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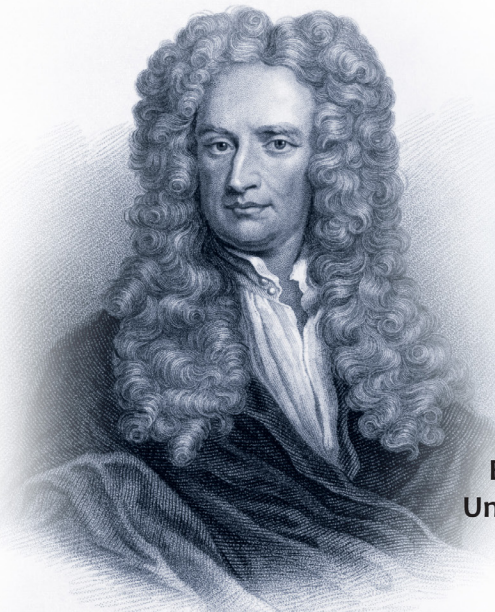

Birmingham
United Kingdom

International Conference "Process Management and Scientific Developments"

Birmingham, United Kingdom
(Novotel Birmingham Centre, January 16, 2020)

Materials of the International Conference
"Process Management and Scientific Developments"
(Birmingham, United Kingdom, January 16, 2020)

M67

ISBN 978-5-905695-79-7

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.

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UDC 330

ISBN 978-5-905695-79-7

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MODERN INDICATORS, METHODS AND PRINCIPLES OF INEQUALITY PREVENTION

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Abstract. The article explores modern indicators that reflect inequality at the macro level. The Lorenz curve, Gini index and other indicators are considered. The methods and principles of preventing inequality are analyzed.

Keywords: inequality, indicators, principles, methods, indices, prevention of inequality.

The problem of inequality is relevant around the world. It was studied by many scientists: A. Smith, K. Marx, E. Durkheim, M. Lorenz, C. Gini, J. Stiglitz, T. Picketti. Each of the authors had his own idea of the effect of inequality on society, as well as different methods of combating inequality, etc. One of the latest works on this topic is a study by J. Stiglitz, a 2001 Nobel Prize winner in economics "for analyzing markets with asymmetric information" (jointly with J. Akerlof and M. Spence). In his study, Joseph Stiglitz analyzes recent changes in the income shares of various social groups among Americans, especially after the 2008 crisis.

The main method for studying the state of inequality is the analysis of socio-economic indicators that distribute the population by income. Such an approach gives a clear idea of the welfare of various segments of the population and the ability to compare it.

Among these indicators:

- modal income, in other words, the most common value of income in society;
- medial income - an indicator of income in the middle of a ranked distribution series;
- the decile coefficient of differentiation of incomes of the population, showing how strongly the incomes of 10% of the richest population exceed the incomes of 10% of the poorest people;

• Gini index and Lorenz curve reflecting the level of inequality in society.

To measure the inequality in incomes of the population, the M. Lorenz curve was used. It reflects the uneven distribution of the total income of the population between different groups of citizens (Fig. 1).

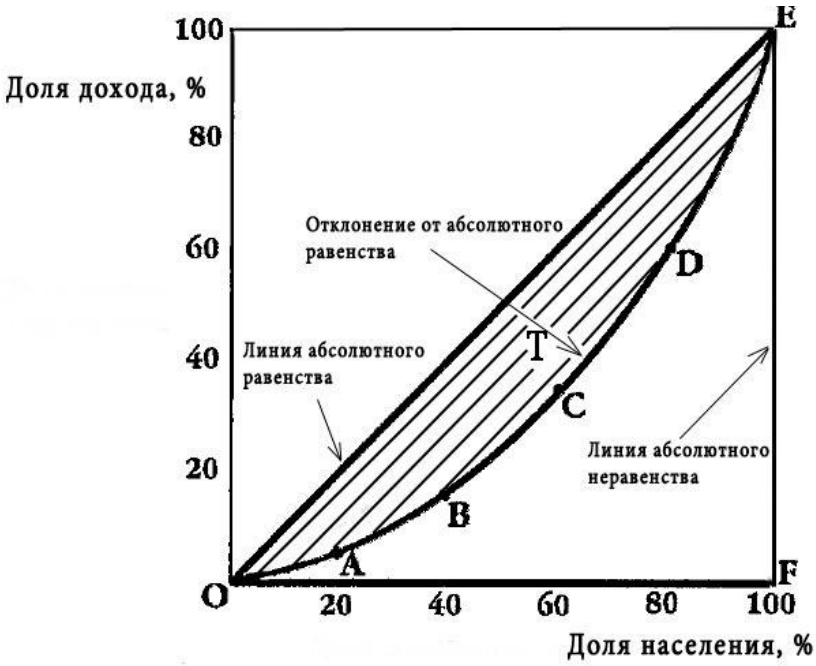

Fig. 1 Lorenz curve

Deviation from absolute equality (from the OE line) is shown by the ABCDE curve, this is the Lorenz curve. Accordingly, the further the ABCDE line deviates from the OE line, the greater the inequality in the feature under study.

If we take and divide the hatched area of the OFE triangle, then we get an indicator reflecting the degree of inequality in the distribution of income.

G=S (T) /SΔOEF

G - indicator measuring income inequality - Gini coefficient [4].

The Gini index is a socioeconomic coefficient that shows the level of differentiation of a society according to some of the studied attributes (for example, annual income, etc.).

The Gini index can take values from 0 to 1. At a zero (limit) value of the index, an equal distribution of this attribute is indicated. The opposite extreme case, when the Gini index is equal to one, says that only 1 person has the trait under study. Gini Index - Gini coefficient, expressed as a percentage.

The actual distribution of income in reality is demonstrated by the ABCDE line. The greater the deviation of the Lorenz curve from the bisector OE, the larger the area of the figure, and, accordingly, the more the Gini coefficient will approach unity.

Consider the benefits of the Gini coefficient:

• It makes it possible to compare levels of inequality in different territories with different populations and at different stages of development.

• Allows you to track changes in the degree of inequality over time.

• Supplements data on GDP and per capita income. It is a correction of these indicators.

• It can be used when comparing the distribution of a characteristic (income) between different populations (say, between different states). However, there is no dependence on the size of the economy of the analyzed states.

• It can be used when comparing the distribution of a characteristic (income) among different groups of citizens (for example, the Gini coefficient for urban residents and the Gini coefficient for rural residents).

Consider the disadvantages of this coefficient:

• The Gini coefficient is often given without a description of the grouping of the population; in other words, there is no information on which quantiles the population is divided. So, the more the same set is divided into a larger number of groups (more quantiles), the higher is the value of the Gini coefficient for it.

• The Gini index does not disclose the method of generating income, in other words, for a certain location (state, region, and so on) it can be very low, but at the same time, some of the citizens provide their own income through excessive labor, and another part provides it for property account. For example, the Gini coefficient in Sweden is quite low, but only 5 percent of households own 77 percent of the total number of shares owned by all households. This provides these 5 percent with the income that other citizens earn from labor.

The differences in the methods of collecting statistical information for determining the Gini coefficient lead to difficulties in comparing the obtained coefficients.

As already noted, inequality is a multifaceted phenomenon, and today there is no universal way to combat it. In each country, in each society, it

is always necessary to conduct a separate analysis, which will help determine the causes of inequality and possible measures to eliminate it. We can only talk about general principles and exemplary methods of combating inequality. To date, researchers identify three methods of combating inequality [5]:

1. An increase in the minimum wage, a limitation on the wages of top representatives (general directors of corporations, senior lawyers, etc.);

2. Raising taxes, especially related to the redistribution of benefits in society. As well as the introduction of state programs aimed at improving the welfare of vulnerable groups;

3. The introduction of a culture of social responsibility of business and the top; development of mechanisms stimulating the wealthy elite to philanthropic activities.

The growth of the minimum wage increases the motivation of workers to work, raises productivity, increases the value of mental and creative professions. This leads to a general increase in prices on the labor market, contributes to the enrichment of the bulk of the population.

The increase in taxes is aimed at removing the superincomes of the wealthy elite, redistributing the wealth of society to create an environment of equal opportunities consisting in equal access to education, medicine, legal assistance, in guaranteeing assistance to those in need (unemployed, disabled, single-parent families, etc.).

Along with direct, state forms of mitigating inequality in the modern world, indirect forms are being introduced, which include the social responsibility of business. It manifests itself in philanthropy, decency. The forms of such behavior can be different: the creation of a non-profit organization, the injection of funds into science and culture, environmental control, etc. The advantages of introducing institutions of philanthropy (from the Greek phileo - love, anthropos - people) — are their high efficiency. Unlike the bureaucratic public sector and the private sector disinterested in charity, the third sector, the personal sense of humanism of citizens, can most effectively invest without losses from corruption, bureaucratization, rent-seeking behavior, etc.

However, for a significant effect, all of these methods should be used in conjunction. It is also important that there are situations in which all measures against inequality become incapacitated: if the country has a highly developed shadow economy, corruption, if there is no high transparency of the budget process, there are no institutions of public expression of will.

In the process of combating inequality, it is important to recognize the advantages and disadvantages for the economy that can be obtained from this struggle. History knows many cases where societies have taken the path of struggle against inequality and injustice. Often this struggle came to a standstill. Analyzing the historical experience and knowledge derived by scientists, we came to the conclusion that in the process of reducing inequality in society, it is necessary to adhere to two principles that will help to achieve the desired results from this struggle.

The primary principle is the principle of understanding the goal. The goal of fighting inequality is to build an environment of equal opportunity. The main thing is that in the process of moving towards a fair society we do not change the course towards moving towards a society with the same income. Such an approach will only increase dissatisfaction in society and reduce interest in labor, which will lead to a recession in the economy.

The second principle is the principle of honesty. It was said above that reducing inequality will help build a just society. At the same time: "The same property and financial inequality can be estimated by people as fair or unfair, acceptable or unacceptable, first of all, depending on its origin (method of obtaining wealth)." When measuring inequality, people always try to assess the honesty of the income received, and the legal component often goes by the wayside. Therefore, special attention should be paid to preventing rent-seeking processes, carefully checking new bills for the corruption component, and also monitoring the legality of state formation. For example, at the moment, similar steps have already been taken in the UK, where the Law on Criminal Finance is in force (effective from 09.30.2017). According to this law, a new concept "wealth of unknown origin" is introduced in the legal field, which forces property owners to prove the honesty of their condition (otherwise, they are threatened with confiscation), and law enforcement agencies are able to confront the shadow economy [3].

So, we found out that the importance of the problem of inequality was noticed in ancient times, and this problem has remained relevant to this day. Inequality itself manifests itself in many forms: from biological inequality to the most obvious economic inequality.

Among the causes of economic inequality, scientists identify a number of factors, such as natural differences between people, status differences, differences in accumulated wealth, differences in employment, etc. J. Stiglitz called the main causes of modern inequality market imperfection, unsatisfactory government activity, and, most importantly, rent-seeking behavior of companies (Fig. 2).

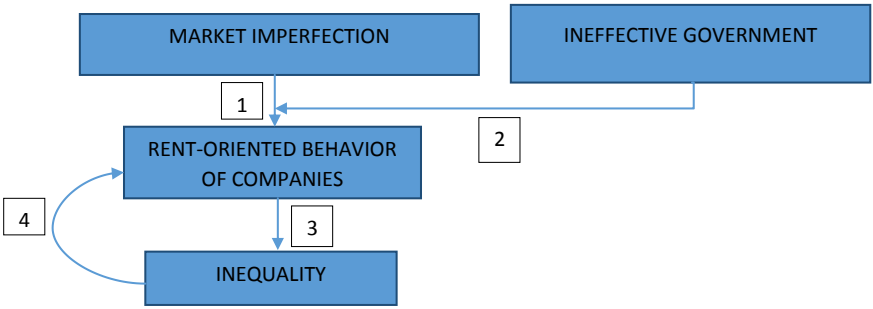

Fig. 2 Reasons for Inequality

Firstly, market imperfections lead to unfair enrichment opportunities. Secondly, it is important to realize that only government actions can offset market imperfections, but the government does not always cope with market failures. Thirdly, if the government failed to cope with the market failure, companies begin to exploit the vulnerabilities of an imperfect economy, asserting monopolies, dishonestly trading with the state, using privileged information, etc. All this is a dishonest form of enrichment (after all, public benefits are disproportionate to private ones) and generates inequality. Fourth, the inequality that has already formed leads to an even greater gap between the rich and the poor.

Regardless of the reasons, inequality negatively affects macroeconomics, slowing economic growth and increasing social tension. In each case, a separate analysis of the situation is necessary, while the most common levers for preventing inequality are fiscal policy, wage policy, culture and education.

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GENESIS OF THE ECONOMIC CONCEPT "INEQUALITY": HISTORICAL AND MODERN ASPECTS

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Abstract. The article analyzes the theoretical aspects of the study of inequality. The essence and content of the economic category of "inequality" are considered. The causes of inequality, the role of government, rent-seeking, the impact of inequality on macroeconomics and society are investigated.

Keywords: inequality, economy, rent-seeking, macroeconomics, society, causes of inequality, Joseph Stiglitz.

With the development of scientific and technological progress, people around the world have significantly raised their standard of living. The level of production as a whole (gross domestic product (GDP) at purchasing power parity (PPP)), and on average per capita (GDP per capita) inspiringly rushed up. Nevertheless, despite the positive changes in life, the enormous wealth that mankind has acquired over the past 200 years from the beginning of industrialization has reflected in an increase in the standard of living of most of the population not in proportion to its growth. There are wide sections of the population that still cannot satisfy even the primary human needs, such as proper nutrition, housing, security, minimum sanitary conditions, necessary rest, etc. The reason for this situation is the inequality of the population.

Even in ancient times, the problem of inequality attracted attention. For example, Plato (428-348 BC) was thinking about dividing the population into rich and poor. He came to the conclusion that the state consists of two sub-states. The poor are one, and the rich are the other, and a hidden struggle is taking place between these sub-states. In such a society, people constantly feel tension, fear, insecurity in the future, and, accordingly, the state as a whole suffers. A healthy state should be different. In his work, the “State” Plato shows what public order should be like. In his understand-

ing, the state should not be built on the principles of self-regulation and spontaneity, but on the principle of scientificness and planning. Society, in his opinion, should consist of 3 classes: 1) rulers, 2) soldiers and civil servants, 3) workers. People should not inherit any status from their parents, because everyone himself must show his qualities and find his own path in life. This is the principle of the capabilities of the Platonic state. So, for example, rulers should have a minimum of property and not pass on any social status to their children. All efforts should be aimed at achieving social welfare. In such a scientifically designed society, social justice, internal discipline, stability and development will be supported.

Aristotle (348-322 BC) also pondered the problem of social inequality. In his work Politics, he divided society into 3 parts: the first part is very rich, the second part is very poor, and the third part is in the middle of the other two. And, accordingly, the third part (or middle class) is the most useful, because it is the middle class that is the most rational and able-bodied. The poor and rich parts, according to this division, have disadvantages: some easily become criminals, while others easily become fraudsters. Further reflecting on inequality, Aristotle urged to think about the poor, because poverty reproduces rebellious and criminal processes from generation to generation, otherwise the state is doomed to death. At the same time, he was against both the influence of the poor on politics and the monopoly of the rich on power. The best for him was the power formed and based on the middle class, because the stronger the middles, the more stable and stronger the state. It is important to note that Aristotle supported a private form of management. It, being inherent in man, although it creates conditions for inequality, but also motivates a person to work. As a result, Aristotle saw the root cause of inequality not in private property, but in the internal shortcomings of human nature [4].

At the initial stages of the study, people identified inequality in strength as the main reason. Military power was then a source of inequality. The historian of antiquity Thucydides wrote: “In human relations, law makes sense only when, with equal forces, both parties recognize a common necessity for both sides. Otherwise, the stronger requires the possible, and the weak is forced to submit ”[2].

To date, the most popular and widespread theory of the cause of inequality is the theory of marginal productivity, which appeared in the 19th century. According to it, the one who works harder and more productive has a higher income, which is an indicator of the contribution to the distribution of wealth in this society. The invisible hand of the market independently determines the value of this product for society and for each indi-

vidual. Accordingly, one who owns a resource that is rare and necessary for society, a skill, receives a greater reward for it. And human labor, aimed at producing not so rare and valuable good, is paid lower. In different societies, these valuable resources and skills differ: in an agrarian society, physical strength is valued, and, for example, in the modern world, intelligence comes to the fore. "The social contribution of each employee is exactly equal to private compensation, - people with high productivity indicators and, accordingly, with a large contribution, receive a higher salary."[8]

An interesting definition of economic inequality was given by the famous Indian economist Amartya Sen, a 1998 Nobel Prize winner in economics "for his contribution to the economic theory of welfare." It characterizes inequality in living conditions through comparison: the existing, real quality of life of a person is compared with those living conditions that could be achieved by him thanks to his abilities. That is, they consider (of course, conditionally) the potential capabilities of each person as the initial criteria for social inequality.

The 2001 Nobel Laureate “for analyzing markets with asymmetric information,” Joseph Stiglitz, emphasizes the economic side of inequality in the study of inequality. J. Stiglitz analyzes income inequality, the concentration of property among different segments of the population, the correlation of income, education and social mobility and other statistical indicators and, based on these data, makes a conclusion about the effect of inequality on society. The effect of inequality is expressed in injustice, the threat to democracy, the growth of protest moods, emasculation of the middle class, and a decrease in production efficiency. J. Stiglitz also deduces more detailed reasons for the emergence of inequality in society (in particular, American). The main causes of inequality are the unsatisfactory activities of the government, on the one hand, and the rent-seeking of companies (especially tops, monopolies), on the other.

