, then they easily become depressed. If the same situations that cause stress are repeated, then stress-trained get used to them and react to them more calmly;
- "Stress brake people" will not change under the influence of external events, they have a solid position and their ideological attitudes. However, such people can go for a one-time change in the psycho-traumatic sphere of life. If stresses constantly accompany such a person, then he is lost [4, p.11].

We noted that setting the rules at the beginning of training sessions helps the group to focus on the working atmosphere, to understand what will happen and what these classes are aimed at. Using exercises to create a working atmosphere, emotional contact between participants in group training, allows to relax participants (Exercise "Compliment"), establish trusting relationships (Exercise "Frankly") and rally the team (Exercise "Who is faster").

An example of the training session "Tension: dialogue is the regulator of emotions." The main part is represented by the exercises: "Wall to wall", "Relieving tension in pairs", "Respectful verbalization"; games: "White Crow", "Sculpture", etc. The psychological and pedagogical meaning of this concept is to orient students not to the object of activity, but to coordinate their actions towards themselves and each group member.

We agree with the point of view of the authors team S.N. Batsunov, I.I. Derecha, I.M. Kungurova and E.V. Slizkova. They believe that the educational environment of a pedagogical university is focused on constructive co-operation in the communicative field, where bachelors have a desire to develop, to gain new experience, to grow professionally; ideas about the goals of their own development and specific development plans are formed; students begin to try not only what is good for them, but also something new, they take risks; begin to analyze their actions and their results, looking for reasons for success and failure precisely in their actions, and not in external circumstances; seek to receive feedback on the success of their actions from classmates, teachers, employers, etc. [3, p. 202-203].

The systematic use of group training is an indicator of the development of skills to cope with situational and organizational stresses, a decrease in emotional and muscular tension, which prevents one from overcoming stress, which can negatively affect the development and efficiency of students.

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中国古代哲学对中国民族心态形成的影响
THE INFLUENCE OF ANCIENT CHINESE PHILOSOPHY ON THE FORMATION OF THE CHINESE NATIONAL MENTALITY

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注解。 中国民族心态是在地理，语言，宗教和哲学因素的影响下形成的。 中国的三大教义（儒家，道教和佛教）对特定心理类型的形成有很大的影响。 思想被改变，受到时代变化引起的变化的影响，但它们的本质保持不变，在全球化和一体化的背景下确保了民族认同的保存。

关键词：民族心态，传统主义，个人尊严，自我完善，天人关系。

Annotation*. Chinese national mentality was formed under the influence of geographical, linguistic, religious and philosophical factors. The three great teachings of China (Confucianism, Taoism and Buddhism) had a great influence on the formation of a particular psycho type. Ideas were transformed, subjected to changes caused by the change of epochs, but their essence remained the same, which in the context of globalization and integration ensured the preservation of national identity.*

Keywords*: national mentality, traditionalism, personal dignity, self-improvement, relationship of Heaven and man.*

The national mentality is a certain lifestyle and culture characteristic of a particular ethnic group of people, as well as a national system of values, views and worldviews of a nation, common character traits. In addition to the special geographical conditions, the isolation of the development of the Chinese language, the formation of the particular mentality of the Chinese nation was greatly influenced by ancient Chinese philosophy. Over time, the main philosophical categories were transformed and began to be called differently, but the essence remained the same: the interrelation of all things, beings and phenomena in nature, the important role of traditions and rituals, the value of the dignity of the individual, the importance of moral education, the reverence of parents.

The relevance of the study is due to the interest in the features of ancient Chinese philosophy as the source of the formation of the Chinese national mentality. The novelty lies in the unexplored topic, as well as in the fact that the study was carried out by a carrier of Chinese culture.

The purpose of this study is to examine the influence of ancient Chinese philosophy on the formation of the national Chinese mentality. To achieve this goal, the following tasks were set: to study the main categories of Chinese philosophy, to consider their influence and picture in the national mentality, to assess the degree of influence of ancient Chinese philosophy on the formation of a particular psychotype.

A distinctive feature of China is pronounced traditionalism. Even Confucius said that he does not create, but only transfers to descendants ancient traditions [7, p.139]. That is, at the heart of Confucianism lies the reverence and adherence to traditions, following rituals. This is reflected in the national mentality in the form of traditionalism, the continuity of generations. Since Confucius, "Chinese ceremonies," that is, the prescribed norms of relations between different categories of people: sovereign and citizens, teacher and student, father and son, have been the dominant feature of the national character "[6, p. 168]. Confucian traditionalism reflects the desire of mankind to the original harmony, destroyed because of our imperfection. Order in society can be maintained only with strict observance of traditions.

In ancient Chinese philosophy, the dignity and value of the individual occupied a very important place, and the value was not in meeting their material needs, but in the pursuit of high qualities, religious morality and knowledge about it, moral practice. Confucians considered morality to be the highest value, and moral values are much more significant than the values to which an ordinary person aspires in his earthly life [9, p. 254].

Confucius said: "A person who has set himself the goal of mastering humanity (jen) will not go against humanity, even if it gives him life and personal security, but is even willing to sacrifice himself for the sake of humanity" [7, p. 417]. Mencius wrote: "I want to live, I also want to be fair, but I will sacrifice my life and prefer justice if I cannot get both at the same time" [5, p. 164]. Confucius and Mencius recognized the value of life and morality, but in case of contradictions between these two concepts, it was considered necessary to sacrifice life in the name of duty, i.e. the value of the dignity of the individual was more important than the preservation of life.

The concept of personal dignity from ancient Chinese philosophy is closely intertwined with the modern concept of "person" (Mianzi - 面子). For the Chinese, personality is first of all a "face", the picture of the social significance of a person. Chinese ethics emphasizes the interdependence of individuals: a person has a "face" as long as it is recognized by others, and must do what society expects from him [4, p.541].

The "face" is developed over the years. The Chinese do a lot to preserve and improve their social status. The better the face of the Chinese, the greater oppor-

tunities he uses - not in the sense of breaking the rules, but in the sense of trust, willingness to cooperate. Losing "face" is not difficult. This can happen if you have been publicly insulted, or you have not been able to gain proper respect from someone else.

A “person” can have both an individual and various companies and institutions. The better the reputation of a company in the eyes of the Chinese, the more popular it will enjoy in the market.

Confucians considered self-improvement, moral practices a prerequisite for the development of the country, the stability of society. Thus, in the “Great Teaching” (Dasyue) it is said: “Verified things are followed by the perfection of knowledge, sincerity of thoughts, straightening of the heart, improvement of the personality, and after it - family evenness, orderliness of the state and balance of the Middle Kingdom” [3, p. 94], i.e. the external order (in society) comes from the internal order. Under the verification of things here is understood the complete attainment of the highest limit of the principles of things. A peaceful society is based on the self-improvement of each person, each person serves the society, this is his value.

At present, the idea of the need for self-improvement can be traced to China’s desire to improve the level of education, to obtain highly qualified specialists for the further development of the country in various sectors. Today, China ranks first in the world in terms of growth of investment in science and education, and this is already bearing fruit: for example, Peking University, Tsinghua University and China University of Science and Technology appear in the ranking of the top 100 universities in the world according to Times. [8].

The importance of getting a good education and service for the benefit of your country, society is closely intertwined with the above-mentioned Confucian ideas, and also contains the idea of the social responsibility of each person in the development of their country.

In this regard, it is also worth mentioning collectivism - an important feature of the Chinese mentality, the formation of which, along with the difficult natural conditions and the need for this titanic collective work (irrigation, defensive works, etc.), was also promoted by awareness of oneself as part of society, understanding the connections of all subjects , creatures and phenomena. The tendency towards collectivism was also promoted by the initial striving for harmony, the balance of man with nature (and not elevation above it), the absence of opposition between people.

Summarizing the above, we can say that at the present time we have in mind a completely different perfection of knowledge (not studying Confucian canons, but getting a good education, including in Western countries) and improving the personality (for moral education of young people, basic categories of ancient Chinese philosophy that have undergone a certain ideological processing, adjusted

for time, which are supposed to contribute to the development of the state at the present time). At the same time, the stability of the state also relies on the stability of the family, on the contribution of each person to the common goal. That is, here you can clearly see the rational borrowing of the achievements of the West with the preservation of national values and identity.

The relationship of heaven and man is a fundamental question in ancient Chinese philosophy. Sima Qian believed that "to study the relationship of heavenly Tao and human affairs, to comprehend the essence of changes from antiquity to our days is the personal responsibility of every intelligent, cultural person [1, p. 356]. Ancient Chinese philosophers believed that all objects, beings and phenomena interconnected and comprehend and to be aware of them, it is necessary taking into account these links, without the priorities of certain areas.

To understand the general rules of the functioning of all life, it is necessary to feel and comprehend the integral functions and belonging of the celestial Tao. Heaven and man are one, one can come to an understanding of the essence (nature) of man and social norms through ideas about the celestial Tao.

Based on the historical notes of the kingdom of Lou, Confucius explored the long history of the Spring and Autumn Period, as a result of which he came to the conclusion that chaos in the Spring and Autumn Period was due to the fact that people did not follow moral rules. History confirms that in order to form a harmonious political system, it is necessary to follow moral standards, and this is the essence of historical development. In the mentality of modern Chinese there is a conviction about a direct connection between the actions of people and the ruler and natural disasters, distemper, wars.

At present, China is actively trying to apply the principles of ancient Chinese philosophy in the framework of modern science. In 2003, a fundamentally new physical effect of a three-dimensional change in the gravitational field was discovered before strong earthquakes at a huge distance from the epicenter of the earthquake (from 1000 km to 10,000 km), which in fact is also an example of a general "interaction". The Global Network for the Forecasting of Earthquakes (GNFE), created on the basis of ATROPATENA stations (implemented on the basis of the above physical effect), has been operating since the beginning of 2009, and during this time more than 300 predictions were given for earthquakes with magnitudes exceeding 5 on the Richter scale, 91% of which were confirmed [2], which demonstrates the high accuracy of prediction. Perhaps this method will allow to reach a new level in earthquake forecasting. Of all the examples above, one can see the desire and ability of China not only to borrow foreign technologies, but also not to give up its roots, not to lose its national identity, to transform it, adjusted for time, and ultimately to receive new benefits.

Thus, we see that the basic teachings of ancient Chinese philosophy had a great

influence on the formation of the Chinese national mentality with the following features: respect for traditions, the value of moral practices, the improvement of personality, the orderliness of relations in society, the balance between man and nature. The idea of harmony with the world is one of the main for the ancient Chinese philosophy. It is not peculiar to the idea of raising the self-worth of the individual, as in the West. This approach has its advantages: it contributes to the construction of a holistic harmonious society without human elevation above nature, other living beings and the opposition of people to each other. China's experience in preserving national traditions and ethnic identity is worthy of attention and respect. In the history of China, there are practically no examples of crossing out the past, burning bridges; instead, one can observe the transformation of the main ideology, its adaptation to modern trends, which contributes to the accumulation of traditions and customs and the strengthening of national identity.

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教育和科学方面的创造性活动：形成和实施的条件
CREATIVE ACTIVITIES IN EDUCATION AND SCIENCE: CONDITIONS OF FORMATION AND IMPLEMENTATION

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注解。 该研究涉及家庭和教育中创造潜力形成的研究的相关性，艺术与创造力之间的关系。

关键词：艺术，创造力，天才儿童，非模板思维，非标准思维。

Annotation. *The study deals with the relevance of the research of the creative potential formation in the family and education, the relationship between art and creativity.*

Keywords*: art, creativity, gifted children, non-template thinking, non-standard thinking.*

The transition of civilization at the turn of the XX and XXI centuries to the information society has become for post-Soviet society a conscious reality and necessity and requires an understanding of possible ways of survival and development, involving the modernization of all spheres of society, the most important factor of which is innovative, creative activity.

The urgency of the problem of determination of creative activity is due to the public need to prevent destruction, to understand the essence of creativity, the conditions of its formation and implementation, because in the context of intensification of all spheres of practical and intellectual activity, modern society especially needs support and development of the wealth of any state.

The problem of creativity has traditionally been one of the widely and actively discussed problems and has received ambiguous insight in modern domestic and foreign literature. The analysis went and goes in various directions: “genius and genetics” [21], “culture and creativity” [17], “innovations in science” [19], “traditions and revolutions in science” [198], “psychology of creativity and pedagogy”

[1; 5], "subjectivity and creativity [16]", "intuition and logic in science" [7; 10; 11], "intuition and logic in mathematics" [11; 14], "management of the creative process" [2; 3; 8; 9].

The theoretical and methodological basis for the study of the problem of creative activity, its determination, formation and realization are the principles of development, systematicity, synchronism and asynchronism [22].

In the opinion of Richard Florida, who formulated the theory of the creative class, which at the turn of the XX – XXI centuries plays the role of the avant-garde of society, that in the nineteenth-century Marxist theory was assigned to the proletariat [20, 176p.].

What path can a man choose for himself that will determine his creative destiny? Is it possible to help a person in his quest for his own essence, to discover and develop his deepest aspirations, abilities, and thereby give him new spiritual strength for a true life, constructive creativity? What is the role of education as a creative environment, which is a prerequisite for the development of the personality, the formation of its creative potential? Would not today be a utopian dream of a constructively directed and socially oriented creative activity? After all, today we mostly talk about creativity, ensuring competitiveness, about creativity, which allows us to get the maximum profit using minimal resources, and creativity and pragmatism are far from synchronous.

The last decades in the post-Soviet space innovations in the field of politics, economics, rights have changed beyond recognition social life. Social transformations require a new understanding of creative activity, its possibilities, social orientation, the limits of the destructive orientation of social creativity, or at least its limitations.

How does the character of an epoch affect creative activity? What are the general historical and cultural background of the scientist? How do spirituality and creativity, values and destructiveness relate? And why today there are so many dubious projects of social transformation in their value, constructive and humanistic orientation? How to separate creativity from pseudo and quasi-creativity? What are the consequences of social, economic and political reforms? And how can we classify them as the results of creative activity? Or is it an ordinary destruction? Does the global reality, the looming civilizational rift, contribute to the realization of creative possibilities? What are the immediate and distant prospects for social, political and legal reforms?

Theoretical quests for answering the questions posed are still waiting for their researchers and can be fruitful thanks to an interdisciplinary approach to the analysis of a number of discussions and works in which questions about creativity were considered [7; 9], including scientific work [2; 7], about productive thinking [4; 5], about the place of intuition in science as a whole [17; 18], and in mathematics, in

particular [11, 14], about thinking and language [18], as well as in the works that consider the questions of logic and methodology of scientific research [7; 12; 13].

The concept of "creativity" is traditionally denoted a special type of human activity, including mental and material, differing non-standard, novelty and autonomy, interaction leading to development. A modern approach to the study of creative activity is impossible without an analysis of the role of intuition in creativity, cognitive and personal characteristics, creativity of the sociocultural environment, without taking into account the continual, “field” nature of consciousness.

On the one hand, this problem is connected with ideas about the information field of consciousness, on the other - with ideas about the "existential", self-sufficient nature of consciousness. The basis of these ideas is the rich Western philosophical tradition (from ancient ideas about the structure of the soul to the existential-phenomenological concepts of the twentieth century), as well as domestic philosophy, philosophical and philosophical-psychological tradition [4; 5; 6; 16; 17].

There are various approaches to the essence of creativity. On the one hand, creativity is viewed as a creative activity, creating a socially significant product, and on the other, creativity is an activity aimed at self-expression, self-realization of the individual. Both of these interpretations encounter difficulties, which is connected, according to Ya.A. Ponomarev, with their narrowness [17]. It was necessary to find a more general definition, incorporating all possible forms of manifestation of creativity. One of these more general definitions was “creativity as interaction leading to development”.

Currently, creative activity, art, creativity, discovery, destruction as concepts carry conceptual uncertainty, which leaves a real imprint on our lives and activities, since traditionally only knowledge and knowledge-based skills are the key to individual success and social prosperity in the modern world.

In a narrow sense, all thinking is creative, productive, independent. Therefore, some researchers consider it inexpedient to divide thinking into reproductive and productive (creative). In the strict sense of the word, there is neither one nor the other. There is a “simple” thinking - an independent search and the discovery by the person of something essentially new [4]. The concept of "creativity" traditionally denote a special type of human activity, including mental and material, differing in novelty and independence, the interaction leading to development.

Naturalism pretends to identify the patterns of human phylogenetic development, from the standpoint of which man is a natural individual, whose psyche has a double determination. It is the result of organismic biogenetic transformations, and in its functions is a consequence of the individual's adaptation to the natural and social environment. Naturalism considers development primarily as maturation and growth (maturity), occurring under the influence of two factors: heredity

and environment, and sets boundaries and methodological grounds for theories of free education, demanding subtle technologies of non-interference by means of pedagogy in the processes of mental maturation. As a result of evolution, it fixes precisely those of the cognitive structures that are most relevant to survival. This is the main thesis of evolutionary epistemology.

Otherwise, the representatives of the P.Ya. Halperin school refer to the problem of inherited advances, who attach little importance to the innate instincts, and all successes and failures are attributed to psychological and pedagogical miscalculations or achievements. The practice of cognitive activity shows that genetically determined prerequisites should be revealed through constant exercises in solving problems dictated by the relationship of the individual and the environment. In these exercises, a person's inherited abilities develop [6].

The well-known neurophysiologist D. Huguell outlined the philosophical aspect of the problem: is the brain capable of understanding the brain itself in the process of researching what it is - a giant computer, or some other giant machine, or something more [15]?

Since the times of Plato and his advice adequately support the "golden children" much has been written about giftedness, but serious research has been started only by Halton. Based on a survey of 180 Cambridge mathematics graduates, Galton concluded that people were not born equal in their abilities. This study did not take into account the origin, as well as the duration and quality of training of the subjects.

Bloom conducted a retrospective analysis of 120 gifted young people who have reached the "world level" in various fields of activity. As a result of this study, several important factors contributing to these achievements were identified: parental support combined with discipline and good teaching. However, the effect of a similar parental effect on other children even in the same families remains unknown, since no such comparison has been made. Be that as it may, some pressure from the parents (and sometimes their self-sacrifice) is necessary. Without this, children with high potential may not be able to spend thousands of hours of work, which are necessary for the development of their talent to the level of recognized achievements.

On the basis of a study of 291 celebrities, Post [1] drew the following conclusions: setting on creativity, their exceptional diligence, pedantry, perseverance, and preference for working alone. The child's own interests are an excellent and often underestimated indicator of the achievements of his adult life. It was also found that school success explains "very little in subsequent career changes in adult life." The influence of the school, due to the demands of the curriculum and the inability to seize the interests of the students, is often less effective in this respect than parental attention. However, contrary to allegations similar to de Bono's

statements about the informativeness of education, from Soviet times, Russian education adheres to D. Alexandrov's thesis: "a student is not a vessel that needs to be filled with knowledge, but a torch that needs to be lit." Creative burning is the meaning of innovative, search education, which is based on productive, creative thinking.

P. Torrens indicates that hereditary potential is not the most important indicator of future productivity. The extent to which a child's creative abilities are realized depends on the influence of parents and other adults at home and at school. The family is able to develop or destroy the creative potential of the child even at preschool age. Studies of L. B. Yermolayeva-Tomina showed that people with low manifestations of creative activity were brought up in families with an unfavorable upbringing style (hyper-care, authoritarianism, etc.)

The results obtained by American researchers with the help of numerous scales of psychological adaptability and cognitive maturity led to the following conclusions: intellectually gifted adolescents of the younger age group demonstrated similar cognitive skills with older adolescents, but differed from both peer groups. However, other researchers have come to the conclusion that the procedures for teaching highly gifted children differ not only in their more mature character, but also in their style.

Representatives of foreign gestalt psychology M. Vertgaymer, V. Keller, K. Dunker created a special type of tasks of productive thinking. They first divorced creative and non-creative tasks.

From a semiotic point of view, M. M. Lotman reduced intellectual ability to three functions:

1) transfer of available information (texts);

2) creation of new information, i.e. creating texts that cannot be inferred from those already available and having a certain degree of unpredictability;

3) memory, the ability to store and reproduce information (texts) [12; 13].

Obviously, having embarked on the development of a knowledge-based economy, it is necessary to recognize that knowledge is vital for achieving outstanding success in activities. Individuals with significant knowledge in a specific area achieve better results than those who do not have such knowledge. However, it is necessary that this knowledge is flexible, suitable for quick, error-free use, as well as for slower thinking, based on deep understanding. Studies of representatives of creative professions (for example, scientists) showed that, after reaching a certain level of professionalism, personal characteristics, such as independence, make a large contribution to obtaining even better results than intellectual factors.

This is due to the need for significant costs, effort and time that are required during training and practice. Then there is the question of creativity in any of its forms, which should be viewed as professionalism combined with a high level of motivation.

Individuals of any age who have achieved significant success are usually emotionally stronger than others. They have higher productivity, motivation and enthusiasm, a lower level of anxiety, and even more friends. Probably, mastering a variety of problem-solving structures allows them to better "emotionally adapt", perhaps they find support in their past frequent successes.

However, paradoxically, very capable individuals are particularly vulnerable. Possessing exceptional qualities and sensitivities, they often create extremely complex psychological barriers. For example, it was noted that the "special stresses" of gifted adolescents can contribute to depression and the risk of suicide. Intellectually gifted girls also proved to be more susceptible to depression than boys, who have equal abilities with them.

At an early age, gifted children may experience considerable pressure from parents and teachers, pushing them to demonstrate continued success.

At school, stress can be caused by the relentless pressure that comes from teachers expecting their students to memorize a significant amount of information and to accurately reproduce it. Under the influence of the teachers' opinion, a gifted child may have a strange feeling of a lack of "intellectual training" performed by him. However, it depends on the way this pressure is put. One can hardly agree with the statements of those creative researchers in education who have not only created methods for developing the creative abilities of schoolchildren, but even tested them. These odious claims mean nothing more than the recognition of the algorithmization of the creative process, and therefore, leveling the differences between the intellectual activity of a person, especially a student, and artificial intelligence and, moreover, a lack of understanding of the role of intuition in the creative process.

It turns out that the possibilities of gifted children to experience life at their own pace and in their particular way turn out to be very limited. However, as adults, many of them still rely on their past academic skills to ensure their identity. Like any other, a gifted person needs to constantly overcome difficulties. For children from ordinary schools, this is possible, perhaps due to various forms of accelerated education, and in those cases where this is possible, more in-depth education. Each teaching method is useful in a variety of ways. It should be understood that the need to develop the intellectual potential of the nation is determined not only by the policy of continuous education of the gifted, but also of education in general. And in this regard, it is hardly an unequivocal solution to the issue of inclusive education for children with special needs.

Creativity is closely associated with the era of "technology triumph" and focused on results. It is no coincidence that this term is usually used in the professional sphere, in the sectors of commercial activity and marketing communications, especially where competition is developed: in business, PR-activities, ad-

vertising, media, design studios. “The fear of spending on the implementation of a new idea is sometimes overcome only by the fear of even greater expenses from losing it through the fault of a competitor,” stated E. de Bono [2, p. 125-126].

Creativity is, above all, a process that has a sociocultural meaning, it is primary and fundamental. Creativity implies the inner activity of the soul and consciousness, the result of which is the creation of what is capable of becoming a significant phenomenon in the science and culture of society at all subsequent stages of its development. An attempt to identify the concepts of “art” and “creativity” leads to a misunderstanding of the qualities of an artistic person and a creative person. Purposefulness, assertiveness and decisiveness are not peculiar to the generator of ideas, because he is more engaged in creativity, in the development of new ideas, rather than in their realization. These characteristic features are most likely inherent in a pragmatically oriented creative person engaged in the implementation of ideas in order to maximize profits.

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科学制定消除人类生存老化和死亡的问题
SCIENTIFIC FORMULATION OF THE PROBLEM OF ELIMINATING AGING AND DEATH FROM HUMAN EXISTENCE

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注解。本文考察了作者在所有三种历史类型的世界观中乐观地改变对神话，宗教和科学中死亡和人类不朽的悲观观念的倾向。特别注意将老年学，幼年学，昆虫学，超人主义和非人类主义所构成的任务进行比较，以解决所考虑问题的现代解决方案。同时，还考虑了最重要的哲学基础，社会因素，科学技术背景，道德和人文等方面的非传统制定和解决这一问题。

关键词：衰老，死亡，面对衰老和死亡的人的自由缺乏，不衰老，人类生活的根本延伸，实际的人类永生问题，人体冷冻法，人的真正复活，生物黑客，老年学，少年学，昆虫学，超人类主义，不朽，人类在老年与青年之间选择自由的问题，生命，死亡和不朽。

Annotation. *This article considers the tendency revealed by the author to change pessimistic ideas about death and human immortality in mythology, religion and science by optimistic in all three historical types of world outlook. Particular attention is paid to the comparison of the tasks posed by gerontology, juvenology, immortology, transhumanism and immotohumanism for the modern solution of the problem under consideration. At the same time, the most significant philosophical foundations, social factors, scientific and technical background, moral and humanistic and other aspects of non-traditional formulation and solution of this problem were also considered.*

Keywords*: aging, death, lack of freedom of a person in the face of aging and death, non-aging, radical extension of human life, the problem of practical human immortality, cryonics, the real resurrection of a person, biohacking, gerontology, juvenology, immortology, transhumanism, immortality, the problem of human freedom of choice between old age and youth, life, death and immortality.*

Life is undoubtedly self-worth. This is an objective fact expressing human nature. Indeed, it is no coincidence that we are talking about, for example, the strug-

gle for existence, survival, and not against both. But it is necessary to ponder and understand that if life is a blessing, and this, in any case, undoubtedly, it should not be finite, it should be made infinite. It is not surprising and completely logical that people, when they had a self-consciousness, initially had a dream of unlimited, infinite, individual being - personal immortality.

It is significant that the ancients already realized the need to combine the properties of immortality with the preservation of youth. A vivid evidence of this can be the ancient Greek myth of the goddess Utreni Zari Eos, sister of the god Helios, which precedes its appearance on the horizon. The goddess fell in love with the earthly husband of Teton, to whom Zeus, at her request, granted immortality. However, both deities "did not realize" to grant him eternal youth. Therefore, after a short time, the man turned into an increasingly decrepit, but never dying, old man, while Eos herself did not lose her former qualities, remained beautiful and flourishing. Naturally, her love came to an end, she began to be embarrassed by him, hiding behind a curtain. Once, Zeus, having heard the sad sounds coming from her, and having understood their reason, instead of correcting the mistake, turned Teton into a cricket [1, p. 13]. So, to understand its appearance, no evolutionary theory was needed.

Therefore, since ancient times, people have realized that immortality, taken by itself, is far from enough, and can bring even misfortune. Thus, in order for a person's happiness to become consistent, genuine and complete, he must be not only immortal, but also forever young, have good health, social freedom and a number of other valuable qualities of life.

But until very recently, science did not know any real ways and means to fulfill the cherished dream of eliminating aging and death from being of people, in other words, achieving their eternal youth and real personal immortality. Therefore, as happens in such cases, its implementation was associated with religious beliefs, and the scientific view on solving this problem remained negative and pessimistic for a long time; (appreciative and judgmental). So far "not everything passes."

However, it is fundamentally important to clarify the truth of the following provisions. On the one hand, those are right who say that death triumphs over the life that it stops, but, on the other, death is powerless over an already accomplished life [2, p. 435 et al.]. Indeed, death cut short the lives of Thales, Heraclitus, Pythagoras, Democritus, Socrates, Plato, Aristotle, Epicurus and many other ancient philosophers more than 2000 years ago, but they remained forever in human culture as a historical fact, as long as earthly civilization exists, and with this death can do nothing about it.

It is no coincidence, therefore, that when the actual prerequisites for eliminating aging and death began to appear, mortal materialism began to transform itself into immortal materialism, the death paradigm into an immortal paradigm, mortal

humanism into an immortal, or immorthomanism (K.E. Tsiolkovsky, biocosmists, or immortal humanism (K.E. Gorky and others), the pessimistic world view is in a scientific-optimistic, mortal culture - an immortal culture. But, unfortunately, this process is extremely slow.

So, K.E. Tsiolkovsky, one of the main founders of Russian cosmism, a staunch supporter of the scientific, technical and social development of human society, devoted much time and energy to working on the problem of immortality in order to betray an optimistic character and greater attractiveness to the materialist worldview. Tsiolkovsky stated: “There is no end of life, no end for the reason and perfection of humanity. Its progress is eternal. And if this is so, it is impossible to doubt in attaining immortality” [3, p. 139]. Moreover, being not only a materialist, but also a panpsychist, who claimed that he felt an individual atom, he came to the very general conclusion that there is no subjective death at all [4, p. 129]. However, it is rather, it seems, is already beyond fiction and reality. However, everyone has the right to express his opinion on this or that problem, moreover, such a bold and original thinker like K.E. Tsiolkovsky.

In the late 10s - early 20s of the 20th century, such consistent representatives of Russian cosmism and the scientific solution to the problem of real personal immortality, like anarchists-biocosmists, boldly and vividly declared themselves in the national history of culture. Unfortunately, their already small number, since the rest of the anarchists did not support them, soon divided into two groups - Moscow and North, which, of course, seriously undermined the popularity and influence of biocosmism. Nevertheless, his ideas became a noticeable historical event.

They led the anarchist biocosmist movement, and to a large extent were members, members of the artistic intelligentsia. So, the Northern, Petrograd, group was headed by the then famous poet Alexander Yaroslavsky. She adopted a special declaration, published in the journal Immortality. It was supposed to be its press organ, but it came out only once, though in at least two editions. The Declaration of the Northern group of bio-cosmists, declaring itself “an autonomous, self-contained center”, declaring a “forced break” with the Moscow organization, “so far headed by A. Agienko (Svyatogor)”, emphasized that it “leaves unalterable the main slogans of Biocosmism: Immortalism and Interplanetary and imposes an honorable work to fight for the final triumph of these ideals” [5, p. one]. It should be noted that at that time the notion of "immortalism" denoted the doctrine of personal immortality, both religious and scientific, which created a certain ambiguity.