As you can see, the situation with inequality is closely related to existing society, technology, supply and demand. But inequality is formed not only under economic factors, but also under political ones. In the modern economy, it is the government that determines the rules of the game: how the economy should function, what is permitted and what is forbidden, how a fair, competitive economy will be built, what role a simple worker will play in the economy; it is the state that regulates business activity, both through taxes and with the help of interest rates and other financial instruments. All this is established by the state, by the government. In addition to setting the rules, the state has one of the central functions - the distribution of resources. Through the tax rate, the level of social support, the state adjusts the dy-

namics of the welfare of the population. For example, without public schools, health insurance, the level of inequality would be much higher. Without a state, the chances of children for a decent life would entirely depend on their parents - the poor would most likely remain poor, and the rich would be even richer. In addition to social functions, the state also has a controlling one. Free market mechanisms and competition themselves limit disproportionate economic profits, but if the state cannot achieve market competitiveness, then monopolies form, which in turn leads to excessive profits and unjustified salaries for senior employees. In addition, output decreases, its quality deteriorates. Disproportionately enriched, the monopoly supplies the population with low-quality products and to a lesser extent. All this leads to an increase in inequality within the country. The government is called upon to limit the possibilities of the monopoly, to limit enormous compensation to corporate executives, thereby reducing the gap between the average employee and the top. Thus, the government affects the level of inequality in the state: “Most of the inequality that exists now is the result of the action (or inaction) of the government, which is in charge of the power to move cash flows from top to bottom and vice versa,” Stiglitz writes in his book [8].

The founder of classical political economy Adam Smith explained that the individual’s personal interest in profit leads to universal well-being. In a situation where markets operate correctly, private income and social spending are deeply interconnected [2]. The theory of marginal productivity says the same thing: personal income and social development correlate. Therefore, under ideal conditions, depending on the social contribution to the overall well-being, a person will receive a salary higher or lower. But here lies the drawback of this approach. Markets are not always competitive, and, which is also very important, not always in such a market the pursuit of profit turns into a benefit for society. That is, the markets themselves, in an effort to achieve positive, desirable results, may fail. When there is no strict connection between the profit of an individual and social profit, we can talk about the failure of the market. For this reason, the government should pursue a policy (for example, related to tax regulation and distribution of funds in society) "which will allow to collect bundles of private incentives and public profits in one bunch" [8]. But in which case can the market crash? There can be many such cases: if market competition is not perfect, if the activity of one has a latent positive or negative impact on the life of another, and no compensation is taken into account for this (as an example, uncontrolled environmental pollution by enterprises: people living near such enterprises they don’t get anything, but they are negatively impacted) if market information is not perfect (one knows the actual infor-

mation and the other does not have access to it), if it is impossible to take into account all the market risks, etc. All this may lead to market inefficiencies. Of course, the government cannot prevent all of these shortcomings, but it can minimize their impact.

At the same time, it is important to understand that companies are constantly striving to receive economic, increased profit. Under ideal conditions, they are forced to constantly reduce costs, introduce innovations, and search for unoccupied market niches. In real conditions, companies often use market imperfections to enrich themselves. Adam Smith also said that firms have incentives to discourage market competition. Moreover, firms often try to assert their monopoly position by law and in every way justify it in the eyes of society, and, more importantly, in the eyes of the government and the courts. In this case, the law “the greater the productivity, the greater the benefit to society, and, accordingly, your profit” does not work. Companies are simply trying to get the market to work for them. Economists call such processes rent-seeking behavior. Initially, the term "rent" was used to refer to the payment of a peasant for the use of the land of the feudal lord. The feudal lord did not receive this payment for any real actions, but merely for land ownership. This is his central difference from the ordinary worker, earning his income only for the work and efforts that he made. In the future, “rent” became a broader term, transforming in its meaning into a fee for a resource, the supply of which is strictly limited (Fig. 1).

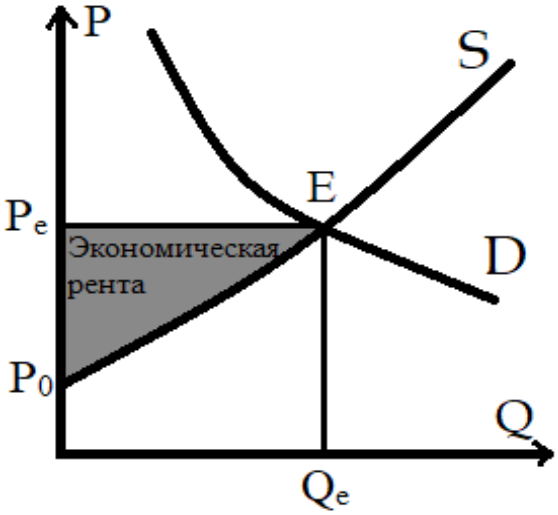

Fig. 1 Economic rent

Firms always strive to get monopoly rents, constant economic profit. They can achieve this by lobbying, patents, creating barriers to output and prices (if the giant does not allow young companies to enter the market by temporarily lowering prices and increasing production), differentiating their product, etc. And sometimes for this they resort to not the purest tricks (from the side of the law such actions are often innocent, but when studying it becomes clear that firms are robbing society). Any rent-oriented behavior has a characteristic feature - the company is trying to get extra profit by taking money from society. These funds can be obtained directly from society or through the state. For example, through the state it is: obtaining a government monopoly, dishonestly cheap buying natural deposits from the state, selling goods to the state at a price much higher than market prices, dishonest subsidies to enterprises in the industry, hidden subsidies (subsidies through trade restrictions and tax breaks), the impact on people with power, etc. Acting directly on society, companies usually crowd out competitors by pushing up prices, using information asymmetries (the seller is constantly on the market, and the buyer is rare, so it's easy for the seller to confuse the buyer and make money on it), etc. Thus, through rent-seeking, the owners and managers of large corporations (the wealthy elite) take money from society and get rich, which leads to the stratification of society at the top of the rich and the rest, the poor.

As an example, we give the asymmetry of information in the financial market. In the financial sector, it is easier for a banker to monitor market conditions, because they are constantly at the center of the information flow. Accordingly, they have the opportunity to impose a predatory loan on customers, an unnecessary insurance contract (if the state guarantees protection already), and conduct a fraudulent transaction with bank cards. Only a buyer who has just arrived does not have the opportunity to take into account all the nuances. In addition, in the modern world information is the same product, and it is easier for rich companies and their owners to get this information. Promotion of mechanisms ensuring the opacity of markets is becoming an important point in the activities of companies, because the more transparent the market, the more competitive it is. And even in the case of open access to information, an ordinary citizen (due to the division of labor, institutional and biological reasons) is not always able to rationally use this knowledge. "The opportunities for representatives of the financial industry to have an advantage over poor and uninformed citizens are innumerable," writes J. Stiglitz [8].

Thus, we can say that the initial imperfection of the market, and then miscalculations of the government, lead to market failures. This, in turn,

enables rent-oriented behavior of companies to draw money out of society, which leads to inequality. In turn, inequality is often self-replicating, and the situation is exacerbated. There are a large number of negative effects for the entire economy and social sphere.

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ECONOMIC SYSTEM BASED ON INTERNATIONAL OUTSOURCING

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Abstract. The article is devoted to organizational and economic systems based on international outsourcing. A model of the economic system based on the goals and needs of the participants in the chain of creating the final value is proposed. The author points out that the proposed approach does not deny the use of subsystems based on a functional feature, but allows constructing economic network structures taking into account the need for structural coordination, as well as the presence of the general and private goals of the participants in the final value chain, which, according to the author, distinguishes an economic system based on international outsourcing from any other networked economic system.

Keywords: economic system, structural coordination, common goal, individual goal.

Today, the world economy is characterized by a high degree of economic interdependence of countries due to changes in the organizational structure of world production, the development of transnational trade and investment, the international division of labor, the presence of multinational companies, and close information links. Large companies, having achieved leading positions in the domestic market, trying to increase profits, are trying to expand their influence beyond national borders and begin to carry out foreign economic activity. Within the management strategy, there are various methods of foreign economic activity. One of these methods is international outsourcing. To use this method, it is necessary to build a different economic system from the others, since outsourcing has a number of distinctive features from other methods that go into the management strategy. In connection with the foregoing, the purpose of this article is to study the elements of international outsourcing that make up the economic system of companies engaged in foreign economic activity, based on this method.

To achieve this goal, the following tasks will be performed:

1) Studying the work of domestic and foreign researchers involved in the analysis of issues of international financial management, trade and outsourcing to identify elements inherent in outsourcing;

2) Building an economic system based on international outsourcing.

Before we begin to identify the elements inherent in the organizational and economic system on the basis of international outsourcing, it is necessary to clarify the content of such a category as "organizational and economic system".

Burkov V.N. and Irikov V.A. argue that the "organizational system" is "a set of interconnected elements, separate from the environment and interacting with it as a whole." [1] The broadest definition of an economic organization is “a complex, interdependent set of elements of subsystems of a lower level, interconnected organizationally, economically, and technologically. At the same time, the final results of the activity of each link (or element) of the low-level system form the initial resources of the higher-level system.” [2] The integrity of the system is manifested in the fact that it is not just a combination of elements, it, the system, exists or is created to achieve a specific goal.

To build an economic system based on international outsourcing, it is necessary to clarify what outsourcing is.

“Outsourcing is a part of the management strategy when transferring work and services to a third-party contractor, based on the fundamental principle of the division of labor, organized as a sustainable business process and aimed at improving the efficiency of the company and reducing costs.”

Having studied the work of the following authors, Kalendjyan S.O., Anikin B.A., Rudaya I.L., Kurbanov A.Kh., Plotnikov V.A., S.V. Yuriev, Sinyaev V.V., Ivlev A.G., Shimshirt N.D., Aalders R., Sako M., Benerjee P., Woleler D., Dorvin D., Kalian K., Gonzales A., Gupta D. et al. [3-15], we can conclude that today most researchers support the assertion that outsourcing is part of a management strategy based on either a systematic or integrated management approach. This is due to the fact that outsourcing itself has undergone evolutionary development during its existence. Today, three generations of the evolutionary development of outsourcing are distinguished. All of them differ in the factors of transition to outsourcing, the activities transferred to outsourcing, coordination of relations between the supplier and the customer, success factors and measures of success.

Table 1

Characteristic	First generation	Second generation	Third generation
Key Factors for transfer to Outsourcing	- Efficiency, cost saving.	-Efficiency; - Focusing on core professional qualities; - Search for additional features.	-Efficiency, innovation and adaptation; - Flexible solutions for customers; - Transformation of business processes.
Outsourcing Activities	Peripheral activity.	Almost main activities.	Traditionally defined core activities.
Relational Features (Relationship Features)	- Small integration; - The only supplier; - The asymmetry of size and power favors an outsourcing firm; - Separation of outsourcing activities from an outsourcing company. There is only one point of responsibility between the outsourcing firm and the supplier.	- Advanced Integration - Asymmetry of the size and power of an outsourcing company; - More than one partner on the side, but still gravitating to one partner; - The outsourcing company maintains the necessary resources to manage relations with external suppliers.	- Virtual integration; - The uncertain asymmetry; - Establishing close relationships with several but major partners; - An outsourcing company is expanding its borders, real-time information exchange with external partners to create a virtual chain; - Outsourcing as a core competency.
Main success factor	- The supplier is more efficient than an outsourcing company; - Strong dependence primarily on choosing the right partner; - Identification of hidden costs and a clear determination of the cost structure in the original contract	Built-in contract flexibility for technological evolution and capital investment; - Standardization of contracts and technological platform; - Protection of knowledge from leakage in the process of outsourcing.	- Flexible and responsive customer solutions to ensure added value; - A clear definition of core competencies; - Standardization of outsourcing processes; - An outsourcing company exercises centralized control over business operations, while ensuring decentralization of business processes.
Performance measurement	Cost reduction	The impact of outsourcing on overall business performance.	Transformation of business processes and achievement of common goals

With the development of the economy, the key factors that caused the transition to outsourcing changed, and after them the activities transferred to the contractor and the features of the relationship between the contractor and the customer and the factors that lead to success and the effectiveness indicators themselves changed. Analyzing the stages of outsourcing development, we can conclude that the first two stages of the evolutionary development of outsourcing are based on a systematic approach, while the third stage is based on an integrated approach.

When constructing economic systems, domestic researchers are guided primarily by the outsourcing methodology based on a systematic management approach, while foreign researchers indicate that outsourcing as a method can be built, for instance, on a strategy based on an integrated management approach.

Summarizing the materials of Russian and foreign researchers in the network organizational structure, the following elements based on functions can be distinguished:

- a subsystem of technological and business processes - a set of organizations engaged in the basic technological and business processes of creating ultimate value;
- subsystem of infrastructure processes - a set of organizations carrying out processes of public infrastructure (financial, informational, material, technical, staffing);
- customer relationship subsystem - a set of organizations engaged in the process of one-way or two-way communication with the final consumer (insurance, after-sales service and the collection of consumer information, the collection of information about the final value from the consumer);
- a subsystem of innovative processes (the main sources of innovation, areas of innovative activity, subjects of innovative activity, innovative infrastructure);
- a subsystem of structural coordination (communications, resource flows and contacts between two or more elements of the system, forms and methods of implementing business relations).

The criticism of this approach is that an economic system based on a functional attribute of subsystems reflects the network structure of the system and management strategy, but does not reflect outsourcing itself. The one-sided direction of relations indicates a strict consistency in the approach and the absence for the participant of the process of creating the final value chain, which has an advantage in the asymmetry, of the goals of its outsourcers, and in this case the differences between the outsourcer and the ordinary supplier are erased.

It should also be noted that organizational and economic systems built by Russian and foreign researchers on the basis of different approaches to management strategies are significantly different from each other and do not have universality. So systems built on the basis of a systematic approach have one integrator and one or more outsourcers, while systems built on the basis of an integrated approach either have several integrators or do not have them at all.

Reflecting on the organizational and economic system, management strategies also determine the management models used by researchers, planning and forecasting outsourcing, as part of the management strategy. Moreover, the use of one approach in most cases excludes the second. So when using an economic system built on the basis of outsourcing methodology as part of a system management strategy, models are often used based on a managed system and/or hierarchical games. Whereas when using an economic system built on the basis of an integrated management strategy, mainly models based on cooperative games are used. This is due to differences in the elements used in organizational and economic systems based on different approaches. However, the nature of outsourcing does not change when using different strategies for managing data by researchers. Therefore, since the essence of outsourcing does not change depending on the management strategy, it is possible to highlight elements for constructing an organizational and economic system applicable to the use of both a strategy based on a systematic approach and a strategy based on an integrated approach.

When describing the organizational and economic system, first of all, a structural scheme and functioning mechanisms are distinguished. To describe the structural scheme and functioning mechanisms, it is necessary to determine principles based on the characteristics of outsourcing of various evolutionary stages, on which the organizational and economic system will be built on the basis of international outsourcing. Cooperation, providing mutually beneficial cooperation to participants in industrial and economic relations, based on varying degrees of coordination and tight relations between the customer and the contractor, in order to create, organize, efficiently operate and economic sustainability, according to the author should adhere to the following principles:

- The network structure goes beyond the framework of one organization, as well as the distribution of the goals and objectives of managing the network structure beyond the boundaries of a formal organization.

- Formation of a network providing the process of creating the ultimate value.

- Interchangeability of individual network elements. Satisfying end-user requests can only be fully resolved with an effective combination of network elements.

- The management of joint activities by organizationally and economically independent entities through agreements or contracts determines the design of the network.

- Organizations, members of the network structure, are connected through the formalization of relations and are responsible for the results of their activities within the boundaries established by relations (agreements or contracts).

- Requirements and business should be flexible with the possibility of their subsequent revision. Detailed work, level of service and prices are less important than establishing partnerships and problem solving conditions.

- Organizations, elements of the network structure, are subordinate to the established hierarchy and interact with network elements by certain limits of their own competence or specialization of activity.

- Reliance of each element of the network structure when performing the process in the chain of creating ultimate value on own resources: material, technological, informational, intellectual, etc.

- The introduction of each element, combined into a network structure, of their own unique resource in the overall process of creating the ultimate value. Value for the end user is determined by the quality of resources and the competence of specific organizations.

- Organizations united in a value creation network, independently within their own borders, solve problems of their own efficiency and competitiveness. In the conditions of bilateral coordination, the ability of the integrator to solve the problem of their own efficiency and competitiveness due to integrable elements is reduced. For many of the integrable elements, participation in the overall process of production of the final value is the basis for the stable continued development of the business.

- All processes connected by a network in a value chain are based on the use of global information networks and communication technologies, modern hardware and software. The determining factor in the formation of the network structure management system is the availability of these tools and technologies.

- The high quality of the implementation of processes in the framework of achieving the common goal and interests of partners can compensate for the low level of control from other organizations involved in the process of creating the ultimate value.

- The costs of acquiring a process from a supplier should take into account the marketing costs and profits of the supplier.

- The need to integrate one or another organization into the network is determined not by the size or form of ownership, nationality, etc., but by the uniqueness that cannot be reproduced in a short time of a resource that is of ultimate value to the consumer.

- The basis of the economic sustainability of a network organization is to reduce the costs of implementing processes integrated into the creation of ultimate value in comparison with the sum of costs associated with the implementation of the same processes of separate organizations, regardless of each other. At the same time, the effectiveness of the functioning of the value chain is determined separately by network elements and customer satisfaction with the value of the final product.

- In the process of creating the final value, the system should be guided not only by its own interests and customer satisfaction, but also take into account the state of each integrable element, since the loss of an element from the chain of creating final value for the consumer can affect the efficiency of the whole system, and not only the effectiveness of the integrator.

Thus, based on the system of relationships outlined in the above principles, we can distinguish the following elements characterizing the economic system of international outsourcing and distinguishing it from other network economic systems:

- common goal for the entire economic system;

- strong cooperative relationship between the participants in the chain of creating the ultimate value;

- structural coordination between participants in the chain of creating the ultimate value;

- personal, for each participant in the chain of creating the final value, priority from other participants in the chain of creating the final value, individual goals (individual goal of the participant in the chain of creating the final value).

The selection of these elements of the economic system allows you to build organizational and economic systems based on international outsourcing, taking into account both strategies based on a systematic management approach and strategies based on an integrated management approach and include any subsystems of the organizational structure and functioning mechanisms.