Despite the split, the Moscow Group also shared these beliefs. Indeed, Alexander Agienko (Svyatogor), then a well-known poet, then headed the Moscow Group, in an article entitled “The Doctrine of the Fathers” and anarchism-biocosmism, stated: “The highest good is the immortal life in space. The highest evil is death” [6, p. 15]. And further: “Personal immortality is not given, it must be con-

quered, realized, created. This is not the restoration of the lost, as the Bible says, but the creation of a still unforced one. Not recovery, but creativity. The same applies to the conquest of space. " His thought also deserves attention: “Immortalism and interplanetaryism are the maximum, but not the final goal. These are stages and means to immensely great creativity. But this goal is ahead - and therefore it is the greatest. Our goal (realization of personal immortality, life in space, resurrection) excludes mysticism, which throws into chaos, into emptiness. This is the task of soberly realistic consciousness” [6, p. sixteen].

The immortal biocosmists set the following two-fold task: to eliminate the temporary localism of human life, having achieved personal immortality, which was what they meant by immortalism; to overcome its spatial localism by going beyond the Earth, by establishing interplanetary communications (interplanetary). Confidence in the attainability of the goals was based primarily on such natural science discoveries and technical and technological successes of his time, as tissue revival in the experiments of Professor N. Kravkov and other scientists, ideas and inventions, including the project of an interplanetary spacecraft, a “major scientific academician Tsiolkovsky” [5, p. 2-3]. No matter how bitter and sad it is, in the most acute political twists and turns of the 20s of the 20th century, Russian history, along with the defeat of historical anarchism, virtually ceased its legal existence and anarchism-biocosmism with its most valuable ideas and aspirations, despite the loyal attitude to the new government and its goals. However, his main ideas live today.

It is wrong to consider the meeting notion that only biocosmists spoke about the desirability of personal immortality and the need to enter outer space. This was discussed, in particular, by other representatives of the artistic intelligentsia, for example V.V. Mayakovsky et al. [7, p. 6–13 et al.]. However, at that time, AM Gorky, an outstanding Russian and Soviet writer, a profound thinker and an active public figure, played a special role in this field of thought and affairs. He was devoted to such ideas throughout his entire creative life. In his famous lecture “On Knowledge”, which he read at the Workers 'and Peasants' University on March 30, 1920, Gorky emphasized that “the human mind declares war on death as a phenomenon of nature. Death itself ”[8, p. 107]. And then he made a demonstrative confession of a personal nature. “My inner conviction is such,” he shared his experiences, “that sooner or later, maybe in two hundred years, and maybe in a thousand, but a person will achieve real immortality” [8, p. 107-108].

However, Gorky developed this topic not only theoretically. They showed a fundamentally significant initiative, the consequence of which was the creation in 1932 of the All-Union Institute of Experimental Medicine. The purpose of this specialized institution was to develop a range of problems related to the comprehensive study of the life, work and wear of the human body. However, Gorky’s

death, just a few years later, the threat of an impending war, and soon the war itself, the political complications of the middle and late 30s in the country's history did not allow them to realize these goals in any noticeable way. Nevertheless, the historical fact of the existence of such an undertaking and event has not lost its significance in our time.

The next wave of lively interest in solving the problem of a radical increase in the species life expectancy of people with the ultimate goal of achieving real immortality of each individual already belongs to the post-war time. In this regard, it is impossible not to note the activities of such scientists as the President of the Belarusian Academy of Sciences V.F. Kuprevich, vice-president of the International Association for the artificial increase in the species life expectancy of people L.V. Komarov, doctor of biological and medical sciences GD Berdyshev and others. Thus, Kuprevich thought: “Having found out the causes of aging, its mechanisms, we will certainly learn how to deal with it, like any other disease. Aging will be conquered by humans just as they defeated smallpox, the plague, and many other diseases. And then it will be possible to extend the life of this or that person not only up to 200 years, but also much longer ... Having won old age, we will thereby win and death! ”[9, p. 32]. And then he makes the following conclusion: “So, we came to the idea: there are no prohibitions in nature against human immortality” [9, p. 32].

But a qualitative breakthrough in this direction has occurred mainly in the last 2-3 decades. The most significant discovery in this field of research can be considered the cloning of mammals (which already have many examples), and hence, man. However, in this case, the existing ideological prohibitions, first of all, religious, give rise to legislative acts that, at best, allow the embryo to develop within two weeks, but at the same time, they require to destroy it after this period. Such an action is considered to be quite ethical, but by no means a continuation of the experiment, qualified as an immoral and insane act that challenges the “Creator” [10]. Meanwhile, cloning allows not only to get the "parts" of the body, "relatives in the flesh", which exclude biological incompatibility, but also to restore a life temporarily lost by a person, in other words, to live a second life from the same cell, from which was already born. For the first time, it depended on an accidental connection in the zygote of the feminine and masculine (one of the manifestations of the opposite of yin and yang), in the second - in it they were already initially connected, which determined their identity.

Among the most important discoveries in this area are also the deciphering of the human genome, methods of regenerative biology and medicine, in particular the use of stem and induced pluripotent cells, gene therapy, biohacking (improvements in body and mind through changes in the genetic mechanism of life activity). Various successes of proteonics, cryonics, nanotechnology, synbiology, and

“computer immortality” are also increasingly being used (when information is removed from a living organism, transferred to other material carriers, and then returned to the cloned creature). Most recently, a head of human transplantation has become one of the topical issues emerging on the agenda, opening up previously unknown additional perspectives in achieving real personal immortality. And we must give a clear report that today's achievements of science in this area are by no means its last word. As a result, a person moves from the lack of freedom in the face of aging and death to the freedom of choice between them, on the one hand, non-aging, preservation of youth and practical immortality, on the other.

This set of problems is most fully and consistently considered by the concept of achieving practical immortality of a person and his real resurrection, or immortology (Latin im. Without; mors, mortis - death) - the science of immortality, and of that person. Regarding the understanding of immortality, there seems to be a kind of serious misunderstanding. Usually, the concept of "immortality" is perceived and understood as a state that fundamentally excludes death, for example, faith in the immortality of the soul, i.e. in its absolute meaning. But such immortality, from the scientific point of view, as it is known, is impossible. Hence, it is often concluded that it is impossible to immortality in general. However, strictly speaking, there are ample reasons to recognize the existence of immortality in the sense of practical immortality, as relative immortality, having a clear ideological meaning and sound, which no other concept gives.

The term “practical immortality of a person” means a fundamentally achievable ability to live while remaining young (more precisely, maintaining the optimal parameters of physical and spiritual life), indefinitely without any specific boundaries, so long as it becomes possible to state that a person has become almost immortal. Such immortality is classified as relative, since it does not in principle exclude the possibility of death from an optional reason. In this case, it will be necessary to restore the temporarily lost life of a person, in other words, to really resurrect it and regain the ability to live for an infinitely long time.

In other words, the task is to ensure that a person does not grow old or die. This ability, apparently, is possessed by some animal species, for example, naked excavators, which today attract the close attention of researchers. However, they, naturally, cannot realize and restore their accidentally lost life. This opportunity has only a person with intelligence. Homo sapiens can and should become Homo immortalis [11, p. 62-67].

Immortology considers not only the historical trend of changing pessimistic ideas about death and immortality of a person in all types of worldview (both mythological, religious, and philosophical, first of all scientific) with optimistic ideas in world religions, modern philosophy and science, including high technologies. Along with this, she pays special attention to clarifying the philosophical

foundations of non-traditional formulation and solving the problem of achieving real personal immortality; objective (above all social) factors causing a new approach to it, its natural-science and technical-technological prerequisites, moral-humanistic, value, legal, cultural, and other aspects of modern views on this problem.

1. Traditional philosophical and materialistic views on the problem of death and immortality of man, have no alternative existed until the beginning of the XX century, however, they are very widely used in our time. A very categorical and vividly expressed the pessimistic position of materialism in the past, L. Büchner, a doctor and materialist philosopher of the nineteenth century. “Not thinking, but only stubbornness,” he wrote, “is not science, but only faith can support the idea of personal immortality” [12, p. 46]. And then he justified his point of view in the following way: “Everything living is born and dies, and not a single living being constituted an exception to this rule; Death is the surest thing to be counted on, and the inevitable draw or end of any individual being: her hand will not be held by the mother’s prayers, the tears of her wife, or her husband’s despair; she pulls a blooming child out of the embraces of a horrified mother, she takes away parents from young children; it collects terrible harvest and continuously piles up the whole hecatom of the destroyed life, bringing grief, care and suffering to the survivors ”[12, p. 57]. This bitter, but quite real picture, really, does not plunge into despair only people who are persistent and strong in spirit and do not need religious consolations and faith in the other world. On the contrary, in the end, this kind of paintings motivate them to find ways and means of a scientific and optimistic solution to the problem of death and immortality.

Therefore, naturally, as soon as the first hints and prerequisites in the field of natural science, technology and high technologies began to appear on the possibility of such a solution, materialists, beginning with K.E. Tsiolkovsky, began to develop new views and approaches to the realization of this opportunity. No matter how strange it may seem at first glance, the ideological and methodological ideas expressed in the context of Marxist philosophy played a particularly important role in this regard, although its founders themselves, strictly speaking, belonged to the materialistic tradition, with the possible exception of from G.V.F. Hegel's teachings on the dialectic of life and death. However, if you think about it, it, in fact, only more deeply substantiates the view about the inevitability of death and the impossibility of attaining individual immortality. This circumstance had a very negative impact on the beliefs of subsequent generations of Marxists in their attitude to the scientific and optimistic solution of this problem.

The fact is that, on the one hand, in the times of K. Marx and F. Engels, no discoveries were made in natural science that would directly indicate the fundamental feasibility of this possibility. Therefore, apparently, they did not dare,

arguing purely theoretically, to make far-reaching conclusions regarding the attainability of real personal immortality, and they avoided building fantasies without any reason to fantasize. But, on the other hand, at the same time, possessing a scientifically-optimistic worldview regarding the understanding of the general perspectives of human history, skillfully mastering the dialectical-materialistic methodology, the founders of the Marxist theory were able to express a number of valuable points that, being unconventionally read in the modern development of philosophy and science, formed the basis of immortology.

Among them is the dialectical understanding of the contradictory nature of life (the interdependence of assimilation and dissimilation, nutrition and excretion, when the body retains its dialectical identity). As long as this contradiction works, life goes on, when it stops, death occurs. Hence, it is quite legitimate today to set and solve the problem - to support the action of this contradiction, so that it does not stop, and this means that life continues and death does not occur.

Another such position was the idea of the historical character of the "eternal" laws of nature. The old, metaphysical, materialism to which the dialectic was alien, considered these laws immutable and immutable. Consequently, from his point of view, aging and death caused by such laws are predetermined and intractable. But according to materialistic dialectics, the operation of objective laws depends on changing conditions, which, strictly speaking, is their historicity. For example, at normal atmospheric pressure, i.e. in one atmosphere, water boils at 100 ° C, but if the pressure changes, then the boiling point will change. In the same way, by changing the conditions of the laws that condemn people today to aging and death, it will be possible to slow down their action and even completely eliminate it so that the laws governing the preservation of youth become effective, which means an unlimited life.

Of particular value in this connection is the Marxist doctrine of the dialectic of freedom and necessity. In contrast to the views of voluntarists and fatalists, F. Engels emphasized: “Freedom lies not in imaginary independence from the laws of nature, but in the knowledge of these laws and the ability to systematically force the laws of nature based on this knowledge to act for specific purposes” [13, p. 116]. And then they were given a no less valuable, ideologically and methodologically significant statement: “This applies both to the laws of external nature and to the laws governing the physical and spiritual being of man himself” [13, p. 116]. Therefore, knowledge is carried out not for the sake of knowledge itself, but in order to acquire reliable knowledge that could help to solve a specific task, achieve certain goals that people set. In this case, it is just that the action of the laws governing the aging and death of people must be changed in such a way as to change the process of their vital activity in order to eliminate its involutionary vector and the tragic end of life from being of people.

Directly related to the issue of the attainability of personal immortality has a modern view of man as a fundamentally open system. It is capable of drawing virtually virtually infinitely from the surrounding reality substance, energy and information. Today it is in principle possible to make this flow through the human body continuous and unstoppable. In this regard, it is necessary to correct the evolutionarily established mechanism of aging. This task is extremely complex and difficult, since it is complex, interdisciplinary. Nevertheless, undoubted successes have been achieved in this area, which give rise to confidence in its final solution [14; 15].

One of the main arguments of opponents of immortality is often the indication that the "perpetual motion" is impossible, in other words, since there can be no perpetuum mobile, it means that immortality is also impossible. However, in reality, things are not so obvious and simple. K.E. Tsiolkovsky wrote a special work on this topic - “Is a perpetual motion machine possible?” [16]. Strange as it may seem at first glance, unlike the prevailing point of view, he considers three types of engines. One of them is considered impossible by him, the other, while it is impossible, and the third, in his conviction, really exists, for example, a barometer. It would seem, obviously, this device will sooner or later cease to perform its function of measuring atmospheric pressure.

But just in connection with this, Tsiolkovsky expresses a brilliant idea of ideological and methodological significance, which is usually not taken into account. Clearly, he could not deny that "all our motors, left to themselves, sooner or later deteriorate and stop working." And then they were told the most important and important: “Only with the participation and observation of a person can they be eternal” [16, p. 1-2], and hence the perpetual motion in this sense. What has been said directly applies to man. A person left on his own will naturally grow old and die, but if this process is supervised by specialists, scientists and appropriate adjustments are made, then the person will be able to radically prolong his life and eventually become personally immortal.

There are other philosophical foundations of non-traditional formulation and solution of the problem of achieving real personal immortality, for example, the dialectic of necessity and chance, which can transform into each other, etc.

2. In the modern formulation and in the scientific and optimistic solution of the problem of death and immortality of a person, the increasing attention of researchers attracts the importance of social factors, which play an increasingly important role. They reveal, above all, the objective conditionality of a non-traditional approach to this topic. For example, it is far from always clearly realized that there is a social order that exists in practice for the need to solve this problem. Meanwhile, the range of problems in this area is expanding and becoming more complex, which makes it all the more urgent to understand, comprehend and eliminate them.

In this area, a favorable circumstance has appeared, on which we must somewhat linger.

The fact is that until recently, the average life expectancy of Russians, especially men, was relatively low, and therefore it was somehow inconvenient to attract attention to them, to build some non-guaranteed projects. But in recent years, the situation has changed for the better. So, in 2015 in Russia, the absolute record of the life expectancy was broken in the entire history of the country, including its Soviet period. In 2017, according to the report of the Ministry of Health of the Russian Federation, this figure was 72.7 years. He became quite comparable even with the highest. According to the average variant of the forecasts, this indicator should reach 75.48 in 2025, and the highest - 77.25. In 2030, respectively, 77.22 and 79.76.

President of the Russian Federation V.V. Putin in last year's Address to the Federal Assembly on March 1, 2018 set the following task: “By the end of the next decade, Russia must confidently join the club of the 80 plus countries, where life expectancy exceeds 80 years. This includes such countries as Japan, France, Germany ”[17].

Since the generalized tasks in this area were already set earlier, in the Message of the FS of 2019, attention was given to this topic in terms of its history, however, some of the tasks were corrected, clarified. The Russian president recalled: “Russia has entered a very difficult demographic period now. Fertility, as you know, is declining. I have already said that the reasons here are purely objective. They are associated with the enormous human losses and failures that our country suffered in the 20th century, during the Great Patriotic War and in the dramatic years after the collapse of the USSR. But this does not mean that we should accept such a situation, accept the fact. Of course not. ”[18] And then it was stated: “We were able to reverse the negative demographic trends in the early 2000s, and then the country was in a very difficult situation, then it seemed that this could not be done at all. But we did it, and I am convinced that we are able to do it again: at the turn of 2023-2024, to achieve a resumption of natural population growth ”[18].

It can be assumed that if there are no unexpected complications both inside the country and in the international arena, the tasks set will be solved, and Russia will take a significant step in its development. It can also be noted with satisfaction that the average life expectancy indicator is today more and more deeply recognized as an integral criterion of progress [19, p. 186–199].

The demand for a social order to solve a modern demographic problem in the country is primarily caused by a significant aging of the population. The previously unknown phenomenon gives rise to a whole complex of the most complicated problems of an economic, political, moral, psychological, medical, and the like.

Of course, there are all sorts of palliative solutions to them, but they cannot eliminate these problems, from time to time exacerbating, sometimes to the extreme, certain of them. At first, only a radical extension of human life and, ultimately, the achievement of real personal immortality can alleviate the severity of such problems, and later completely eliminate them. In other words, there should be such a society in which there will be no people of old and old age, for they will be able to remain young, while maintaining the optimal parameters of their physical and spiritual life.

Close in meaning is adjacent to the previous one and the factor of shortening the working period of a person's life. Previously, as a rule, people rather early in the production activities. Today, as is well known, for the formation of a specialist who meets the requirements of our time, it is necessary to spend about 25-30 years, while Acme (about 40 years, the time of higher personal development) remains almost the same. After it begins the period of involution - a downward vector of life, which is characterized by an increase in aging, decrepitude and, as a result, its tragic finale. A person begins to care more about maintaining health, rather than about increasing his productivity.

Consequently, the main workload, designed to prepare a new generation for life, to ensure a decent old age and ourselves, falls on a shorter average period of human life. This load is constantly increasing, and therefore heart attacks, strokes, vascular and other diseases are inevitably "getting younger". Therefore, the task now boils down, first of all, to pushing the acme point away into the indefinite, and, ultimately, so that it ceases to exist at all. This task, again, truly, is fundamentally capable of solving only the achievement of real personal immortality.

It will also counteract the negative consequences of modern demographic trends, which now threaten not overpopulation, but, on the contrary, underpopulation of our planet, individual countries, including Russia. This is fraught with a reduction in the intellectual potential of mankind and many other negative consequences. But they may not be, however, like many others, if the problem of infinite duration of human life is solved.

3. The presence of philosophical foundations and the effect of social factors on the new formulation of the solution of the problem under consideration are supported by the natural science and technical-technological prerequisites of such an approach. These, as previously noted, include human cloning, transplantation of his head and much more. In the extension of human life it is necessary to note three main stages: gerontological (gerontology - the science of aging and old age), juvenile (juvenology - the science of ways of preserving and returning youth) and immortological (as already mentioned, immortology - the science of immortality, precisely immortality) when the problem of achieving real personal immortality is solved.

The ideas of immortology are becoming increasingly global in nature. So, recently it was reported that cryonics is beginning to develop in China, where the first patient is taken for cryopreservation. In the same place, as it turned out, animal head transplantation is widely practiced. For example, Zhen Xiaoping, a neurosurgeon, a professor at Harbin Medical University, has already transplanted heads of thousands of mice. Italian professor Sergio Kanavero is currently working with him, who put forward a project to transplant a human head. They, together with their colleagues, transplanted the monkey's head and, for practice, the head of a dead man. Now, apparently, the first contender for the transplant of the head of a living person will not be Valery Spiridonov, as originally planned, but the representative of China. It seems that China in these new areas will achieve more rapid and significant success. No wonder today they say that China is becoming a Mecca for scientists.

The globalization of this problem lies in the fact that interest in it is manifested in many other countries.

4. Despite all sorts of doubts, natural difficulties and difficulties, the desire to solve this problem is, of course, moral and humane. In other words, the topic under consideration, the ways and means of a real solution to the problem of immortality, undoubtedly, have a powerful humanistic potential. Therefore, it is quite natural that immorthohumanism, the immortal humanism, is now being formed [20, p. 56–64].

"On duty" objections against personal immortality, such as the "boredom of immortality", that if it is achieved, all matters will be postponed and regress will begin; they say that asocial elements (dictators, criminals, etc.) will also become immortal, because cognition and history have a constant novelty and cannot be bored in principle; it is personal immortality that opens up the real possibility of the all-round development of the personality and its activities on earth and in space. Of fundamental importance is also the fact that it is essentially about practical immortality, which means that the same criminals can be punished with the highest measure — death, irreplaceable destruction, or life imprisonment, and then it can become really "boring" . However, in the era of immortality, such excesses and situations are unlikely to arise.

There are many other arguments for immortality. These include today's popular transhumanism. However, a lot of prejudice arose to him, since he is oriented that they are constantly stressed not so much on achieving immortality for a real person, but on immortality and solving other problems for the "postman" and even the "non-person". Therefore, compared with him, immorthohumanism seems to be preferable [21, p. 46–58].

One gets the firm conviction that our time can rightly be considered a time of optimism, because for the first time in human history, the victory over aging and death becomes quite real.

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对ELITE概念的联想 – 认知分析（关于俄语的材料）

ASSOCIATIVE-COGNITIVE ANALYSIS OF THE CONCEPT "ELITE" (BASED ON THE MATERIAL OF RUSSIAN LANGUAGE)

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注解。 ELITE概念通过诸如词汇（一个词），系统，文本等语言共性来研究。本文重点介绍概念转换。 自由联想实验的结果和俄语国家语料库的材料使得有可能描述概念的核和侧面内容，研究在现代大众媒体中运作的概念的特定特征以及描述ELITA概念的认知属性。 联想实验的结果使得概念的语义场更加完整，从而使其交际价值脱离。

关键词：ELITE概念，自由联想实验，概念的认知属性，ELITE概念的语义场。

Annotation*. The ELITE concept is studied through such linguistic universals as a lexeme (a word), a system, a text. The article focuses on the concept transformations. The results of free associative experiment and the materials of National Corpus of Russian language make it possible to describe nuclear and side content of the concept, to study specific features of concept operating in modern mass media as well as to describe cognitive attributes of ELITA concept. The results of the associative experiment allow to make semantic field of the concept more complete, to detalize its communicative value.*

Key words: *ELITE concept, free associative experiment, cognitive attributes of the concept, semantic field of ELITE concept.*

Researches about the connection between language sign and cognitive consciousness are becoming popular. A meaning of the word contains relatively small

amount of semantic properties (semes) which are considered to be familiar for a certain society. They are connected to operation of the phonetic level (of the lexeme). On the on hand the semantics of the word provides a guarantee that the communicants understand each other, on the other hand the use of the language unit, its cognitive attributes often are wider than its language meaning. That is why there is a unit of more complecated language level - a concept. It is the concept what fully contains mental specific characteristics which, of course, show language and/or cultural consciousness at the stage of language development. A concept's function is to control realizing of the world, therefore the content of a concept can change. Associative and cognitive analysis of ELITA concept, detecting of cognitive features of the concept are interesting because the results of the conducted experiment let us state the semantic value of the concept as well as the specific details of its transformation. The research tells about the analysis of materials of several dictionaries, of the free associative experiment as well as of the cases of usage of ELITE lexeme in modern journalism texts. (Corpus linguistics data, ore than 1000 examples).

The word "elite" is of foreign origin. It came from French word "elite". *Elite includes the most prominent people of a part of society or a group. Elite (adj.) - representing the elite, the best one, the selected one; it makes smth elite* [1]. The "Explanatory dictionary of the Russian language *states that "elite"* is *the elected society, the best part of the society.* [4]

Thus, nuclear meaning of the lexeme "elite" is the semantic component "the best, the selected one". Let us assume that this component is nuclear for the concept. "Russian associative dictionary" shows the following associations-reactions on the word "elite"*: a cultured, intellectual person, cultured and intellectual layer of the society, to select, government, to accept, saloon, creak* [1]. As we can see, first of all, the Russians associate the word *"elite"* with the word-set *"cultured and intellectual layer of the society"* . The language tradition makes the connection between this social layer and *white-collars who mainly work with complex art stuff, development and expansion of culture (scientists, artists, lawyers and teachers, engineers, doctors, journalists. Russian society traditionally considers white-collars to be containers of the highest moral states and ideals.* [1].

Hence, cultured part of the society is considered to be that part of society which has the highest moral ideals, that means that it is the best part of the society. Just like elite. This means that it is necessary to consider "elite" concept in connection to the "cultured society" concept. But does Russian native speaker of the XXI century associate elite with cultured society? Cultured society(intelegenzia) - *Russian, lousy, Soviet, good manners, noblemen, culture, young, old, clever, aristocracy, bourgeois, generous, rotten* and other according to associative dictionary [2]. As we can see, the dictionary shows the reaction of 2 types on this concept.

On the one hand, the connotations are positive *culture, clever, good manners, aristocracy*. On the other hand - thire is a set of pejoratives - *rotten, lousy* [Same] It seems that the reason of such contradict attitudes should be looked for in the history of Russian cultured society, which at the beginning had the specific feature characteristic of ethic imperative and it appeared not to be equal in hopes which had been put on it. That is why disappointed society started to associate this part with the words like "rotten" and "lousy".

Associative dictionary does not contain the same reactions on the "elite" lexeme, but this notion is being rethought actively nowadays and new senses come into it. Thus, "Explanatory dictionary of the modern Russian language" which contains language changes of the end of the XX century states that lexical meaning of the word *"elite"* becomes wider and changes significantly: elite is described as *privileged top of the society or its part, a group of people.* It seems that the notion "*privileged*" takes the first place. The meaning of the word is illustrated by following examples from mass media texts: "*Politic and economic elite strengthening its control over the power levers is forming rapidly in Russia. This elite is constantly expanding. it includes new groups of population, mass media and administration." "Finally the Kremlin has claimed the cultured and intelligent part of the society to cooperate, - they assumed. "Or flatters it, - objected the others"* [4].

The vivid example of the concept's transformation is the examples of journalist discours. Thus, in a number of TV programs, when discussing the meaning of the word ELITE, its composition and historical purpose, opposite points of view were voiced. Nikita Michalkov and prominent Russian businessmen sounded the following definition: "*Elite - is the people who influence the way of making desicions; elite - is the group which separated from the whole society at the end of 80s as the result of revolutionary changes; elite - is the rich; people inclined to live luxuriously (this is obviously the elite) are environmently harmful. There are many examples: They use not one, but many cars, cut the trees to expand their farms atc* [National Corpus of Russian language]

The tasks of the elite are defined by the participants of the discussion as follows: *to transfer the material benefits that she regained or inherited; to remove responsibility for what is happening in Russia.*

The ambivalence of the concept lies in the fact that there is an opposite interpretation of the meaning of the core, sounded in the air*: "elite is those people who can do their job better than others, the best people, they are active, they do a lot for their Motherland to be wealthy, they connect their projects to Russia.*

The examples from the modern mass media prove that the ELITE concept structure in modern Russian society is changing: firstly, the borders of the concept become wider (elite includes new groups of population), secondly, the concept itself transforms: elite becomes very close to power, it is associated with it, elite is, firs of all, the top of the power, management apparatus.

Let us see the way the ELITE concept transforms: First of all, it is necessary to formulate the nuclear center of the concept: elite is spiritual, moral and intellectual leader of the society, nation: elite is self-efficient and independent, it has high responsibility, competent level, it is honor on the one hand, and on the other hand it lose the qualities which used to make it to be considered as te best, there is the death of elite, it is sounded in mass media openly "*Elite* ***has lost the qualities of nation leader****;* "*Excessive attention to upcoming president polls shows* ***damaged character*** *of the new Russian elite appeared because of the oligarchy of Yeltsin period. Its peculiarity is that* ***from the intellectual and independent it has*** *degenerated into a predominantly official and serving";* " *Ideologically dead-end Soviet system nevertheless made very high demands on its elite. Today, these requirements, especially for competence and honesty,* ***are very blurred****. The main principles of the current elite are: personal loyalty, mutual responsibility and irrepressible greed"* [national corpus of the Russian language].

The present elite is described as damaged, incomplete therefore dependent. From who? From power, of course. It's its toy, a puppet, a pawn in the game: "The relationship between power and elite, unfortunately, are not so different from Pavel I times who used to say that "The only that person is elected by the destiny, whom I look at". Elite demonstrates loyalty to the government: *"The elite lives, waiting* ***for*** *the next destiny-making press-conference of a leader. It is literally groans for a new melody which would make it (depending on a tone) dance Russian national dance, Slavic gopak or Europeen polonaise".* [3] Thus we can make a conclusion that ELITE concept structure is going to change semantically into negative connotation of its content: *dependent, greedy, bureaucratic, serving, voiceless, damaged.*

Do these sense components include into the nuclear structure of the concept or they stay to the side? Analysis of information from National Corpus of Russian Language shows that Russian language consciousness still has the state similar to the word-set *"the best men of Russia", "the best examples of the society"* , that allows us say that the core of the concept is still the same: elite is still the best, selected part of the society. At the same time, it is realized that the modern Russian elite is not always such, so in a number of examples the definitions are "quoted" by the author. In the course of the study, we tried to find examples where the opinion of the elite as the best part of society would have sounded with all the evidence. In the language consciousness of the Russians the impression that the best part of society is the poorest in material terms, but rich in the spiritual sense of it.

During the study, a free associative experiment was led. It included a network associative experiment (more than three hundred participants of the age from 15 to 62 years). The word-stimulus was a lexeme ELITE. Associates analysis allows to state both the associative concept image and its cognitive attributes.