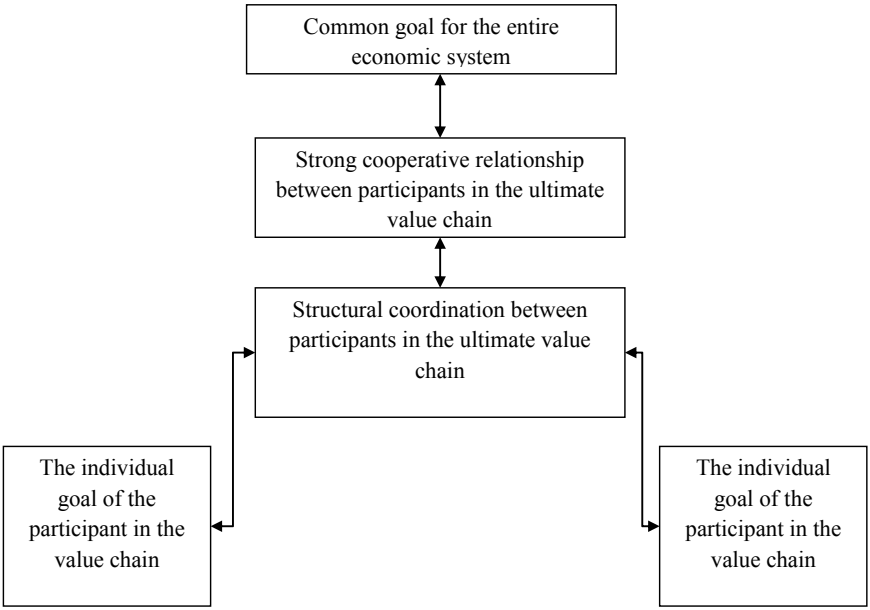

Fig. 1 The composition and structure of the economic system based on international outsourcing

The economic system shown in Fig. 1 differs from most economic systems that describe network structures in that it is expressed not through the functions of subsystems, but through their goals and needs.

This economic system does not deny the subsystems indicated by Russian and foreign researchers based on a functional attribute, but expresses them through the individual goals of the process participants. Also, the individual goals of a participant in the ultimate value chain may include the individual goals of one or more integrators. The juxtaposition of their own individual goals to the individual goals of the customer necessitates structural coordination between the participants in the chain of creating ultimate value. If the indicators characterizing the private goals of the participants come into conflict, it is necessary to coordinate either the individual goals of the participants in the final value chain, or the adjustment of the final goal, taking into account the interests of all participants in the final value chain. If there is no contradiction between the individual goals of the participants in the chain of creation of the final value, then a specific stage of the process of the chain of creating the final value is carried out by means

of cooperation between the participants of the chain. The implementation of the entire set of stages of the chain of creation of the final value leads to the creation of value ensuring the realization of a common goal for all participants in international outsourcing. However, if the creation of the final value does not ensure the realization of a common goal for all participants in the chain, then cooperative relationships at each stage of the chain of creating the final value should be analyzed and, through structural coordination, affect the functional subsystems through their individual goals. Thus, the inverse relationship is manifested between all elements of the economic system based on international outsourcing.

The economic system proposed by the author on the basis of international outsourcing allows us to develop organizational and economic network systems not only on the basis of a systematic approach to management, but also on the basis of an integrated approach to management. It allows you to use subsystems developed on the basis of a functional feature that are used by Russian and foreign researchers, expressing them through the goals of the participants in the chain of creating the final value. Reflects the direct relation and feedback between the elements of the system from the private goal of the participant in the chain of creation of the final value to the achievement of a common goal for all participants. It includes such an element as the need for structural coordination, which was previously not paid attention to when building organizational and economic systems based on a functional attribute, which reflected the network structure, but did not reflect the essence of outsourcing, namely, close cooperation between the participants.

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THE ESSENCE AND CONTENT OF THE BASIC INNOVATIVE CONCEPTS

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Summury. The article reveals the content and essence of innovative concepts. The significance of innovation is analyzed. Correct interpretation and comparison of the concepts of "innovation", "innovation" and "tradition". The article formulates the main views. Given the process of change in different areas of life, these views can be considered as an indicator of innovation, if their content is common in practice and new opportunities are created to meet changing human needs.

Keywords: Innovation, introduction, novelty, pioneer work, tradition, concept.

One of the most striking achievements of the Republic of Azerbaijan was the formation of a new education system. 21st Century Reform Process still ongoing. As a result of these reforms, the Development Concept “Azerbaijan 2020: A Look into the Future”, approved by the Decree of the President of the Republic of Azerbaijan dated December 29, 2012, contains provisions on innovations and their benefits for society. The concept of the development of education and its innovations is as follows: “Support for scientific potential and innovation; The development of science will be a priority, taking into account local characteristics and global trends, and the process of effective integration into advanced world science will continue. The scientific infrastructure will be improved, the material and technical base of science will be modernized, and electronic information systems in this area will be converted into electronic form. ”

The concept of "innovation" is one of the terms that reflect innovation in scientific terminology.

The State Education Development Strategy of the Republic of Azerbaijan, aimed at developing the education system of Azerbaijan, emphasizes the development of human capital in the country, ensuring the acquisition of modern knowledge and skills by accelerating the integration of the country's economy into the global economy market. This is not without reason.

The development of human capital is one of the most important conditions for the successful integration of the economy into the world system and the effective use of the country over international competition. The new education system requires an innovative approach.

The innovative environment and its integral part in the education of Azerbaijan, as well as pedagogical innovations make it necessary to introduce new educational technologies and teaching methods. Each successful work in the field of modern pedagogical science and enrichment of the pedagogical process considers it important to develop modern theoretical and methodological directions. The pedagogical environment for the search for innovation, as well as its visual representation in the relevant sections of the training, requires some scientific explanation. The most striking thing here is the concept of "innovation." When interpreting the main content, it is important to know its essence and content.

The term “innovation” was first used in the 19th century. in anthropology and ethnology. This concept means the process of incorporating an element of one culture into another.

In explaining the content of the term innovation, first of all, it is necessary to clarify a number of common features and the essence of this concept. Both foreign and Azerbaijani scientists conducted quite interesting studies on the international term “innovation” and managed to form new scientific ideas in this area.

The content and essence of the innovation are widely disclosed in the textbook “Pedagogy” by A. Pashayev and F. A. Rustamov. “Innovation” in the broad sense is understood as innovation in the pedagogical system in order to improve learning, as well as the process and results of the educational process. The authors distinguish two types (extensive and intensive) when it comes to innovation, and explain the content of each of them separately. From time to time, innovations and innovations are introduced in education. If we look at the Middle Ages in the East, we will see that there have been some changes in the attitude of students and teachers and in their approaches to education.

The concept of “science” in Arabic “علم” - “Elm” means “to know, to be informed” .. Although the term “innovation” is far from the eastern world, “الا تربو وي لابد تكار” is “Al Ibtikar al Tarbuy” as “educational innovation "," The innovation presented by the teacher. " We can say that the basis of pedagogical innovations should be considered as the result of studies of oriental science. Some studies consider pedagogical innovation as a renaissance of education.

One of the key concepts of innovative pedagogy is innovation.

What is innovation? From the Latin word "novatio" means update, change. The prefix “In” indicates the direction and, if we translate it verbatim, it gives the expression “in the direction of change”. Not every innovation is innovative. Innovation is ideas, processes, tools and results that have been combined into a qualitatively improved pedagogical system. The encyclopedia reads: “Innovation is the end result of the use of innovations in the field of high technology, the discovery and invention of human intellectual activity. The result of innovation is a new or improved business, technological process, as well as organizational, technical and other cases in various areas of social relations. Innovation is the application of new ideas, scientific knowledge, technologies and products in various fields of production and management to ensure economic growth and competitiveness. ”

In the explanatory dictionaries, the concept of innovation is defined as “new”, “newly created or appearing”, “recent or replacing the old”, “based on the past”. From these explanations it is clear that innovations have always been in the pedagogical process, but recently they have begun to be applied more intensively. Researchers from the UK also interpreted the word innovation as an innovation in the pedagogical system to improve the teaching and learning process, as well as improve the quality of the results of this process.

The term “innovation” has been translated into English-Turkish, French-Turkish, German-Turkish languages as novelty, updating, invention, creating a new one, replacing the old with a new one. “This is not possible without open source resources that cannot be created without a platform that cannot be created without a community.” The word "innovation" is widely used in the works of J. Schumpeter. He writes that “Theory of Economic Development” is a systematic activity of the human collective aimed at the full implementation of innovations, based on new scientific knowledge, ideas, discoveries and inventions, the use and application of modern scientific and technological systems. “Innovation” is a new scientific and organizational combination of production factors motivated by the spirit of entrepreneurship. According to renowned scientist Peter F. Drucker, “innovation” is the key to entrepreneurship, but Michael Porter said that innovation provides both competitive technology and artificial ways of creative thinking. Another researcher, E. Rogers, described the concept of innovation as a process of developing a tool using new methods and techniques. E. Rogers classifies innovation in the form of ideas, practices, or objects that are recently accepted by individuals. We see this clearly in table 1 below:

Table 1

Elemen	Classification
Innovation	The division and implementation of new ideas or practices has defined innovation.
Communication Channels	Means. Messages are transmitted from one side to the other.
Time	Time for innovation.
Social system	This system defines joint efforts to achieve a common goal and solve problems.

Some researchers call "innovation" the effective use of innovations in the form of new products, socio-economic and organizational-technical solutions of a production nature. Innovation is defined as a new or improved process used in practice, or as a new approach to social services, as well as the end result of developing an innovative product. According to Twiss theory, “innovation” is the process by which an idea or an invention acquires economic content. According to Santiago, “innovation” is a socio-economic process through which ideas and inventions are created to produce better products and technologies. While an innovation may be driven by economic benefits or profit, marketing it may lead to additional products. ” IN AND. Zagvyansky also explained the term “innovation”. In his opinion, this will bring new ideas and new technologies to the pedagogical experience of teachers. ” Pedagogical processes strive for innovation, so that there are no contradictions between the requirements for the rapid development of the learning environment. Innovation is a process, and as a result of this process, knowledge that is partially or fully used is regarded as the protection and development of intellectual activity. The organization of innovative training and education management can be considered as a new stage in the education system. According to the results of the study, innovation is qualitatively different from its predecessor. The set of scientific, technical, technological and organizational changes that occur in the process of innovation can be called the innovation process, the process of creating, disseminating and using innovations. New schools have been created. As a result of innovations, new curricula were developed, and in recent years modern schools for all levels of education have been created in Azerbaijan. Innovations in technology, new labor technologies and management were presented in the Encyclopedia as “innovation”. Innovation is based on the use of scientific achievements and best practices. Innovation in the organization of joint activities of teachers and students, the application of goals, content, methods and forms of this activity. Innovation is presented in the

form of a model reflecting programs that span different areas. First of all, it provides for innovations in the content and methodology of training. In other words, innovative learning is content, new educational technologies, new forms of the educational process, active teaching methods. In addition, this is a good system for managing the quality of education, and not a new approach to managing the quality of education and educational institutions. The power of science and its structure can be considered as the integration of educational and innovative activities. The necessary reforms in education make it necessary to improve the training of primary school teachers. Under these conditions, new areas of scientific knowledge and innovation in education are emerging. Therefore, the use of modern information and technologies should continue to be used by leading scientists of the world in the field of pedagogy, psychology, sociology, philosophy and economics. The concept of “innovation” by P. Talperin, A. K. Markov and V. A. Slasten is viewed from a different point of view as a pedagogical category. One common point of view, in their opinion, was that pedagogical innovations were the introduction of innovations in pedagogical activity, and changes were made to the content of teaching and learning technology to increase the effectiveness of these innovations. The analysis of the scientific source and the real pedagogical situation indicates that the preparation of future primary school teachers for innovative pedagogical activity is one of the main strategic directions in education. Research on innovation in pedagogical literature, written over the past decade, is systemic. The socio-psychological aspects of innovation were investigated in the works of foreign authors such as A. Ananyev, A. L. Berak, I. M. Kurdyumova, E. Rogers, as well as when introducing new management models in various areas of the education system. These works offer an innovative research methodology and assessment program to prepare future primary school teachers for innovative teaching activities. Russian educational scientists (V. S. Tolstoy, V. B. Sazanova, A. I. Prigogine, V. I. Zagvazinsky, I. V. Bestuzheva-Lad) have achieved great success in this area. M.V. Clarina's research details and summarizes innovative processes in pedagogy.

Azerbaijani researchers have also conducted significant research in this area. A. Mehrabov, A. Pashayev, A. Agayev, F. Rustamov, F. Ibragimov, A. Abbasov, H. Alizade, L. Gasimova, R. Makhmudova, A. Abbasov, I. Dzhabrailov, H. Akhmedov, m. In the studies of Ilyasov, I. Aliyev, O. Hasanli, much attention is paid to the use of innovations in the pedagogical training of future primary school teachers. Primary school teachers also have many practical skills related to innovation in the learning process. The pedagogical and psychological problems of innovations in the pedagogical science

of Azerbaijan were systematically investigated by A. Mehrabov. According to him, the promotion of the scientific foundations and new features of innovations that determine the effectiveness of modernization of the education system, of implemented projects is crucial. He highly appreciates the role of innovation in improving the quality of the educational process and analyzes the integration of medical and pedagogical education as an innovative process.

New results were obtained thanks to innovative professional characteristics of teachers. According to V. Slasten and L. S. Podymova, there are certain contradictions between innovations and traditions. As a result, the concept of “innovation” can be found in most economic areas. Modernizing education means developing a strong economy. The economy, which is the cornerstone of a strong state, needs a fast-growing, competitive and education-oriented education with innovative interests. That is why the international assessment is funded by economic organizations.

In dictionary terms, the term “innovation” is interpreted as an investment in innovation, new technologies and technological development. In the dictionary of foreign words in Russian, “innovation” means introducing something new, modernizing, reforming, investing in new technologies, opening and introducing new forms of labor management. This dictionary describes the morphological features of the concept of "innovation." Innovations applied in the field of production technologies and used in the management of any division are called “innovations”. As a result of a constructive approach to something existing, the innovator and his team take advantage of their competitors and provide a temporary monopoly. Why temporary? Because competitors will look for ways to enter the market. Thus, one team will develop new products that focus on identified needs, while others will develop technological innovations that will create new markets. As a result, this cycle continues in a row. It is advisable to use the term “innovation” as a synonym for “innovation”. The formation of life skills is presented as an element of innovation, when a person is able to solve problems of society. Some innovations and cultures are based on community traditions. Innovative ideas that arise in the individual consciousness are spreading in society and contribute to sociocultural changes. In the scientific and pedagogical literature, significant changes in social practice and their implementation are called “innovations”. New activities, technological processes, scientific and technological development are interpreted as innovations. “Innovation” is a cultural development phenomenon that did not exist in the early stages. Methods, mechanisms, results and activities are expressed in the form of “innovation” with a radical change in content.

The term “innovation” represents new processes. If we take into account the process of environmental change, its content can be perceived as an innovation if it creates new practical innovations to meet the changing human needs for the development of sociocultural systems. But one problem is worth mentioning. Innovation is the result of investments in new technologies and technologies. In the socio-psychological aspect, innovation is the main reason for the creation, implementation and introduction of fundamental changes in practice. Innovation also constitutes the content of innovation, which means the implementation of its content.

The Law Encyclopedia touches on the concept of innovation. It is justified here that innovation is a combination of changes in the economic, technical, social and other fields based on new ideas, inventions and discoveries.

Creating a wide range of products and their quality, options, production processes, market mechanisms based on the latest technology covers the content of innovation. Innovation is of great importance in a market economy. At the same time, I would like to note that Innovation requires the coordination of three different components:

1. The potential of science and technology;

2. real production capabilities;

3. The real market needs new scientific and technological achievements [153, p. 33].

Pedagogical literature is based on the fact that there is a “life cycle” of innovation. The effective use of innovation goes all the way. This, in turn, constitutes the stages of innovation:

Stage I: development of an idea or technology of manifestation (work);

Stage II: technical description (projection) of a new idea or technology;

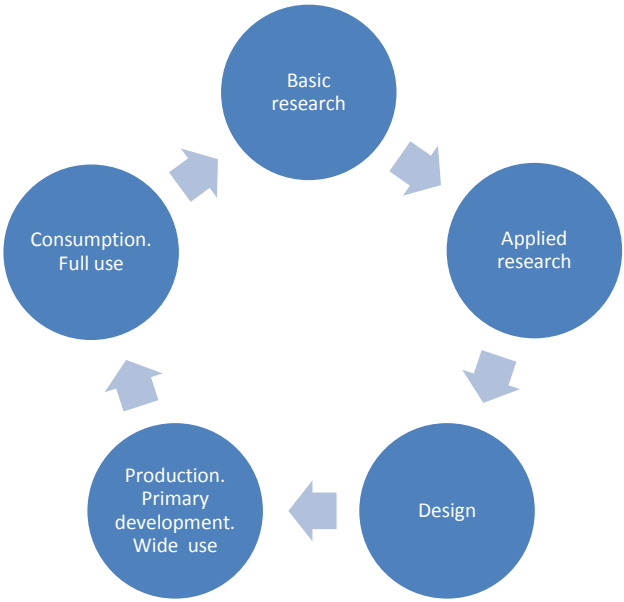
Stage III: testing, development and implementation of new information (innovation).

Innovation management uses the concept of the innovation life cycle. Such approaches represent the stages of innovation in a system in a market economy:Picture 1

Apparently, the innovation life cycle consists of five main steps:

1) Basic research. A feature of basic research is that the time and money spent on the creative process cannot be determined by the end result. The end result of basic research is the identification of laws and patterns, categories and methods of their application in practice. These results are reflected in publications and scientific reports.

At the first stage of basic research, problems of practical application are considered.



Picture 1

At the second stage of basic research, the most suitable and favorable results for practice are selected. Important areas of expertise, technical and economic feasibility, are currently being investigated.

In basic research, the goal is not to create innovation.

2) Applied research. Applied research is based on the results of basic research. It includes technical capabilities, socio-economic efficiency and ways to use the results of basic research in a specific area or section. It includes the creation of production programs and conceptual projects, technical requirements and tasks, methodologies and standards, projects and technologies of future enterprises, standard specifications, as well as other scientific consultations. At this stage, experimental work is being carried out on laboratory and production options.

At the first stage of research, the implementation of projects, the theoretical justification of their approaches and methods, as well as the development of schemes and options for solving them are implemented.

At the II stage of applied research - development and approval of technical issues, and the program is being implemented.

At the III stage of applied research - the experimental phase.

At the IV stage of applied research is the generalization and evaluation of research results.

3) Design. The project is based on research. Compilation depends on:

- double-check the existing project;
- creation of new projects;
- creation of a new system;
- the formation of the potential of the new system and the ability to manage it.

4) Products (primary and widespread use). Training new personnel for training, retraining and innovation. The economic assimilation of innovation is determined by the level of organization of the process in the system, the quality of human capital, the sociological climate - a creative atmosphere for the innovation team. The activation of the human factor for the formation of innovation. The goal here is to reduce the time spent on innovation, accelerate learning and development.

5) Consumption (full use). This stage is characterized by a gradual stabilization of innovations and an increase in their use. It is at this stage that the main effect of innovation is realized.

Theoretically, where the innovation is located, this further enhances its prospects in the market. It is about when and how a new product will develop. The growth in demand for innovation is associated with its development. This is why the innovation process is expected to be more successful if implemented quickly. Sometimes innovation takes a long time. If other innovations occur during this period, the resulting innovations will be lost.

Thus, old age completes the “life cycle” of innovation. This means that innovation begins at the end of development. Economic, environmental or sociological efficiency provides the basis for innovation.

USE OF MULTIMEDIA PRESENTATION AT FOREIGN LANGUAGE LESSONS FOR THE PURPOSE OF DEVELOPMENT EDUCATIONAL - COGNITIVE COMPETENCE

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Abstract. The article highlights the features of using multimedia presentation in foreign language lessons, the conditions for its use in order to develop educational - cognitive competence are analyzed. The process of development, creation of multimedia presentations and their capabilities in the field of education and formation of interest in the subject among students is under review.

Keywords: Multimedia presentation, features of application of multimedia presentation, media education, modern technologies in education, digitalization of education, educational - cognitive competence, development of educational - cognitive competences, foreign language lesson.

At the present stage of the development of education, in the XXI century, the importance of media education as a way of productive learning and the process of personality formation, development of competencies, including the development of educational and cognitive competence, is undeniable. Today, information technologies are actively used, forms and methods of media education are being created and developed, for example, multimedia presentations that help school education reach a new level - student independence and the ability to learn, acquire knowledge anywhere the Internet is available.

The development of educational and cognitive competence, the emergence of interest and abilities in foreign languages are formed as a result of family and school education and training. In modern comprehensive schools, a transition to media education is necessary, since children and adolescents with great interest, rather than a textbook, use a computer and information technology.

Speaking of educational and cognitive competence, we refer to the definition presented in the Federal State Educational Standard of the new

generation: “Educational and cognitive competence is the development of general and special educational skills that contribute to the improvement of educational and cognitive activity; mastering the methods of independent study of a foreign language and culture, including using information technologies” [Federal Law “On Education in the Russian Federation”, 9; 46].

Thus, the use of media education, multimedia presentations is directly aimed at the development of educational and cognitive competence as a type of knowledge and skills focused on a high level of educational motivation, an independent search for information in the media space.

The study focuses on the analysis of the use of multimedia presentations in foreign language lessons, on the analysis of the ratio of intellectual and personal changes in the educational level of a student using these teaching aids.

Having examined the different points of view of researchers, educators, we will get acquainted with the definitions of the concept of “media education” and “multimedia presentation”:

1. Media education is the study of media, which is different from learning through media. Media education is associated both with the knowledge of how media texts are created and disseminated, and with the development of analytical abilities to interpret and evaluate their content <...> [Fedorov, 8; 27].

2. Media literacy is a relatively recently introduced term that refers to the study of the impact of mass media and other communications (including the press, television and radio broadcasting, advertising, cinema, the Internet with all its applications) both in the framework of training workers in this field and in relation to what everyone needs to know to master information and communication technologies <...> [Razlogova, Sharikova, 3; 24].

3. A multimedia presentation is a qualitatively new approach to the study of a foreign language. To prepare such a presentation, the student must conduct research work, use a large number of sources of information, which avoids templates and turns each work into a product of individual creativity. In the process of preparing the presentation, conditions are created for the development of motivation to learn a foreign language, the background knowledge of the student, his horizons and awareness <...> [Kirillova, 7; 114].

4. A multimedia presentation - is training material prepared using various multimedia presentation editors, such as PowerPoint or Kingsoft Presentation. A multimedia presentation is used to organize work on a specific topic, to draw students' attention to lexical and grammatical or regional study material. It consists of a set of frames that replace each other in a certain sequence [Asimov, Schukin, 1; 149].

The relevance and effectiveness of the use of multimedia presentations is as follows: it is proved that the simultaneous influence on the perception channels, which are dominant in most people (visual and auditory), allows to achieve a greater educational effect, expressed in memorizing at least 50% of the information, which ensures high lesson effectiveness a foreign language [Badanina, 2; 42].

So, since the multimedia presentation contains linear text, video, audio, 3D models, drawings, photographs, animation, links, navigation, its main purpose is to provide information as a combination of audio and video materials.

The objectives of the lesson created using the multimedia presentation are as follows:

- development of new educational material and consolidation of the topics covered;
- in-depth control of memorization and quality of students' knowledge;
- facilitating the process of assimilation of information;
- development of various types of intellectual operations and the development of educational and cognitive competence: the creation of motivation for independent study of a foreign language, the development of creative abilities, familiarization with a foreign language culture, the development and improvement of the skill of working with information technologies.

Therefore, working with multimedia presentations is one of the priority and effective areas for the development of educational and cognitive competence.

Consider the advantages of using multimedia presentations in order to develop educational and cognitive competence:

1. Advantages in the development of cognitive activity (logical, methodological, general scientific activity, functional literacy):

- combination of audio and video materials;
- structured lesson material;
- variety of tasks for students with different levels of language proficiency;
- creative independent tasks;
- formation of intersubject communications;
- reflexive component - self-assessment of one's activities and self-observation;
- development of communicative competence: pair and group work, projects, listening and speaking tasks, work with sound recording devices.

2. Advantages in the formation of motivation for learning and self-education:

- attractive presentation of material;
- availability and consistency of material;
- development of horizons and social ties;
- high level of creative component in training;
- application of self-checking, self-control;
- possibility of practicing at home.

3. The advantages of forming a cultural component:

- variety of visual material;
- watching movie clips and listening to audio recordings in a foreign language and completing tasks;
- viewing training videos;
- online excursions to the sights of the countries whose language is being studied;
- Internet communication with native speakers: text messages, voice messages, video chat.

In order for the lesson using multimedia presentation to meet the above requirements, to contribute to the development of educational and cognitive competence, we recommend that you adhere to the rules for creating a multimedia presentation:

- apply audio material, video material, illustrations, links to sites and online excursions, use social networks;
- do not overload the slides with information and do not use too bright colors, causing visual irritation and fatigue;
- highlight key points in the presentation, the presentation demonstration should not take more than 25 minutes of the lesson;
- divide the lesson using multimedia presentation into semantic blocks;
- select information that contributes to the development of mental abilities (observation, independent, creative thinking; imagination; building associative connections; ability to compare, generalize);
- select material aimed at the development of arbitrary memory. It is necessary to take into account the peculiarities of short-term memory of students: information is stored once for 5-7 minutes and does not go into long-term memory without several repetitions [Nemov, 4; 228];
- model the effective cognitive activity of students, to update the acquired knowledge and skills, to provide feedback through the selection of control questions, tasks aimed at reflection.

Thus, with the help of multimedia presentations, not only more productive training and knowledge control in an interesting and creative form

takes place, but also an in-depth development of educational and cognitive competence, which allows students to master the linguistic, cultural, historical component in learning a foreign language at the proper level. In addition, the ability to independently find information in the media space and improve foreign language knowledge is developing.

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COMPETENCE APPROACH IN THE MECHANISM OF FORMATION OF MORAL QUALITIES OF A POLICE OFFICER

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Abstract. The article discusses the concept of educational work implemented in the system of departmental education. The issue of integrating the processes of training and education at the faculties of educational institutions of higher education under the jurisdiction of the Ministry of Internal Affairs of Russia is actualized. Attention is focused on the development of professional competencies and moral qualities of a qualified specialist, subject to the introduction of modern pedagogical technologies in the organization of everyday activities of cadets of the educational organization of the Ministry of Internal Affairs of Russia. The competency-based approach is seen as a tool for the formation of sustainable moral regulations necessary for the performance of official duties by police officers.

Keywords: departmental education, educational organizations, police deontology, moral education, the formation of competencies, modern pedagogical technologies.

Competence, as a tool for determining the quality of an educational product, is one of the most widely used methods for assessing the quality of efforts of pedagogical teams of higher education educational organizations engaged in professional activities in the Russian Federation.

The problem of the competency-based approach in education is an object of study in various fields of science: psychology (V.L. Tsvetkov, S.N. Fedotov, A.A. Rean, O.S. Irba, D.N. Uskova), pedagogy (A.V. Khutorskoy, V.S. Senashenko, V.A. Kuznetsov, N.I., Sytnikov, L.S., Znikin), sociology (N.O. Lozhenko, E.V. Pryamikova, N.I. Melnikova, M. V. Garaev, O.V. Yuryev), philosophy (V.O. Volkova, V.V. Blazhevich, P.V. Aseev, A.A. Ivanov, N.A. Demina) and others.

Based on the conducted research [1], the essence of the competency-based approach is to create conditions for practice-oriented training, in

which not a skill of performing specific professional tasks is formed, but a method of searching for optimal actions and solutions to overcome obstacles. “The substantial vectors of the competency-based approach emphasize the practice-orientation of higher education programs” [2].

The successful implementation of the tasks facing the internal affairs bodies depends a lot on the personnel that the territorial divisions possess [3]. The potential of management services, in turn, is determined by the capabilities that the departmental personnel training system has.

In conditions of accelerating changes in the social information space, everyday improvement of the norms of legal regulation of social relations, competencies are an effective mechanism for acquiring the skills of independent knowledge of the conditions of professional activity. In this case, the use of this particular approach is due to two reasons: the educational opportunities of educational institutions for objective reasons are not able to fully ensure the integration of theoretical knowledge into the practical plane of their application; the state system of education standardization uses the method under consideration as a form of educational activity.

The problem of acquiring professional competencies by qualified specialists is the goal-forming task of the entire training system in the interests of ensuring law and order. A clearly articulated graduate model determines the direction of development of the training program. Personnel work in the law enforcement sphere dictates the need for normative consolidation of requirements for specialists. Research in this area [4] identifies the following levels of a professional model:

1. System-wide - the requirements for federal law governing service in the internal affairs bodies and the police;

2. Professional - the requirements for members of the service team of the internal affairs bodies arising from the types of professional activity;

3. Specialized - the requirements for the performance of official duties in a particular specialty;

4. Job - requirements based on the duties assigned to the employee in accordance with the job regulations.

Professional service requirements are reflected in the federal state educational standards, on the basis of which training programs are implemented and are contained in such elements of the competency matrix as: general professional competencies, professional competencies, professional service competencies.

To successfully achieve the goals for the development of personal competencies among specialists who implement the law enforcement

function of the state, modern educational technologies are used [5], which include: research technologies, problem-based learning technologies, game technologies, project-based learning technologies, portfolio technologies, etc.

In our opinion, the omission in the educational space of a higher educational institution of the Russian Ministry of Internal Affairs system is that modern technologies aimed at creating the necessary set of professional competencies are implemented, in most cases, within the framework of the main educational process.

The rest of the educational space is unidirectionally given to the intrasystem educational propaganda through the tools [6]: cultural and leisure, spiritual and educational, mass sports and psychological work. The essential positive potential of the departmental educational system is unconditional, but, like most processes, this direction is organized by the administrative-command method of management, eliminating the possibility for independent development of competencies, which contradicts the very idea of a competency-based approach to education.

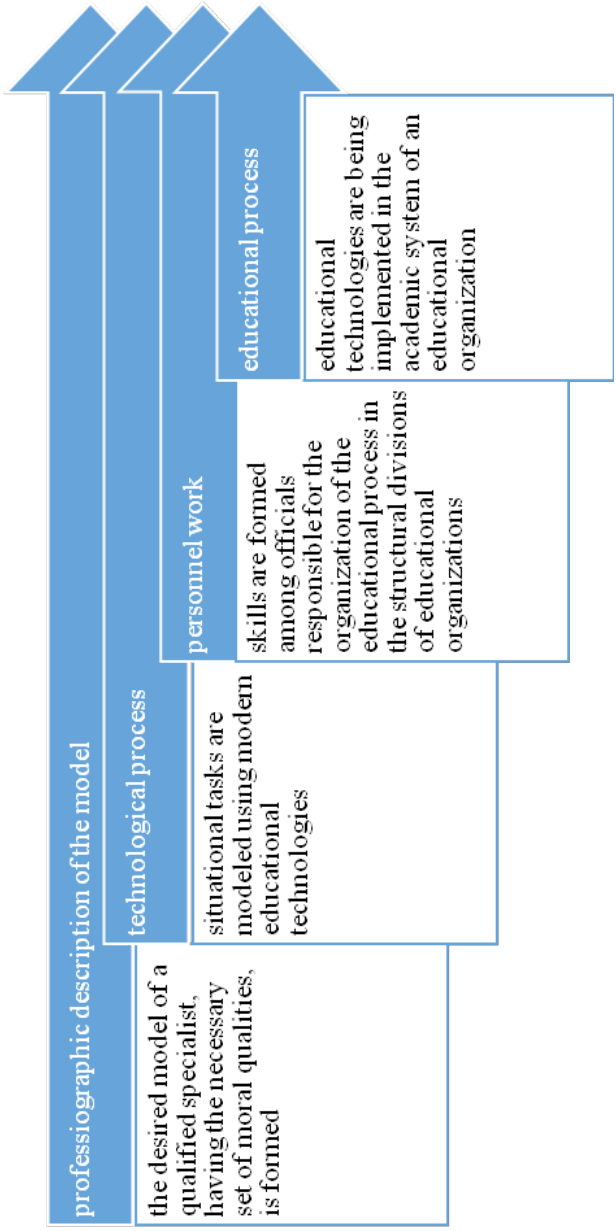
The use of active forms of training in the process of educational work in the training system possesses significant potential for achieving the result in the formation of professional moral qualities.

Moral requirements for official conduct are reflected in the general cultural competencies necessary for the performance of official duties. Based on the content of this competency element, the most important moral qualities necessary for the successful performance of official duties by the police are: sense of duty, responsibility, justice, humanity, legality.

The spiritual and moral principles of service in the internal affairs bodies were the subject of studies of: G.A. Vitolnik, A.Yu. Efremova, N.A. Igosheva, M.V. Makhortova, A.D. Kuznetsova, S.N. Tikhomirova G.K. Nurlybaeva, V.V. Beschetnaya and others.

Despite the abundance of scientific research in the formation of sustainable moral regulations, the possibilities of using a competency-based approach outside the framework of the main educational process have not been investigated.

A model for the formation of moral qualities of a person using a competency-based approach is presented in the following scheme.



(Fig.1)

Model for the formation of moral competencies of a police officer

The formation of the spiritual and moral principles of a person depends on the development of a conscious desire for good, proper behavior, compassion and sympathy. Successful implementation of professional functions cannot be carried out without understanding and putting into practice civilized forms of communication, without the availability of appropriate cognitive functions based on caring for others.

The development of the desired model is based on legal rules governing the necessary set of unified qualifications required by employees to comply with the moral principles of service in internal affairs bodies. These include: federal laws defining service in the police, departmental acts defining the organization of activities of various services for which qualified personnel are trained. The source of the formation of the model is also deontological documents (professional ethical codes) that determine the proper behavior of the employee. The most important component in the formation of the moral and ethical model is the social order, which is based on: the opinion of the professional community (primarily the heads of various departments of the Ministry of Internal Affairs of Russia), the interests of society (those expectations regarding the personal qualities of the employee that social individuals want to see) and desires a consumer of educational services (those requirements that potential applicants make to a holistic educational program).

The modeling of educational technologies is based on the formation of qualitative characteristics of the personality of the future employee. The main idea is to create a problem or a project when positive conditions are achieved, the stage of reflection of acquired moral skills and moral and ethical competencies is carried out. Projects should be aimed not so much at achieving the goals of personal growth and personal presentability (competition of amateur creativity), but at the tangible result of collective work (the formation of positive reputational indicators of the unit). Successful implementation of an educational project depends on a correctly formulated common goal, to achieve which various educational technologies will be used and all subjects of interaction within the educational unit will be involved in the process.

Compliance with all conditions for the formation of moral qualities of the personality of a police officer at the training stage in an educational organization requires qualified personnel who are responsible for organizing the moral and psychological support of official activities in the structural divisions of the educational institution. For this purpose, it is necessary to balance the managerial competencies that the heads of combat units of educational organizations of the Ministry of Internal Affairs of Russia

possess in the field of introducing modern pedagogical technologies into the educational process. To achieve the indicated result, it is proposed to form the required educational programs as part of additional education, through continuing education courses aimed at strengthening the pedagogical experience of the category of employees under consideration, or through the second-level (master's) education tools, creating the appropriate educational product.

After the implementation of the three previous stages of the technological process aimed at the formation of sustainable moral regulations, the stage of the introduction of pedagogical technologies in the educational environment of the educational organization is directly implemented. The successful implementation of the elements of the overall project will be the main one for assessing the effectiveness of pedagogical work in the formation of the moral qualities of the individual among individual cadets.