ELITE – best 30; the highest status 26; society 25; power 23; wealth 20; money 15; prestige 10; the cream of the crop 10; favorites 10; luxury 9; intelligence 8; education 6; top 6; arrogance 5; Golden youth 5; high society 5; to know 5; best quality 3; top-ideology 3; President 3; business 2; king 2; privilege 2; nobility 2; up 1; glory 1; limited range 1; gloss 1; clothing 1; superiority 1; closeness 1; unavailability 1; best 1; master 1; master 1; salt 1; nobility 1; wealth 1; clubs 1; expensive 1 districts; private schools 1; gourmet 1; five-star hotels 1; solo exhibitions 1; sportscar 1; exclusivity 1; top grade 1; Sobchak 1; Putin 1; Lomonosov 1; Shostakovich 1; Mendeleev 1; Tolstoy 1; heads of major centres 1; Bankova workers 1; deputies 1; officers 1; influence 1;leaders 1; the head of state 1; snobs 1; government 1; moral 1; top-level 1; elite products 1; expensive 1; authoritative 1; aristocrats 1; style 1; troops 1; special 1; taste 1; creative 1 .

The experiment showed that cognitive attributes of ELITE concept is follows:

1. moral and volitional qualities, abilities of the person: *high moral, best, intelligentsia, educated, arrogance, know, best quality, nobility, gloss, superiority, closeness, inaccessibility, exclusivity, snob, high moral, authoritative, aristocrat, special, creative;*

2. possession of material values (inanimate objects are indicated): *branded clothing, private clubs, money, expensive areas, private schools, fine dining, five-star hotels, personal exhibitions, sports cars, luxury products*);

3. abstract entity: *highest status, society, power, prestige, cream of society, luxury, high society, best quality, highest order, business, fame, best conditions, influence, highest level, expensive, style, taste; closeness;*

4. personification of the concept: *Putin, Lomonosov, Shostakovich, Mendeleev, Tolstoy, Sobchak.*

In the group of associates there is one answer – *the sense of the earth.* This word-set emphasize positive evaluative component of the concept On the one hand it is the reaction on the stimulus, this component has to take the side part in concept's structure, on the other hand it is based on personal experience, his individual point of view about the world around him that is why we have marked the explication of this meaning by other language units: *best quality, best, authoritative, highly moral.* We believe that the examples of the fourth cognitive group can also enter this field of the concept. The experiment does not confirm the data of the associative dictionary. So, there are no reactions like *lousy, selling* and similar, relevant to native speakers of the Russian language of the end of the XX century (the dictionary was published in 2002).

Thus, the nuclear components in the structure of the meaning of the concept of ELITE are the semantics reflecting collective knowledge (the best, the highest status). The influence of the scientific picture of the world clearly affects, because in the lexicographic tradition in the first place are the values that implement spe-

cial knowledge (the best varieties). Education*, cultured society*, connected to elite are also nuclear. The fifth place and futher - *wealth, money, power and luxury* It is interesting that the reaction *cultured and intelligent society (9)* is weaker that the reaction *art* (1). There are much more associations with positive connotation. Generally speaking it is possible to say that the ELITE concept is vast and complex heterogeneous lexical and semantic paradigm which includes mutually dependent micro fields which verbalize different aspects of the studied concept.

The lexeme *the best* realises double semantic of the concept as it represents its positive and negative connotations. Significant cognitive features of the ELITE concept are the following: personality, its moral and volitional qualities, as well as the names of their own individual historical personalities, which, according to some recipients, are the carriers of these qualities; material values, as well as a set of abstract entities, emphasizing the ambivalence of the concept on the basis of "ordinary – exceptional".

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俄罗斯的想象主义在中国接受了XX – XXI世纪的风口浪尖。
RUSSIAN IMAGINISM IN THE CHINESE RECEPTION OF THE XX - XXI CENTURIES

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注解。 文章讨论了俄罗斯在中国接受俄罗斯形象的经历。 在二十世纪和二十一世纪之交，中国译者开始关注俄罗斯作家的宣言，理论着作和一般方向。 特别关注曾增一（北京，2012）所着的“俄罗斯未来主义与想象主义：学习经验”一书。 以S. Esenin撰写的“圣母玛利亚”一书的评论为例，证明了世界国家图片之间的差异，这是翻译艺术文本适应困难的主要原因。

翻译与原文关系的例子揭示了汉语中复杂意象意象的意义转换的等价程度。

关键词：想象主义，S. Yesenin的“玛丽之钥”，世界国家图景，翻译等值

Annotation. *The article discusses the experience of the reception of Russian imagism in China. At the turn of the twentieth and twenty-first centuries, Chinese translators began to pay attention to the declarations, theoretical works of Russian imagists and to the direction in general. Particular attention is paid to the book "Russian Futurism and Imaginism: The Experience of Learning" written by ZengSi I (Beijing, 2012). On the example of commented reading of the book « Keys of Mary» written by S. Esenin, the discrepancy between national pictures of the world is demonstrated, which is the main reason for the difficulties in translating the adaptation of artistic texts.*

The degree of equivalence in the transfer of meanings of the complicated imagistic imagery in Chinese is revealed by the example of the relationship of translation with the original text.

Key words: *imagism, “Keys of Mary” by S. Yesenin, national picture of the world, equivalence of translation*

It may be said that the concept of the literary movement in Chinese culture was not exist. The idea of the fact that there is another literature appeared in China only after the 1911 revolution. The one-hundred-year period is a very small period of time for comprehending Western, foreign creativity for a culture that has been closed for a long time and followed the medieval pattern for two and a half millennia.

When we wondered what has been known about Russian imagism in China, we discovered the following research papers:

GuYouPu. «Esenin's assessment in the USSR» || Foreign literature. 1981

Juan Tingkei. «Chuang Bing Cen Symbolism, imagism». - Beijing. Publ. China People's University. 1989. 751 s.

GuYouPu. Yesenin and Chinese classical poetry || Theoretical art and criticism. 1993.

GuYouPu. Selected poems of the Russian Silver Age. - Guangzhou. Publ. Flower City. 2000. 584 p.

WuZhe Lin. The keys of Mary. - Beijing. Publ. Eastern Publishing. 2000. 189 p.

WuZhe Lin. Yesenin’s attitude to Imaginism || Russian Literature & Arts. 2001, 04

Huang Mei. Rhythm and meaning: a theoretical study of Russian poetry of the 20th century. - Beijing. Publ. Beijing Publishing. 2005. 252 p.

ZengSi I. Futurism, imagism: the experience of studying. - Beijing. Publ. Solar newspaper. 2012. 308 p.

GuHongJzhe. Yesenin and Imaginism || Journal of Shaoyang University (Social Science Edi- tion). 2015, 14 (5). Pp. 25-30.

TiVay. Figurative art in the poetry of Esenin || Annual conference of the Tianjin Sociological Academy. 2015

As you can see, the peak of interest in imagism falls at the turn of the 20-21 centuries.

We will dwell on the book "Russian Futurism and Imagination: The Experience of Studying" (Beijing, 2012)

ZengSi I is a professor at Tianjin Pedagogical University, a member of the commission for the study of Russian literature in China, a member of the commission for the study and teaching of foreign literature in China, a former representative of the commission for foreign literature in the city of Tianjin. Among his research works, the following should be noted: “Study of modernist poetry in the Russian silver age”, “Study of Russian aesthetic literature in the 19th century”. ZengSi I translated “Crime and Punishment” by F.M. Dostoevsky. From his translations compiled compilations "Elected Russian Lyrical Poems", "Selected Prose of Turgenev". ZengSi I made a huge contribution to the spread of Russian culture in China.

From the names of the above materials, it becomes clear that the interest in imagery in China was limited only to the work of Sergei Yesenin. Until recently, Chinese researchers perceived Sergei Yesenin as an exclusively peasant poet. The idea of Russian imagistic aesthetics in China, one might say, was zero. The names of such imagists as A. Mariengof, A. Kusikov, and V. Shershenevich were practically unfamiliar to the Chinese reader.

The publication of the book ZengSi I became an important event in the expansion of ideas about the Russian silver age in China.

Let us pay the attention on the book, the first chapter of which is devoted to the futurism. It deals with poems by V. Mayakovski, V. Khlebnikov, I. Severyanin.

The second chapter of the book is devoted to the theory and practice of Russian imagism where the verses of V. Shershenevich, A. Mariengof, A. Kusikov are analyzed.

ZengSi relies on ZhangTay's translations ““ 2 x 2 = 5 ”,“ Do imagists exist ”by V. Shershenevich, the “ Keys of Mary ”,“ Life and Art ”by S. Yesenin. It should be noted that the "Keys of Mary", "Life and Art" and "Declaration of Imagist" exist in translations of WuZhe Lin. At the turn of the 20th and 21st centuries, Chinese translators began to pay attention to the declarations, theoretical works of Russian imagists and to the direction in general.

Why there was such a long way to Russian imagism in China? It is due to the fact that Imagist poetry is difficult for us to understand. Traditionally, in China, poetic imagery has a steady sign fixation; there are dictionaries of images that help to decipher the symbolic meaning of ancient Chinese literature.

We tried to correlate Chinese translations with original texts, clarifying the degree of equivalence in the transfer of meanings of complicated figurativeness. A special difficulty for the translator was represented by the “Keys of Mary”. First, Yesenin’s work has many references to biblical, ancient Russian texts, to works of foreign and ancient authors, many mythological allusions, which requires extensive comments and explanations for the Chinese reader.

Secondly, verbal expression is determined by the diversity of connections and relationships, which differ in different cultures. Chinese readers find it difficult to imagine some images of objects that are so familiar to Russian culture.

We noticed that in the Russian tradition the ornament is applied on white fabric. White color is ambivalent, but we noticed that for Russians it is a symbol of purity, light, white color is associated with solemnity and festivity. In ancient China and in modern China white colour is more associated with mourning. White color is used in funeral rites. This is the color of nothingness. In Russian huts, the traditional red corner is decorated with white towels with embroidery. The Chinese white color causes fear. In the theater masks white color is the color of a villain.

The ceiling in the hut - likening the firmament; **the joist** in the hut is a likeness of the Milky Way. In Chinese culture, too, there is the image of the “mother,” only this image in the home is the likening to a man. The Russian people perceive the "joist" in space categories, the Chinese people - in family categories. If the joist has broken, then the family has lost the breadwinner.

“*Understanding the patterns of our mythological epic, we find a number of indications that man is neither more nor less than the cup of cosmic separateness,” writes S. Yesenin in the “Keys of Mary”* [Yesenin, 1997, p.195] . In China for two and a half millennia, it was not the man that was important, but the race. There is no worse punishment for the Chinese than the death of the race.

For the Chinese ancient peoples, cosmos is a far star space, strictly organized, regulated. There was no concept of the “milky way” (Yesenin emphasizes the importance of the category of the way). In Chinese culture, there is the concept of "heavenly river", which also implies movement. But at the same time there is “an idea of the Great Limit and the Heavenly Spring, defining the concept of the universe and the cyclical nature of space-time coordinates” [Gorbunova, 2013, p. 6].

Another example is in the “Keys of Mary” we read: “The moon is a hare, the stars are hares traces” [Yesenin, 1997, p.195]. Due to the fact that we do not know the Russian mythological epic, it is difficult for us to imagine the connection between the Moon and the hare. In the Chinese mythological perception, the goddess Cang Ei lives on the moon, and her favorite animal is the jade hare, which tinkers the elixir of immortality in a mortar. On the one hand, the hare is a mystical animal; on the other hand, it is not the most positive image in Chinese perception. Comparison with the hare has a negative connotation.

To put **a sea horse on the roof** in Russian culture is an assimilation of a Russian hut beneath its chariot, - we find such an explanation in S. Yesenin's Mary's Keys. In the Chinese Palace, several different mythological animals are planted on the roofs (dragon, phoenix, tiger, sky horse, sea horse and other mythological animals - 狻猊 押 鱼 、 獬 豸 、 斗牛 、 行 什。)

Mythological animals on the roofs of the imperial palaces symbolize well-being, power, success, etc. Different mythological animals have their own symbols: if there are many animals planted on the roofs of palaces, then the emperor wants well-being, power, and victory over the enemy and other benefits.

Such a design of the roofs is permissible only for the imperial palaces. In Russian culture, horse is erected on the roof of the house of a pleb. A typical house of a Chinese pleb is the house with a flat roof, covered with reeds. You will not hoist a sea horse on such a roof, and the roof was used for pragmatic purposes.

The roosters on the shutters in the Russian culture mean the attitude of the peasant to the sun. Everyone knows that "the rooster rises with the sun; he is the eternal herald of its sunrise." Yesenin explained the meaning of the image of the

“rooster on the shutters” as follows: “ a man lives here, who fulfills the duty of living by the sun. As the sun rises early and with rays-tentacles, it puts warmth into the pores of the earth, so I, a plowman, rise with him to place down the grain of my labor into these warm pores. In this blessing of my life, I am fed up with this zeal and this shuttered rooster, who stands as a guard at my window and every mat, with a splash of wings and singing, meeting the sun’s face that rolls out from behind the mountain, wakes up its owner ”[Yesenin 1997, p. 191].

Such an image for Chinese readers is also not difficult for perception. In ancient China, hearing the song of a rooster, the people get up and begin to work.

Yesenin said that **the pigeons on the longitudinal beam of the porch** were a sign of *visitation* by meekness.

It is like an invitation to come in from a plowman: "meekness blows over my house, whoever you were, come in, I am glad to see you." Having cut this pigeon over the porch, the plowman warned him with the meaning of the heart of the incoming one. The pigeon is depicted with outstretched wings. Waving wings, he seems to want to fly into the soul of the one who set his foot on the level of the temple-hut, performing a liturgy for the world and man, and as if he wants to say: “to feel me, you will comprehend the mystery of this house” [Yesenin, 1997, .192]. The mystery of the house, as well as the mystery of the soul, for a representative of Chinese nationality is sealed. The pigeon in Russian Christian culture symbolized the spirit, the soul. Yesenin accentuates precisely this semantic component of the image. The Chinese concept of the soul is different. In that concept the soul has the last appearance until it is reborn.

In the Bible, the pigeon is a symbol of peace, and in ancient China the pigeon was a means of transmitting important and secret information especially during the war period. People through pigeon exchanged information with each other.

The red corner in the hut is likening to dawn. In Chinese perception the dawn is a symbol of hope in life. There are icons in a Russian hut in a red corner. There is no red corner in a Chinese house, but in most Chinese families a figurine of the goddess Kuan-yin is placed in the house, or a figurine of Ts'ai Shen the God of wealth.

To understand the ornamental theory of the image, you need to have an idea about the characteristics of Russian life, Russian ornament. Comprehending the features of the significance of the ornamental picture poetically presented by Yesenin in “The Keys of Mary”, we revealed common and divergences in the reflection of the world’s vision in the Chinese and Russian perceptions.

We understand that in the “Keys of Mary” Yesenin gave the original interpretation of the ornament as “a great significant epic to outcome of the world and the purpose of man” [Yesenin, 1997, p. 191]. Getting into the mysteries of the ornament of everyday life, Yesenin leads to the mysteries of the ornament in the life

of the word. In geometrically clear repetitions of the same signs, there is not only the understanding of beauty expressed by a primitive man, but also a magical spell effect on people and nature. This magical function of the ornament prompted Yesenin the essence of his aesthetic concept, in which the image obeys the ornamental logic and also has a magical spell effect [Kuzmischeva, 2011, p.27-28].

The book has a separate paragraph dedicated to the life and work of Sergei Yesenin. There are a lot of researches considering Yesenin's work, biography in China. This section presents 18 poems of Yesenin, such as: "The Cow", "I am the last poet of the village", "I am in the first snow delirium ...", etc.

The second chapter of the book presents the verses of V. Shershenevich "Rhythmic landscape", A. Mariengof "Every our day is a new chapter of the Bible", "Crowds, crowds, irrepressible", "March of revolution", A. Kusikov "Come from there" "So doing nothing, how much I did."

The poems by A. Kusikov are translated by Lee Hay "从 那边 来". It is worth paying attention to the fact that the poem "So doing nothing, how much I did" in the Chinese translation is renamed to "Mountain Forest". The translator showed active creativity. The image of the upland forest is important in the poem. It becomes a space in which anxiety, bizarre visions, secrets and pines, owl flight, and palm leaves, fog, dawn - all figurativeness is associated with the forest. The mountain forest can be reached by overcoming the difficulty of recovery. Such a forest is associated with height, with overcoming difficulties, with all that may accompany the process of knowledge. "I Cognize Everything" is the setting of the lyrical hero.

The upland forest becomes an allegory of our consciousness and our unconscious experience. The fact that Lee Hay paid attention to the significance of this image (highlighted it in the title), speaks of the philological competence of the translator.

We found that the translator did not quite accurately convey the meaning of some lines in the poem. For example, "So doing nothing, how much I did" 不像忙时那样，我什么也不干， in translation sounds like, "I didn't do anything, like on busy days."

The lyrical character "I" did a lot. All these actions seem to be done, but in reality, these actions occur only in the imagination, in the thoughts of a lyrical hero who does not commit any deeds. The Chinese translation of "I did not do anything, like during busy days" is clearly inaccurate in conveying meaning, but understandable. But "So doing nothing, how much I did," sounds absurd to Chinese perception.

The Chinese translator renames the poem "Oreada" to "The Mountain Forest". In connection with the name there is an association with a picture of the forest. When the wind blows, the pines moves as the waves in the sea ("the sea is swirling").

"The mountain Forest" became the image that allowed the author to relate, in our opinion, the incompatible works of Hilda Doolittle and Alexander Kusikov

The American version for Chinese readers is more understandable; the author analyzes in detail the imagery in the «Oreada», but leaves Kusikov's figurativeness without comment.

The poem by A. Kusikov, translated into Chinese, is almost not commented. The reasons are explained by the fact that 1) the images of Russian Imagists are complicated and for Chinese readers it is difficult to perceive their meaning; 2) Chinese images in classical poetry are always fixed but images from Russian imagists are not fixed, and the main task for them is to create a new unusual image.

In Chinese classical poetry, images always include the essence and we can always reveal the secret meanings of the figurativeness of classical Chinese poetry and experience the feelings (sensations) of the poet. But understanding the poetry of Russian imagists is difficult for the Chinese reader. Yesenin told about his brethren in the "Life and Art" article. He told that "My brethren were carried away with visual figurativeness of verbal form; the words and the image seem to them to be all" [Yesenin, 1997, p.214]. For Chinese readers suppose that if the image is without meaning and poetry is without essence, then this is not considered as poetry.

Thanks to the book ZengSi I, the perception of Russian imagism in China has been enriched and expanded. Yesenin was the most famous imagist poet in China. At the moment, the Chinese reading audience has the opportunity to get acquainted with the works of other Russian poets and imagists.

At the turn of the 20th and 20th centuries, Chinese translators began to pay attention to the declarations, theoretical works of Russian imagists and to the literary trend in general.

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与地外文明接触的可能性
THE POSSIBILITY OF CONTACT WITH EXTRATERRESTRIAL CIVILIZATIONS[1]

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注解。 作为一个现代版本的panspermia概念，作者假设宇宙起源的可能性不仅适用于生命，也适用于意识。 在这些想法的框架内，单个完整意识先于个体。积分作为一种基本背景，作为“载波”，在此基础上建立更加分化的个体意识。这使我们能够从意识先存的假设中得出结论，“太空兄弟”不仅可以通过发射无线电探空仪和望远镜进入太空，而且可以通过冥想，将心灵的眼睛深深地引导到自己的意识中来解决集体问题。 原型，可能还有宇宙无意识。

关键词：运动“全球未来2045”，“超级历史”，新人类，外星文明，宇宙意识，无意识，心理实践，冥想。

Annotation. *Developing a modern version of the concept of panspermia, the author assumes the possibility of cosmic origin not only for life, but also for consciousness. In the framework of these ideas, a single integral consciousness precedes the individual. The integral acts as some basic background, as a "carrier wave", on the basis of which a more differentiated-individual consciousness is modeled. And this allows us to conclude from the hypothesis of the preexistence of consciousness that "space brothers " can be searched not only by launching radiosondes and telescopes into space, but also by meditating, directing the mind's eye deep into one's own consciousness, addressing the collective archetypes, and possibly cosmic unconscious.*

Keywords: *movement "Global Future 2045", "Megahistory", neo-humanity, extraterrestrial civilizations, cosmic consciousness, unconscious, psycho-practices, meditation.*

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The history of self-knowledge of humanity goes deep into antiquity. Let us recall such works of art as the Egyptian papyrus "Conversation of the Disappointed with Your Soul", the het's Hymns to the Sun, the ancient Indian Vedas, the epos Mahabharata and Ramayana, religious traditions and philosophical works of ancient thinkers from Lao Tzu and Confucius. Do not forget the Greek and Roman thinkers, who gave the foundation of European civilization. All these monuments of antiquity contain in a syncretic unity both ethical, religious, philosophical, cosmological ideas, and observations on the inner life of a person, his self-consciousness. Nevertheless, psychological science, in its European-Scientist understanding, dates back to the creation of the first psychological laboratory in Germany in 1879 by V. Wundt. Until the end of the XIX century psychological laboratories modeled on it were opened in other countries: W. James at Harvard, A. Lehman in Copenhagen, I. Motor in Tokyo, J.M. Baldwin in Toronto, T. Flurnua in Geneva, A. Meinong in Graz. In Russia, the first psychological laboratories founded V. Bekhterev in Kazan (1886) and P. Kovalsky in Kharkov (1885). Thanks to the efforts of G. Chelpanov, the first in Russia (and the third in the world) Psychological Institute named after. L.G. Shchukin, was founded on the money of patron S. Schukin in 1912.

Since its beginning, psychology as an experimental science in the knowledge of the Descartes's subject-object paradigm, where the role of the object belonged to the "subject" who was required to study with objectively fixed methods. Since the possibility of their application to the internal, spiritual, and social life of a person was very limited, then the subject of consideration was simple physiological reactions, association processes, patterns of perception of simple objects. Methods of self-observation, introspection turned out to be on the periphery of psychology and only with the advent of psychoanalysis they formed a branch of science parallel to the main line that gave humanistic and transpersonal psychology - that is, first-person psychology aimed at spiritual experiences and not obscuring subjects coming from "Diversity of religious experience" by W. James

The history of Russian, and, perhaps, the whole world psychological science is characterized by a shift of interests from the study of individual mental elements (associations, mental actions, reactions in behaviorism, motives and actions in the activity approach, mental maps and semantic spaces in cognitive psychology); from mental functions (perception, memory, thinking, emotions, etc.) and even from an individual, individual differences and personality, to ever more integrated systems of being, processes that include the personality of a person as a subsystem in a person-environment relationship, society, history, science, art, cultural values. The higher the scientist rises in the study of the levels of being, the more difficult and less studied are the feedback rings in the regulation and development of a complex whole in which man is included. For example, only in the last century,

thanks to the works of A. Chizhevsky, the influence of solar activity and cosmic wind (cosmic radiation) on the biological activity of the biocenosis and even on the social activity of a person, on his work, was discovered.

Thanks to the works of V. Vernadsky, the role of the biosphere and human civilization as a geological factor in the evolution of the earth's crust and the reverse influence of geomorphological processes and cataclysms on the emerging noosphere as an area of application of the human mind is shown. This line was continued in the theoretical studies of A. Nazaretyan [*Nazaretyan* 2003], V. Panova [*Panov* 2006] in the analysis of man-made crises caused by the violation of moral and man-made balance and the reverse influence of the spiritual state of society on nature and industrial progress.

Works by S. Freud, K.G. Jung, S. Ferenzi (the names of the researchers can be continued), allowed to reveal the positive or destructive influence of the unconscious processes of a person on his psychosomatics. In religious systems it is postulated (and in acts of self-contemplation and repentance it is directly experienced) not even actions influence, but bad thoughts on a person's spiritual and physical well-being. All these feedback levels of complex systems in which people are involved are poorly understood, have little reflection and are poorly represented in the conceptual psychological apparatus.

And here, remaining in the field of science (rather than religion or art), two global strategies of theoretical constructions are possible: either remain rigidly within the framework of the natural-science paradigm and operate with concepts fixing current knowledge, risking reducing the whole to its projections on private sciences, and remain blind to the multidimensionality and multilevelness of the world (while the person successfully functioning on the field of everyday life turns out to be naked and helpless in a collision with extraordinary existential problems of life and death and the meaning of life and of faith); either to construct the concepts "for growth" or to leave in their content a kind of uncertainty, which is a component of the "play of the unknown".

According to the hypothesis of the technological balance of *Nazaretyan* [2001; *Nazaretyan* 2008], the development of new technologies requires the emergence of new value systems that are relevant to the changing world, which would direct, and sometimes limit, the degrees of freedom of possible implementations that a complex system has in choosing its development paths. Nazaretyan, following G. Pomerantz [*Pomerantz* 1994] interprets history "as the progress of moral tasks". The expansive growth of any civilization inevitably causes negative consequences. The emerging crises, due to the rampant exploitation of increased instrumental capabilities, can be resolved by creating new value systems, new ideologies that limit the rampant expansion of technological capabilities and lead the development of civilization to a new direction. This was the case, for example, in the era

of “axial time” associated with the emergence (approximately at the same time, but in different parts of the planet) of world religions that limited genocide and violence. The Christian position “there is no Greek, and there is no Jew, but there is a Christian”, which places emphasis on the religious, rather than the ethnic relations of the people, was resonant to Buddhism, and later to Islam.

The twentieth century is faced with the increased capabilities of weapons of mass destruction, which carry the threat of self-destruction of mankind; with environmental problems of pollution of water, land and air in vast areas due to intensive mining of natural resources, toxic industrial waste and modern agriculture. One of the central threats to the survival of mankind, in conditions of progress in medicine and public health, has caused an increase in life expectancy is associated with the accumulation of hereditary anomalies in the human genome and the threat of its degeneration as a biological species. The negative balance of the population of developed countries is a disturbing bell “from the next world”. O. Spengler called this process the “metaphysical fatigue” of civilization.

All these problems dictate the need not only to increase the growth rate of science and scientific technology in order to have time to eliminate the negative side effects of civilizational progress. To stay in place, as stated in the book “Alice in Wonderland” by L. Carroll, you need to run quickly. And you will have to run faster and faster. The calculations, independently carried out by the Russian theoretical physicist Panov [*Panov* 2008] and the Australian globalist historian G. Snooks, showed a steady acceleration of the evolutionary process throughout the geomorphological, biological and noospheric stages of the earth's evolution. The calculations revealed a singularity zone (Snooks-Panov vertical), according to which, by about 2045, the evolution speed curve rushes to infinity. What will follow next: the death of mankind or, on the contrary, the emergence of immortal superhumanity, due to the possibility to exist in several bodies, or the integration of mankind with the development of communication facilities into some kind of single super-essence - a sort of earthly version of "Solaris" by S. Lem.

I believe that, nevertheless, the thirty-year period from today to the hypothetical zone of singularity is too small for the transformation of humanity into neohumanity. One of the possible hypotheses for explaining the phenomenon of singularity is the connection of mankind with other space civilizations, which opens up truly limitless informational opportunities and treasures of knowledge. But this hypothesis is contradicted by the “Great silence of the cosmos” - the absence of reliable signals from the “brothers of reason” addressed to humanity.

Another interesting example of human perception and awareness is from my own practice. Back in the dat, with my colleague and student V. Kucherenko, we described such an interesting phenomenon. If during hypnosis you make a person believe that he will not see any object - well, for example: “You will not

see cigarettes" - then he will not see them. Moreover, when a person leaves the trance state, he is asked to list the items lying on the table. He does not see not only cigarettes, but an ashtray full of cigarette butts, a pack of cigarettes. He may not see the lighter, because it is associated with the process of lighting. Maybe he can see a lighter - he turns it in his hands and says: "Some strange cylinder ... I don't understand ... it's probably from under validol". That is, the objective function associated with a prohibited object is disabled, and the whole semantic field of objects associated with a prohibited one drops out of perception. The action "watch" and "see" are somehow parted. Of course, a person sees these objects, but with the value of the hypnotic instruction blocked, he is not aware of them.

I explain this contradiction through the parting of the "see" and "realize" phenomena and, relying on the philosophy of G. Hegel to explain this phenomenon, retell his ideas in a more modern language. In feelings, emotions, Hegel believes, the subject and object are merged and there is no their epistemological opposition. But if we express something sensual in a symbolic form, then we commit an act of alienation from the directly experienced. In this symbolic form, the initial experience can be translated to another in the act of communication or to oneself in the form of auto communication, and thus (see [*Bakhtin* 1979]) - consciously. That is, with such an interpretation, consciousness is a secondary perception in symbolic form. It is aware of what can be expressed in a language that has a system of meanings as a form of the cultural and historical experience of mankind. At the same time, by language we understand not only the natural language (Russian, German, English), but also, in varying degrees of clarity and completeness, the language of art and the language of symbols of the unconscious.

Experiments have demonstrated that awareness requires the presence of a certain language, thanks to which awareness takes place. Apparently, the more formalized the language, the clearer, but narrower (in semantic scope) is awareness. The figurative and symbolic language of the unconscious, giving the possibility of a broad interpretation of the perceived, is characterized by a small degree of awareness. Thus, the conscious perception of something requires both the presence of specific perseptive organs for reading information and cognitive structures responsible for recognizing and interpreting the perceived. Finally, the perception of the perceived depends on the presence of a system of meanings (a certain language understood in a broad semiotic sense, for example, a language, or rather, languages, art).

Let us return to the "Great silence of the cosmos" problem. Since the Big Bang, at least 13.75 billion years have passed. And, according to modern astrophysics, there is a huge number of planets similar to Earth, many of which are much older than it, for the age of our home planet is just some 4.54 billion years. Paraphrasing Ch. De Coster, I like to remind students at lectures that "the ashes of extinct stars"

are beating in our hearts. Indeed, our body contains heavy elements (for example, iron in red blood cells), which is not on the Sun. It is a secondary star. There are mainly (99.9%) hydrogen and helium. Heavy elements appear in supernova explosions. When the old star burns out and collapses to much smaller volumes at enormous density and ultrahigh temperatures, it explodes. Then the heavy elements of the periodic table form. Heavy elements are mainly brought into the solar system by comets. But not only heavy elements are brought in by wandering space bodies. There are theories of "panspermia" (G. Richter, G. Helmholtz), suggesting that life itself has a cosmic origin and is transmitted in the cosmic relay from earlier sources. Vernadsky supported this idea. According to modern scientists F. Hoyle and N.Ch. Vikramasingha, particles of interstellar dust contain frozen cells and bacteria (see [*Astaf'eva, Gerasimenko, Heptner, Zhegallo, Zhmur, Karpov, Orleansky, Ponomarenko, Rozanov, Sumin, Ushatinskaya, Hoover, Shkolnik* 2011]). Of course, it took billions of years of biological evolution to move from "cosmic germs of life" to highly organized living organisms, besides possessing a psyche. But if life has a cosmic origin, then it is logical to assume that human consciousness developed in the course of cultural-historical evolution not without the participation of the all-pervading cosmic mind.

But why, then, is Cosmos silent? In my opinion, it is naive to think that cosmic civilizations will meet at about the same level of their development; that they will send us some signals, and earthlings successfully decipher them; that aliens will arrive in space ships, even on more advanced ones than ours, and establish friendly contact. Though over the past 300 years, earthly civilization has passed an unprecedented path of technological progress. With its acceleration (as evidenced by the calculations of Snooks and Panov), it is difficult to even imagine what heights our civilization will reach in the near future. Although 300 years - is a flash by cosmic standards.

Rather, it is possible to search for contacts with other civilizations within one's own mentality, in the sphere of the unconscious, in meditative trance states, and such sciences as psychology and semiotics will help to establish these contacts. In our most recent article [*Petrenko, Suprun* 2015] we try to substantiate the point of view that consciousness works in the subject-object paradigm that comes from R. Descartes, where space is present as categories of consciousness (or intuitions of consciousness according to I. Kant) and time. Consciousness builds objective images that include these categories in the Euclidean space, a kind of which are the Riemann, Lobachevsky, Menkovsky spaces. The collective unconscious of C. Jung, which goes back to the hypothetical cosmic unconscious, is described in terms of the integral states of the Hilbert space, which are not decomposable into discrete subjectness. This holistic state (as well as quantum reality) is characterized by the non-locality of being and the EPR phenomenon (Einstein, Podolsky,

Rosen), which, according to quantum physics, consists in an instantaneous synchronous connection of genetically related elements.

Consciousness, widely understood as the ability to feel, experience, feel, that is, as a quality inherent in one degree or another to all living beings, may have a cosmic origin. In its background forms, it is able to act as a tuning fork of the Universe, evolving and differentiating in terrestrial conditions to a level associated with the language of human consciousness. If the hypothesis about the preexistence of consciousness is true, then "space brothers" can be searched not only by launching radiosondes and telescopes into space, but also by meditating, directing the mind's eye deep into your own consciousness, referring to the archetypes of the collective, and possibly the cosmic unconscious. This is exactly what the adepts of Buddhism, Hinduism, Sufism and Hesychasm practiced. The only difference is in the concepts in which they substantiated the "diversity of religious experience."

Practices of science and religion are coming together here. The history of religion is imbued with the experience of "peak" states of consciousness [*Maslow* 1999; *Freyder, Fadeyman* 2008; *Torchinov* 1998], on the scientific understanding of which goes psychology. "Shouldn't we suppose," V. Frankl believes, "that above the human world, in its turn, is a superior and inaccessible world for man, the meaning of which, more precisely, its" super sense "can give meaning to all human suffering? A human being can comprehend the superworld no more than an animal from its environment can understand the wider human world. However, he can catch him in foreboding - in faith "[Frankl 2009, p. 42].

The concept of the preexistence of cosmic consciousness is contained in Hinduism. The individual consciousness (Atman) is a part (spark of God) of the whole ocean of cosmic consciousness (Brahman), with which it merges after physical death. In the framework of these ideas, a single integral consciousness precedes the individual. The integral acts as some basic background, as a "carrier wave", on the basis of which a more differentiated-individual one is modeled. W. James compared the interconnection of individual consciousnesses with the roots of trees, intertwined in underground darkness, or with the bottom of the ocean, which connects the islands with each other. It is not excluded that the continuum of cosmic consciousness also exists, in which our divided minds are immersed as in the material sea.

Individual consciousness is limited, apparently, due to possible overload and nervous breakdowns when adapting to the environment. With this understanding, self-awareness mechanisms of self-identity are cut off, they limit the individual from another's consciousness, other people's experiences (sometimes breaking through, perhaps, in phenomena of telepathy, hypnosis, synchronicity). The hypothesis of B. Porshnev about the emergence of the diversity of natural languages

as a result of a countersuggestion, caused by the need to separate the barrier of one's own language from alien influences [*Porshnev* 1979].

In order to consciously perceive something, it is necessary to have peripheral sense organs and cognitive schemes, recognition standards, and for awareness, it is also perceived to have a certain language understood in a broad semiotic sense, for example, “the language of art” or, more correctly, “languages of art ". Due to the absence of a number of specific sense organs for the perception of information coming from the external world, the human psyche contains a number of “blind zones”. For example, it does not perceive electromagnetic radiation in the ultraviolet range, including X-ray and gamma radiation, and does not “catch” radio waves in the low-frequency region. Human perception is insensitive both to a static magnetic field and, of course, to neutrino radiation. Human perception is limited to rapid and super-slow processes. But in addition to the work of peripheral organs, the process of perception includes, according to the principle of the “reflex ring”, the regulating role of the cognitive structures of the brain (the model of the “required future” in terms of N. Bernstein [*Bernstein* 1990] or the “action acceptor” P. Anokhin [*Anokhin* 1970]). In the language of psychological science, these physiological control mechanisms [*Aleksandrov* 2008] correspond to perceptual standards, cognitive maps, cognitive schemes, value systems, and semantic spaces. Blocking or underdevelopment of the last two leads to a “blindness” of perception. It is possible to expand the range of perception through various psycho trainings, such as “training of sensitivity”, meditation [*Dalai Lama* XIV2010; *Sivananda Swami* 2001; *Chogyal Namkhai Norbu* 2009; *Nida Chenagtsanga* 2010] and autotraining [Psychotherapy ... 1999; *Shoyfet* 2010], yoga [*Iyengar* 2010; *SaiBaba* 2009; *Sidersky* 1998], holotropic breathing [*Grof* 2007; *Kozlov, Maikov* 2004], the method of sensorimotor psychosynthesis [*Petrenko, Kucherenko* 2007], hypnosis [*Shoyfet* 2006] and soft Ericksonian hypnosis [*Erickson* 1995]; various religious practices: dynamic meditation in the form of monotonous body movements or repetition of mantras, texts that have a sacred character [*Horuzhy* 1993; HinduisMoscow.. 1996], fasting, prayers [*Vasilyuk* 2005], contemplation [*Akopov* 2009; *Karitsky* 2011; *Shestun, Podorovskaya* 2011], seclusion [*Theophan the Recluse* 2010], retreat [*Sopa Rinpoche* 2012].

Psychological practices and meditation not only reduce the thresholds of sensitivity, revealing areas previously inaccessible to sensations and experiences, but most importantly, they expand consciousness, removing the subject-object opposition, integrate individual consciousness with cosmic, transpersonal, divine (different terms are possible). But this requires some clarification. In philosophy, the concept of "consciousness" is interpreted widely, and there include all the mental manifestations of man. Since the time of Freud, it is customary in psychology to breed the concepts of “consciousness” and “unconscious”, which include, in

particular, the perceived, but unconscious [*Allahverdov* 2009]. According to A. Luria [*Luria* 1968], a person remembers almost everything he sees in his entire life, and this is confirmed empirically by psychotechnology for extracting passive information [*Kucherenko* 1996; *Kucherenko* 1997], where the patient may recall, for example, what sandals were on his feet at the age of two, or the number of the car that accidentally caught his eye many months ago.

In a hypnotic trance state, he, as in a slow motion movie, can see in his imagination a moving car and have time to read its number (if, of course, it was accessible to the vision during the initial perception). In the hypnotic state, you can zoom in or out the object perceived in the imagination, change its viewing angle, scroll back and forth in time, that is, work with it as a perceived present object rather than a passive photo. But in order to become aware of the actualized from the passive memory reserve, we need a language (in our case, the usual Russian language), because the hypnotic instruction was communicated to the subject through the language, and the subject himself described the image extracted from the memory using words. The more formalized the language, the clearer the awareness, but less breadth and narrower the scope of the conscious semantic field. The figurative and symbolic language of the unconscious opens up an extremely wide range of interpretations. The situation with the choice of an interpretation of an image (for example, a dream image) resembles the process of reduction of the wave function in physics [*Penrose* 2005; *Mensky* 2007]. The history of the Ancient world gives us vivid examples of Delphic oracles and Pythias, interpreted in unclear statements the images of their own unconscious, caused by trance states under the influence of psychotropic drugs. The interpretation of the prophets were dark and ambiguous. The misunderstood prophecy is widely known: "If the king steps across the river Galis, he will destroy the great kingdom." The Lydian king Croesus interpreted this prophecy as a favorable prediction, and as a result of his actions his own kingdom was destroyed.

Translating from the figurative and symbolic “language” of the unconscious (allegedly containing information about “extraterrestrial mind”) into ordinary language requires the development of the problem of understanding [*Marks* 2005], analyzing the semantics of the image and the semiotic studies of the character [*Lotman* 1992], developing the problematics of “psychosemantics of art” *Petrenko* 2014]. It is possible that the “psychology of art” (in particular, the semiotics of music) will be the “thread of Ariadne” that will bring researchers to contact with the Cosmos. A no less important area for establishing such a contact is comparative religious studies, which study concrete particular realizations of the transpersonal “call of the Cosmos”. It is important in the context of the discussed issues and the study of altered states of consciousness [*Tart* 2003; *Kucherenko, Petrenko, Rossokhin* 1998; *Spivak* 2000; *Gordeeva* 2009], and transpersonal psychology [*Grof* 2005; *Grof* 2007; *Mindell* 2011; *Murphy* 2009; *Tart* 2003; *Freyder*, *Fadeyman* 2007; *Hunt* 2004; *Kozlov, Maykov* 2004].

To replace race and competition between countries in the field of atomic physics in the 20th century in the 21st century cooperation and mutual work will come in the field of the humanities, especially psychology, post-non-classical philosophy [*Stepin* 2003], structural linguistics and semiotics, so necessary for understanding the "problems of understanding". Contact with extraterrestrial civilizations, supposedly predicted around 2045, will necessarily cause an explosion of problems and research in the field of humanities, and psychology will take the role of the "queen of sciences" in a certain segment of "mega history" (or "universal history"). Then, as I said at the Global Future 2045 congress on February 18, 2012: "Perhaps, by developing a peculiar value system that is not tied to our particular world, on the one hand, and on the other, by developing sophisticated techniques of meditation and psycho-practice, we will come into contact with possible worlds at deep meditative levels. "

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能力和能力：这些概念是否相同?
COMPETENCY AND COMPETENCE: ARE THESE CONCEPTS IDENTICAL?

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注释最初，能力方法的使用与其理解的困难一起，因为没有对其基本概念 – 能力和能力的精确描述。来自世界各地的许多科学家认为这些概念是平等的，其他人则认为它是不同的概念。本文试图表明这些概念实际上并不相同。它们中的每一个都有自己的结构，是为了自己的特定目的而创建的，用于解决特定任务。笔者认为，在心理学和教育学早期，科学界解释了能力和能力的本质和内容，更有效，更成功地解决了教育组织提高专业教育机构毕业生专业培训质量的任务。 。

关键词：能力和能力相同的概念，能力结构，能力结构，领导素质，形成能力，领导素质，形成能力。

Annotation *At the beginning, use of the competence approach was together with difficulties of its understanding because there were not precise description of its basis notions - competency and competence. A lot of scientists from all over the world believed that these notions were equal, others considered it as different concepts. This article tries to show that there notions are not identical in fact. Each of them has its own structure, is created for its own specific purposes to solve specific tasks. The author concludes that the earlier in psychological and pedagogical science the scientific community explains the essence and content of competency and competence, the more effective and successful will be solved the tasks of educational organizations to improve the quality of professional training of graduates of professional educational organizations.*

Key words*: competency and competence as identical concepts, structure of competency, structure of competence, leading qualities while forming competency, leading qualities while forming of competence.*

From the very beginning, during the Bologna process the definition of basic concepts of competence approach was not made therefor many mistakes were made

in the reforms of education and as a result a lot was missed. We are not going to analyze the top in the hierarchy of education management, but even on the level of educational institutions for quite a long time we were trying to renounce the traditional, so-called ZUNovskii (system) approach. At the same time is not deeply analyzed and understood that these important components as knowledge, skills, abilities are the basis of the competence approach. Moreover, after Russia has started to participate the Bologna process, the educational system ceased to be closed. Western Europe claimed from Russia to correct policy of the national education system under the pretext of its need to be adjusted to the conditions of actually prevailing market relations. The competence approach was taken as a methodological basis. To support this approach scientists formed the idea that having good and sometimes excellent fundamental training, most of our graduates have serious difficulties in applying the obtained mental formations (knowledge, skills) in practice. A serious adjustment of the existing education system in Russia has been carried out in the direction of greater competitiveness and flexibility, in which administrative methods are harmoniously combined with economic and psychological methods. Power relations are based on a highly developed corporate culture, which required both effective practical implementation and its theoretical justification. Printed sources and mass media have different precise information but the majority of authors say only 20% of employed population works according to their basic specialization , 42% of the youth specialists change their professions in the first 2 years after graduate.

Organization of pedagogic orientation shows how acute these questions are. The decree of the Government of the Russian Federation directly stressed that" a Large number of teachers have reached retirement age, and 60% of graduates of pedagogical universities do not go to work in schools, settling anywhere " [6]. The current trend is growing due to the high technological processes in the industry, without work in the first place are persons with low qualifications and narrow specialization, low educational level. In this regard, many young people aim to have two or more diplomas of higher education. It was suggested that the introduction of the competence approach in the educational process in Russia will contribute to the solution of this problem. Government of the Russian Federation made some decision to stimulate it, these decisions aimed to improve the practical orientation of the educational process in educational institutions.

As some specific graduates of educational institutions do not always effectively cope with their duties assigned to them by the Order of the Government of the Russian Federation in positions they have in accordance with the diploma. A comprehensive №487-p plan of actions for 2014-2016 was approved and signed in March 31, 2014. Its aim was to develop professional standards, their independent professional and public expertise and application of 50 most popular, new and perspective professions in the labor market, requiring secondary vocational education [5].

But despite the taken measures the satisfaction of the education process is not reached yet both by the specialists and students at educational institutions as well as by managing personnel of educational process. So rector of Moscow State University named After M. V. Lomonosov during the meeting with representatives of the Higher School of Voronezh expressed his rather critical position in relation to the existing education system. He directly stated that " the education system in the Soviet Union was unique, it proved itself. And then we lost the fundamental nature of our education, it was replaced by the concept of "competence". We have always been strong because we taught the student not to memorize and not to have some competencies, but to think, prove, doubt, overcome. Then a student becomes a scientist or a specialist. This has helped us in space and in other branches. And then we tried to copy other systems simply because they exist in the world" [7]. This point of view was supported by the fact that there were not precise description of general notions of competence approach for quite a long period of time.

To complete the issue of competency and competences formation as the basic concepts of the competence approach, it is necessary to define the interpretation of the concept of "competence". Unfortunately, Russian Pedagogic Scientists followed the example of foreign researchers, most of whom identify the concepts of "competency" and "competence". It can be assumed that this conclusion was made because of the objective fact that both the concept of competency and competence includes the same qualities of their components, and secondly, there was not enough reliable psychological and pedagogical research to determine the role and place of these qualities in educational activities that require the manifestation of competency and competence.

Approximately this question the author had to face in 70s of the previous century when he was actively trying to solve the problem of psychological preparation which has such central notions like psychological readiness and stability. Exploring the flight crews who were on duty in readiness No. 1, and also the crews were carrying out combat operations over a year in the Republic of Afghanistan, was revealed (table 1) that, despite the fact readiness and stability use the same components of psyche that is the same qualities, the role and place of these qualities, and in their totality components differed significantly [2, p.72]. So, If

Table 1

Rating places of components of psychological readiness and stability in activities

Rating places	Manifestation of psychological components	
	of readiness	**stabilities**
1	Motivational	Volitional
2	Cognitive	Motivational
3	Intellectual	Emotional
4	Motor	Intellectual
5	Volitional	Cognitive
6	Emotional	Motor

in connection to psychological readiness the first place was taken by motor, cognitive and intellectual qualities while in connection to psychological stability the first place is taken by those qualities which compose volitional, motive and emotional components.

In this regard, there were two ideas: a) to conduct a study in the interests of a clearer and more accurate interpretation of the concept of competence, especially as it was emphasized above that the law "on education in the Russian Federation", along with other concepts, such a definition is absent; b) to investigate what qualities constitute such integrative concepts of competence approach as "competence" and "competence".

As for the first idea, the analysis of psychological and pedagogical literature on the competence approach has led to the conclusion that in the scientific literature you can find a significant number of different definitions of the concepts of competency and competence, which sometimes contradict each other. During the survey 178 of successful workers (psychologists, social workers, public officers) were identified those psychological features which allowed these people to solve their problems more effectively in difficult situations.

This data was compared to the results of the other research led by scientists of MSU named after M.V. Lomonosov , by T. Y. Bazarov, A. K. Erofeev, and A. G. Shmelev,The results of their research were showed to the scientific community at the round table held at the Faculty of Psychology of Lomonosov MSU on February 2, 2009 It was a joint meeting (round table) of the Moscow branch of the Russian Psychological Society (RPS) and the Department of Psychology of Labor and Engineering of Moscow State University named after M. V. Lomonosov, dedicated to the conceptual and terminological problem with the concepts "competence" and "professionally important qualities" [1, S. 87-101].

The researches with the qualities forming "competency" and "competence" were led with the method of analysis of critical incidents by successful workers. The results showed that "competency" and "competence" are composed by the

same qualities. But in connection to competency one set of qualities work (motives, values, I-concept, knowledge, basic skills, simple and difficult experience and psychophysiological properties), while in connection to "competence" the other qualities are leading (intuition, wisdom, intention, latent knowledge, professional experience) (table 2).

Table 2

Comparative characteristics of the qualities included in the competency and competence

COMPETENCY includes:	COMPETENCE includes:
Motives, values, I-concept, explicit knowledge, initial skills, simple and complex skills and psychophysiological properties, methods of activity, professional and personal qualities, professional flair and experience, intuition, wisdom of intention, explicit knowledge of a specialist, his attitude to activity, theoretical and applied readiness to use explicit knowledge	Intuition, wisdom, intention, implicit knowledge, professional experience, motives, values, I-concept, complex skills, simple and complex skills and psychophysiological properties, methods of activity, professional and personal qualities, professional flair and experience, attitude to activity, theoretical and applied readiness to use implicit knowledge

As for the definition of competence, the results of the studies showed that the provision on the identity of such basic concepts of competence approach as competency and competence we took after European scientists in the process of transition to the requirements of the Bologna process. It is likely to be assumed that this methodological premise was made possible by the fact that both competency and competence include the same qualities.

While interviewing successful workers such as psychologists, social workers, public officials by the method of analysis of critical incidents of professional activities [3, p.118-125] and comparing these results to the content of the notion "competence", stated in MSU named after M.V. Lomonosov [1,p.87-102], we listed rating of the qualities of the essence and cintent of the notion "competences".

The interviewed successful workers consider as the most promising heuristic approach the cluster to rank in first place which is clearly visible attempt a creative synthesis of the native (active) and Western (behaviorist) conceptual and terminological traditions (table 3), which was formulated as an integrative capacity for the mobilization (use) of knowledge, skills and other mental formations in the interests of effective action in specific difficult (extreme) situations, the manifestation of psychological readiness for first place in the rank out the quality of motivational, cognitive and intellectual components, whereas in the manifestation of psychological stability in the first place came out quality the components of volitional, motivational and emotional components [2, p.72].

Table 3

Rating places of definition of the concept of " competence»

Rank places	Content of competence	Authors of this point of view
1	Competence - as an integrative ability to mobilize (use) knowledge, skills and other mental formations in the interests of effective activity in a particular difficult (extreme) situation	P. A. Korchemny, as well as 85% of successful workers during the process of interview
2	Competence as a set of qualities	E. V. Krasilnikov, A.V. Khutorskoy, V. D. Shadrikov, V. S. Lednev, N. D.Nikandrov, M. V. Ryzhakov), and Lyle M. Spencer Jr. and Sain M. Spenser
3	Competence as awareness, terms of reference, responsibilities	S. I. Ozhegov, N. Yu.Shvedov, V. D. Shadrikov, A.V. Khutorskoy.

In second place in rank in our study, and in the study of psychologists MSU named after MV Lomonosov, took the formulation "competence as a set of qualities." The third rank was taken by the wording of the characterizing competence across the breadth of awareness of the powers and duties of the contractor.

At the same time, many researchers in their practical work are really guided by the conclusion B. Hutmacher that the term "competence" is closer to the conceptual field "***to know how***", there is a practical component than to the field "***to know what*** " that there is a theoretical component [8, p. 58-62].

According to this methodological premise in the previous decade the way of further psychological researches to detect the role and place Academic and Practice intellects was planned.

In General, we can emphasize that there are many unresolved and problematic issues theory and methodology of the problem. This is clearly evidenced by the fact that justifying the Federal state educational standards involved, experts unreasonably set a high bar that the graduate has to master from 60 to 80 General cultural and professional competencies during the training period. And now let's look objectively, General cultural and professional competencies in the Federal state educational Institutions are formulated, but is it possible to separate the proposed 60-80 competencies substantively, and what is most important to describe the technology for assessing the level and quality of development of each of them, especially to prepare members of the state certification Commission, who could assess a particular level of development of the necessary competencies for the graduate, respectively, to formulate and evaluate them for graduation from an educational organization?

And this is a question that takes the first place in Russian education. Thus, the Russian Government Decree No. 2765-R of 29 December 2014 approved the Concept of the Federal target program for the development of education for 2016-2020, the purpose of which is to ensure the conditions for the effective development of Russian education aimed at the formation of competitive human potential. В числе основных задач одна из которых гласит: «*сформировать востребованную систему оценки качества образования и образовательных результатов*». [6] Предполагается, что решение данной задачи позволит обеспечить формирование качественно нового отношения обучающихся и образовательных организаций к качеству образования и получаемым по его итогам компетенциям, процедурам и механизмам их измерения и оценки. Представляется, что данная проблема пока является приоритетной в совершенствовании и развитии психолого-педагогической науки.

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艺术创造力世界中“东西方”态度的整合过程
INTEGRATION PROCESSES OF THE “EAST – WEST” WORLDVIEW IN THE WORLD OF ARTISTIC CREATION

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注解。 本文包含对东西方文化二分法的主要哲学和艺术批评立场的分析性回顾。 对东西方世界观中“心灵”，“艺术意识”概念的解读已经确定，并进行了比较分析。 作者引用了一些论证，证实了整合东西方艺术传统以理解不同文化的必要性。

关键词：东西方，文化对话，融合，世界观，思想，艺术意识，艺术创作，绘画，民族艺术

Annotation. *The article contains an analytical review of the main philosophical and art criticism positions of the East-West cultural dichotomy. The interpretations of the concepts “mind”, “artistic consciousness” in the Eastern and Western worldview have been ascertained, their comparative analysis has been carried out. The authors adduce a number of arguments confirming the need to integrate Eastern and Western artistic traditions for understanding different cultures.*

Key words*: East - West, dialogue of cultures, integration, worldview, mind, artistic consciousness, artistic creativity, painting, national art*

The Interest to the “East - West” problem has highly grown in recent decades, both in Russia and abroad. The possibility of dialogue between these regions, finding a common language for two such different cultural traditions is of obvious acute political and scientific relevance, since the problem of mutual understanding between nations is one of the components of the process of detente of international tension and cultural interchange.

The interpenetration of temporal and spatial parameters, whether it is “past-present» or “East-West” is always a spontaneous process. Today the concepts of “interpenetration” and “mutual influence” are identified with the concept of “dia-

logue of cultures". Of course, these categories are related, although they are not identical, because the mutual influence does not always develop into a dialogue. The perception of the mutual enrichment of cultures is inevitably consistent with the tradition with which the world of art itself comes in contact. However, at the same time, traditions can turn out to be quite different – sometimes they can be quite recently formed, in other cases – they can be deep, spontaneously acting and purely intuitively embodied in the world of artistic creation. Between these two positions there is a range of possible options.

Various formations which could be nations, states, epochs, generations create their own cultural space in their own way. To this day, two largely isolated models with different archetypes of consciousness that determine their attitude to the world are preserved - the western and eastern types of world perception. At this point the question about contacts in the field of artistic creation, about the integration of various cultural traditions, which is often part of the problem of relations between peoples who differ in their views of the world and the place of man in this world, arises. It is also a question of the relation to the foreign historical past, its assimilation or denial, which, in turn, is in connection with the national identity, the spiritual climate of this era, and also in connection with the peculiarities of the ethnopsychology of different peoples. For example, people of traditional cultures understood that the underestimation of whole life leads to disharmony of the world and the mental state of man. It is harmony and tradition that are the main formulas in ancient Chinese philosophy.

The most profound differences between East and West are visible in the assessment of the role of mind in art. A Chinese artist would never say: "I think, therefore I am," but would say: "I experience, therefore, I create" [1, p.6]. And, although Chinese painting bore the imprint of the intellectualism of scholarship, it nevertheless relied not on mind, but on reflections that flow from experience. Beauty, viewed simply as an object of aesthetic pleasure, was considered "surface decoration". It did not have much value and could even have a destructive effect on the spirit. Formal beauty did not appear in China in its isolation. It seemed to dissolve in the integrity of experience, therefore China did not speak about beauty or aesthetic value, but about the spirit or Qi. Zhang Zhidong, the famous 19th century thinker rightly said: "Chinese teaching is the essence (Qi); European teaching is a function (Yun) [2, p. 241].

The highest dignity of the Eastern man is observancy. If a Western person wants to come closer to an understanding of the Eastern worldview, then it is necessary to understand that the main advantage of thought according to Eastern ideas is its ability to be mediated and expressed in actions. It is necessary to understand that in the East, the laws of nature and human existence, as well as social laws, are a single entity, therefore, a person of the East finds justification for his thoughts

and actions in contemplation of the world rather than in revealing truth. Therefore, Confucius, the Chinese thinker, in contrast to Socrates, does not respond with definitions when he is asked to explain this or that phenomenon, but comes to figurative comparisons, expressing at the same time rejection of any universal rules and truths.

As an argument, one can give an example of the difference in understanding by the representatives of the western and eastern world of the concept of mind. The word "mind" for the Chinese contains the idea of separation, dismemberment of reality in order to know it. This way of thinking is formed by taking into account the constant scrutiny of the reality of the human environment, observation of it, in order to recognize in it the basic laws that govern everything: the state, the principles of morality, the family, individuals, the forces of nature, and works of art. It is obvious and indisputable for a person of the West that the body and the spirit do not obey the same laws. The matter and consciousness follow their own rules. The distance between the lower world and the higher world is very significant, and therefore, perhaps, irresistible. The vision of a man of the East, as he has been formed since antiquity, does not recognize a clear distinction between spirit and matter, he rejects the existence of a higher world, which would be fundamentally different from the world of delusions and illusions. He asserts the existence of a continuous connection between the physical life and the mental, intellectual, spiritual life. The body and spirit in his view differ only in the density of the flow of energy, which constantly permeate them.

The spirit of the true artist is in continuous communication with the World Spirit. Any true artist, who knows how to give a synthesis of forms, without depriving them of a living reality, causes a special mood, because the viewer is informed by the thrill that the artist experiences before eternal truths. “Ordinarily people think that drawing can be beautiful in itself: but the real beauty is in only those truths and feelings that it expresses,” said Auguste Rodin, French artist about art [3, p. 70.]. An artist who feels the essence of the Spirit, deeply aware of the union of his inner “I” with the world, becomes the embodiment and conductor of the deep spiritual laws. Thus, art is the expression of the spirit of human consciousness and the creative act is “the continuation of the Creator's work and creation is ingenious in its essence” [4, p. 70.].

According to Western ideas, there is an insurmountable barrier between two worlds - the living (gods, people, animals, plants) and the inanimate (stones, mountains, paintings ...). There is no such boundary in eastern reality. In a word, the fact that Western man seems sharply marked, divided, that he wants to isolate in order to understand, is regarded in the East as being in perpetual communication, in a continuously vibrating medium of subtle waves circulating in the Universe.

The way of the West is based on the observation of a direct givenness of the thought, reflection on a pure, internally homogeneous subject. Consciousness in Western thought is invariably endowed with objective content and does not exist outside the object. The way of the East consists, first of all, of the appeal of thought not to the subject of experience, but rather to the fact of the presence of consciousness, to the presence of the one who is conscious. And this eccentric concentration of spirit is equivalent to striving to conceive of the limits of the conscious, to see the spiritual light in the depths of the consciousness that hides itself. For Eastern thought, consciousness appears as an "emptiness which is universal and all-covering openness of being" [5, p. 39.].

Consciousness is that integrity of experience that eludes itself. Consciousness is focused on a natural rhythm, on a gradual change of phases: for example, night is replaced by day, day is replaced by night, and one cannot cause the death of the other. Everything comes in time and leaves on time. The return journey begins on the verge of the Great Limit (Tai Chi).