Summarizing up the above, it should be said that the observance of the conditions for effective training of personnel and its component - the formation of the moral qualities of the individual in the modern educational organization of higher education is largely determined by the choice of those technologies that underlie the achievement of the result. This circumstance makes it necessary to rethink educational methods and create conditions under which the process of self-knowledge and self-identification of a person as an active participant in the educational process becomes a priority. In view of the comprehension of the competency-based approach in the educational process for departmental education, the issue related to the development of a modern technological culture among officials responsible for organizing work with personnel becomes more relevant than ever.

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TO THE ISSUE OF SOCIAL-PEDAGOGIC ACTIVITY WITH PROBLEM TEENAGERS IN SUPPLEMENTARY EDUCATION ESTABLISHMENTS

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Summary. The article deals with issues of social-pedagogic activity in extra-curricular establishments with problem teenagers. There have been notions «supplementary education», «social activity», «pedagogic activity», «social-pedagogic activity», «problem teenagers» determined in the article. The authors point out aims, prior directions, principles and specific features of social-pedagogic activity with problem teenagers in supplementary education establishments.

Keywords: social pedagogic activity, supplementary educational establishments, problem teenagers.

One of the social institutions of the issues of development, upbringing, formation and socialization of children and teenagers is the establishment of supplementary education. Creating conditions for self-development, self-education, self-realization of children and teenagers; introducing them to the world, domestic and national culture is the main goal of the supplementary educational institution.

In article two of the Federal law «On education in the Russian Federation» dated 29.12.2012 No. 273-ФЗ it is defined that supplementary education is « a type of education that is aimed at fully satisfying educational needs of a person in intellectual, spiritual and moral development, physical and (or) professional improvement and is not accompanied by increase in the level of education» [10, p. 2].

According to the position of A.V. Mudric establishments of supplementary education as a social-pedagogic institutions are founded for relatively controlled socialization of children and teenagers, for transmission social norms and culture to them in addition to solving adaptation and correction tasks, which in its turn allows to develop capabilities and abilities of children and teenagers, to enrich knowledge and patterns of behavior, values and attitudes [5].

Social activity is considered from the position of activity of a social subject to transform a social situation in accordance to its goals and needs [7]. Pedagogical activity can be defined as a type of professional activity, which is aimed at the transmission of socio-cultural experience through training, education and upbringing, to create conditions for the personal development of learners [9].

A. S. Voronin [3], G. M. Kojaspirova and A. Yu. Kojaspirov [4] define social-pedagogic activity as pedagogical activity that is directed to social protection of a child (teenager) and helping him to organize himself, his psychological state, to establish normal relations in a family, school and society; to organize his training, rehabilitation and adaptation.

We agree with the opinion of G. N. Shtinova, M. A. Galaguzova, Yu. N. Galaguzova that social-pedagogic activity is «a kind of professional activity intended for helping children and young people in the process of their socialization, social development, development of social norms and values, creating conditions for self-realization in society» [12, p.104].

As V.A. Nikitin notes that «social-pedagogic activity consists of providing means of educational and upbringing of directed socialization of the individual, in transmitting to the individual (and mastering by him) the social experience of mankind, in acquiring or restoring the social orientation of social functioning» [8, p. 27].

L.A. Belyaeva and M.A. Belyaeva point out that a distinguished feature of social-pedagogic activity consists of the fact that a need of it appears only in case when a person or group of individuals have a problem-based situation of relationship with the environment [1].

A problem teenager is usually a child in the puberty stage who demonstrates anti-social behavior. As noted by A.I. Kochetov, a child becomes problem when there is an overlap of negative external factors, failures at school, pedagogical mistakes of teachers and the negative influence of family way of life and intra-family relations, in other words-the child is in the zone of active negative influences [6].

T.A. Vasilkova and Y.V. Vasilkova note that the problem teenagers are «pedagogically neglected children, physically healthy, but ill-mannered

and untrained. A difficult teenager combines biological and social neglect» [2, p. 130].

Psychological peculiarities of a problem teenager were called "complicated teenager's complex", which has the following manifestations. First, it is the sensitivity of a teenager to other people's assessment his/her appearance. Second, it is the extreme arrogance of teenagers and their dogmatic judgments of others. Third, we can observe a certain polarity in behavior and the manifestation of reactions and actions of teenagers, such as: a) thoughtfulness can simultaneously get along with a remarkable cruelty; b) painful shyness - with smugness; c) the desire to be recognized and appreciated by others, particularly in the reference group-with pretentious independence; d) the struggle with authorities, generally accepted rules and norms – with the adoration of random idols, etc.

We often forget that the world of teenagers is the complicated world of a child and the developing world of the adult at the same time. We see the growth of consciousness and self-awareness in juvenile period, which, in its turn, generates an increased desire for independence and freedom, which is often manifested in increased criticism of other people. On the other hand the requirement of a teenager to recognize his points of view, his right to some freedom in actions and behavior on the part of parents, teachers and peers. And this is also true for problem teenagers.

A.B. Fomina considers additional education through the prism of social-pedagogic activity and believes that institutions of supplementary education carry out multi-functional social activities focused on social protection of children and their preparation for life in modern socio-economic conditions, to solve their personal and social problems [11].

The organization of life-sustaining activity of problem teenagers in the institution of supplementary education is already socially pedagogical, because it enables not only to organize the leisure of teenagers, but also to attract them to organized forms of leisure activities in formalized groups (sports club, association, etc.).

Today it is necessary to state that the disjointing from the family, weakening of parental control, upbringing in one-parent and dysfunctional families, truancy of school lead to the fact that teenagers, in particular – problem teenagers, are forced to experience stress on their own, to adapt to the changed social conditions of life. Hence-we see social loneliness in difficult issues, problems with relationships in society.

In institutions of additional education, social and pedagogical activities are carried out by teachers of supplementary education. A teacher of supplementary education is an organizer of social and pedagogical activity, an

intermediary in using potential opportunities of society to provide necessary assistance to a person in need.

Social and pedagogical activity in supplementary educational establishments can be viewed from the position of appropriate activity of teaching staff, which is based on social needs, and its goals are determined by society and which are necessary for children and teenagers, including problem teenagers within the period of their socialization. It exists as an interaction of two active subjects of the pedagogical process - a teacher of supplementary education and learners. It includes universal ideals, tactical tasks and means to achieve them, as well as specific actions that are aimed at the formation and development of a personality.

Social-pedagogical activities with problem teenagers in the institution of supplementary education have the following objectives:

- social and pedagogical protection of difficult adolescents;
- overcoming interpersonal conflicts in groups of peers and with adults;
- training conflict-free forms of behaviour in society;
- development and formation of personal qualities of a problem teenager;
- teaching problem teenagers how to control their lives and how to solve problems;
- compensation for communication deficits;
- formation of ability to see the position of another, to evaluate it, to accept or not to accept it; and to express and prove their views; etc.

Social-pedagogic activity in supplementary educational establishment with children and teenagers, particularly with problem teenagers is built on the basis of following principles:

1) individual approach;
2) reliance on positive aspects;
3) objective approach to a teenager;
4) maintenance of confidentiality
5) respect for the personality of a teenager.

A.B. Fomina points out that the target programs in the field of free time in the institution of supplementary education should be based on the principles of:

1) motivation of teenagers' activity;
2) individuality;
3) system and continuity [11].

It is possible to allocate functions of social and pedagogical activity in institution of supplementary education with problem teenagers:

1) diagnostic, 2) educational, 3) organizational, 4) prognostic, 5) preventive, 6) correctional and rehabilitation, 8) organizational and communicative, etc.

Priority directions of social and pedagogical activity of teachers of establishments of supplementary education with problem teenagers are the following:

- assistance to the family of a problem teenager in solving problems related to learning and truancy; upbringing and behavior;
- psychological and pedagogical education of parents in order to create optimal conditions for mutual understanding in the family;
- attracting problem teenagers and their parents to the organizing and carrying out social and pedagogical actions and events;
- individual and group counseling of problem teenagers to resolve difficult life situations and interpersonal conflicts;
- educating a problem teenager in the family;
- identification of needs and development of measures to help a particular problem teenager with the involvement, if necessary, of specialists from relevant organizations to resolve the situation;
- social and pedagogical support of a problem teenager;
- organization of leisure activities for problem teenagers, etc.

We would like to attract attention to specific features of social-pedagogic activity of educators of establishments of supplementary education of problem teenagers. We can point out the following features:

- creating conditions for free choice of each teenager, in particular – a problem teenager,
- educational area, a program and time of its obtaining;
- creating conditions for self-realization, self-knowing and self-determination;
- recognition of a problem teenager's right in tryout and error in their choice;
- a variety of activities that would satisfy different interests and inclinations and needs of a teenager;
- assisting a problem teenager in understanding and seeing the stages of his/her own development, etc.

Today, a modern teenager, in particular – a problem teenager, needs a certain level of communication skills, with which he/she can express himself/herself, can use knowledge and skills of conflict-free behavior in the process of interaction with other people. In this regard, one of the tasks that an educator of supplementary educational institutions solves when organizing social and pedagogical activities with problem teenagers

is development of social competence of a problem teenager. When solving this problem, an educator of the institution of supplementary education emphasizes:

- on teaching a problem teenager ability to interact, communicate and relax with other people;
- on formation of abilities of a problem teenager to self-control, self-assessment and reflection;
- focus on healthy lifestyle choices;
- on the development of individual abilities.

In our opinion, development of social competence of problem teenagers can be promoted by such actions and events that can be organized in the institution of supplementaryl education in frames of social-pedagogic activities, as: 1) actions "Kindness around us", "Who if not us", "New year's gift with your own hands for orphans", etc.; 2) week "only healthy habits", "I and my health", etc.; 3) training "a teen and conflicts", "a teen and his qualities", "I and my behavior", etc.

Thus, we can make a conclusion that social-pedagogic activity is a kind of professional activity aimed at helping children and young people in the process of their socialization, social development, development of social norms and values, creating conditions for self-realization in society.

Institutions of supplementary education carry out multi-functional social activities that focus on social protection of children and their preparation for life, solving their personal and social problems.

The priority directions of social-pedagogic activity of educators of institutions of supplementary education working with juvenile delinquents are: 1) help a family of difficult children in solving problems that are associated with the school and missing lessons; education and behavior; 2) psychological and pedagogical education of parents with the aim of creating optimal conditions for mutual understanding in the family; 3) engaging troubled Teens and parents in organizing and carrying out socio-pedagogical activities etc.

Specific features of social-pedagogic activity of teachers of institutions of additional education with at-risk youth: 1) creating conditions for free choice of educational field programs and time for its development by every teenager, particularly by a troubled teen; 2) creating conditions for self-realization, self-knowing and self-determination; 3) recognition for a difficult teenager of the right to trial and error in their choice for a difficult teenager.

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DEVELOPMENT OF A PROGRAM OF HEALTH-CREATING ACTIVITIES OF PRIMARY SCHOOL STUDENTS

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Annotation. The article is devoted to the problem of formation and development of values guidelines for health-creating behavior in younger students. The article presents the program of design of health-creating activity of pupils, the characteristic of it is given content modules and aspects of their implementation.

Keyword: health, life-creation, health-creating activity, creation, primary school students, design, project activities.

Health-creation is an integral part, a necessary condition and a way to include a person in the process of creating their own life. Human creativity as a creative attitude to life and his personality, is at the heart of health-creating (in the very sense of the word – creation, creation of health-laid the creative nature of man) – activity motivated by the spiritual needs of the individual in self-creation and creation of an ecologically healthy object-spatial, natural, social and mental environment around him.

In the concept of foreign humanistic psychology (A. Adler, A. Maslow, G. Allport, K. Rogers, K. Jung, etc.) creativity is considered as one of the most important components of the «I-concept» of a person. The original source of creativity is determined by the motivation of personal growth: people are born with the desire to grow, create and love, they have the ability to manage their lives. In A. Adler's dynamic theory of personality the main designer of the entire system of personality is the creative «I», which embodies the active principle of life [1]. In a creative way, the dispositional theory of the personality Of G. Allport was developed. He introduces the term «proprium» as «a positive, creative, growth-seeking and developing

property of human nature» [2]. According to the phenomenological theory of personality K. Rogers creative people tend to live constructively and adaptively in their culture, they are able to flexibly adapt to changing conditions [4].

In our opinion, health-creation as a pedagogical category is an activity for the creation of health of all participants in the pedagogical process, creating conditions for the maximum disclosure of their health-creating potential and development of health culture. The process of health-creating in the context of subject-subject relations is of a mutual nature: the teacher «creates» the health of children and enriches their health-creating potential; teaches how to «create their health» and thereby increases their valeological literacy; promotes self-development and self-improvement of pupils and reveals, develops their creative possibilities and abilities.

The process of forming and developing value orientations for health-creating behavior should begin with preschool and primary school age. This is the period of the most rapid development of the child, the formation of physical and mental qualities and properties that make him a person, the establishment of the Foundation of the way of life and behaviors in society. In addition, at this age, children's creative abilities are actively demonstrated and updated, and an interest in creative perception and transformation of the surrounding world is formed. The problem consists in the selection of effective forms and methods of valeological work with children, competent design of health-creative activity of pupils in determining possible ways of involving children in the process of self-creation and creation of an ecologically healthy environment.

We have developed and implemented in the educational process of primary school program design of health-creating activities of younger pupils, considered the features of its complex and integrative nature from the point of view of the use of various pedagogical technologies: storytelling and game-making, theater pedagogy, training technology, organization of project activities, etc. [3].

The content modules of the program are determined by the logic of designing health-creating activities: «I → family → nature → society → safety → cognition», which expands the boundaries of the child's knowledge from the microworld to the macrosocium, and are focused on the implementation of various directions of health-creating activities of students: cognitive, search and research, practice-oriented, creative-creative, reflexive-evaluative.

We will give a description of the content modules of the program of health-creating activities of primary school pupils and aspects of their implementation.

The module «Me and my health» includes projects aimed at formation and development in pupils the skills of self-knowledge and self-observation, self-assessment and self-diagnosis, self-development and self-improvement (realization of «self-concept»): «My name», «My routine», «My menu», «My posture», «the World is my Hobbies», «The healthy habbits' garden», «My health passport», etc. The implementation of these projects implements the principle of positive egocentrism on most interesting and relevant problems in a child's life.

Aspects of design of health-making activity within the framework of this module:

• moral-inclusion of children in the process of self-creation and self-actualization;

• creative (development of creative abilities) – design of products of health-creating activity, selection of colors, material to perform applications, writing poems and fairy tales, organizing exhibitions, etc.;

• pedagogical – cooperation with parents, consultation of the teacher, psychologist, school physician on the possibilities of correction of negative characteristics;

• philosophical-realization of life-creation: from self-creation to creation of the surrounding natural-social and mental environment.

The module «Health of my family» includes projects of family education aimed at involving parents in health-creating activities, awareness of the value of family and marriage, love and mutual respect, mutual understanding and assistance, creation of family relations («Our home is our friend», «My sports corner», «Valeological passport of my room», «Our Pets», «Leisure of our family», «Pedigree of our family», etc.).

Aspects of design of health-creating activity within the framework of this module:

• moral – aimed at fostering respect for their family, their ancestors; honoring the family tree of their family, its history and tradition, labor, cultural and other achievements; the child's perception of themselves as an integral part of their kinds;

• ecological – education of humane attitude and cognitive interest to Pets as members of their own family, participation in the care of them;

• creative – expanding the boundaries of positive cooperation and co-creation of children and parents to study their own family and create family relationships;

• psychological – the transition from the «I-concept» of the child to the «We-concept», contributes to the fullest development of the individual and society as a whole.

The module «Environmental Health» is aimed at assessing the state of the natural and subject-spatial environment, involving younger pupils in research and environmental activities, aesthetic improvement of the environment («Valeological passport of the classroom», «Grow a Botanical garden», «Plants-creators of the microclimate», «Plants-canteens for birds», «Plants-weather predictors», «Flowers for the school garden», «My tree», etc.).

Aspects of design of health-creating activity within the framework of this module:

• the research aspect involves conducting an expert assessment of the conditions of the nearest subject-spatial and natural environment by primary school pupils, forming and developing research skills;

• ecological – organization of environmental activities, feasible age characteristics of pupils;

• the moral aspect is aimed at fostering a respectful and careful attitude to the natural environment through the study and communication with the objects of nature, providing them with assistance;

• creative – organization of positive cooperation of children on creation of ecologically healthy environment, development of creative abilities at design of products of project activity.

The module «Health of society» is focused on the characteristics of some social factors of health and prevention of bad habbits. Includes projects aimed at implementing cultural and humanistic approaches in education: «Piggy Bank of good deeds», «Traditions of health creation of different countries», «What games do we play?», «Sports stories», «Museum of health assistants», etc. Project activities are focused on the inclusion of the child in the improvement of the social environment, awareness of the positive and negative impact of society on human health.

Aspects of design of health-creating activity within the framework of this module:

• the moral aspect is aimed at developing a culture of health, prevention of bad habbits in younger students, promotion of a healthy lifestyle;

• historical – knowledge of the history of health-creation, health-saving traditions of mankind as an indicator of scientific and creative development, culture of society;

• creative – positive cooperation and co-creation of children and parents in the implementation of project products («museums», theatrical and game programs);

• philosophical – the implementation of the socio-cultural position of the ideas of life creation (creative creation of the social environment, the creation of good and humanism).

The module «Health Safety» involves the organization of project activities of school students to study various aspects of life safety: «Useful and harmful products», «Caution – poisonous!», «Road alphabet», «Rules of safe behavior», etc.

Aspects of design of health-creating activity within the framework of this module:

• the moral aspect is aimed at developing a culture of safety, prevention of extreme and dangerous life situations;

• value-oriented – formation and development of a value attitude to human life and health;

• practical-activity – modeling of dangerous life situations and working out the rules of safe behavior, participation in the promotion of road safety rules;

• philosophical – implementation of the ideas of life creation from the socio-cultural point of view (knowledge and creation of a safe and health-saving environment).

The module «Knowledge of health» is stimulating in terms of expanding valeological literacy and Outlook of children, the formation of a healthy lifestyle. Project activities are focused on the inclusion of the child in the process of learning the phenomenon of human health: «Adventure of vitamins», «Health gymnastics», «Rainbow of health», «Green pharmacy recommends», «Path of health», «Grow a tree of health», etc.

Aspects of design of health-creating activity within the framework of this module:

• cognitive – development of skills of primary school students search and creative interpretation of information about the components of a healthy lifestyle and means of preservation and development of health;

• the moral aspect is aimed at developing a conscious attitude of children to health problems;

• practical-activity - the inclusion of younger pupils in the promotion of a healthy lifestyle, participation in health-creating actions and events.

The introduction of this program in the educational process of primary school has revealed some features of the design of health-creating activities of younger pupils:

• the greatest interest of pupils is caused by practical activity (participation in trainings and game programs, examination of environmental conditions, theatricalization, productive activity, etc.), its creative implementation and use of the results: exhibitions, «museums», «botanical garden», «path of health», «valeological passport», «healthy food menu», «birds' town», etc.;

• the content of health-creating activities can effectively integrate world-wide, homeland, local history, civil-Patriotic and environmental components;

• organization of health-creating activities of pupils promotes the development of positive cooperation with parents, teachers, peers in self-creation and creation of a healthy environment.

The result of the program design health-creating activities of primary school students is the formation health-creative potential of the child's personality, components of which, in our opinion, will be:

• cognitive readiness – a certain level of cognitive interests and erudition in the field of health-creation and the use of their knowledge in everyday life;

• value-oriented reflects the awareness of health as a vital value, the relationship between human health and the environment, the child's understanding of himself as an individual, the Creator of his health, the health of the surrounding people and the natural environment (provides the basis for individual and personal orientation to the process of health-creation);

• need-motivational readiness implies a positive attitude of the pupil to health-creating, his active position in self-creation and creation of an ecologically healthy environment, in solving specific problems of changing the surrounding reality;

• operational-activity involves the possession of certain health-creating skills and skills in self-knowledge and self-assessment, self-observation and self-diagnosis, self-regulation and adaptation, drawing up and implementing their own programs of health-creating, improvement of the natural and subject-spatial environment;

• emotional-volitional readiness includes a positive emotional attitude and volitional efforts of the child to self-improvement in physical, mental and moral terms, reflects the culture of personal feelings, the ability to self-organization (setting goals and objectives, planning health-creating activities, self-control);

• communicative is characterized by the desire and desire, the ability of the pupil to interact with other people in the process of health-creating and Wellness programs;

• reflexive readiness includes skills understanding of the process and results of health improving activities, estimate the degree of their involvement in the implementation of Wellness programs, analyze our own thoughts and actions, determine the degree of self promotion (health advances), forecasting and planning future health-creating events.

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THE PHENOMENON OF HORTATIVE HASHTAGS AND THEIR AFFORDANCES ON INSTAGRAM

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Abstract. The article touches upon the usage of hashtags on social network of Instagram. The phenomenon of a hashtag is being discussed as well as its functions, forms and linguistic structure. The conducted study of the affordances of the Instagram hashtags within the continuous sampling and statistic analysis methods has shown that the Instagram users include as many hashtags as possible into the media text to promote the publication. The authors of the current article suggest naming such hashtags - hortative hashtags. Hortative hashtags are used on Instagram in different forms according to their affordances, user's intentions, functions and structure. The classifications of the hashtags by their form, affordances, motivation type and functions are being presented in the paper. The results of the study might be useful for linguists, marketologists and others who study media texts and digital discourse

Keywords: hashtag, media text, communication, motivation, Instagram, promotion.

The Internet has become the most popular communication space and information source. To organize and differentiate its content the authors of media texts has begun to use a new media phenomenon – a hashtag. The latter is used not only to mark the affiliation of a particular topic but also to perform some functions that are quite extensive.

Furthermore, it should be noted that the hashtag itself has evolved from a single word to a whole sentence, at times – a text. Modern scientists, studying a hashtag as a linguistic unit, note that hashtags are now a means to convey new information, describe phenomena, motivate and encourage action. It is hashtags that are the most used for promotion. We suggest naming such promoting hashtags – hortative ones by the function they perform.

Actually, the analysis of Instagram hastags has shown that the users include as many hashtags as possible into the media text of their Instagram accounts in different forms:

1. As thematically similar and grammatically unrelated hashtag(s) at the end of the post: *It's beginning to look a lot like Christmas* [Lapo is waiting for Santa]. *I wish you all A Happy Christmas and joyful holidays with friends and family.* #christmas #christmasiscoming #natale2019 #family.

2. As a linear sequence that relates in meaning and corresponds its grammar . E.g. Under the photo of a couple near the fur tree: *We're in love.* #christmasiscoming #loveisintheair #loveofmylife #couplegoals

3. As an integrated part of a message (sentence or text) acting as a grammatically marked component: *It's been almost two months since #PandaPaddle ! Have you done any paddling since then? Tell us about it! #supboard sup isup paddlesports #standuppaddle*

The most effective of the abovementioned ways is to integrate the hashtag into the context to make the text more organic and save space. B. Solis considers hashtag as a phenomenon that has gone beyond virtual reality: "Hashtags flow from one form of communication to another beyond the microblog. <...> They must have cultural relevance, connecting the intellectual and emotional levels before being launched into the three blocks of social media (actions, reactions, transactions). Hashtags should not be branded, but should evoke associations". The communicative capabilities of hashtags and therefore their effectiveness are determined by the functional orientation. According to A.P. Atyagina, there are several functions of hashtags [1]:

1) designation of the situation model for compression purposes;
2) inclusion in the general context / trends;
3) actualization and expression;
4) self-presentation;
5) promotion (goods, services, ideas).

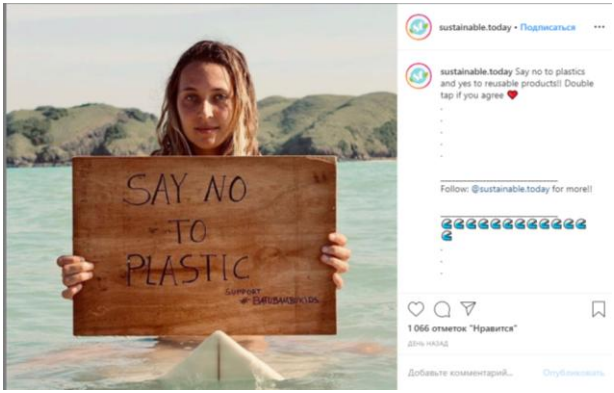
Promoting affordances and intentions

The promoting function is under study in this paper. The aim of the current study is the classification of the hashtags by the intentions of the Instagram users and therefore the affordances of the hashtags. As a result, in the focus of our analysis are hortative hashtags, the ones that perform the core function that of a promoting trigger for the Instagram followers and motivate them to act in a certain way.

On Instagram the promoting function is having a specific form of a self-promoting intention of a user as it is employed to develop a "personal brand" that will later on promote the product or service and actualize the

other functions. However, in its excess it may lead, according to Pozhidaeva E. V., to the appearance of a cyber-exhibitionist a user who has within the framework of hyperreality /Internet discourse 1) an excessive tendency to self-love, self-promotion, self-presentation or self-flagellation; 2) a tendency to flaunt the details of the personal life, emotional experiences, etc.; 3) the desire to be constantly in the center of attention [2]. Another form of promoting affordance is in its original function to motivate a person to make purchases, study the philosophy of the brand, support the manufacturer and inform about the product, therefore perform the promoting function. This is the most well-studied by scientists type because of its practical applicability.

The third affordance of hortative hashtags is to promote ideas. One of the most popular hashtags on Instagram is #savetheplanet. Various users use this hashtag to spread the idea of recycling plastic, to introduce the idea of the need to clean the planet, save many species of animals, waste recycling, etc. According to Instagram statistics, 2.7 million publications.



On Instagram, you can find other popular motivating hashtags as #letsgo (12.5 million publications), #letsgosomewhere (9.5 million publications), #letstravel (339 thousand publications), #letsdance (931 thousand publications).

Another example of an effective affordance of a hashtag is #followmeto created to combine thematically the publications of a famous photographer Murad Osmann who launched “Follow me to” project but also to motivate followers to travel. It shows the most distant and beautiful corners of the planet, advises people to visit them and start travelling.

To be particular, "#followmeto the Dead Sea hashtag represents a unique place that might disappear in 30 years. *While you have an opportunity to see these places with your own eyes - do it! Where are you guys from? Write in comments!* @honorglobal #honor20series #CaptureWonder". According to the statistics of Instagram, hashtag #followmeto has been used 4.3 million times.

In some cases several affordances might be performed simultaneously. For instance, one of the most popular hashtags of sportswear brands is the hashtag of Nike #justdoit (18.1 million publications). The official publications motivate people to achieve new goals and win but the primary function is to promote sales. "*I kept saying, 'tomorrow is my day.' I wanted to be the second @kipchogeeliud — the Kipchoge for women. I focused on that."* At the age of 25 #BrigidKosgei is now the fastest woman on earth. In a weekend of broken barriers, Brigid shattered @paula_radcliffe's 16-year-old marathon world record by 81 seconds. *Don't change your dreams, change the world... And the world record, while you're at it.* #justdoit". In the comments to the publication, subscribers tell their stories related to their sports career, their achievements, using this hashtag. In addition, many write that this brand inspired them to win. Thus, Nike makes its products popular and desirable for everyone.

Motivation type

To analyse the types of motivation we suggest to follow the division of hortative sentences into their types and analyse their usage and effectiveness on Instagram. The hortative sentences are divided into [3]:

1. Hortative sentences formed by bare infinitive (see the example with Nike).

2. polite hortative sentences with bare infinitive: please, come to me; call me, please;

3. hortative sentences starting with let's: let's go together, let's play (see above #letsgo, #letsgosomewhere, #letstravel, #letsdance).

4. forms with the emphatic verb do/does at the beginning: do read this book.

On Instagram the forms with the verb do/does (#4) were not found. We suppose that, firstly, Instagram is a platform that is free from rigid grammatical frameworks, Secondly, it might be avoided to illuminate the negative reaction of subscribers to emphatic forms that are always stressed.

Polite forms of hashtags (#2) are rarely used in order to save characters. The style of communication and presentation of information on Instagram are informal, i.e. these forms are not mandatory. We haven't identified any on Instagram.

To conclude, the Instagram hashtags in the form of a hortative hashtag are widely-used and effective. Their analysis shows that each type of a hortative sentence can be used as a hashtag but the polite and emphatic forms were not identified. The latter might be justified by the peculiarities of a media text.

Hortative hashtags were classified by the affordances into the following types: 1) a self-promotion/branding 2) a product or service promotion and 3) promotion of an idea.

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B. WERBER 'S NEOMYTHOLOGICAL WORKS IN THE CONTEXT OF FRENCH POSTMODERNISM

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Abstract. This article is a linguocultorological study within the framework of literature and philosophy of language. Based on the works of postmodernism theorists, the concepts of "myth" and "neomyth" are distinguished, and a definition of postmodern simulacrum is given. The role of neomyth in the work of postmodern French writer Bernard Werber is found. Special attention is paid to the peculiarities of the artistic organization of the neomithological text in the novels Tanatonautes, Empire of Angels, We, Gods, Breath of Gods, Mystery of Gods, Encyclopedia of Relative and Absolute Knowledge.

Keywords: Werber, myth, neomyth, simulacrum, postmodernism.

The information space in which modern man lives is overwhelmed by postmodern chimeras - myths-simulators. Chimeric measurement is a serious alternative to real internal mentality. Postmodern era simulacra to which J. Bodrillar pointed [Bodrillar, 2006] are made by means of archaic mythological consciousness which possesses symbolical function.

According to K. Jung [Jung, 1996], symbolization represents the fundamental mechanism of integration of contrasts which he called the transcendental function binding the Ego and Egoism. Thus, any simulacrum can be not only an illusion or fiction, but can also be a virtual calcium of sacral knowledge stored in a collective unconscious, extremely distorted, or almost guessed. Simulacrum as a metaphor is more often used as a reference to semantic emptiness, so it is in this sense that the term will be used in this article. Myths both as archetypal texts and as simulators represent the two extremes of meta-linguistic mythostructuring.

R. Bart [Bart, 2009] treats the modern myth or the neomyth only as a chimera. It is framed as a reflective name discourse, as a critical essay rather than an epic narrative, and is a meta-linguistic pragmatism of motives that can only be stated and analyzed. Myths serve, according to Bart [Bart, 2009], to maintenance of the false, aloof and deformed image of reality, being "naturalization", but not resolution of conflicts. Bart [Bart, 2008] brings down that critical reflexive discourse about which he writes in connection with features of modern mythology on the myth, accusing it of lightness and abstractness from reality.

Eliade Mircha [Eliade, 1996], on the contrary, emphasizes sacral, and, therefore, the archetypic function of the myth doing permeable for consciousness an essence of Life and giving the importance to certain events of human life explaining how thanks to supernatural forces it reached the embodiment and implementation. M. Eliade notes [Eliade, 2006] that the myth asserts the root cause of the supernatural Beginning, from whose origins the World and man arise. [Eliade, 2006] carries the initiating myths which reproduce the Beginning of creation of Everything to fundamental sacral mythological subjects of M. Eliade, and, according to K. Jung's doctrine [Jung, 1993], myths and mystical rituals are designed to update archetypic energy of unconscious.

Postmodern mythology necessarily includes a myth about the postmodern itself, which, like any negative myth is full of "terrible stories": about a rapidly passing era, bringing us closer to the edge of the abyss, beyond which there is nothing.

Living in modus of death has become the norm for mythologically oriented human postmodern discourse. This is nothing more than a mainstream postmodern-era MYTH, and there is yet to be explored why it is the apocalyptic myth that is favored today.

This phenomenon is devoted to the first novel from the cycle "About Angels" by B. Werber "Tanatonautes". In his work, Bernard Werber describes seven "territories" of the world of the dead discovered by the heroes of his novel - brave tanatonautes -researchers introduced into the coma using special equipment.

Eschatological Myths [Apinyan, 2005; Eliade, 1996, Campbell, 2004] in the modern world are born with incredible speed and are increasingly like scientific theories. The end of the World today is expected regularly - by millennium, by 2012, by 2050, etc. The most common are myths about environmental catastrophe, global warming, and the change of Earth 's poles. When they are united together, with the appropriate fact, even the most skeptical optimists can shake. M. Eliade [Eliade, 1996], arguing on

eschatological myths, noted that in them the most important thing should be considered not the inevitable end, but confidence in the new beginning, which is pronounced in B Werber 's neo-mythological novels from the cycles "About Angels" and "About Gods". In this book, the main character first, explores the phenomenon of death, plunging into a coma, then dies and becomes an angel, and then a god-apprentice.

"God died" - Nietzsche proclaimed [Nietzsche, 1990] about 80 years ago, having pointed to made blank space. Then Freud [Freud, 1992] proclaimed sexuality a general denominator of human life, again having left the place of God free. Then there were many voices about the Authors 'deaths, the end of history, writing and the extinction of mankind - all with enviable regularity dying after each other, still leaving the transcendent Place empty. Bernard Werber fills the worlds of his works with angels, gods, mythological creatures who live, enjoy, suffer, fight and die as ordinary people.

Neomithologism exists only when two texts are conjugated, one belonging to archaic culture and the other to modern culture. It is based on the correlation, comparison, mutual identification of ethnically and chronologically spaced phenomena. The paradox of neomiphology is that the source text, mythological, is present a priori, it appeals to the general schemes of mythological thinking, to the general unconscious, assuming the relation of the new text to the archetype.

Speaking about the conversion of postmodern texts to mythological images, it should be noted that the main techniques of genre deconstruction of postmodernism cause rich intertextuality and hypertextuality and create prerequisites for them. It is obvious that this ideological justification of the current creates good conditions both for the wide use of intertext and hypertext in general and for addressing mythical images in particular.

An example of the implementation of the mechanisms of intertextuality, hypertextuality and neomiphology is the romantic creativity of B. Werber ("Tanatonautes," Empire of Angels, "We, Gods," Breath of Gods, "Mystery of Gods," Last Secret "). Neomiphologization in B. Werber 's work is due to the increase in the specific weight of the ancient mythological component in the writer 's prose, as evidenced by the names of most of his novels (trilogy "We, Gods," Tanatonautes, "Laughter of Cyclop," Mirror of Cassandra, "etc.). n the cycles of the novels "About Angels" and "About Gods," the main character Michel Pinson dies in an airplane to then be revived as a guardian angel and then become a god-apprentice. The reader of his works is a true creator of neomiphological worlds ss B. Werber considers. His novels are addressed to a wide audience, which perceives informa-

tion at different levels. Some will see only basic classical myths. A more sophisticated reader will see subtle allusions to the works of philosophers (Nietzsche, Eco, Eliade, Bart).

Bernard Werber 's neomithology is combined with psychology, and dictated by the modern sociocultural situation. The writer 's novels, which successfully connect myth and science, physics and metaphysics, perform four main functions: entertainment (mass literature), educational (mid-literature and pop-science), communicative and function of activation of imagination and cognitive activity of the recipient (elitist literature). The writer uses in novels all forms of functioning in the text of mythological intertext (quotes, references-referents, allusions and reminiscences, parodies).

In the context of B. Werber 's creativity, chronotope (space-time) appears as a kind of hyperreality of the cosmopolitan man, the researcher of the "continent of the dead," the creator and the leader of the fate of alternative civilizations. The deconstruction of classical Greek myths, religious views of ancient Jews, Maya, Aztec, Navajo Indians in the novels of the postmodern writer is combined with the kind of "mole`s burrow" in time and space, into which the heroes of his novels and his reflexive readers travel.