It is interesting to note that the contemplativeness of the Chinese, which may seem lazy or idleness to a Western person, is nothing more than a special method of the work of consciousness and a way of knowing the world. It is important to realize the extent to which the criteria that seem to us, Europeans, to be the most "natural" in reality are the "cultural component" [6, p. 5]. Human self-consciousness is inexhaustible. Psychic energy, or Qi, is a pledge of a person's power, if he learns to use it: his mind, his memory reserves.

Artists of the East, delving into the subject, try to catch all its details and curves. In Europe artists prefer to expand the boundaries of the subject, put it in a larger context and consider it from different sides. The type of Western man is "Prometheus", a man of heroic disposition who craves power and moves further and further away from the spirit, goes deeper and deeper into the world of things. In contrast, an Eastern person always contrasts to the heroism and expressiveness of a Western person a kind of universality - a kind of "tastelessness". This is an example of a world-orientation focused on preserving the harmony of the world, having internal dynamism of development and therefore not requiring human intervention; it is a sign of perfect taste, its universality, it is the highest virtue, it is a value that is realized in practice by accepting or eliminating from cases with maximum flexibility and focus solely on the requirement of the moment. Therefore, "if the virtues for the Western man are energy and intensity, fashion and sensation, then for the Eastern man is the exact middle, noiselessness and wilting" [7, p. 93].

One of the typical features of Chinese art, caused by the desire to summarize the whole human experience in comprehending the inner essence of things, turned out to be a tendency to symbolization. Essentially, this became a common phe-

nomenon for European culture of the end of the 19th century: Englishman Aubrey Beardsley, Frenchman Gauguin, American J. Singer Sargent, Dutchman Vincent van Gogh, Czech Alfons Mucha, Belgian Ensor James, Russian artist Ivan Bilibin - they all turned to Oriental themes and Oriental styling in their works.

Chinese painting has never been art for art. It has always contained the task of moral perfection of the personality. But with all its symbolism, Chinese art is very reliable, because it reflects the world, not as the artist sees it, but what it is. The main theme of Chinese painting becomes the image of nature as a majestic image of the universe. This traced the influence of Taoism on the fine arts of China. The artistic thinking of the Chinese was originally connected with their ideas about the world, according to which everything happened from the One - Tao. This Way of the Tao has long been the sight of the Eastern sages. This was also said by Russian cosmist philosophers. Today, the maxim sounds in the paradigm of universal evolutionism. The peculiar forms of the animal and plant world developed the original, elegant taste of the Chinese, and pantheistic thinking, combined with rationalism and traditional lifestyle, gave rise to amazing stability in architecture and painting. And yet, from all types of artistic creation, the Chinese considered painting to be the most important. At various historical stages, the favorite was either horizontal or vertical form of painting-rolls. Wherein the Europeans sculpted volume with light and shade, the Chinese sought to linear expressiveness.

The modern technological progress is changing the mind of man, distracting from the contemplation of real nature. The views of mountains, dales, turbulent rivers had an impact on spiritual development, on the formation of a person's world outlook and self-assertion. The desire of people to overcome the gap with the environment, the search for ways to connect with it is one of the important reasons for preserving the traditions of Chinese painting "Shan-shui (mountains and waters)", as well as the heyday of modern landscape painting in Russia. The subject of the latter is likely the nature of the Altai Mountains. This suggests that every person, whether they is a representative of the East or the West, is a part of Nature. They feels well and artistically expresses his close nature, its bosom that is its homeland. Contemplation of the eternal mountain peaks determines the place of man in the world of Nature. Obviously, landscape painting is one of the possibilities for the perception of mountain nature. The archetypal images of the mountain landscape are in the artistic traditions of the peoples of the world. It is in the picturesque image of the mountains that the arsenal of archetypes and symbols is concentrated, in the meaning of which the mountain plays the role of the world tree connecting Sky and Earth. Thus, artistic traditions constitute the core of the unique features of regional and national art schools.

In addition to traditional painting from the end of the 19th century in China, thanks to the emergence of the Shanghai school of painting, Western-style painting

thrived. There were oil painting, drawing, watercolor. When the city of Shanghai became the center of exchange and trade with European states and also one of the largest trade ports of China, many Chinese artists rushed to explore European painting traditions. And, if originally Eastern traditions had a direct impact on the art of Europeans, then the processes that took place in Eastern culture at the turn of the XIX - XX centuries were already influenced by the art of European artists. Some artists began to combine the traditional style of Chinese painting with the Western style, enriching their artistic language with new experiences. It was the way the Shanghai school of painting, and today known in China, was born. The French concession in Shanghai is becoming the center of a new artistic cosmopolitanism. Later, the Sino-Japanese war destroyed these innovations, but the artists regained their lost native roots with their people, as a result of which, at the end of the war, signs of the revival of national art began to appear. This, in particular, is inherent in the works of Pan Sunqing, Zhao Uchi (Zhao Wu) and Zen Yuyho, whose works were both innovating and national.

In the twentieth century, despite the political upheavals, traditional painting in China continued to evolve. Among the many hundreds of talented artists, amateurs and professionals, Qi Baishi was most noticeable, in whose living sketches of flowers and small animals, the style of the artists Bada Shanren and Shi Tao came to life, as well as the artist Huang Binhong, who became the last outstanding representative of the Wu tradition in landscape "painting of educated people." At that time, many Chinese painters and sculptors returned from Europe and brought the atmosphere and ideals of the Paris School of Fine Arts: among them were Xu Beihong and Liu Haisu. Many modern Chinese artists, despite their commitment to tradition, still prefer European oil and canvas to replace traditional ink, watercolor and fine bamboo and rice paper. M. E. Kravtsova, exploring the culture of China, writes: "The first third of the XX century also includes the stage of genuine and mass acquaintance of the Chinese with the artistic culture of European civilization, its artistic traditions and modern art" [8, p. 89].

Recently, the Chinese landscape painting in the style of "Shan-Shui" has emerged a new theme of "ice and snow". In this genre, the artist Yu Chzhisyue takes the leading place. He proposed a new style that did not fit into any of the former national schools: Yu Chzhisyue managed to create a unique artistic language and a peculiar method of performance, which cannot be uniquely attributed either to the traditional or to the modern style. Snow landscapes with their unique aesthetics of "cold beauty" stand apart from the diversity of trends and areas of painting. Responding to the desire for a new interpretation of traditions, the adoption of European technology and the establishment of new artistic principles beyond traditional and modern art, but without joining any of the schools, the landscape painting "ice and snow" has an "innovative and guiding meaning" (Tao) [9, p. 62]. This is a bright example of the

integration of Eastern and Western world views in the field of visual arts.

The dialogue of cultures is not just the knowledge of the “other”, but also the special flexibility, predisposition to in-depth communication with the “other”, not identical in order to come to a more complete understanding of life on this basis, including in the world of artistic creation. Currently, both for the West and for the East, movement towards each other becomes a special kind of pilgrimage, aiming not only to get acquainted with the spiritual culture of another region, but to immerse in two worlds for the purpose of searching for bridges between two different worlds, internal perfection. Understanding the integration processes of the world perception in different cultures means going beyond the limits of the peoples' own spiritual activities and turning to an analysis of modern social technical conditions, which they reflect, as well as those diverse forms of mutual influence of the largest civilizations of the world, which for centuries enrich the aesthetic thought of the peoples of the West and the East.

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微笑美学是影响接受牙科康复的患者生活质量的一个因素
SMILE AESTHETICS AS A FACTOR OF INFLUENCING THE QUALITY OF LIFE OF PATIENTS RECEIVING DENTAL REHABILITATION

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Relevance

Despite the large number of conducted and ongoing studies on the causes and development of the carious process, management tactics and preventive measures for this disease, dental caries remain the main reason for patients to apply to dental clinics [1]. The World Health Organization, according to data for 2012, has registered a high incidence of disease, amounting to 60-90% of children and almost 100% of adults, depending on the country and the standard of living of the population. The main cause of tooth loss is also recognized as a carious process, leading to the complete loss of natural teeth by the age of 65-74 years in 30% of cases [2]. According to the results of the analysis of the frequency of susceptibility by the carious process of various groups of teeth, it was shown that the frontal section is involved infrequently, only in 2-2.5% of cases [3]. Despite such a low frequency of damage to the teeth in this area, it is the aesthetic dissatisfaction that leads the patient to the dental clinic, and often this happens at the stage of a high degree of destruction or lack of teeth in the lateral divisions. Due to the need for complete dental rehabilitation of patients in such a situation, they are under stress, faced with the problem of the impossibility of a momentary long-term solution to a simple, as it seems to them, problem of restoring the aesthetic balance of the smile line.

The degree of emotional arousal, characterized by the level of anxiety of the patient, can reach a critical level, leading to dissatisfaction with the process and the result, and often interruption of treatment [4, 5].

Purpose of the study

In connection with the direct influence of the emotional status of a person on the quality of his life, we conducted a study of the effect of the aesthetic component of dental health on the level of anxiety both before the start and on the result of restoring the harmony of the smile line.

Materials and research methods

In order to achieve this goal, we conducted a survey and treatment of 36 people with complaints of aesthetic dissatisfaction with the teeth of the frontal department, who applied to the dental clinic. The age of patients ranged from 30 to 52 years. By sex, the subjects were distributed as follows: 58.3% (21) females and 42% (15) males. Before the restoration of the volume of lost tissues of the crown part of the vital teeth of the frontal section, an orthopedic rehabilitation was car-

ried out with the filling of defects of the dentition, localized in 30.5% (11 individuals) in the lower jaw, in 22.2% (8 individuals) in the upper and in 47.3 % (17 individuals) on both. The study was performed before the restoration of the front teeth, after one week and after 6 months.

The aesthetic defects of the vital teeth of the frontal section of both jaws were replenished with imported photopolymerizable composites offered in terms of paid services - Estelite asteria (Tokyama Dental) and a domestic equivalent available in the framework of services provided in accordance with the HIF Program - Estelux NK (Stomadent). To examine patients, a traditional scheme was used, including the collection of anamnesis and complaints during a survey, direct examination of the oral cavity, and examination of the temporomandibular joint. The level of anxiety was determined by the method proposed by C.D. Spielberg (Spielberger's State Trait Inventory (STAI)) in an adaptation by Yu. L. Khanin, which allows for separate measurements of anxiety both as a personality and as a state. Interpretation of the results was carried out in accordance with the following criteria: low - less than 30 points, moderate - 31-44 points, high - 45 points and more [6]. The OHIP-14 questionnaire was used to assess the degree of influence of dental health on the patient's quality of life. The WHO-26 brief questionnaire was used to assess the quality of life of patients according to the scales of physical and psychological well-being, micro-social support, self-perception and social well-being [6, 7, 8]. Data was saved in digital form using Microsoft Excel 2010. For the purpose of statistical processing by the method of variation statistics of the data obtained, the program STATISTICA STATSOFT version 6.1 was used. Student's t-index was used to determine the significance of differences between the compared average values and was $p < 0.05$ and 0.01.

The results of the study

The stability of restorations made by a domestic photo composite and an import analogue was evaluated using the Ryge criteria 6 months after production. All indicators had a high level of evaluation and differed slightly between the two materials. So secondary caries, violations of regional adaptation and discoloration of the edges of the cavity were not detected in any case; the correspondence of the color of the restoration to the surrounding tooth tissues was found in 96.5% of restorations from Estelux NC and 97% from Estelite asteria. The anatomical form was better preserved in works from imported material and amounted to 99%; however, the domestic analogue yielded only 1% of stability in this indicator. The surface roughness was not exceeded in 97.8% of cases in works using Estelite asteria and in 97% using Estelux NC.

Questioning patients using the optimized OHIP-14 questionnaire showed a significant effect of aesthetic discomfort that impedes social contacts on responses. The assessment of dental health before treatment was 83.28%, and after - 84.7%, which indicates the low sensitivity of this questionnaire to identify the degree of influence of the aesthetic component of dental health on the social adaptation of the individual.

An analysis of the results of a survey on the World Health Organization Quality of Life (WHOQOL) -BREF questionnaire to assess the extent to which smile aesthetics as a component of dental health affects the patient's overall quality of life showed positive dynamics in terms of psychological and physical components, as well as self-perception. The data before treatment on the following indicators were: physical and psychological well-being - 23, self-perception - 22, micro-social support - 11, social well-being - 24; in a week: 29, 28,13 and 25 respectively, and after 6 months: 26,27,13,24 respectively.

According to the results of the analysis of the psychological state of patients obtained using the methods of Charles D. Spielberg - Yu.L. Khanin, it was revealed that before treatment the reactive anxiety was 55 ± 1.7 points ($p \leq 0.05$) - a high level, and personal anxiety - 42 ± 1.5 points ($p \leq 0.05$) - moderate level. These results confirm the high importance of the aesthetic component of dental health for the quality of the patient's own perception in a social society. A week after the restoration of the frontal teeth, the positive dynamics of reactive anxiety was obtained with a significant decrease to 43 ± 0.6 ($p \leq 0.05$) - a moderate level, against the background of which the level of personal anxiety remained almost unchanged and amounted to 40 ± 0.7 ($p \leq 0.05$). Six months later, indicators of personal and reactive anxiety were 43 ± 0.7 and 44 ± 0.5, respectively [6].

Discussion

Analysis of the data obtained makes it possible to draw a conclusion about an objective decrease in the level of anxiety after restoring the aesthetic balance of the teeth of the frontal section compared to the level of anxiety at the initial stage of treatment. A comparative analysis of the stability of restorations of the frontal group of teeth in the remote period showed no statistically significant differences between domestic and imported materials under equal conditions of use.

Summary

The quality of life of patients depends on the state of aesthetic comfort as part of dental health. The level of reactive and personal anxiety objectively decreases with the completion of defects of the frontal group of teeth. Also, aesthetic dental rehabilitation, in accordance with the data obtained from the results of the survey using the short WHO questionnaire and OHIP-14, has a positive effect on the indices of psychological and physical well-being with an increase in the level of self-perception of an individual in society. The most important, in our opinion, conclusions on the results of this study are: 1) a quantitative assessment of the impact of anxiety on the patient's quality of life is one of the methods to control the treatment being performed, due to the insufficiency of the isolated study of the patient's dental status having an elevated initial level of anxiety; 2) restoration of the aesthetic component of dental health by photocomposite is possible using equally both imported and domestic materials.

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制定评估牙科护理质量的标准
DEVELOPMENT OF CRITERIA FOR ASSESSING THE QUALITY OF DENTAL CARE

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抽象。 2018年，俄罗斯联邦确定了提供牙科护理的临床建议（治疗方案）的新状况。 到2021年，法律要求为所有ICD-10制定新的和重新批准现有临床建议，这决定了医疗界需要积极开展工作，以便早日实施该计划，该计划应该是 旨在标准化治疗过程和客观化质量评估过程和牙科治疗结果。

关键词：临床建议，评估牙科护理质量的标准，治疗方案，剩余根。

Abstract. *In 2018, a new status of Clinical recommendations (treatment protocols) in the provision of dental care was fixed in the Russian Federation. The requirement of the law on the development of new and re-approval of existing clinical recommendations for all ICD-10 by 2021 determines the need for active work on the part of the medical community aimed at the early implementation of the program, which should be aimed at standardizing the treatment processes and objectification of the quality assessment processes and the results of dental treatment.*

Key words: *clinical recommendations, criteria for assessing the quality of dental care, treatment protocols, remaining root.*

Evaluation of the quality of care and the achieved results of dental treatment has always been an urgent and challenging task. Multi-factor characterization of the assessment process taking into account the assessment of compliance with standards and treatment protocols, the degree of achievement of planned results, objectivity and reproducibility of assessments, comparability of cost and quality of treatment, patient satisfaction, etc. necessitates the use of adequate tools for evaluation [1]. In 2018, in

the Russian Federation (RF), a new Federal Law No. 489-FL dated December 25, 2018 “On Amending Art. 40 of the Federal Law "On Compulsory Medical Insurance in the Russian Federation" and the Federal Law "On the Basics of Health Protection of Citizens in the Russian Federation" were passed on the issues of clinical recommendations on the basis of Clinical recommendations on the relevant nosologies.

Approved by the order of the Ministry of Health of Russia dated 05.25.1998 No. 200 / 52-98 "Instructions for the use of the international statistical classification of diseases and problems related to health, the tenth revision" determines the need to develop clinical guidelines in accordance with ICD-10. The material on the work on the clinical guidelines (treatment protocol) for the treatment of patients with a diagnosis of "Remaining root" is proposed.

The notion of the remaining root corresponds to code K08.3 (Dental root delay (retention root). The analysis of medical records of dental patients in various dental organizations showed that dentists do not use the diagnosis “Remaining root”, and in a relevant clinical situation they write the diagnosis “Chronic periodontitis”. Considering the need to draw up Clinical guidelines (treatment protocol) for treating patients, the authors analyzed the literature to determine the “Remaining Root” concept and develop common approaches to diagnosing and treating patients with this pathology.

According to literary sources, the remaining root is pathology of hard tissues of the teeth, manifested in the form of destruction of the crown part of the tooth of carious and non-carious etiology. In case of carious origin, the cause may be late treatment of caries and its complications. In case of non-carious origin, the main factors contributing to the formation of the remaining tooth root can be acute or chronic trauma (tooth crown break off upon impact, complication after tooth extraction, the outcome of wedge-shaped defect formation, pathological abrasion of hard tooth tissues), as well as unsuccessful tooth extraction operations [1,2,3,4]. In foreign literature, the notion of the remaining root after coronectomy (removal of the crown part of the tooth) of the impacted lower third molar, as an alternative to its removal, is also encountered in order to prevent possible injury of the lower lunar nerve during removal [5].

According to A.V. Dembitsky (2010), 60.7% of the roots of the teeth can be used for prosthetics, but only 2.0% is used. The remaining root cannot be clinically visualized, therefore, for diagnosis, x-ray diagnosis is carried out. According to foreign literature data [6], at least 1 X-ray root was found in 15.4-37.3% of patients with complete absence of teeth in radiological examination of patients.

Based on the analysis of scientific literature, the following concept is formulated. The remaining root (K08.3, according to ICD - 10) is the root that remained after the destruction of the coronal part of the tooth, was not removed during the extraction operation, remained as a result of the tooth trauma, as well as after the coronectomy (removal of the coronal part of the tooth) .

In some cases, according to orthopedic indications, they retain a healthy single-root root or one of the roots of a multi-root tooth for later use as a support for a future removable or non-removable orthopedic construction.

The clinical picture, corresponding to the diagnosis of "The remaining root." A root is visualized in the mouth at or below the level of the gum rim of the jaw. If the remaining root is below the level, then most often it is partially or completely covered by the gingival mucosa and is not available for visual inspection. The mucous membrane of the alveolar process above the root may not be changed. In the presence of an inflammatory process in the area of the apex of the tooth root, a fistulous course can be detected. The mucous membrane of the gums around the root of the tooth can be hyperemic and edematous, when probing is determined by bleeding. With the exacerbation of chronic inflammatory process in the area of the remaining root from under the gums, purulent discharge is observed, the appearance of inflammation of the periosteum is possible. Palpation of tissues in the projection of the remaining root and along the transition fold can be painful. The state of the remaining root of the tooth and periapical tissues is determined by X-ray images, in particular, is estimated [2,7,8,9,10,11,12,13]:

- (density) condition of the bone tissue around the root;
- the presence of pathological bone pockets, expansion of the periodontal gap, destruction of bone tissue in the periapical region or in the area of the bifurcation (trifurcation) of the roots;
- length and shape of the root, the presence of bends, curvature of the roots;
- presence of carious root cement damage;
- size and condition of the root canal, the presence or absence of canal filling;
- quality of the canal or root canal filling (relative to the physiological, anatomical or radiographic apex, as well as the density and uniformity of the filling);
- the ratio of the root to the level of the gums and bone alveolar crest (higher, at the level, below the level);
- presence of a root fracture line;
- the ratio of the length of the remaining part of the root and the planned to restore the root part of the tooth.

Diagnosis of the remaining root of the tooth is carried out by collecting anamnesis, clinical examination and additional methods of examination.

The main task in diagnosis is to determine the condition of the remaining root of the tooth and decide whether it is appropriate to preserve it, taking into account the clinical picture in the mouth, the functional state of the entire dental system, the planned orthopedic treatment, the patient's adaptive capabilities and manual skills [3, 13]. A thorough diagnosis requires the involvement of a dentist, general practitioner, dentist - surgeon, dentist - orthopedic surgeon, radiologist, and sometimes an orthodontist (if necessary, extrusion (extension) of the root) [14].

Depending on the diagnosis, a comprehensive treatment plan is prepared for the patient.

In addition, the diagnosis should additionally be aimed at identifying factors that impede the immediate start of outpatient treatment. These factors may be:

- the presence of intolerance to drugs and materials used for treatment;
- associated diseases, aggravated treatment;
- acute inflammatory diseases of the organs and tissues of the mouth;
- A life-threatening acute condition / disease or exacerbation of a chronic disease (including myocardial infarction, acute cerebral blood circulation disorder) that developed less than 6 months before the time of seeking this dental care, and other severe somatic conditions;
- patient's refusal to treat.

During the examination of the patients, the following clinical methods are used: palpation and sensing of the mucous membrane around the remaining root of the tooth, percussion of the remaining root itself. An additional method is x-ray.

The principles of treatment of patients with the remaining root of the tooth provide for the simultaneous solution of several problems [3,11,12,15]:

- preservation of the remaining tooth root, or its removal;
- preservation and restoration of the function of the entire dentition;
- prevention of the development of acute odontogenic inflammatory pathological processes in the dental-toothed and paramaxillary tissues;
- replacement of aesthetic defect;
- restoration of the function of speech in case of violation of diction due to the presence of an included defect in the anterior part of the dentition;
- improving the quality of life of patients.

The complex of therapeutic measures is carried out mainly on an outpatient basis. When drawing up a comprehensive treatment plan, they take into account the severity of inflammatory events, the general and local picture of the disease, as well as data from additional examination methods. First of all, it is necessary to evaluate the possibility of preserving the remaining root and using it during prosthetics. In the case of root removal, the operation is performed under local anesthesia - conduction or infiltration anesthesia; in certain patients, according to the indications, the operation is performed under general anesthesia.

The analysis of literary sources allowed defining of the term "The remaining root". Work on the conceptual apparatus, the formation of a survey algorithm and the preparation of a treatment plan is an integral part of the new clinical guidelines. This work is designed to help dentists in appropriate clinical situations to reasonably and correctly diagnose and, thereby, improve the quality of dental care provided to the population.

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城市空气微生物
MICROFLORA OF URBAN AIR

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Bacteria are widely distributed in the atmosphere, where they are often present as a colloidal system. In a colloidal system, microorganisms are bound to dust particles or liquid droplets. Dust aerosols and mixed-type aerosols are usually larger and heavier than droplet aerosols, so they settle faster. Drip aerosols have the best ability to penetrate the respiratory tract and reach the alveoli [1].

The sizes of some particles can vary under the influence of external factors (mainly humidity and temperature), or as a result of combining into larger aggregates. Small particles include bioaerosol particles of less than 1 micron, and larger particles include more than 1 micron. Small particles, mainly viruses, endospores and cell fragments, are hygroscopic and form the nucleus of condensation of water vapor. At high humidity, water collects around these particles, forming a droplet spray. Further, the particle diameter may increase due to the additional inclusion of bacterial and fungal cells [2].

The presence of microorganisms in the air of a city can have important consequences for human health, causing various infectious and non-infectious diseases (asthma, seasonal allergies, etc.). A person's susceptibility to penetrating infection of the lungs increases in the presence of dust and gaseous air pollution [3]. For example, sulfur dioxide reacts with moisture present in the air, forming a weak solution of sulfuric acid, which irritates the mucous membrane of the upper respiratory tract. Therefore, in areas of high air pollution, under smog conditions, an increased level of respiratory diseases is observed [3, 4].

The source of microorganisms are all environments and inhabitants of the urban ecosystem. The quantitative and qualitative composition of the microflora of atmospheric air depends on the nature of the soil and water cover, the general sanitary condition of the area, seasonal, climatic and meteorological factors. Most often, the microbial landscape of the atmosphere is formed by human activity and soil microorganisms. In turn, the soil microflora of urbanized areas is formed due to fallen leaves, household garbage, dog feces, cats and birds [5, 6]. On average, one resident of a small Russian city (for example, the city of Kaluga) accounts for up to 1 kg of feces of cats and dogs per year.

During the growing season there is a large amount of pollen from anemophilous plants (grass and some trees) in the air. In addition, in the air you can find algae, protozoa cysts, eggs of small invertebrates. All these biological objects have allergic properties that are magnified in the presence of various chemicals [4, 6, 7].

Thus, the above data suggests that microbiological research of atmospheric air should be an equally important part of environmental monitoring, along with an assessment of its chemical pollution. Microbiological study of air is also necessary for understanding the relationship between the conditions of the urban ecosystem and the presence of certain microorganisms in the atmosphere. However, less attention is paid to microbiological air monitoring compared to the assessment of chemical or physical pollution. The study of microorganisms in the air and their influence on the inhabitants of urban ecosystems is the main task of a developing scientific field – aerobiology.

Research methods

Air sampling was carried out in different seasons of the year using a bacteriological sampler for 20 minutes on Petri dishes with nutrient agar and with Sabouraud's glucose agar. Samples were taken in 3 replications in seven places of the city of Kaluga at a height of 1.5 m: the city center, residential district, industrial district, pine forest, sanitary protection zone of the landfill, the Oka River (1 km from the city), the street with intensive car traffic.

At the end of the selection, Petri dishes were delivered to the microbiological laboratory for further research. The total microbial contamination of 1 m^3 of air was calculated using the formula:

$$K = a \times 10$$

where K - the number of colonies forming units of microorganisms in 1 m^3 of the test air (CFU / m^3);

a - the number of colonies of microorganisms grown on Petri dishes after aspiration of 0.1 m^3 of air;

10 - factor to determine the CFU in 1 m^3 of air.

Research results

We have noted a significant variability of the qualitative and quantitative composition of the bacterial community in the surface atmosphere of the city of Kaluga, depending on the season of the year and the place of sampling. The maximum content of total microflora in 1 m^3 of air was observed in the spring-summer period at all sampling sites (Fig. 1).

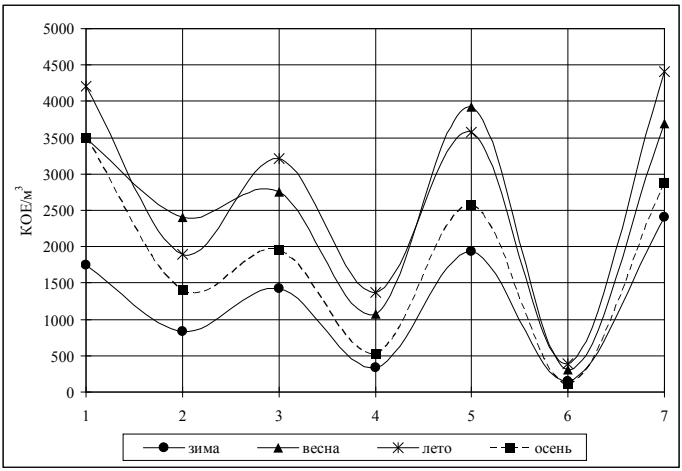

Fig. 1. *Dynamics of detection of microorganisms (M_{cp}) in the atmospheric air of the city of Kaluga in different seasons of the year*
Note: 1 - city center, 2 - residential area, 3 - industrial area, 4 - pine forest, 5 - sanitary protection zone of the landfill, 6 - river bank, 7 - street with heavy traffic.

But the greatest concentrations were recorded by us in the city center, in the industrial district, the sanitary protection zone of the landfill and on the streets with heavy traffic. In the pine forest and on the banks of the Oka River, the total content of microorganisms in the air was minimal in all seasons of the year. The composition of bacterial communities found in air samples in winter is characterized by approximately the same ratio of cocci, bacilli, and mold fungi (Fig. 2).

In the spring months, cocci and mold fungi were most often sown. The summer atmosphere was characterized by an abundance of bacilli, and the autumn atmosphere was characterized by elevated concentrations of mold fungi. Gram-positive flora prevailed among all air microorganisms.

In the total mass of coccal microflora of the surface atmosphere of the city, we identified micrococci (up to 42%), tetracocci (up to 29%), staphylococci (up to 10%), diplococci (up to 7%), sarcins (up to 22%) and streptococci (up to 7%)). The greatest number of micrococci was sown in the winter and autumn months (Fig. 3). Among the mold fungi, mold fungi of the genera Cladosporium (up to 44%), Penicillium (up to 31%) and Aspergillus (up to 33%) were sown more often. Then, in decreasing order, follow Alternaria and Fusarium (up to 9%), Botrytis (up to 6%). The genus Cladosporium prevailed in the total mass of mold fungi in all seasons of the year, but the maximum number of spores was sown in the spring-summer period, i.e. during the growing season of plants.

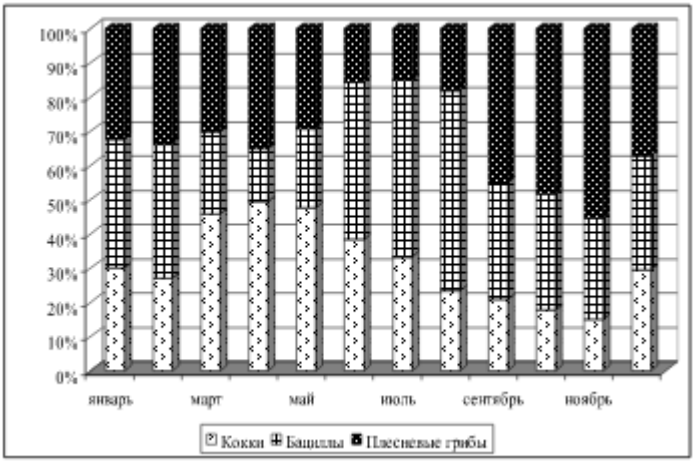

Fig. 2. *The percentage of different types of microorganisms in the atmospheric air of the city of Kaluga in different seasons of the year*

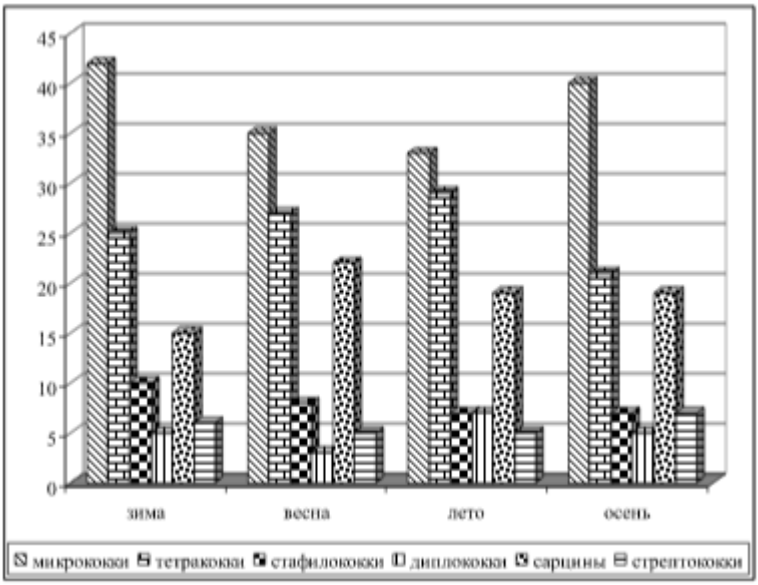

Fig. 3. *The percentage of coccal forms of microorganisms in the atmospheric air of the city of Kaluga in different seasons of the year*

Penicilli and Aspergillus were present in the air almost evenly throughout the year. The remaining micromycetes (Alternaria, Fusarium, Botrytis) were also uniformly seeded from the air throughout the year, but in much smaller quantities (Fig. 4). The results indicate the presence in the atmosphere of urbanized areas of a large number of diverse microorganisms.

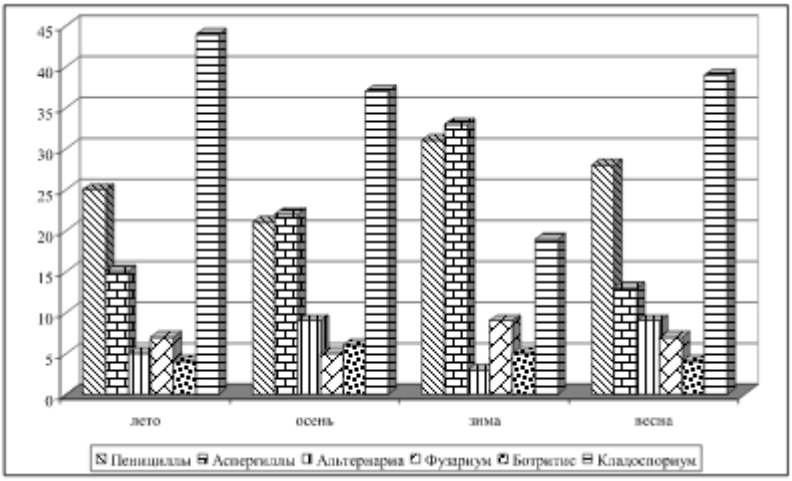

Fig. 4. *The percentage of different types of fungi in the atmospheric air of the city of Kaluga in different seasons of the year*

We noted a high percentage of detection of micrococci and spores of the fungi of the genus Cladosporium in various parts of the city (Fig. 5).

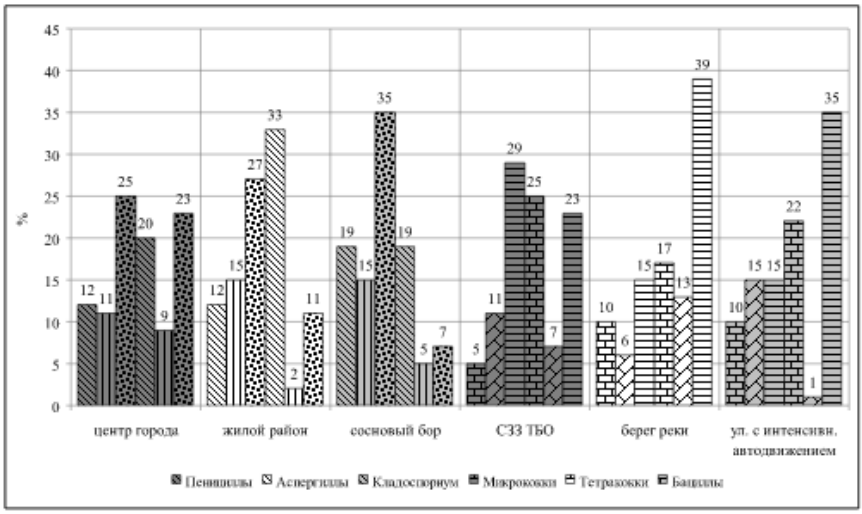

Fig. 5. *The percentage of different types of mold fungi in the atmospheric air in different parts of the city of Kaluga*

According to various authors [5, 6, 8, 9], this may be due to the contamination of the territory of the city with the feces of dogs and cats, which are among the main sources of bacterial pollution of the atmosphere in urban areas. In 1 year, dog feces contain up to 23 million different microorganisms that can seriously affect people's health, causing, among other things, allergic reactions. Further research is needed to understand the importance of soil pollution by animals in the anthropoecosystem, as the main source of pollution of the surface atmosphere.

Thus, our studies have shown that the surface atmosphere of urbanized areas contains significant amounts of various microorganisms coming from various sources in the form of dust or droplet aerosols. The migration of microorganisms into the atmosphere is an indicator of the sanitary condition of the urban environment and a risk factor for public health.

Various publications provide conflicting data on the quantitative and qualitative composition of air microorganisms in open territories [1, 2, 3, 4, 5, 6, 7], which is associated with the peculiarities of the studied anthropoecosystems.

In this regard, for each specific region, against the background of a well-known ecological situation, further research is needed aimed at a deeper study of the species composition of microorganisms in the atmosphere of cities, their migration routes and links with specific morbidity of the population.

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UDC 663.1

利用酿造业的二次资源生产食用醋
THE USE OF SECONDARY RESOURCES OF THE BREWING INDUSTRY FOR PRODUCTION OF FOOD VINEGAR

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注解。本文致力于开发合理使用生产非酒精啤酒中生产的啤酒透析液的技术方案。使用它的最有效方法之一是生产醋。本文介绍了初始啤酒透析液中挥发性成分，有机酸和氨基酸的研究数据，其中乙醇的体积分数为0.6%，啤酒透析液浓缩至乙醇的体积分数为5.0%和8.0%。通过浓缩啤酒透析液与醋酸菌的生化氧化，得到了醋的挥发性成分，有机酸和氨基酸的研究数据。氧化过程以周期性的深度方式进行。显示了曝气方式和乙酸的起始浓度对从啤酒透析液生产醋中的乙酸细菌的功能活性的影响。建议从啤酒透析液中定期深入获取醋的技术制度。

关键词：啤酒透析液，浓缩啤酒透析液，挥发性成分，氨基酸，有机酸，醋酸菌，醋，通气方式，乙酸起始浓度。

Annotation. *This article is devoted to the development of technological regimes for the rational use of beer dialysates produced in the production of non-alcoholic beer. One of the most effective ways to use it is the production of vinegar. The article presents research data on volatile components, organic acids and amino acids of the initial beer dialysates with a volume fraction of ethyl alcohol of 0.6% and beer dialysates concentrated to a volume fraction of ethyl alcohol of 5.0% and 8.0%. The data of studies of volatile components, organic acids and amino acids of vinegar obtained as a result of biochemical oxidation of concentrated beer dialysates with acetic acid bacteria are given. The oxidation process was carried out in a periodic deep way. The effect of aeration regimes and the starting concentration of acetic acid on the functional activity of acetic acid bacteria in the production of vinegar from beer dialysates is shown. Technological regimes for obtaining vinegar in a periodic deep way from beer dialysates are recommended.*

Keywords*: beer dialysate, concentrated beer dialysate, volatile components, amino acids, organic acids, acetic acid bacteria, vinegar, aeration regimes, starting concentration of acetic acid.*

Currently, brewing is one of the developed branches of the food industry of the Russian Federation. In addition, the volume of non-alcoholic beer production increases every year, which is usually obtained by dialysis of regular beer. The dialysate produced during the production contains ethyl alcohol, which entails the need for its rational use and accounting in accordance with the requirements of the Federal Law No. 171-ФЗ "On State Regulation of the Production and Sale of Alcohol and Alcohol-containing Products".

Receiving rectified alcohol from the formed dialysate is not rational, since, on the one hand, according to its organoleptic characteristics, it cannot be used for the production of vodka and alcoholic beverages, on the other hand, it is not economically advantageous to produce alcohol-containing liquids. One of the most effective ways to use it is the production of vinegar.

Food vinegar is widely used in the production of food products, including canned vegetables, as well as seasoning. The cheapest but least valuable among its varieties is table vinegar, which is made by diluting acetic acid with water, produced by synthesis during the processing of wood waste. Alcoholic vinegar obtained by microbiological synthesis using acetic acid bacteria (AAB) from rectified food alcohol has a slightly higher quality. Complete or partial replacement of the rectified alcohol to the head fraction of ethyl alcohol, allows to obtain vinegar on organoleptic and physical and chemical properties not inferior to vinegar obtained from rectified alcohol [1-8]. Certainly, grape and fruit (apple, quince, etc.) vinegars [9-17], which are obtained directly from grape and fruit wine materials, possess higher quality. The most progressive is the method of apple cider vinegar production with a movable nozzle, developed at the All-Russia Research Institute of Beer, Wine and Soft Drinks Industries, in which the deep method is combined with the use of a special polyethylene nozzle. The development of vinegar technology from beer dialysate will help expand the range of domestic food products, and most importantly, will allow us to find a rational use of one of the main secondary products of brewing - alcohol-containing dialysates.

The purpose of the work was the development of technological regimes for processing beer dialysates to obtain edible vinegar. The studies were conducted in the laboratory conditions of the institute using the methods of analysis adopted in enochemical, brewing and acetic industries and set out in the appropriate GOST and modern instrumental methods of analysis.

In the studies, we used samples of beer dialysates with a volume fraction of ethyl alcohol of 0.6%, samples of beer dialysates concentrated to a volume frac-

tion of ethyl alcohol of 5.0% and 8.0%. Acetic fermentation was carried out in a deep way. Acetobacter aceti VNIIPBT-66 microorganism strain was used. For the cultivation of the strain, a liquid medium of the following composition was used: rectified ethyl alcohol - 7.0%; acetic acid (glacial) - 0.7%; (NH4) 2HPO4 - 0.5%; KH2PO4, 0.2%; MgSO4 - 0.2%. Cultivation was performed by the method of gradual accumulation of biomass and increase in the physiological activity of bacteria by successive subculture on nutrient media.

It is known that beer is rich in aromatic components [18-20]. Some aromatic substances from beer are partially transferred to dialysate during membrane dealcoholization.

In the test samples of beer dialysates, the quantitative and qualitative composition of volatile components was determined. The data presented in Table 1.

Table 1. *Volatile components of beer dialysates with various volumes of ethanol*

Volatile components	**Mass concentration, mg / dm^3**		
	Dialysates with a volume fraction of alcohol,%		
	0,6	**5,0**	**8,0**
Isobutyraldehyde	not det.	not det.	not det.
Acetone	not det.	not det.	not det.
Ethyl formate	not det.	not det.	not det.
Diethylformal	not det.	not det.	not det.
Ethyl acetate	not det.	4,1	10,5
Methanol	not det.	0,4	0,8
2-propanol	not det.	not det.	not det.
Diacetyl	not det.	not det.	not det.
01-propanol	not det.	9,8	17,4
Isobutanol	not det.	13,2	23,7
Isoamylacetate	not det.	0,2	0,6
01- butanol	not det.	0,4	0,7
Isoamilol	0,5	50,1	88,4
Ethylcaproate	not det.	not det.	not det.
Hexanol	not det.	0,05	0,07
Ethyl lactate	0,2	0,2	0,3
Ethyl caprylate	not det.	not det.	not det.
Ethyl caprate Phenylethyl alcohol	not det.	not det.	not det.
Phenylethyl alcohol	18,2	20,3	21,3
Total	18,9	98,7	163,8

As can be seen from the table, isoamylol, ethyl lactate and phenylethyl alcohol are found in dialysate with a volume fraction of alcohol of 0.6% of the detected volatile components. While strengthening the dialysate, volatile compounds were concentrated to a volume fraction of ethyl alcohol of 5.0% and 8.0%.

The amount of volatile components in dialysate with a volume fraction of alcohol of 5.0% increased more than 5 times, and in dialysate with a volume fraction of alcohol of 8.0% - almost 9 times.

In the greatest amount they contain higher alcohols isoamylol, isobutanol, 1-propanol (50.1 mg/dm^3 and 88.4 mg/dm^3 ; 13.2 mg/dm^3 and 23.7 mg/dm^3; 9.8 mg/dm^3 and 17.4 mg/dm^3, respectively). The content of phenylethyl alcohol increased by 11% in dialysate with a volume fraction of ethyl alcohol of 5.0% and by 17% in dialysate with a volume fraction of ethyl alcohol of 8.0% compared with the initial dialysate.

Studies of the quantitative and qualitative composition of organic acids in beer dialysates showed that the organic acids in the initial beer dialysate are malic, lactic, and succinic acids. The total mass concentration of organic acids is low and amounts to 1.5 g / dm3. In dialysates concentrated to a volume fraction of alcohol of 5.0% and 8.0%, the qualitative composition of organic acids remained, their mass concentration decreased and amounted to 1.0 g / dm3 and 0.4 g / dm3, respectively. In the study of the quantitative and qualitative composition of amino acids in beer dialysates, 18 amino acids were identified.

In dialysate concentrated to a volume fraction of ethyl alcohol 5.0%, the content of amino acids is 1.8 times, and in dialysate with a volume fraction of alcohol 8.0% it is 2.7 times lower than in the initial dialysate.

Organoleptic analysis showed that dialysates have a pleasant light beer aroma. The effect of aeration regimes on the functional activity of acetic acid bacteria in the preparation of vinegar from beer dialysates, concentrated to a volume fraction of ethyl alcohol of 8.0%, was investigated.

In order to clarify the optimal amount of air required in the process of acetic acid fermentation, its consumption was changed from two to five dm^3/h per dm^3 of culture liquid.

The greatest amount of acetic acid was formed at the air flow rate from 3 to 5 dm^3/hour. The duration of the oxidation cycle at the same time was 5-6 days, while at a flow rate of 2 dm^3/hour, the technological cycle increased to 8 days.

Due to the fact that with an increase in air flow from 3 to 5 dm^3/hour, the accumulation of acetic acid practically does not increase, for the best option the consumption of 3 dm^3/hour per 1 dm^3 of medium was selected. The content of dissolved oxygen in the culture fluid ranged from 2.1 to 2.4 mg/dm^3.

From the practice of making alcohol vinegar with a biochemical method, it is known that the initial (starting) concentration of acetic acid in the culture fluid,

during which the oxidation of alcohol by acetic acid bacteria occurs, affects the yield of the finished product and its quality. When determining the influence of the starting concentration of acetic acid on the functional activity of acetic acid bacteria, dialysate oxidation was carried out at different starting concentrations of acetic acid: 4.5; 5.0; 5.5; 6.0; 6.5; 7.0 g/100 cm^3.

The maximum production capacity of acetic acid bacteria (acetic acid yield is 86%) is observed when the starting concentration of acetic acid is 6.5-7.0 g/100 cm^3, causing the producer's development phase, which is characterized by limited growth of new cells and high oxidizing ability of the culture. When the starting concentration is below 5.5, the yield of acetic acid is significantly reduced (79%), since conditions are created for the growth of the biomass of acetic acid bacteria.

Further studies were carried out with a starting concentration of acetic acid of 6.5 g/100 cm^3. The oxidation process was carried out at an air flow rate of 3 dm^3/ hour per 1 dm^3 of liquid.

The resulting vinegar was used to determine the qualitative and quantitative composition of organic acids, volatile components, and amino acids. The research results are summarized in tables 2, 3.

Studies of the quantitative and qualitative composition of organic acids in vinegar obtained from beer dialysates, concentrated to a volume fraction of ethyl alcohol of 5.0% and 8.0%, showed that in addition to acetic acid (6.9 g / dm3 and 3.9 g / dm3, respectively) other organic acids contained in vinegar in small quantities.

Table 2. *Mass concentration of volatile components, mg/dm^3*

Names of volatile components	Brewer's dialysate vinegar with an alcohol volume of 8.0%	Brewer's dialysate vinegar with a volume fraction of alcohol 5.0%
Acetaldehyde	not detected	not detected
Isobutyraldehyde	not detected	not detected
Acetone	not detected	not detected
Ethyl formate	not detected	not detected
Diethylformal	not detected	not detected
Ethyl acetate	1,2	1,2
Methanol	0,5	not detected
2-propanol	not detected	not detected
Diacetyl	not detected	not detected
2- butanol	not detected	not detected
1-propanol	12,8	3,4
Isobutanol	19,2	10,5
Isoamylacetate	not detected	not detected
1-butanol	0,5	0,2
Isoamilol	69,4	21,0

Names of volatile components	Brewer's dialysate vinegar with an alcohol volume of 8.0%	Brewer's dialysate vinegar with a volume fraction of alcohol 5.0%
Ethylcaproate	not detected	not detected
Hexanol	not detected	not detected
Ethyl lactate	1,0	0,5
Ethyl caprylate	0,8	0,2
Ethyl caprate	not detected	not detected
Phenylethyl alcohol	32,4	28,2
Amount of volatile components	137,9	65,2

The content of volatile components in vinegar from beer dialysate with a volume fraction of alcohol of 8.0% is 2 times higher than that of dialysate with a volume fraction of alcohol of 5.0%.

Table 3. *Mass concentration of amino acids, mg/dm³*

Names of Amino Acids	Brewer's dialysate vinegar with an alcohol volume of 8.0%	Brewer's dialysate vinegar with an alcohol volume of 5.0%
Aspartic acid	1,2	0,9
Glutamic acid	0,8	0,6
Asparagin	7,5	7,4
Histidine	0,4	0,3
Serine	1,3	2,8
Glutamine	2,5	7,5
Arginine	0,3	1,1
Glycine	6,6	6,4
Threonine	5,8	6,1
Alanine	38	42,8
Tyrosine	1,2	1,3
Valin	4,5	5,7
Methionine	3,6	7,1
Tryptophan	0,8	1,1
Isoleucine	3,4	4,1
Phenylalanine	2,5	2,4
Leucine	2,4	3,2
Lysine	0,7	0,8
Total	83,5	101,6

It was shown that acetic acid bacteria intensively synthesize aspartic acid, serine, glycine, threonine, alanine, valine, tryptophan, isoleucine, as well as cyclic aromatic amino acids tyrosine and phenylalanine, which are involved in the addition of a specific flavor. As can be seen from the table, the amount of amino acids in both vinegar samples is almost 2 times higher than in initial dialysates in dialsate vinegar with a volume fraction of alcohol of 8.0% and more than 2 times of dialysate with a volume fraction of alcohol of 5.0%.

Vinegar, obtained from concentrated beer dialysates, has characteristic specific organoleptic properties, with a light beer aroma combined with bread tones.

As a result of the research it was found:

- the optimum air consumption in the process of acetic acid fermentation of beer dialysate, concentrated to a volume fraction of ethyl alcohol of 8.0%, is 3 dm^3 /hour per 1 dm^3 of liquid. The content of dissolved oxygen in the culture fluid ranged from 2.1 to 2.4 mg/dm^3;

- the starting concentration of acetic acid affects the functional activity of acetic acid bacteria in the production of vinegar from beer dialysates. It was shown that the maximum production capacity of acetic acid bacteria is observed when the starting concentration of acetic acid is 6.5 g/100 cm^3, which determines the producer development phase, which is characterized by limited growth of new cells and high oxidizing ability of the culture. When the starting concentration is below 5.5 g/100 cm^3, the yield of acetic acid is significantly reduced, since conditions are created for the growth of the biomass of acetic acid bacteria;

- in the process of acetic fermentation of beer dialysates, there is an active accumulation of amino acids, the sum of amino acids in both vinegar samples is higher than in initial dialysates - almost 2 times in vinegar from dialysate with a volume fraction of alcohol of 8.0% and more than 2 times from dialysate with alcohol volume fraction 5.0%;

- in the process of acetic fermentation of beer dialysates, β-phenylethyl alcohol is accumulated, the synthesis of ethyl lactate and ethyl caprylate esters, causing the specificity of the product.

Based on the results of research, technological regimes were developed for the production of vinegar from dialysate, concentrated to a volume fraction of ethyl alcohol of 8%, by a periodic in-depth method: aeration conditions - 3 dm^3/ h per 1 dm^3 of liquid; the starting concentration of acetic acid is 6.5 g/100 cm^3; the optimal process temperature is 28-30 °C.

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Na-羧甲基纤维素测定分子量参数的特征
FEATURES OF DETERMINATION OF MOLECULAR WEIGHT PARAMETERS OF NA-CARBOXYMETHYLCELLULOSE

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注解。 对分级和未分级Na-CMC样品的溶解进行比较分析，然后测定这些级分的分子量，其显示出Na-CMC的显着逐步溶解。 研究了Na-CMC溶液的粘度对溶液的表面和溶液的张力以及浓度的依赖性。 根据溶液表面张力的变化，建议确定Na-CMC聚电解质溶液和低分子量抗衡离子的浓度范围，以有效测量Na-CMC的分子量特征。

关键词：羧甲基纤维素钠，多糖，分馏，溶解度，表面张力，粘度，聚电解质。

Annotation. *A comparative analysis of the dissolution of fractional and unfractionated Na-CMC samples was performed, followed by the determination of the molecular weights for these fractions, which manifest pronounced stepwise dissolution of Na-CMC. The dependence of the viscosity of the Na-CMC solution on the surface and the tension of the solution and on the concentration was studied. According to the changes in the surface tension of the solution it is proposed to determine the concentration range of the Na-CMC polyelectrolyte solution and the low-molecular counterion for effective measurement of the molecular-mass characteristics of the Na-CMC.*

Key words: Na-carboxymethylcellulose, polysaccharide, fractionation, solubility, surface tension, viscosity, polyelectrolyte.

Na-carboxymethylcellulose (Na-CMC) is a water-soluble polymer, a derivative of cellulose. The strong demand for this polymer in practice is due to its solubility in water. However, the solubility of Na-CMC depends on many such factors as molecular weight, degree of substitution, swelling, compositional homogeneity, fractional composition, polydispersity, etc. [1]. Therefore, it is quite difficult to determinate the critical values of the solubility parameters, as well as the thermodynamic and kinetic laws of dissolution.

In other equal conditions one of the main factors influencing the dissolution is the polydispersity, which causes the flow of fractional dissolution according to molecular masses or the molecular mass distribution. An increase in polydispersity usually takes place during carboxymethylation of cellulose, which leads to an increase in the number of fractions in the final product. Therefore, the time of fractional dissolution also increases. This circumstance allows obtaining fractions differing in molecular weight, i.e. by using the method of fractional dissolution. This method was used to fractionate the Na-CMC sample. Five samples of the fractions were obtained during complete dissolution in water, i.e. in 8 hours.

Table 1 shows the results of a comparative study of the complete dissolution of the non-fractional and fractional dissolution of the selected sample of Na-CMC in water over time (t). Samples were taken at a concentration of 0.14 g / dL.

Table 1.

The results of the fractional dissolution of Na-CMC by time (tf) and the determination of the molecular weight of the initial sample and fractions by viscometry

Sample - fraction	t_f, hour	C, g/dl	[η], dl/g	M_η
Na-CMC (1)	0,5	0,144	3,11	61000
Na-CMC (2)	1	0,142	3,37	64000
Na-CMC (3)	3	0,146	3,50	65700
Na-CMC (4)	5	0,142	3,65	68500
Na-CMC (5)	8	0,146	6,98	112700
Na-CMC (non-fractional)	8	0,150	6,45	106000

Since the solutions of Na-CMC samples in water were characterized by polyelectrolyte effects, for conducting hydrodynamic studies, namely, for determining the molecular weight (M_η) of the samples using the viscometric technique, these effects were suppressed by adding 2% NaCl to the solutions [2].

First of all, the behavior of unfractionated Na-CMC chains in dilute solutions was examined by measuring the reduced viscosity (η/C) depending on the concentration (C), according to Huggins's law [3]. A graph is plotted based on the obtained results. It is shown at Figure 1 as the dependence of η/C on C. By extrapolating $C \rightarrow 0$, the characteristic viscosity [η] = 645 ml / g is determined.

The molecular weight (M_η) of the CMC sample calculated by the Mark–Houwink $[\eta] = 2{,}33 \cdot 10^{-4} M_\eta^{1{,}28}$ ml / g was equal to M_η= ([η]/K)1/a= (645/2,33·10-4) 1/1,28= (2768240)0,78= 106000.

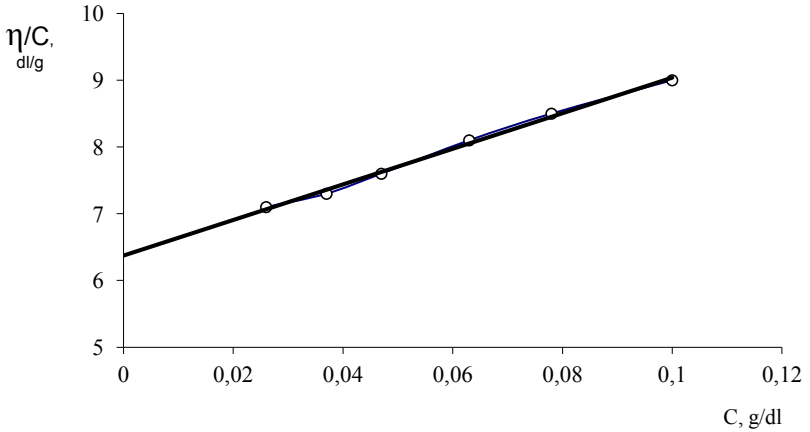

Fig.1. *Dependence of the reduced viscosity (η/C) on the concentration (C) of the solution of the unfractionated sample Na-CMC.*

The values of the characteristic viscosity of the samples of the fractions [η], determined by this method, are given in Table 1. The values of the molecular weight of the samples of the fractions calculated are also presented. These values were calculated according to the Mark–Houwink equation. It can be seen that within 5 hours the dissolution of the fractions characterizing the molecular weight up to 68500 is carried out. Then the selected sample of Na-CMC, the average molecular weight of which is equal to 112700, is almost completely dissolved within 3 hours. Based on these results, it can be assumed that the dissolution of the Na – CMC sample is carried out in two stages, depending on the molecular weight. If we look at the fact that the dissolution takes place after a certain degree of swelling of the polymer sample, then the swelling and dissolution of the low molecular weight fractions ($M_\eta \leq 68500$) is performed at approximately the same speed, and the dissolution of the high molecular weight fraction ($M_\eta \geq 112700$) requires additional time due to slow down the process of swelling. The reason for the slowing down of swelling is the thermodynamic complication of the penetration of solvent molecules into the bulk of the polymer and the breaking of intermolecular bonds. The distribution of the separated molecular chains in the solvent volume is uniform.

It is known that a number of polymers, especially of natural origin, are used through solutions, which, depending on the content of various ionogenic groups in the chains, express polyelectrolyte properties that complicate the behavior of both individual chains and the solution system itself in determining the molecular mass characteristics, as well as in its interaction with the environment [4]. One of these factors affecting the properties of solutions is the surface tension, which

appears on the border of two medium, depending on the nature of the liquid-phase system and its ability to hold a minimum volume [5]. The study of the surface tension of polyelectrolyte by the Rehbinder method showed that the solutions have significant values of this indicator [6]. The surface tension is of great importance for the formation of a stable stream of polymers subjected to stretching in air or precipitator during the formation of fibers or membranes. In the case with polyelectrolytes, where the interaction of macromolecular chains is complicated by their ionic groups, surface tension in different ways affects the formation of a jet and its transformation into materials [7].

This work studied the specific manifestation of the surface tension of a polyelectrolyte by the example of a Na-CMC solution in the presence and absence of a polyelectrolyte effect using the Rehbinder method, which allows determining the surface tension coefficient (α) of various liquids. Since this method is used for the first time for aqueous solutions of Na-CMC, the results of the experiments were compared with data obtained using the viscometric method [7].

A sample of Na-CMC selected for research was characterized by a degree of substitution of $\gamma \approx 0,8$, which ensured its complete dissolution in water. The polyelectrolyte effect of the solution, manifested by the activity of COOH-groups of the chains, was excluded by adding 2% NaCl.

The Rehbinder installation scheme used to study the surface tension of the solutions is presented in Figure 2. The aspirator (A) of this installation was improved by connecting a short capillary (k1) with a diameter of 1 mm for the expiration of a constant volume of water (b1) providing a constant vacuum in the tank (B), due to what is the absorption of air (B2) through a capillary (k2) with a diameter $r = 0.5$ mm, put into the solution (P) at a depth h1. In this case, air bubbles (d) are formed in the solution, which rapidly move outward, overcoming the surface tension of the solution.