Excursions to ancient mythology (for example, about Cyclops, Zeus, Dionis, Poseidon, Hefest, Odyssey, Eole, Trojan horse, Pegase etc.) are woven by the writer into the fabric of the narrative in an entertaining form, and the heroes are not shy about their ignorance and often seek the necessary information on the Internet. This take reduces the distance between the main characters and the reader, who relates himself to the first, receives information and does not experience such difficulties as in the recipe of works of elitist art. B. Werber thus fills the lacunae in the reader 's humanitarian knowledge, raising him to a higher intellectual level and simultaneously preparing his readership for a more complex recipe of another plot.

A feature of the artistic organization of B. Werber 's neomythological text, in addition to the poetry of quotes, reminiscences and allusions to the mythotectic, are scientific and cognitive excursions. Detailed descriptions using industry professional vocabulary are organically combined in the novel with a fantastic mythological plot. All these features are characteristic of the writer 's neo-mythological thinking, which masterfully connects physics and metaphysics, rational science and myth.

B. Werber 's work "Encyclopedia of Relative and Absolute Knowledge" is filled with ancient myths and it is a kind of thesaurus, references to it can be found in all the novels from the cycles "About Angels" and "About Gods."

Neomiths are the cultural dominant of B. Werber 's creativity, a universal cipher code that helps enrich the classic narratives of the mosaic, stained-glass worlds of his novels.

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TOLERANCE IS IN GLOBAL PRACTICES OF CONTEMPORAITY

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Annotation. In the article the problem of tolerance is analysed in her sociallyphilosophical foreshortening. An author investigates nature of tolerance in the system of difficult interconfessional communications.

Keywords: Ethnos, religion, state, tolerance, education, young people

In the twenty-first century, irreversible globalization processes began in the world, the essence of which wasthat if we use the language of philosophy we will do it in the expansion of the Western logos or if we use the language of sociology, we will do it in the modernization of non-European states.

The scale of the originated cultural changes has provoked active discussions among the theoreticians. There was an acute need for immediate futurological forecasts. Opinions divided into two polar camps.

Representatives of the first camp, headed by the American political scientist Francis Fukuyama [1], based on the Hegelian model of the development of world culture, proclaimed the so-called "end of history". The meaning of this pretentious statement was to affirm the optimality of the ideology of liberal democracy, the basic principles of which have already been translated into reality by some Western countries. Thus, further qualitative historical changes were declared impossible by Fukuyama and his followers. The remaining countries, according to their forecasts, can only catch up with the advanced Western states.

Fukuyama's argument was based on the rather bold assertion that nothing more perfect in value terms than the liberal democracy with its individualized rights, as well as the ideals of freedom, equality, fraternity, the world will no longer be able to offer.

Nevertheless, the real process of globalization has shown the axiological relativity of the ideals of liberal democracy. Some non-Western societies reacted to the policy of forcibly introducing Western values more than hostilely. Others, while acknowledging the technical achievements of the

West as a blessing and, happily adopting them, categorically denied this right to the ideological principles that underlie Western civilization. In other words, in the process of real world political and intercultural practice, the West found the inconsistency of its claims to universalism. It turned out that the values of liberal democracy - just one of the possible values that were worked out by mankind (and most likely will continue to be developed in the future).

The diversity of world outlooks and, accordingly, the diversity of cultures built on them as a purely empirical fact is a rather ancient phenomenon. However, it became relatively culturological. Previously, with respect to the rest of the world, the West, in the person of Europe, starting with Alexander the Great, used the colonialist approach, the meaning of which was the a priori recognition of other cultures as inferior in status.

Today, when a stratification rank on a cultural basis between different countries is no longer possible in the form in which it existed in the XIX century, the policy of colonization is replaced by a policy of globalization.

If we talk about the reasons for the impossibility of applying the old means of world politics, two main factors that determine the public consciousness of modernity can be singled out: ideally, this is a reflection of the Western intellectual elite, which affirms the principles of relativism, pluralism and multiculturalism; in the material sense, it is a nuclear factor. The presence of atomic weapons, even in such a small country as North Korea, automatically turns it into a full-fledged participant in the world political process, which must be reckoned with.

That is why today the policy is conducted not by technical or even economic, but by humanitarian means. That is, by means related to the human essence, his thinking, consciousness, identity, psychology, culture, etc. This is what gives some theorists the reason to talk about the phenomena of the "information field", the "information impact" and even the "information war" [2].

It can be said that the policy of globalization, in a purely semantic sense, differs little from the policy of colonization. Changed methods and means, but not goals. The goal of colonization was the establishment of domination (sometimes violent) of Western culture in the territory of non-European states. The goal of globalization is the creation of such conditions of the world economy and politics, in which the population of non-western countries will voluntarily accept the Western way of life as a normative pattern.

Despite the apparent softness of the globalization processes, which, as we found out, are inseparable from Westernization, there is actually an imposition that causes a legitimate confrontation. The West, of course, does

not introduce troops, but it aggressively invades the information sphere. Television, the Internet, the press, literature abound in images of Western culture, which are presented in an extremely positive way. However, if there is any alternative, it, entering into a binary opposition with Western meanings, falls into a deliberately disadvantageous position in accordance with the scheme of the French philosopher-postmodernist Jacques Derrida, according to which the model of binary oppositions assumes the initial asymmetry of its members. For example, in the opposition Logos / Mythos, the first member is labeled as something positively positive, connected with rationality, progress, development, while the second member is labeled as equally unconditionally negative as something illusory, not true, misleading. The same implicit logic of the superiority of the first term over the second is preserved in all cases of binary oppositions: man / woman; right / left; good evil; science / religion; mind / feeling, etc. In the culturological perspective, all the above-mentioned oppositions somehow go back to the fundamental opposition West / East.

As shown by modern cultural studies, the closest range of factors of personal identification of a person includes values [3]. This means that the person perceives encroachment on immaterial values more sharply and more hostile than encroachment on material goods.

That is why the forecast of Fukuyama's opponent Samuel Huntington was more adequate, which in 1993 published in the magazine Foreign Affairs an article in which, based on the Machiavellian principle "there can be no real friends without real enemies", predicted in the coming XXI century the advent of such a global cultural events as a "clash of civilizations". In support of his radical thesis, Huntington cites a number of key arguments.

First of all, he notes that the fact of civilizational differences is not only real, but most significant. According to Huntington, "civilizations are dissimilar in their history, language, culture, traditions and, most importantly, religion. People of different civilizations have different views on the relationship between God and man, individual and group, citizen and state, parents and children, husband and wife, have different ideas about the relative importance of rights and obligations, freedom and coercion, equality and hierarchy. These differences have developed over the centuries, and they will not disappear in the foreseeable future. They are more fundamental than the differences between political ideologies and political regimes" [4].

Further, taking into account the inevitable intensification of the processes of globalization, Huntington emphasizes the significance of the role of national self-awareness that grows in these conditions. For example, North

African immigration to France caused hostility among the French, and at the same time strengthened the benevolence of other immigrants - Catholics and Protestants from Poland.

The following argument, which leads Hantigton and which directly affects the subject of our study, appeals to the phenomenon of de-secularization, which, according to Weigel, "all the dominant social phenomena of the late twentieth century" took place [5]. The fact is that the universalization of the economic space, with which the first globalization shifts began, deconstructed the traditional mechanism of cultural identification linking this or that person with the specific place of his residence. The compensatory principle in this case worked as filling the formed identification lacuna with a religious upsurge of public consciousness, and often of fundamentalist persuasion. Appeal to the religious worldview is primarily associated with the supranational ideology of the Abrahamic tradition. According to Huntington, it is religion that "creates the basis for identification and involvement with a community that transcends national boundaries" [6]. At the same time, identification based on the religious factor entails a sharp increase in the conflict potential of world interaction, since nothing is such an acute reason for open antagonism as religious zeal and intolerance.

That is why today the question of the formation of a tolerant personality has become very acute. The fundamental position of our research is that only educational processes that are meaningful in the modern (and perhaps postmodern) way can become that sociocultural space within which the realization of a multicultural strategy becomes possible. Accordingly, the task that confronts this study is the comprehensive study of modern educational processes. At the same time, the methodological optics used by us presupposes not only an available phenomenological description, but also a projective optative modeling, the identification of possible vectors for the development of education in order to achieve an optimal level of relevance to those requirements that the strange spirit of our time makes.

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IT IS IMPOSSIBLE TO TURN BACK THE COURSE OF HISTORY

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Abstract. The situation in the world in the 2020s is very similar to that of 1920s, when on the wave of the struggle against communist threat the far-right forces came to power in the defeated countries, plunged the world into the abyss of a new disastrous war. Collapse of the Soviet Union, the Eastern Europe's countries departure from socialist path of development, the instant break-up of the socioeconomic and political relations developed over fifty decades and integrated many of them, gave rise to a deep common crisis, even more dangerous than the "World crisis" of the 1920s and 1930s. As then, nationalist forces with a tendency to grow them into Nazi came to power in all parts of the disintegrated unions and federations. The rabid criticism and condemnation of the hated to them socialism and communism logically leads to the rapprochement of their views and policies with those condemned by the International Tribunal in Nuremberg. The Russian anticommunist authorities also went down this path. It seems that they are trying to return the multinational Russian society to the times of not even wild capitalism, as some of its researchers believe, but to the times of transition from feudalism to capitalism with absolutist regimes of power. In the XXI century, when the social system based on the principles of 'human rights', 'democracy' and 'the rule of law' is considered corresponding the era, an issue of the 'ideal ruler of the future' is discussed in Russia's ruling circles. A certain "enlightened" journalist asks: "Has Putin decided with his successor?" Putin is "thinking about preparing a successor from morning to evening," the president's spokesman informs. The news "the president, the prime minister, etc. have allocated billions of rubles to someone; Putin forgave 20 billion dollars of debt to Africa" are taking for granted. Had they committed this action from their own means or at the expense of the people and without their consent? Roughly breaking the oath to defend the constitution, the President declares before the world of the needless for the country in a representative body of the people.

The report provides author's understanding of the reasons for such behavior of authoritarian power, as well as recommendations of ways of legal support of the republican system.

Keywords: Democracy, Republic, Democracy, Constitutionalism, Civil Society, Sovereignty, State, Authoritarianism, Responsibility, The Rule of Law.

According to the testimonies of Herodotus (V century BC), the Roman historian A. Marcelin (4th century AD), P. Caesar (VII century AD), the Slavic tribes have lived for millennia in harmony with the laws of the nature of their native country [1]. As a result of an almost thousandyear political and spiritual colonization of the Slavic and allied peoples, the spirit of freedom, the life in accordance with a system of the ethnic values had been gradually replaced by the spirit of obedience to 'all powers' and a life according to the precepts from 'above'. Short-term return to democracy in the 20th century, for many reasons, carried out with the preservation of authoritarian beginnings in it, clearly demonstrating its creative potential, greatly frightened the comprador segments of the population. Under democratic slogans, they once again seized power and turned the course of the country's development "forward" on the path leading it to a disappearance as an independent civilization. Impartially summing up the activities of false patriots ("How do we equip Russia?" "To gather Russia," "Forward Russia!", "Saving the nation"), we can see that the peoples of Russia had become victims of the monstrous deception and have lost their power and statehood as an institution for the protection of their rights and security. The criminal and comprador forces, who occupied the institutions of power under the slogans "More socialism!", "No bureaucracy!", "All power to Soviets!", "Fighting privileges" etc., have turned them into institutions of the people enslavement, the robbery of national wealth and a return to serfdom. Once again, as in the 9th - 10th centuries, they are trying to deprive the people of the spirit of freedom and equality, to impose some myths about the 'divine nature of power and its performers' to the society that has become highly educated. Falsifying history, the newly-appeared Nero and Caligula without any evidences slander the ideas of the human rights, democracy and the rule of law. [2].

The knowledge is a power; they are formed and multiplied by the education of people. "Enlighten the people generally, and tyranny and oppressions of body and mind will vanish like evil spirits at the dawn of day", the author of the "Declaration of Independence", founder of the first in the World Department of Human Rights T. Jefferson believed [3, 14: 491]. His contemporary and adherent D. de Tracy also wrote on inseparable connection between educational systems and political orders: "Those governments which support themselves by false ideas, should not venture to give

to their subjects a very solid education; that those which require to keep certain classes in a state of degradation and oppression, should not permit them to obtain instruction; and that those governments only which are founded on reason, can desire that education should be solid, profound, and generally diffused" [4, c. 40]». It is clear that the anti-democratic forces do everything to prevent this, for the illiterate, gullible, cruelly exploited and occasionally fed mass of people is easier to turn into "submissive servants and loyal subjects". They have always understood that people should not be allowed to realize their human dignity, otherwise it will be impossible to manipulate and manage them. "If one day our men want to learn and be literate, then we will not be here with you," Catherine the Second had wrote [5, III. P. 1170]. The Empress Catherine's nightmare haunts the rulers of modern Russia also. "You say terrible things," said G. Gref, one of the leaders of the dominant group. "You are proposing to transfer power in fact into the hands of the population. Once ordinary people understand the basis of their Self and self-identify, it will be extremely difficult to manipulate them... People don't want to be manipulated when they have knowledge." [6].

Thus, "lightening and ennobling the situation", restoring the rights of the peoples of multinational society to use the natural resources in the areas of their residence on the principles of social justice must and can begin with the 'exile of the darkness' from the minds of people, providing citizens with a true knowledge of the laws of the nature and nations, the logic of the socioeconomic life of the republic and much more. First of all, a society must understand its high mission as a supreme sovereign, owner and user not only of natural resources in the area of its historical habitat.

The republic is the commonwealth of the free citizens, the connection of their strength, will, desires, rights and responsibilities into a single whole to ensure and protect their own rights, the most important of which are those to life, freedom, health, and to property. Let us recall the formula of the United States Declaration of Independence, which has become the moral norm of international customary law: "That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed,-That whenever any Form of Government becomes destructive of these ends, it is the Right of the People to alter or to abolish it, and to institute new Government, laying its foundation on such principles and organizing its powers in such form, as to them shall seem most likely to effect their Safety and Happiness'[3, 1: 29].

In a republic, society as a whole, consolidated by the will of the majority of its members, rather than an individual, chooses the ways of its

further development. If it is not done constantly and responsibly, a gradual alienation of the apparatus of power and its fetishization occur, the social progress slows down, people's lives become more complicated and worsened. The State is an extremely authoritarian institution, which, if a society allow it to use force and dispose with the national wealth on its own discretion, might to turn into the main threat to democracy and the lives of its citizens. [7, c. 214] This threat increases several times when the political power put forward erroneous "theories" and concepts remaining without scientifically reasoned criticism.

The modern and extremely dangerous for democracy misconception, designed to justify the state's claims to its supremacy and the unlimited field of its activities, is a misunderstanding of the relationship between the society and its state. There are ‘politicians’ and their epigones, claiming that a civil society is "only one of the attributes of the state" and the head of the administration (president) is a symbol of the state, etc. [15a] This leads to the substitution of actors of social processes and their roles in a life of the country, to the servant’s empowerment and belittling of the role of the supreme sovereign to such one of the "servants of the servant", to the transformation of power from the servant to his master, from what, as still biblical Solomon believed, ‘the earth shakes’. One can, of course, assume that not only a civil society, but also the state has its own interests and aims. It’s true, but they are essentially reduced and should be reduced to optimal selforganization for in the best serve their people.

The true republican system is characterized by a relentless adherence to a number of fundamental and binding principles, namely:

The people are the source of power, the only legitimate author of the Basic Law of their republic and its protector.

The Basic Law of a Society can be amended to expand democracy, but by no means to limit and weaken the power of the people.

Most of the problems of personal life the citizens solve independently, guiding by the laws of the nature and norms of public morality, and the complex ones - by forming appropriate institutions, consisting of competent representatives of the people, elected on short terms and replaced by the will of the citizens’ majority.

All institutions of power and governance are formed, improved and optimized by civil society according to the norms and rules established by the absolute majority of its members.

Natural resources in the historical habitats of the peoples belong primarily to these peoples.

Expenditures necessary for the maintenance functions of society and

special functions of the state (protection of the life, health, socialization of younger generations, education of the citizens, creation and continuous improvement of their working conditions, formation and the maintenance of the necessary institutions, training of specialists and the payment of their labour, and much more) are borne by all able-bodied members of a society by paying certain share of their income as taxis, set by the society itself and fixed in Basic Law. Plus, the proceeds from the exploitation of natural resources within its borders. All of them collectively form the budget of the country.

The society and the responsible before it state are extremely interested in increasing the incomes of their citizens and every way must encourage the creative activity and frugality, leading to an increase the well-being of all citizens, as well as the revenues to the budget of the country; they do not allow waste and the outflow of national wealth outside the country.

Taxes on the members of the society and on residents of the country are proportional to the social obligations of the society and its institutions.

Whether these obligations (realization of the citizens' rights to education, health care, socialization, housing, etc.) are fulfilled for payment or free for the citizens of the republic – is an issue formally secondary, as their cost is included into the consumer basket and must necessarily be taken into account while determining the amount of remuneration for the labour and social benefits. Some societies with take this article from wages, centralize it throughout society, organize appropriate structures and spend concentrated funds as needed, making health care more efficient and timely accessible to all citizens. When the value of some articles is made available to each employee directly, he spends it at his own discretion.

The society and states recognize the right of everyone to the enjoyment of just and favourable conditions of work which ensure, in particular:

(a) Remuneration which provides all workers, as a minimum, with:

(i) Fair wages and equal remuneration for work of equal value without distinction of any kind, in particular women being guaranteed conditions of work not inferior to those enjoyed by men, with equal pay for equal work;

(ii) A decent living for themselves and their families in accordance with the provisions:

(b) Safe and healthy working conditions;

(c) Equal opportunity for everyone to be promoted in his employment to an appropriate higher level, subject to no considerations other than those of seniority and competence;

(d) Rest, leisure and reasonable limitation of working hours and periodic holidays with pay, as well as remuneration for public holidays. » [9,

Article 7].