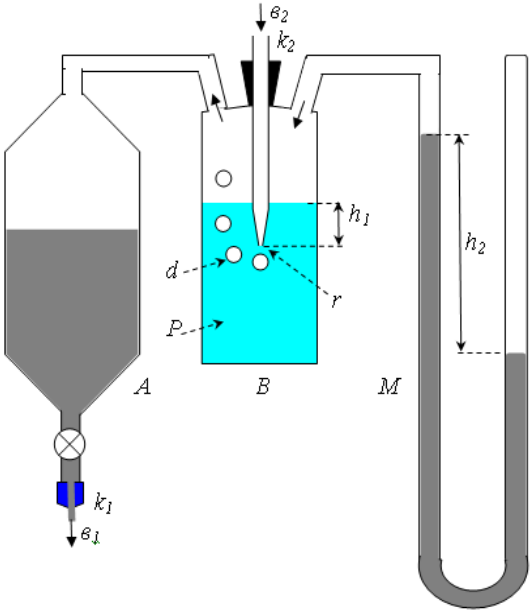

Fig.2. *Rehbinder installation scheme for the researching of surface tension of the solutions.*

With a constant vacuum effect, the displacement of the formed bubbles, which depends on the strength of the surface tension of the solution, is estimated from the pressure drop ($\Delta h=h_2-h_1$) in the manometer (M). Based on Δh, the coefficient of surface tension (α) of the solution is calculated, depending on the nature of the intermolecular interaction and the polymer concentration [6/171]:

$$\alpha= 0,5rg(\rho_2 h_2 - \rho_1 h_1)$$

Where g is the acceleration of gravity; ρ_1 and ρ_2 are the densities of the solution and air, respectively.

From the comparative data presented in Figure 3, it can be seen that a decrease in C is accompanied by an increase in η/C for an aqueous solution of Na-CMC (curve 1). This phenomenon is characteristic of polyelectrolyte, which is caused by a noticeable straightening of the chains due to the electrostatic repulsion of COOH-groups as the solution is diluted. The addition of 2% NaCl led to the elimination of the polyelectrolyte effect, i.e. shielding the mutual repulsion of COOH-groups by means of Na + ions. This is indicated by the straightness of the dependence of η/C on C (curve 2). This made it possible to determine $[\eta]\approx 4,8$ dl / g and calculate the value of the molecular mass of Na-CMC equal to $M_\eta \approx 108000$ according to the equation $[\eta]\approx 5,4*10^{-3} M_\eta^{0,73}$, dl / g [2].

This feature of polyelectrolyte occurred in the study of surface tension. From figure 4 it can be seen that upon dilution of a moderately concentrated solution (from 3 to 1 g / dl) a relatively intensive decrease in the coefficient α is observed for the Na-CMC solution in the presence of a polyelectrolyte effect (curve 1) than in the absence of this effect (2). In the area of a dilute solution (C <1 g / dL), the decrease in α is insignificant and the curves merge with each other. The results show that the surface tension is relatively high in the presence of a polyelectrolyte effect in the region of moderately concentrated solutions.

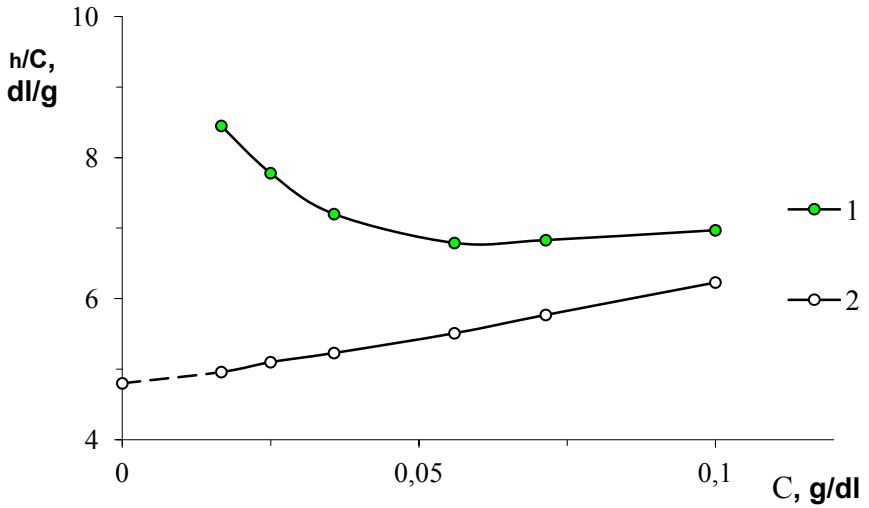

Fig.4. *Dependence of surface tension coefficient (α) on concentrations (C) for aqueous solutions of Na-CMC (1) and Na-CMC + 2% NaCl (2)*

Thus, it was found that in the region of a moderately concentrated solution of Na-CMC (C ≈ 1 g / dl) ionic COOH-groups in chains increase surface tension forces at the "polyelectrolyte-air" interface more efficiently than in the case when these groups shielded. In general, proportionality α was found with the change in C, which is an important characteristic of polyelectrolyte in determining its applications. This pattern of change determines the range of solution concentration and low molecular weight counterion for efficient measurement of the molecular mass characteristics of Na-CMC.

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降水变化对西西伯利亚南部径流形成的影响
EFFECT OF CHANGES IN PRECIPITATION ON RUNOFF FORMATION IN THE SOUTH OF WESTERN SIBERIA

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抽象。 准确量化河流集水量水平要素的问题：降水，局部径流和地表总蒸发量是工程水文学的主要问题之一。 本文致力于利用V.S.分析降水变化对西西伯利亚南部局地径流形成的影响。 Mezentsev的水文和气候计算方法。 对鄂木斯克气象站水文气象资料的研究表明，降水量的变化导致土壤水分增加，最大可能蒸发量和实际蒸发量逐渐增加，反过来又导致流量增加。

关键词：水量平衡，降水，局地径流，地表总蒸发量，水文和气候计算方法，土壤湿度。

Abstract. *The problem of accurately quantifying the elements of the water balance of river catchments: precipitation, local runoff and total evaporation from the earth's surface are one of the main problems of engineering hydrology. The article is devoted to the analysis of the effect of changes in precipitation on the formation of local runoff in the south of Western Siberia using the V.S. Mezentsev's method of hydrological and climatic calculations. Studies on the hydro meteorological data of the Omsk meteorological station showed that changes in the amount of precipitation lead to an increase in soil moisture and a gradual increase in the maximum possible and actual evaporation, in turn, this leads to an increase in the flow layer.*

Key words*: Water balance, precipitation, local runoff, total evaporation from the earth's surface, method of hydrological and climatic calculations, soil moisture.*

One of the main problems of engineering hydrology is the problem of accurate quantitative determination of the elements of the water balance of river catchments: precipitation, local runoff and total evaporation from the earth's surface.

During the second half of the last century in the city of Omsk, under the leadership of Professor V.S. Mezentsev studies of water resources and elements of the water balance in many regions of Russia and Kazakhstan were conducted.

The system of equations of the method of hydrological-climatic calculations (HCC) developed by Mezentsev V. S. in 1957, the mathematical model of the processes of moisture conversion at the level of the active surface of the catchment area of any territory is the most general and universal from the point of view of using for any calculated time interval. Being based on two fundamental conservation laws — energy and matter — the HCC method, unlike other well-known methods for calculating evaporation, is the only genetic method [1].

The HCC method is widely used in practice for the quantitative assessment of the degree of hydro-reclamation effects on agricultural landscapes, for the study of the elements of water and heat balances and the characteristics of the natural heat supply of territories.

Atmospheric precipitation is one of the main factors for the formation of runoff. Precipitation in the form of snow during the winter period gives a greater flow than summer precipitation, since a significant part of the summer precipitation is lost to evaporation. The same amount of precipitation that fell during a short-term heavy rainfall, gives a greater flow than during prolonged heavy rain [2, 3].

In the southern part of Western Siberia, the bulk of precipitation falls on the warm part of the year. Their number increases markedly from May and reaches a maximum in July (Fig. 1-3). Minimum rainfall is in the second half of winter and early spring.

In our work, the effect of changes in precipitation on the formation of runoff in the south of Western Siberia is considered. Baseline data for analysis were obtained at the meteorological station Omsk.

The graphs below show a comparative analysis of precipitation according to Omsk meteorological stations for May, June and July for a 30-year time interval, from 1975 to 2005 with many years of rainfall for these months for the area.

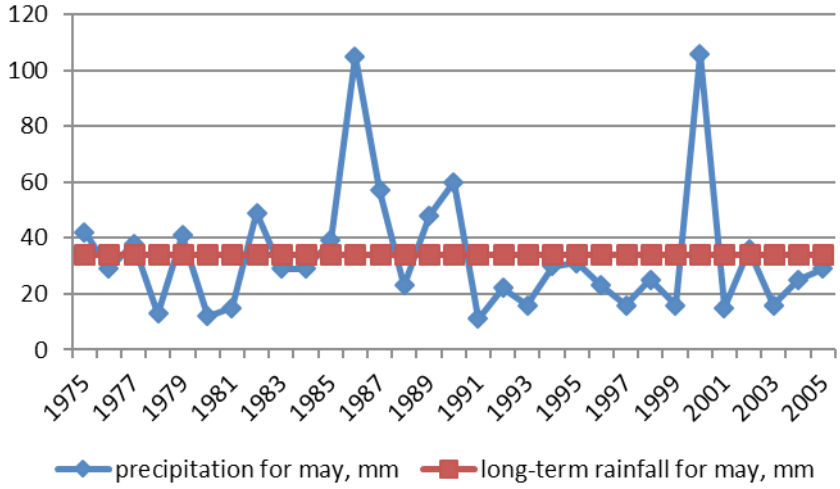

Figure 1. *Amount of precipitation at the Omsk meteorological station in May, 1975 - 2005, mm*

As it shown in Figure 1, the greatest amount of precipitation is 105 mm and 106 mm in May compared to the multiyear norm for a given month of the studied territory of 34 mm observed in 1986 and 2000, respectively. The least amount of precipitation - 12 mm and 11 mm recorded in 1980 and 1991.

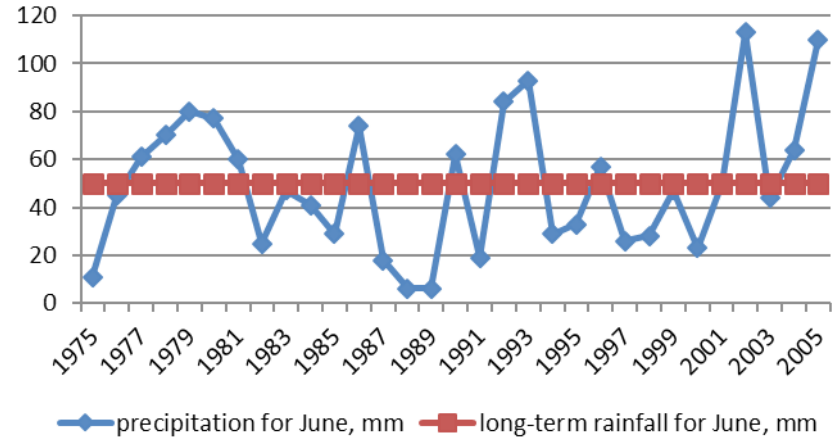

Figure 2. *Amount of precipitation at the Omsk meteorological station for June, 1975 - 2005, mm*

The graph in Figure 2 shows that the greatest amount of precipitation is 113 mm and 110 mm in June compared with the multiyear monthly norm for a given area of 50 mm observed in 2002 and 2005, respectively. The least amount of precipitation is 6 mm recorded in 1988 and 1989.

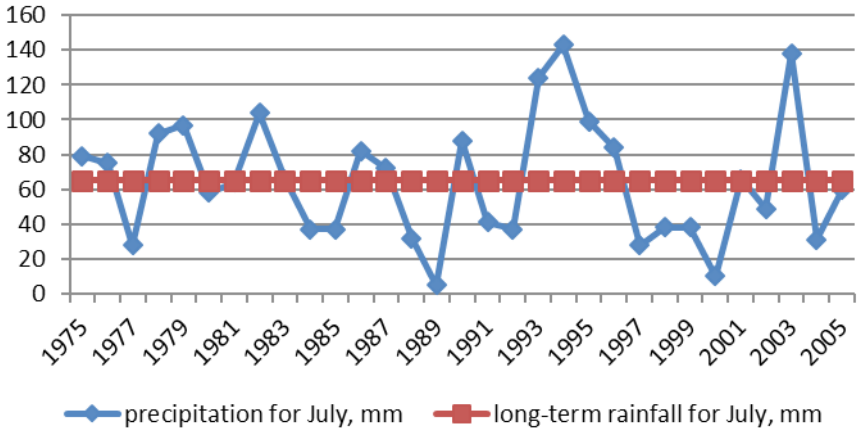

Figure 3. *The amount of precipitation at the Omsk meteorological station for July, 1975 - 2005, mm*

Judging by the data shown in the graph in Figure 3, it should be noted that the greatest amount of precipitation is 143 mm and 138 mm in July compared to the multiyear norm for this month for a given area of 65 mm observed in 1994 and 2003, respectively. The least amount of precipitation is 5 mm and 10 mm recorded in 1989 and 2000.

Figure 4 analyzes the course of daily precipitation from May 25 to June 25 for 1981, 1991, 2001. Judging by the schedule, it is necessary to emphasize that the greatest amount of precipitation in a given time interval at the level of 24-27 mm is observed in 1991, and the lowest precipitation of 8-10 mm is characteristic of 1981. And in 2001, by the end of the period, the trend goes to an increase in precipitation to 21-23 mm.

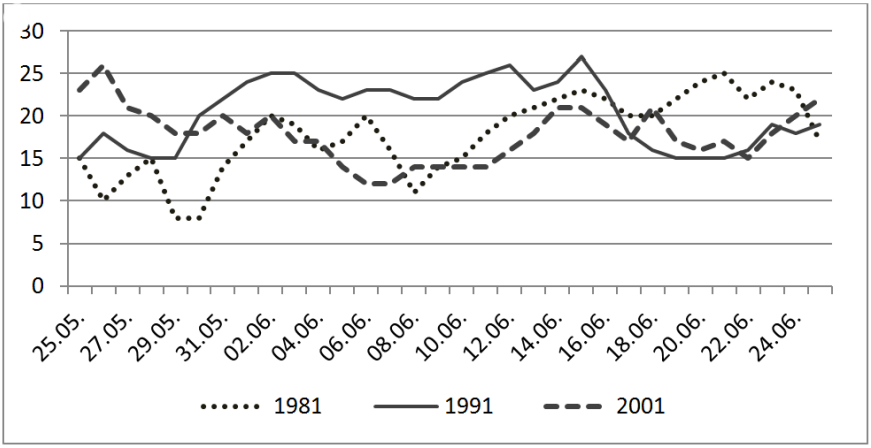

Figure 4. *Daily precipitation at the Omsk meteorological station from May 25 to June 25 for 1981, 1991, 2001, mm*

		Теплоресурсы			Результаты расчетов				
Дата	KX окончат. каждого интервала	Сумма Tcp > 0	Zm год	Zm оконч., мм	V1	Bz	Z	H	Y
13.06.1993	24,4			4,7	0,73	0,62	3	3,2	0,3
14.06.1993	11,7			4,2	0,82	0,67	2,8	3,2	0,4
15.06.1993	12,7			3,6	0,85	0,7	2,5	2,9	0,4
16.06.1993	3,2			3,6	0,89	0,72	2,6	3	0,4
17.06.1993	0			4,7	0,88	0,71	3,4	3,9	0,5
18.06.1993	0			5,3	0,87	0,69	3,7	4,2	0,5
19.06.1993	0			5,3	0,85	0,68	3,6	4,1	0,5
20.06.1993	0			6,1	0,83	0,66	4,1	4,6	0,5
21.06.1993	0			6,1	0,81	0,65	4	4,4	0,4
22.06.1993	0			5,9	0,79	0,63	3,7	4	0,4
23.06.1993	9,5			5	0,77	0,63	3,2	3,5	0,3
24.06.1993	14,8			4,5	0,8	0,66	2,9	3,3	0,4
25.06.1993	0			5	0,84	0,67	3,4	3,8	0,4
26.06.1993	5,3			5	0,82	0,67	3,3	3,8	0,4
27.06.1993	0			5,3	0,83	0,66	3,5	3,9	0,4
28.06.1993	0			6,4	0,81	0,64	4,1	4,6	0,4
29.06.1993	0			7	0,79	0,63	4,4	4,8	0,4
30.06.1993	0			7,5	0,77	0,61	4,6	5	0,4
01.07.1993	27,8			6,4	0,75	0,64	4,1	4,5	0,4
02.07.1993	8,2			4,7	0,84	0,68	3,2	3,7	0,4
03.07.1993	0			5,3	0,85	0,68	3,6	4,1	0,5
04.07.1993	0			6,1	0,83	0,67	4,1	4,6	0,5
05.07.1993	0			6,1	0,81	0,65	4	4,4	0,4
06.07.1993	15,5			5,6	0,8	0,66	3,7	4,1	0,4
07.07.1993	1			5,3	0,84	0,67	3,6	4	0,5
08.07.1993	26,8			5,3	0,82	0,7	3,7	4,3	0,6
09.07.1993	0			5,9	0,91	0,73	4,3	5	0,8

Fig.5.*Fragment of the table of daily water balances. Weather station Omsk. Baseline data (KX and Zm) and calculation results (V1, Z, Y and H) for 27 days of June and July 1993.*

In the table in fig. 5. The results of the transformation of atmospheric precipitations of the KH falling on the surface of the earth in Omsk in June 1993 are clearly visible: on June 13, 24 mm of moisture fell out, due to which soil moisture increased from 0.73 to 0.82 (from the lowest capacity). For 27 days of June and July, the soil moisture content increased to 0.91, the intensity of the maximum possible evaporation gradually increased (from 3.6 mm / day to 5.9 mm / day). Since the actual evaporation Z cannot exceed the heat resource Zm, the daily intensity of the actual evaporation gradually increased from 2.5 mm to 4.3 mm per day. The daily runoff layer for 27 days increased from 0.3 mm to 0.8 mm.

Thus, in the above graphs, an attempt to assess the effect of changes in precipitation on the formation of runoff in the south of Western Siberia using hydro meteorological data from Omsk meteorological stations is made.

Within the city of Omsk, the Irtysh River flows into which the Om River flows, but both rivers are large in terms of hydrological characteristics and cannot clearly show the influence of local runoff. The nearest river is Ui, which is of medium size (the length of the Ui river is 387 km), with the studied runoff located north of Omsk. In the period from June 14 to July 9, the flow rate in the River Ui changed from 11.2 to 24.3 m^3/s (Fig. 6). The increase in the flow of the Ui river confirms data on the increase in local flow calculated by the method of hydrological and climatic calculations of V.S. Mezentsev on meteorological data.

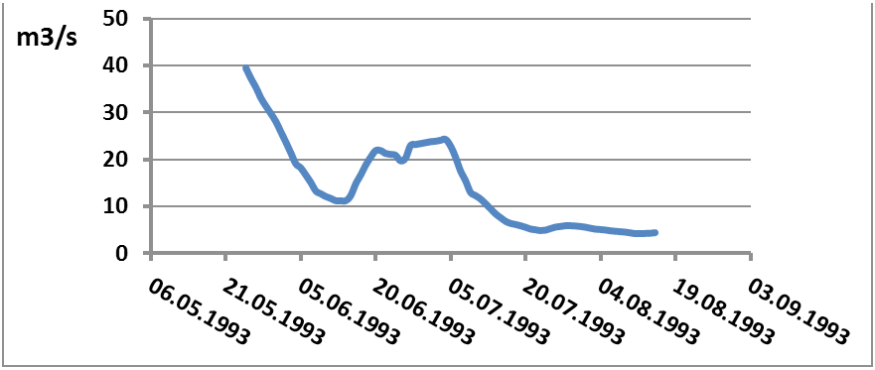

Fig.6. *Daily costs of water in the Ui river near Sedelnikovo from May 25 to August 15, 1993, m^3/s*

As a result of the analysis, it should be noted that the amount of precipitation according to Omsk meteorological stations for the months of May, June and July for the 30-year interval, from 1975 to 2005. in comparison with the multiyear norm of precipitation for these months, for this territory there are some deviations in different years in the direction of increase and decrease. The study of daily pre-

cipitation from May 25 to June 25 for 1981, 1991, 2001 showed that the greatest amount of precipitation for a given time interval is observed in 1991, and the lowest precipitation is characteristic of 1981. And in 2001, by the end of the period, the trend is towards an increase in precipitation.

Changes in the amount of precipitation leads to an increase in soil moisture and a gradual increase in the maximum possible and actual evaporation, in turn, this leads to an increase in the flow layer.

The results of the study of the effect of changes in precipitation on changes in runoff in the south of Western Siberia can be used in planning and organizing sowing in the agricultural sector, as well as in the construction of roads, buildings and structures.

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UDC 631.674.2

磷石膏对西北里海盐渍土水稻产量的影响
EFFECT OF PHOSPHOGYPSUM ON RICE GRAIN YIELD ON SALINE SOILS OF THE NORTH-WESTERN CASPIAN

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注解。 本文介绍了盐渍土复合复垦对水稻栽培效果的实验研究结果，包括引入4–6吨/公顷磷石膏和维持水稻淹水池的缩短。 这种在盐碱地种植水稻的技术提供了土壤顶层的淡化和5.0–5.5吨/公顷的谷物形成。

关键词：水稻，改良剂，磷石膏，土壤盐渍化，灌溉制度，产量。

Annotation*. The results of experimental studies on the effect of complex reclamation of saline lands in the cultivation of rice, including the introduction of 4-6 t / ha of phosphogypsum and the maintenance of a shortened flooding of rice bays, are presented. This technology of rice cultivation on saline lands provides desalination of the top meter of soil and the formation of 5.0-5.5 t / ha of grain.*

Key words: *rice, ameliorator, phosphogypsum, soil salinization, irrigation regime, yield.*

Introduction.

The rice is characterized by mean stability to elevated salt content in the soil solution and is suitable for cultivation on saline soils. It is well known that the growth processes of plants are significantly slowed down, and their productivity decreases under the conditions of salinization [1, 2, 6]. The negative effect of this factor is associated with an increase in the osmotic potential in the cell, namely, violation of the water regime; excessive absorption and accumulation of

ions, which has a toxic effect; deficiency of individual elements of root nutrition, as a result of an imbalance of ions in the soil, which leads to hormonal disruption in plant organs and tissues and changes in various physiological parameters of plants [3, 4, 7].

In this regard, the technology of growing rice with the superficial flooding of bays contributes to the leaching of toxic salts of the soil in the underlying layers and bringing them to the drainage and escape network of the irrigation system. However, it is necessary to carry out a set of ameliorative measures to prevent secondary salinization and alkalinity of the lands and to improve the condition of sodic soils for the environmentally safe functioning of the rice irrigation system. One of the priority methods for improving saline lands is chemical reclamation, the essence of which is to displace the exchangeable sodium and magnesium ions from the soil-absorbing complex and replace them with calcium, while decreasing the alkalinity of the soil solution and improving the agrochemical indicators of the soil. The effectiveness of gypsum and phosphogypsum during reclamation of alkaline soils increases when they are introduced in a dissolved state due to an increase in the activity of H^+, Na^+, Ca^+ ions and the possibility of easier movement of the latter along the soil profile [3-5].

The purpose of this work was to study the effect of various doses of phosphogypsum on the formation of the production process and the yield of rice grains on saline lands.

Scientific studies were carried out on the irrigation system in Sarpa, the Republic of Kalmykia, which is the northernmost zone of Russian industrial rice farming. The source of irrigation is the Volga River; water mineralization is less than 1 g / l. The soil cover of rice bays is represented by meadow-light chestnut-salty and heavy loamy soils. The content of water-soluble salts in the soil layer of 0-1.0 masses is 1.019-1.960%, the type and degree of salinity is sulfate-chloride strong. Soil absorption capacity is high; the proportion of absorbed sodium in the arable layer is 15-20%.

Rice sowing was carried out in the first decade of May with the norm of 7-8 million viable seeds per hectare. The irrigation regime of rice on saline lands provided for conduction of flooding with a layer of water of 10-12 cm immediately after sowing, then the layer of water was dumped after 2-3 days, and the bays were flooded with fresh water again. This made it possible to reduce the sensitivity of rice plants to salinization in the initial period of their development, from seed germination to the appearance of 2-3 leaves. After the emergence of seedlings, the water layer in the rice field was maintained at a level of 10-12 cm before the tillering stage. During the interfacial period “booting - milky ripeness,” the water layer was maintained up to 15 cm. Then the water supply was stopped and by the onset of full grain ripeness, the water was completely discharged. It should be

noted that during the growing season with an increase in the salinity of water in the paddy-rice, it was replaced. With this technology of irrigation of rice on saline lands, the irrigation rate is 20.5-25.0 thousand m^3 / ha, which ensures leaching mode (desalination of the top meter layer of soil) and the yield of rice grains at the level of 4 ... 5 t / ha.

Results and discussion.

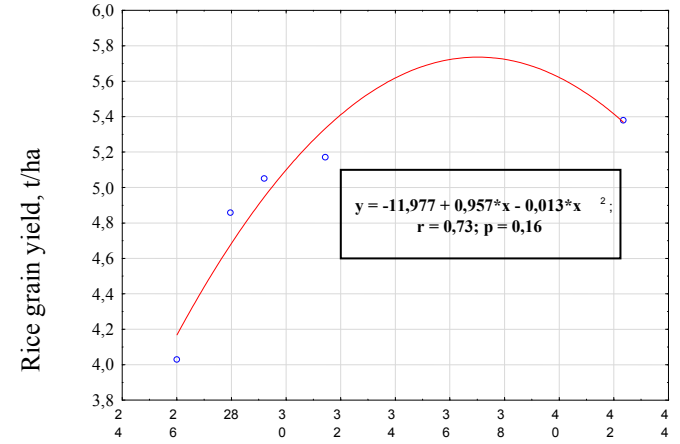
The main production process of field crops is the photosynthetic activity of crops, which is characterized by the following indicators: leaf area, leaf surface index (LSI, m^2 / m2), photosynthetic potential (PP, mln.m^2 / ha day), net photosynthesis productivity (NPP, g / m^2 day).

The formation of high yield of rice is primarily associated with the formation of optimal parameters of the leaf surface of agrocoenosis. The greatest LSI is noted in case with the introduction of phosphogypsum in a dose of 6 tons / ha of rice plants. Thus, in the tillering stage, the leaf surface index was 5.49 m^2 / m^2, in the phase of chopping it was 5.76 m^2 / m^2, and in the out-drawing phase it was 5.90 m^2 / m^2.

In the control variant without applying of ameliorator, weak tillering of plants was observed, while the crops formed an insufficient leaf surface, not exceeding 2.96-3.48 m2 / m2 in size. This is due to the influence of soil salinization, which is essentially the limiting factor in the optimal functioning of the photosynthetic activity of rice plants.

The photosynthetic potential of sowing is a value that characterizes the use of field crops of solar radiation for photosynthesis during vegetation, which is calculated by multiplying the integral area of the leaf surface of plants (m2 / ha) by the number of days of the active leaf period. The PP value in crops increases significantly with increasing levels of phosphogypsum introduction, as with its introduction at a dose of 6 t / ha, the value of the photosynthetic potential was 3.32 million m2 / ha day, which is 14% more compared to the 4 t / ha variant and 45% more control variant (without applying of phosphogypsum).

Models of dependencies of rice grain yield on the photosynthetic activity of agrocoenosis, characterized by a high degree of correlation convergence, are established, as indicated by the correlation coefficient R = 0.73-0.96 (Fig. 1).



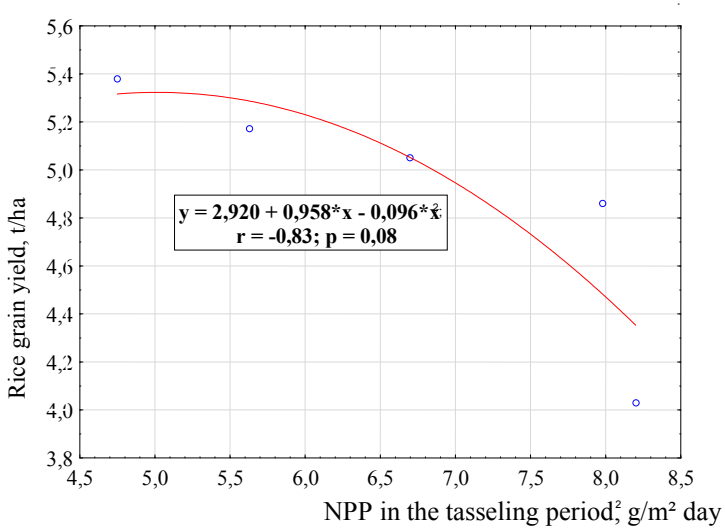


Fig. 1 – *Models of the dependence of the rice grain yield on the indicators of photosynthetic activity of crops.*

The results of field experiments show that already in the first year the introduction of phosphogypsum ensures an increase in grain yield as compared with the control variant. The yield increase varies depending on the content of water-soluble salts in the soil from 1.80 t / ha (0.78%) to 0.50 t / ha (1.10%). In the second year after the introduction of the improver, an increase in the yield of rice grains is 0.36-0.76 t / ha is noted (Fig. 2).

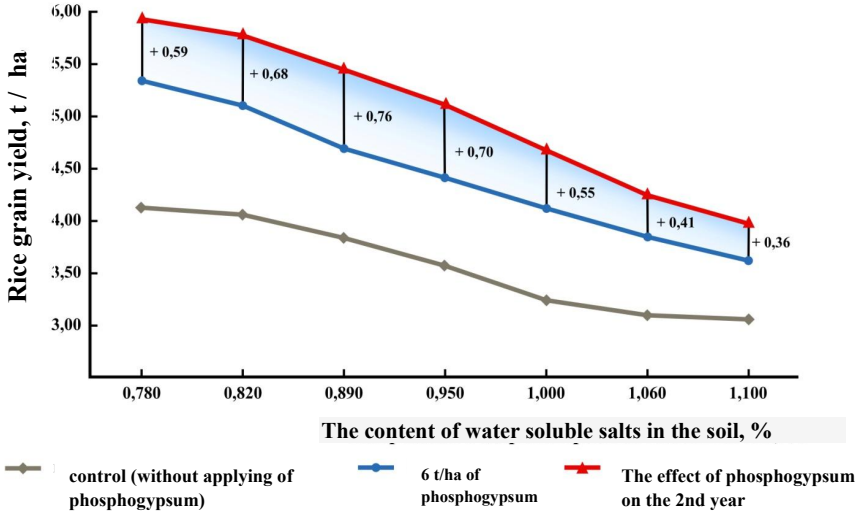


Fig. 2 - *Dependence of rice grain yield on the content of water soluble salts in soil*

Conclusion.

As a result of the conducted research, the dependencies of the formation of the production process and the yield of rice grains on saline lands with various doses of chemical ameliorant are established. The optimal dosage of phosphogypsum introduction was determined, providing yield at the level of 5.0-5.5 t / ha.

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层流旋流的传热系数

HEAT TRANSFER COEFFICIENT OF LAMINAR ROTATIONAL FLOW

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注解。考虑了层流温度和动态边界层分布的模型。针对温度空间边界层的能量方程导出积分关系，其允许在任何形状的表面上积分，这是确定能量损失的厚度所必需的。对于层流，定义了温度空间边界层的能量损失厚度的表达式。考虑到传热，考虑流动的特征情况，确定能量损失厚度的表达式是确定局部传热系数所必需的。分析地，获得表达式，用于根据固体的定律和自由涡旋的旋转流以斯坦顿标准的形式确定旋转流的局部传热系数。确定层流旋转流的局部传热系数。

关键词：传热系数，边界层，旋转流动，能量方程。

Annotation. *A model of the distribution of laminar temperature and dynamic boundary layers is considered. An integral relation is derived for the energy equation of the temperature spatial boundary layer, which allows integration over the surface of any shape, that is necessary for determining the thickness of the energy loss. For the laminar flow, the expressions for the thickness of the energy loss of the temperature spatial boundary layer are defined. The expressions for the thickness of the energy loss are necessary to determine the local heat transfer coefficients for the characteristic cases of flow, taking into account heat transfer. Analytically, expressions are obtained for determining the local heat transfer coefficient in the form of the Stanton criterion for the rotational flow according to the law of a solid and the rotational flow of a free vortex. Local heat transfer coefficients are determined for laminar rotational flows.*

Keywords: *heat transfer coefficient, boundary layer, rotational flow, energy equation.*

1. Introduction. Consideration of the characteristics of heat transfer in flow-through parts of power units is an important task. At present, taking into account the peculiarities of the flow with heat transfer in the implementation of potential and vortex rotational flow in the flow parts is mainly carried out by the following methods: using empirical equations, numerical and analytical methods for solving partial differential equations [1].

The first method does not always provide the required accuracy of the calculation of the hydrodynamic and thermal characteristics of rotational flows, taking into account heat transfer, and requires additional experimental refinements. This entails quite large time and material costs for the formulation and conduct of research.

Numerical methods are rather difficult to use when carrying out engineering calculations and require their implementation in specialized software. Numerical methods use direct numerical simulation (DNS method) and the Reynolds-averaged Navier-Stokes equations (RANS method). The choice of method depends on the complexity of the problem and the accuracy of the results. The RANS method is quite often used with the use of k-ε and k-ω turbulence models [2-7].

The analytical method allows to obtain analytical dependencies applicable for engineering calculations in a wide range of possible variations of design and operational parameters. Analytical methods, as a rule, were developed for rectilinear uniform flow and have several limitations. One of the problems with the use of the analytical approach is the approximation of the distribution of the profile of changes in temperature and velocity in the temperature and dynamic spatial boundary layers. The use of the velocity and temperature distribution profile in the boundary layer is proposed by V.D. Ranni [8] and modified by D.L. Turcott [9]. Turcott's analysis of the underlayer took into account the effect of heat transfer on turbulence. Analytical methods for determining the heat transfer coefficients proposed in [10, 11] take into account convective heat transfer and are made for straight turbulent flow. A one-dimensional analytical model, for subcritical conditions, is also proposed by S.R. Shine [12]. In the flow parts of turbo power plants (turbines and centrifugal pumps) there are both turbulent and laminar rotational flows.

2. Object of study. When designing the flow parts of the units and assemblies, it is necessary to take into account the temperature change of the working fluid flow along the length of the working channel, since the viscosity parameter is a function of temperature and determines the flow regime and, as a consequence, loss.

Modes of operation are possible, especially of supply units, in which even a slight heating of the working fluid can cause boiling up and, consequently, a drop in performance, as well as a loss of tightness of the unit as a whole. On the other hand, insufficient heating in the flow part of some types of working fluids leads to their high viscosity and decrease in the overall efficiency of the turbine unit.

The main object of study, where the potential and vortex rotational flow is realized, are the structural elements of gas turbines and centrifugal pumps: inlet and outlet devices, cavities between the stator and the impeller, auxiliary hydraulic path [13].

3. Setting a research problem. In the generalized formulation of the problem of fluid flow during heat exchange with the surface of aggregates, such as compressors, expanders, pumps of cryogenic components, etc., it is necessary to take into account the temperature change of the flow along the length of the working channel, since viscosity, as a function of temperature, mainly determines the flow regime and, as a result, hydraulic losses [14].

For the case of the flow of an incompressible fluid, it is necessary and sufficient to jointly solve the equations of motion and energy in the boundary conditions of the spatial boundary layer [15]; for a compressible fluid, the system must be supplemented with an equation of state.

4. Flow with heat transfer in the cavities of rotation. The case of rotational flow is considered taking into account the heat transfer for a liquid (Pr > 1). Taking into account the analysis of the scale of quantities and taking into account the absence of internal heat sources, integrating the energy equation along the coordinate within the boundaries of the boundary layer thickness, an expression is obtained for the integral ratio of the spatial boundary layer energy equation (SBL):

$$\frac{1}{H_\varphi}\frac{\partial\left(\delta_{t\varphi}^{**}\right)}{\partial\varphi}+\frac{1}{H_\psi}\frac{\partial\left(\delta_{t\psi}^{**}\right)}{\partial\psi}+\frac{1}{H_\varphi H_\psi}\frac{\partial H_\psi}{\partial\varphi}\delta_{t\varphi}^{**}+\frac{1}{H_\varphi H_\psi}\frac{\partial H_\varphi}{\partial\psi}\delta_{t\psi}^{**}=\frac{\alpha}{\rho C_p U}-\frac{\tau_{\varphi_0}\left(1+\varepsilon^2\right)}{\rho C_p\left(T_\delta-T_0\right)}, \quad (1)$$

where $\delta_{t\varphi}^{**}$ is the thickness of the energy loss of the temperature SBL in the longitudinal direction;

$\delta_{t\psi}^{**}$ - the thickness of the energy loss of the temperature SBL in the transverse direction.

The study examines the laminar flow with regard to heat exchange in the cavities of rotation. The features of the temperature and dynamic boundary layer distribution are shown in Figure 1.

The distribution of the laminar dynamic boundary layer is approximated by the velocity distribution function:

$$\frac{u}{U}=\left[1-\left(1-\frac{y}{\delta}\right)^m\right] \quad (2)$$

The distribution function of the laminar temperature boundary layer

$$\frac{T-T_0}{T_\delta-T_0}=\left[1-\left(1-\frac{y}{\delta_t}\right)^m\right]. \quad (3)$$

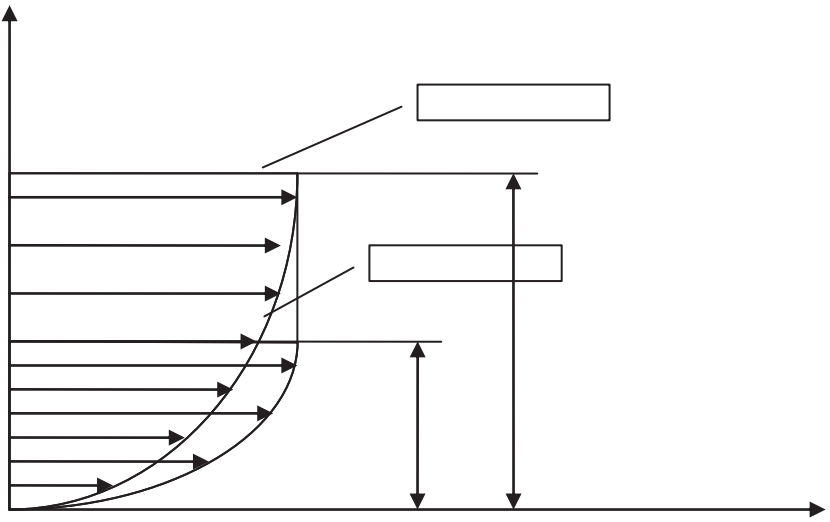

Figure 1 - *Model of laminar temperature distribution and dynamic boundary layers with Pr > 1*

We define the expression for the thickness of the energy loss for the adopted model of the distribution of boundary layers:

$$\delta_{t\varphi}^{**} = \int_0^{\delta}\left[1-\left(1-\frac{y}{\delta}\right)^m\right]\cdot\left[1-\left(1-\left(1-\frac{y}{\delta_t}\right)^m\right)\right]dy,$$

required to determine the local heat transfer coefficient. Then the thickness of the energy loss for the laminar flow is defined as:

$$\delta_{t\varphi}^{**} = \frac{\delta_t\left(20\delta^2+5\delta\delta_t-\delta_t^2\right)}{30\delta^2}.$$

To solve the problem of heat exchange with the surface, the heat transfer law is written down:

$$St = \frac{q_0}{\rho C_p U(T_\delta - T_0)} = \frac{\lambda\left(\frac{\partial T}{\partial y}\right)_{y=0}}{\rho C_p U\left(T_\delta - T_0\right)} = \frac{\lambda}{\rho C_p U}\left[\frac{\partial}{\partial y}\left(\frac{T-T_0}{T_\delta - T_0}\right)\right]_{y=0},$$

where $\alpha = \frac{q_0}{\left(T_\delta - T_0\right)}$ is the heat transfer coefficient.

To obtain an additional equation relating the thickness of the energy loss of the temperature of the SBL $\delta_{t\varphi}^{**}$ and the law of heat transfer, we define the derivative of the temperature boundary layer on the heat exchange surface:

$$\frac{\partial}{\partial y}\left(\frac{T-T_0}{T_\delta-T_0}\right)_{y=0}=\frac{\partial}{\partial y}\left[1-\left(1-\frac{y}{\delta_t}\right)^2\right]_{y=0}=\frac{2}{\delta_t}.$$

Or taking into account the expression for the thickness of the energy loss

$$\frac{\partial}{\partial y}\left(\frac{T-T_0}{T_\delta-T_0}\right)_{y=0}=\frac{\left(20+5r+r^2\right)}{30}\cdot\frac{1}{\delta_{t\varphi}^{**}},$$

where $r=\frac{\delta_t}{\delta}$.

The heat transfer law for the profile (2), (3) takes the form:

$$\mathrm{St}=\frac{\lambda}{\rho C_p U}\cdot\frac{\left(20+5r+r^2\right)}{30}\cdot\frac{1}{\delta_{t\varphi}^{**}}.$$

The integral relation of the equation of energy SBL for a rotational flow and distribution profiles (2) and (3) written in cylindrical coordinates is determined:

$$J\varepsilon\frac{\partial}{\partial R}\delta_{t\varphi}^{**}+\frac{J\varepsilon}{R}\delta_{t\varphi}^{**}=\frac{\lambda}{\rho C_p U\delta_{t\varphi}^{**}}\frac{\left(20+5r+r^2\right)}{30}-\frac{\tau_{\varphi_0}\left(1+\varepsilon^2\right)}{\rho C_p\left(T_\delta-T_0\right)} \quad (4)$$

The obtained integral relations (4) have been integrated from zero to the current value $\delta_{t\varphi}^{**}$ and the thickness of the mass of the temperature SBL for the rotational flow is determined according to the laws of "solid" $\frac{U}{R}=\omega=const$ and "free vortex" $UR=C=const$.

Substituting the values of the thickness of the energy loss of the temperature SBL in the heat transfer law, we determine the dimensionless heat transfer coefficient in the form of the criterion for the Stanton criterion:

- for laminar rotational flow according to the law of "solid"

$$\mathrm{St}=\sqrt{\frac{J\varepsilon}{\mathrm{Pr}\cdot\mathrm{Re}}\frac{\left(20+5r+r^2\right)}{30}}$$

- for laminar rotational flow according to the law of "free vortex"

$$\mathrm{St}=\sqrt{\frac{J\varepsilon}{\mathrm{Pr}\cdot\mathrm{Re}}\frac{\left(20+5r+r^2\right)}{15}}.$$

It should be noted that by considering and analyzing the rotational flow according to the “free vortex” law, the vortex degeneration and the transition to the case of a straight flow are possible.

The local heat transfer coefficient is defined as:

$$\alpha = \rho C_p U \cdot St .$$

Figure 2 shows the results of a theoretical dependence for laminar rotational flow according to the law of a "solid body". From the graph of Figure 2 it can be seen that the theoretical dependences are in good agreement with those given by other authors.

The graphical dependence in Figure 2 is shown as a dimensionless heat transfer coefficient as a Nusselt criterion.

$$Nu = St \,\mathrm{Pr}\,\mathrm{Re} .$$

In general, the discrepancy between the data obtained from models with a convective component and with affine-like profiles does not exceed 10% (at $\mathrm{Pr} = 4,341$ a discrepancy is 9.14%). The obtained theoretical dependences by other authors as a whole are in the range of permissible values and essentially depend on the Prandtl criterion (temperature and working medium).

5. Conclusions. An integral relation is derived for the energy equation of the temperature spatial boundary layer, which allows integration over the surface of any shape, that is necessary for determining the thickness of the energy loss. The expressions for determining the thickness of the energy loss of the temperature spatial boundary layer are necessary to determine the local heat transfer coefficients for the characteristic cases of flow, taking heat exchange into account.

Analytically, expressions are obtained for determining the local heat transfer coefficient in the form of the Stanton criterion for laminar rotational flow according to the law of a solid and the rotational flow of a free vortex, for the case of Pr> 1.

Analytical expressions for heat transfer coefficients are in good agreement with the dependencies of other authors.

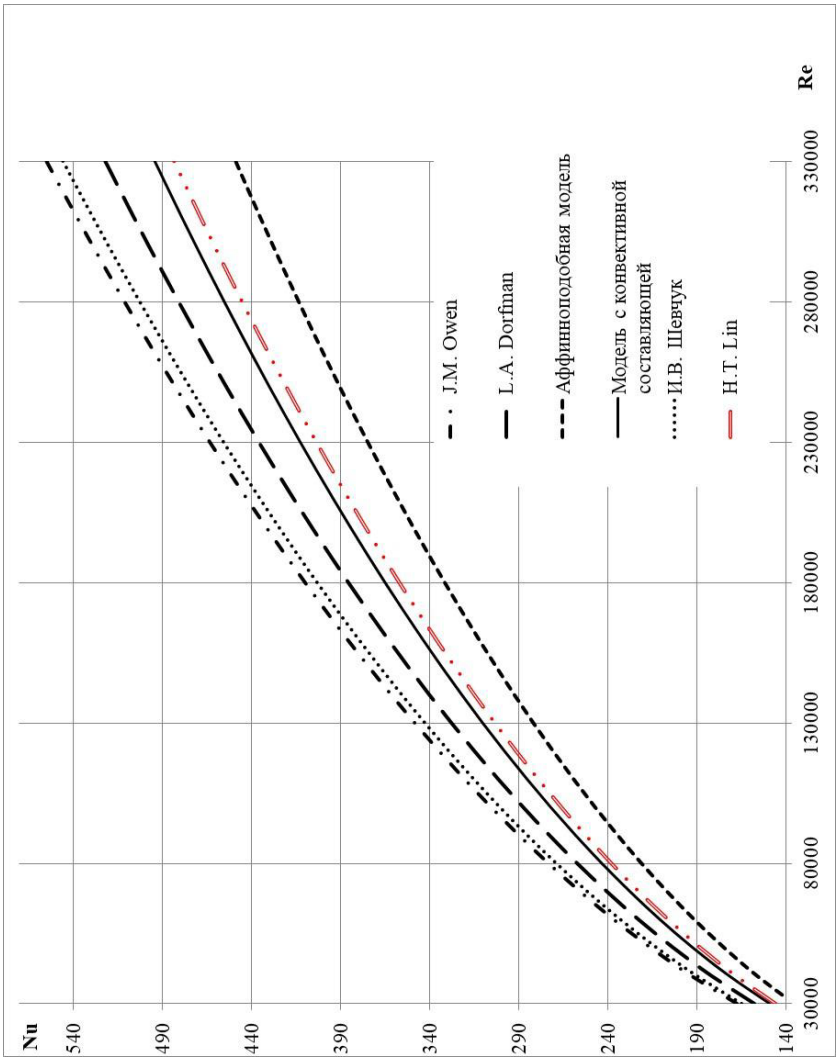

***Figure 2** - Dependence of the dimensionless heat transfer coefficient of laminar rotational flow at* $\mathrm{Pr} = 4,341$

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蜂箱的自动电加热系统
THE AUTOMATED ELECTRICAL HEATING SYSTEM OF BEEHIVES

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注解。 本文重点介绍蜂箱局部加热的具体特点。 该研究基于Comsol 5.4软件制作的数学模型。 这些模型可以推荐加热系统的参数和工作模式，而无需反馈蜂箱内的温度。 根据提出的管理算法，基于微控制器制定了自适应加热系统管理方案。 实验表明模型的高度充足性。
关键词：养蜂； 蜂窝;加热器;微控制器； 温度感应器。

Annotation. *The article focuses on specific features of local heating of beehives. The research is based on mathematic models made by Comsol 5.4 software. The models made it possible to recommend the parameters and work-modes of the heating system without feedback on the temperature inside the beehive. Adaptive heating system management scheme was elaborated based on microcontroller according to the proposed algorithm of management. The experiment showed high adequacy of the models.*
Keywords: *beekeeping; beehive; heater; microcontroller; temperature sensor.*

Agro-industrial complex of Russia has a special branch-beekeeping, which is closely related to crop farming. It is known that bees are pollinators of agricultural plants. The largest number of bee colonies is accounted for by such countries as China (7.5 million), Russia (4.5 million), Turkey (3 million), USA (2.76 million), Poland (2.5 million), Mexico (2.4 million), Argentina (1.6 million), Germany, Spain, Iran, Greece, France, Romania (1.1–1.3 million) [1]. The following countries are leaders in the production of honey for trade: China (305 kt), USA (82 kt), Argentina (80 kt), Turkey (74 kt), Ukraine (50 – 70 kt), Mexico (56 kt), Russia (53 kt) [1]. Russia is one of the largest honey producers in the world, but the level of automation of general technological processes is very low. The level of produc-

tivity of the bee family strongly depends on its overcoming of the winter period. There are a lot of researches about bee wintering [2,3]. During winter period bees gather in the cluster and stay in passive condition, their main life processes are slowed down at this moment. Bee cluster can be considered as an organism. During the winter the temperature outside the cluster in the beehive is close to the outside temperature.

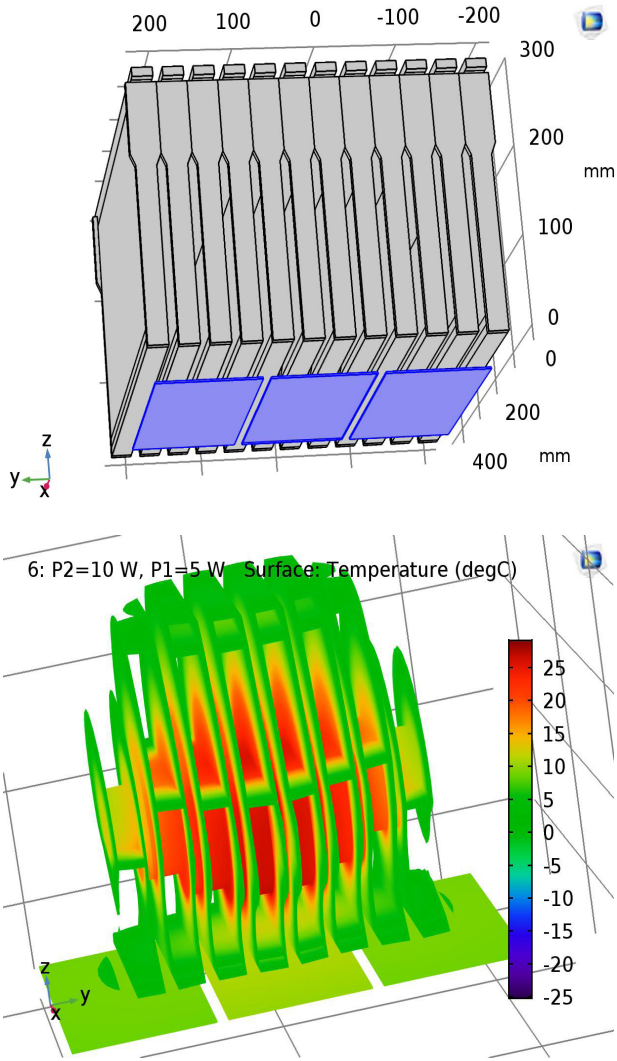
In spite of the large amount of published research about this difficult period of bees it is necessary to continue to study this issue. Toboev V.A. and Eskov E.K [3] made detailed analysis using modern software. D.A. Ovsannikov and S. V. Oskin with their assistents are making similar research in Kuban SAU[4,5, 6]. It is necessary to specify the parameters of electric heating of beehives and its mode in dependence on air temperature outside annd the season. To specify the parameters we made the models of basic physic processes which exist in a beehive on Comsol 5.4 software basis. The equations of the software product as well as the equations calculated by the authors analytically were used[1, 4, 5, 6]. For example, thermal processes were modeled in the interface "Heat Transfer". The resulting mathematical model can be represented as follows:

$$\begin{cases} \rho_{air1}\cdot c_{air1}\cdot u_{air1}\cdot\nabla T+\rho_{air2}\cdot c_{air2}\cdot u_{air2}\cdot\nabla T+ \\ \rho_{elh}\cdot c_{elh}\cdot u_{air1}\cdot\nabla T+\nabla q_{air1}+\nabla q_{air2}+\nabla q_{wood}+ \\ +\nabla q_{hc}+\nabla q_{emptyhc}+\nabla q_{bee}Nu+\nabla q_{elh}=Q_{bee}+Q_{elh} \\ \lambda_{bee}=0,0076-0,0017\cdot T_0;\rho_{nu}=243-8\cdot T_0 \\ Q_{bee}=3,2\cdot T_0{}^2-20\cdot T_0+922 \\ q_i=-\lambda_i\Delta T \\ Q_{elh}=f(T_o,\,t) \end{cases} \quad (1)$$

where $\rho_{air1}-\rho_{air2}$ density of air coming from the outside (index 1) and passing through the bee cluster (index 2); $c_{air1}-c_{air2}$ thermal capacities of the air, of the first and the second air units (inside air and the air inside the cluster); $u_{air1}-u_{air2}$ the velocity field, respectively, the first and second air units, m/s; q_{wood} , q_{wood} , q_{wood} , q_{hc} , $q_{emptyhc}$, q_{bee} q_{elh} – density of losing heat flows because of heat conductivity, respectively, of the 1 and 2 air units, the wooden elements, honeycomb, empty honeycomb, bee cluster, electric heater, W/m^2; Nu – the Nusselt number, Q_{bee} - intensity heat dissipation of bees, W/m^3; Q_{elh} - the intensity of the dissipation of the electric heater in W/m^3. q_i ,- the temperature surrounding the beehive, °C; q_i λ_i -respectively, the density of losing heat flow and the thermal conductivity of the I-th element of the beehive.

It is stated that the temperature field of the family is not homogeneous, the isotherms show a relatively small inner region with a temperature of 30 °C or more, and on the surface of the cluster it is on average level of 10 ˚C....12 ºC (Pic.1). Different zones should be heated in differenf seasons (autumn, winter, spring): In

autumn it is advised to heat the air just in front of the entrance of the beehive, that means that the heater should be installed directly near the bee-entrance; in winter the whole bottom of the beehive should be heated; in the end of winter central part and that one where the cluster is should be heated; in spring - feeding-stuffs should be heated for bees to take it, that means to heat the edges of a beehive.



Picture 1. *Placement of heaters inside the beehive and thermogram of space inside the beehive*

The analysis of the models helped to state the average value of input capacity to separate heaters (Table 1).

Table 1 - *Values of heaters capacity at different outside temperatures*

Name of indicators	**Value of indicator**						
Temperature, ºC	Zero	-5	-10	-15	-20	-25	-30
Heater capacity P_1, W	3	4	4	5	5	5	5
Heater capacity $P_{,,}$ W	6	8	8	10	10	10	10

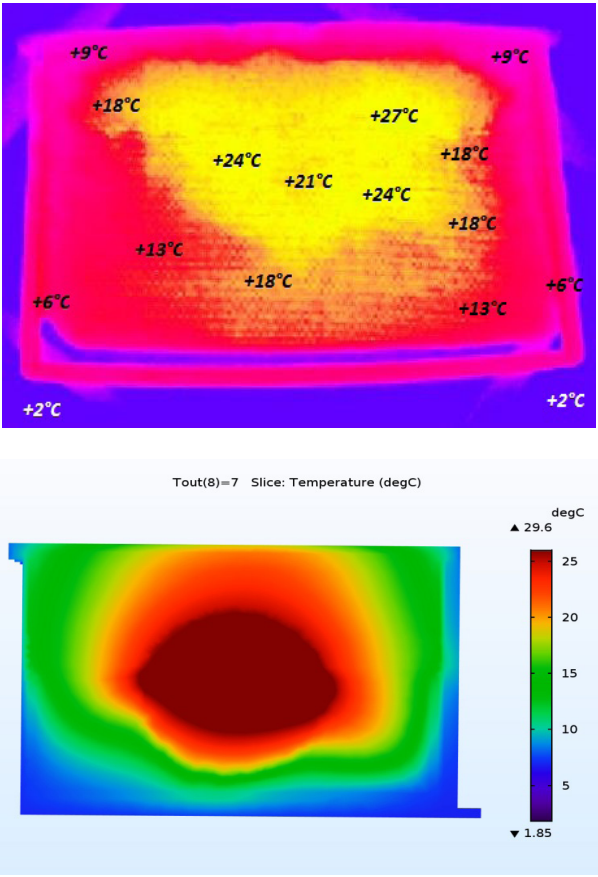
Thus it is necessary to heat beehives localy. EN - 18/15 heaters and other heaters of this type are good for it.

The scheme based on 8-bit microcontroller named PIC16F1827 by Microchip was elaborated to manage heating elements of the beehive. The microcontroller is configured to operate from an internal 32mhz clock generator. Micro scheme DS18B20 is used as the temperature chip. It is a digital device which helps to measure temperature and to resolute 9-12 digits. It has the alarm function to control temperature of heating. DS18B20 communicates with the microcontroller by a single wire link using the 1-Wire interface Protocol. The temperature measurement range is from -55 to + 125 °C. Accepted imprecision for the range from -10 to +85 °C is equal or less than 0.5 °C.

Picture 2. *Film heaters*

Heating elements are controlled by PWM of high quality. Powerful IRL3705 MOSFET transistors which allows to control voltage of logic level and current capacity up to 63 A were used like keys. Depending on the temperature sensor readings, cycle of PWM pulses changes entering the transistor gates. It changes in the power that is released on the heating elements. The microcontroller has a heating program which depends on the outside air temperature and allows to control heating elements in several hives simultaneously.

The experiment to study the correlation of theory and practise were led at the aipiary located in Mostovski disctrict of Krasnodarskii Krai. We studied thermal fields of Dadan beehive of 12 frames. Here there was a bee-family on the 10 frames. Heat survey was in winter at different outdoor temperatures. Picture 3 presents a comparison of the thermograms obtained experimentally and in simulation at the same external temperature: 2°C. it is seen that the temperature fields are almost the same. Then we cheched if termograms of models and heating survey were the same while back wall of the beehive was removed. Thermal picture was taken at the outside temperature of 8°C. At the same temperature the model was taken too. The thermograms showed that the thermal fields were similar but in the experimental zone bees occupated larger area. This difference shows that the bees take more frames and it is most likely that the cluster stretched parallel to the bottom. At the same time, it is seen that the temperature values in the model and in the experiment are the same, and there is a similar distribution of heat in the hive.



Picture 3. *Thermograms of frames during the experiment (left) and the simulation (right)*

Thus we can conclude the following: Comparison of the temperature values in different parts of the beehive during the simulation and experiment showed that the difference does not exceed 2°C. As the thermograms are the same it is possible to use elaborated models analysing morcoclimat in a beehive. The thermograms got by the thermal imager are almost the same with those published earlier by other researchers. The introduction of such adaptive localized systems of electric heating would help to get rid of temperature sensors in the hives, use the electricity and feeding reserves more reasonable, and this could help bees to winter.

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