Studying and analyzing attentively the degree of fulfillment of these obligations in postSoviet Russia unwittingly have to conclude that the apparatus of power and management not only refuse to fulfill the obligations of the state before its citizens, but also do everything possible to deprive them of even previous achievements, to make their life unbearable, to pump Russia's wealth abroad and eliminate Russia as an influential actor of the world politics. In support of this, let us turn to the facts recorded in the history's annals.

According to official censuses, in 1920 the population of the USSR was equal to 136.81 million people (20.885 million urban and 115.925 million rural). By 1939 it had increased to 190.027 million, by 1959, despite huge losses during the war - to 208.826 million, by 1979 - to 262, 436 million. and by 1989, to 286.717 million. Even without the losses during the Great Patriotic War and the fantastic figures of those who died during the years of repressions, the population of the USSR increased by almost one hundred million people, including the RSFSR (108, 377 million in 1939 and 147,386 thousand in 1989) - by 39 million. [10].

In 1939, there were 15.866 million citizens with higher and secondary education and in 1989 - already 172.228 million. In 1939, one resident of urban settlements accounted for about 6 square meters of living space. Despite the enormous destruction during World War II, in the next 4 decades it increased to about 16 square meters per resident. It is also important to note that taxes on the incomes of the population in those days were progressive: they were not taken from the amount of the minimum wage (MW), for each next ruble after the amount of MW tax increased by a few cents, to a maximum of 12-13 percent of the amount above the MW. Thus, in 1989, the share of taxes consisted only 8.424% in the budget of the country (492.4 billion rubles) [10, p. 17].

According to the UNESCO, in 1990 the USSR was 3rd in the educational ranking in the world, in 2012 Russia fell down to 35th place. Predatory privatization of the public property carried out without any consent of the owner, the ensuing economic crisis, unemployment, a sharp decline in the living standards of the population and limited opportunities to get some medical aid, education, the established in the country regime of state racketeering [11, p. 91 – 149] pushed Russia back to the days of late feudalism and the initial accumulation of capital. This, in turn, led to moral degradation of the so-called 'new Russians' with their philosophy of all permissiveness, what had a detrimental effect on family and marriage relations. Hence the moral promiscuity with too dangerous diseases, including social ones. Russia currently ranks 49-51 in the world in health, and the

proportion of HIV/AIDS carriers is the highest among developed countries.

The situation in the country is like at the 'Cattle yard' by D. Orwell, where "the greedy pigs and the growing number of dogs" with an ever-increasing appetite established the laws of life. So it is in modern Russia. The share, which goes to the maintenance of the excessively expanding apparatus of power and management, and their security services have been increasing every year in its budget. Thus, 1.445 trillion rubles have been allocated for the maintenance of the state apparatus for 2020; the same amount for 'national security' and another 5 646 billion rubles for 'law enforcement' activities. Plus, there are some separate articles in the budgets for education, health care, social security, etc. for administrative expenses. More than 20 billion rubles will be spent under the section 'functioning of the president'. By 2021, the cost of the president's activities will increase to 21 billion rubles. Accordingly, the share of expenditures to sustain the lives of direct producers has decreased. Their minimum wage in 2018 was set at 85% of the living minimum, in 2019 - 100%. A fifth of this amount is withdrawn through the value-added tax. It is impossible to understand, how the minimum wage can be below the subsistence level or equal to it, because the employee can have minor children and disabled family members, whom he must take care of? Does not it lead to genocide?

Education, public health and security are considered priorities for all countries thinking about their future. In the budget of Russia, the health of the population takes the eighth place, education - the 10th.

The Russian authorities. like the "insatiable pigs and dogs" at the farm of Orwell's beasts, are looking for new ways to grabbing the country's masters and its natural resources through new taxes, up to the tax on water in wells, on the right to collect mushrooms and berries in the forests, declaring them 'the state's resources' [12]. They want to privatize forests and lakes with their resources. It remains unclear to the majority of the people, why turning education, health, transport, housing and much more into paid for people, taxes and fees from them not only do not decrease, but, on the contrary, grow every year without any justification for their destination. The greatest disaster that can happen to us, T. Jefferson warned his compatriots, "is the empowerment of the government" and explained: Whenever the government assumes undelegated powers, their acts are unauthoritative, void, and of no force, and the citizen have the right to not be obeying them. [3, 17:380]

The will of the people is the highest law of society and foundation of the republic. This will is revealed by 'the rule of majority' in elections, referendums and plebiscites through preliminary discussions, critical anal-

ysis of viewpoint, identification of painful points of public life, the causes of their existence and of the programs to eliminate them with the subsequent universal and secret 'For' and 'Against' vote under the strict control of the civil society. The 'Majority Rule' is the first principle of republicanism and the fundamental norm of any society of people with equal rights. And the degree of conformity between the republican structures of power and their functionaries is determined only in proportion as they embody the will of their people, and execute it. [3, Vol. 14, p. 33]. The social contract and constitutional laws being the expression of the will of the people are above official authority; all citizens, regardless of their socio-economic, political and other status, are equal to them. They are one for all citizens, and no one can be excluded from their actions; therefore, all officials of the state bear the same responsibility for each of their illegal actions. [13, p. 189]. The so-called administrative law (orders and decrees of officials), which in fact is 'administrative tyranny' (14, p. 70), puts the state officials in a special position relatively to the rest of the citizens. The illegitimate Constitution [15, p. 333 – 345], and, accordingly, illegitimate government, 'Presidential Decrees', orders of the head of government and governors, socalled 'packages of laws' of sworn-criminals - such is the 'legal field' of the Russian Federation with administrative arbitrariness doomed the multinational community to a state of anomie.

Hundreds of the deputies, senators, governors and ministers, elected and appointed on recommendations of the presidents and heads of government of the Russian Federation, turned out to be criminals, thieves of the national treasure, took out of the country for trillions of. Those from them who were caught by the hand, are sitting in luxuriously furnished 'prison' apartments, but their appointees are stepping aside, because they put themselves above the law. Thus, V. Putin presented Governor Dubrovskiy as a hard-working, honest and decent man. This 'honest and decent man' soon embezzled twenty billion rubles and fled Russia. And with the patron of the criminal as with the goose water! In countries with the rule of law, the entire government bears full responsibility for the activities of each official and, first of all, the chief executive, who is under the watchful control of the highest representative body and the opposition. "We are all responsible for mistakes," British Prime Minister W. Churchill had admitted during a discussion of the vote of confidence after the surrender of Singapore and Tobruk by British forces in February 1942, "and we will all be condemned." [16, Vol. IV, p. 111]. In cases when actions that threaten the security of the country and the well-being of its citizens are detected, the entire government must resign with subsequently recalling

to the court. In Russia, this does not happen only because the behavior of all 'branches of government' is determined here from a single center and by a single person, and because the civil society does not strictly control the activities of its officials, allows them to act waywardly, to absolutize power and to privatize it, agrees silently with that the officials of its service institutions behave them in the country as owners of its natural resources and human capital. The regime of state racketeering, carried out by mafia methods had formed as a consequence. Such a regime needs an artificially inflammation of the fear before an 'external enemy', which can divert attention of the people from internal problems and provide temporary support of a deceived part of the society that cherishes the independence of their homeland but does not realize that the hidden enemy behind his back (the 'fifth column') is more dangerous than an open enemy.

The authoritarian regimes always held on demagogy, falsification of history, insulting and belittling the achievements of the predecessors, attributing to themselves non-existent merits and seeking the imaginary culprits of the inefficiency of their policies. Unfortunately, the current political regime in Russia is no exception. Thus, to the question of the Italian edition "Corriere della Sera" "which hinders the plans for the development of the country?" Putin replied: "It is not the percentage of votes in the elections, but the economic realities that Russia has to face. Namely, falling or fluctuating prices in international markets for traditional goods of our exports: oil, gas, metal. ... Of course, there is also an influence of external restraints".

Calling such 'convincing' reasons for the stagnation of the Russian economy, the head of the state did not take into account or did not know at all that they for some reason do not hinder the development of other countries, such as Norway, Sweden, Iceland, etc., who are in harsher conditions, but are leaders in the human development index? The true reasons are quite different: all resources of the nature are used for the benefit of citizens, not allowing unnecessary luxury and waste, as in Russia. [17] It is enough to compare the residences of the heads of the states and governments, the costs of their maintenance, the extent of corruption and capital outflows, the income gaps of 10% of the upper and lower levels of the population, and everything will become clearer.

To change the situation radically, to implement the principles of democracy and the republican system the Russian Federation civil society can only regaining the status of supreme sovereign and restoring its sovereignty over all resources in the areas of its residence and using them for the benefit of the peoples. It must ensure that all its service institutions act as managers in their spheres of life, fulfilling his will as of the general

manager. Any claims of the political manager for the role of a patron of his master should be stopped and accused immediately, as well as to function as a rival of the society. The society must have sufficient power to nip in the bud any authoritarian tendencies that come from its service bodies.

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FREDERIC WILLIAM MAITLAND AND "THE RUSSIAN ENGLISHMEN": THE SCIENTIFIC, INTELLECTUAL AND FRIENDLY CONTACTS OF THE HISTORIANS

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Abstract. The article deals with analysis of scientific, intellectual and friendly contacts of F.W. Maitland, P.G. Vinogradoff and A.N. Savin, and is based on the study of F.W. Maitland's letters to P.G. Vinogradoff and British and Russian historiography of the problem. Its purpose is to reveal the role of P.G. Vinogradoff in the determining of the scientific fate of F.W. Maitland. F.W. Maitland considered himself a disciple of P.G. Vinogradoff, A.N. Savin – a disciple of F.W. Maitland.

Keywords: F.W. Maitland, P.G. Vinogradoff, A.N. Savin, "the Russian Englishmen", scientific, intellectual and friendly contacts.

The scientific, intellectual and friendly contacts of the great British and Russian historians F.W. Maitland (1850-1906), P.G. Vinogradoff (1854-1925) and A.N. Savin (1873-1923) are largely unexplored in the British and especially in the Russian historiography. The Russian historians do not give sufficient attention to the problem of these relationships, though they contain unique material to study the formation of F.W. Maitland as historian at the early stage of choosing a life path.

I think it is not an exaggeration to call P.G. Vinogradoff and A.N. Savin "the Russian Englishmen". Really, they knew English perfectly well; they visited Great Britain many times for the purpose of collecting materials for scientific works and lived there for a long time; they were the historians of England; they worked in the British archives; they published their works in English; they did very much for the studding of the English history (the Russian P.G. Vinogradoff wrote about medieval England as authentic Englishman, in excellent English and have done immeasurably more for the study of English history, than many of his British colleagues) and they were buried in England (P.G. Vinogradoff – in Oxford cemetery Holywell,

the inscription on his grave reads “Hospitae Britanniae Gratus Advena” [24, p.129]; A.N. Savin – in London cemetery Kensal Green [18, p. 213]), in contrast to F.W. Maitland, whose grave is very far from his homeland – his body lies in the English cemetery at Las Palmas [8, p. 173]. Moreover, in 1903 P.G. Vinogradoff was elected a Corpus Professor of Jurisprudence at the University of Oxford, and held it until he died in 1925. He was also elected a Fellow of the British Academy in 1905. He received honorary degrees from the principal universities, including the University of Oxford in 1902, in connection with the tercentenary of the Bodleian Library, he was made a member of several foreign Academies and was appointed honorary Professor of history at Moscow, was knighted in 1917. Due to the efforts of P.G. Vinogradoff, F.W. Maitland became the honorary Professor at Moscow University, in addition to other Universities and Academies – Cambridge, Oxford, Glasgow, Krakow; he was an honorary Bencher of Lincoln's Inn, an original Fellow of the British Academy; the corresponding member of the Royal Prussian and of the Royal Bavarian Academies; the newly established bronze medal of the Harvard Law School was awarded to him in the last days of his life [14, p. 180; 8, p. 173; 11; 6, p. 13, 14]. These are a well-known facts of the biographies of the scholars. But, as far as I know, of all Russian historians in the late XIX-th the early XX-th centuries only P.G. Vinogradoff and A.N. Savin were familiar with F.W. Maitland personally. F.W. Maitland considered himself a disciple of P.G. Vinogradoff, A.N. Savin – a disciple of F.W. Maitland.

Numerous names of great British, German and American historians, lawyers and philosophers must be specified here in order to trace the process of F.W. Maitland’s formation as a learned historian [20, s. 99-103, 147-149, 159-161, 177, 178-184]. However, the acquaintance and friendship with Russian historian Paul Vinogradoff left a more tangible mark on F.W. Maitland’s life. It is safe to say, that they met in Great Britain in 1884, but there are different interpretations in historiography about the time and the place of this meeting: weather it was on January 20 on “Sunday Tramps” in London, or on May 1 or 11 in Oxford, or, may be, they firstly met in Cambridge [8, p. 24.]. Most likely, F.W. Maitland and P.G. Vinogradoff met not once, but several times as evidenced by the letters of the British historian to his Moscow colleague [23, p. 14, 44, 59, 94, 294].

The acquaintance with young Russian scholar, a man of comprehensive knowledge and an ardent mind finally strengthened F.W. Maitland’s intention to devote himself to the study of the history of English law. It marked the beginning of a long-standing close friendship and creative collaboration reflected in the letters of F.W. Maitland to P.G. Vinogradoff. F.W.

Maitland's published epistolary heritage compose 501 letters, 14 of them addressed to P.G. Vinogradoff, written in different years: first in April 28 1884, last – in January 1904. The letters are fragments of originals as a rule without the beginning and the end, and only two of them – № 12 and № 12A – remained fully [23, p. 13-14, 32, 44, 48-49, 57, 59-60, 69, 94-95, 102-104, 294]. But what little has come down to us eloquently testifies in favor of the significance of this meeting, its consequences, and shows haw F.W. Maitland appreciated P.G. Vinogradoff's favor.

The letters of F.W. Maitland to P.G. Vinogradoff is a valuable and bright page of his biography written in the context of "invisible college", pushing the boundaries of intellectual space of the British historian far beyond the national historiography and forming an intelligent network, which by analogy with the famous work of F.W. Maitland may be called "Maitland and beyond".

The letters of F.W. Maitland to P.G. Vinogradoff cover a twenty-year period of F.W. Maitland's life, almost the entire stage of his scientific and pedagogical activity as Downing Professor of Cambridge University. A substantial part of the letters of P.G. Vinogradoff studied and published by A.V. Antoshchenko [1; 3; 13; 25], does not affect the correspondence of the great Russian historian to his British colleague. Unfortunately, the response letters of P.G. Vinogradoff were not find in the archives, notably in the archive of the Harvard University Law School. By assumption of A.R.A. Hobson, the husband of P.G. Vinogradoff's granddaughter, his personal correspondence was destroyed by his widow [9].

Trusting, friendly relationship established from the very beginning between F.W. Maitland and P.G. Vinogradoff over time have not lost their original content – the relationship of the disciple to the teacher. For example, in April 1884 F.W. Maitland wrote to P.G. Vinogradoff: "I wish that you would stay here (in England – *T.S.*) and teach us something about our old books"; in May 1892: "For myself I wish I could have your advice, for I feel that the History will be an ungodly jumble, a set of fragments"; in January 1904: "I badly need a coadjutor *cum spe successionis* in my Year Book work" [23, p. 13, 102-103, 294]. H.A.L. Fisher wrote of P.G. Vinogradoff, who received his historical education in Mommsen's Seminar in Berlin and was fortified by the advantages of a system of training such as no British University could offer, as of F.W. Maitland's friend [8, p. 24]. F.W. Maitland showed a lively interest in everything that concerned P.G. Vinogradoff, whether it was help in finding records necessary for him to work, or clarification of certain information when he was in Russia, or his scientific achievements. Some examples. In August 28 1884 F.W. Maitland

wrote to P.G. Vinogradoff: “When last we met you spoke of procuring a copy of the old edition of Bracton – if you have not yet done so I hope that you will make me proud by taking home with you a copy that I have: it is in fair condition. I should like to think that it was in your hands, and if you will tell me of any place where it will find you it shall go thither. … Please remember that when you are at home I shall be always delighted to do for you anything I can in the way of verifying references and believe me.” In June 12 1887: “… I heartily congratulate you upon having finished your book (“Villainage in England” – *T.S.*) and thank you warmly for a copy of it that you sent me and for the kind words that you wrote upon the outside. … it is a great book, destined in course of time to turn the current of English and German learning” [23, p. 14, 32]. In the Preface of “Villainage in England”, published in 1892, P.G. Vinogradoff thanked F.W. Maitland for help and fair criticism: “As for F.W. Maitland, I can only say that my book would hardly have appeared at all if he had not taken infinitive trouble to further its publication. He had not only done everything in his power to make it presentable to English readers in style and wording, but as to the subject-matter, many a friendly suggestion, many a criticism I have had from him and if I have not always profited by them, the blame is to be cast on my own obstinacy” [27, p. X]. When the situation at Moscow University has escalated so much that P.G. Vinogradoff had to resign [2, s. 234-272] and go to England, F.W. Maitland vainly appealed personally and through his friends to Oxford and Cambridge Universities, regretting that he is not a Prime-Minister of Great Britain, and wrote to H.A.L. Fisher, that he would risk a war to get Vinogradoff a vacant post [23, p. 123]. Meanwhile, P.G. Vinogradoff was four years younger than F.W. Maitland, who retained a sense of deep gratitude to a man, who once introduced him to the world of the English Middle Ages and the source study.

In the English and the American historiography the question about the results of the meeting F.W. Maitland and P.G. Vinogradoff has been discussed for a long time and in detail. It aimed to prove that F.W. Maitland studied the history of English law and the medieval records himself before his acquaintance with Russian historian, whose influence was insignificant. The supporters of this point of view among the researchers incomparably more than those who inclined to see in the Russian historian the man who determined the scientific fate of F.W. Maitland. They bases arguments on the F.W. Maitland’s earliest biography, written by H.A.L. Fisher, where he himself told, how during this decisive meeting “from the lips of a foreigner he first received a full consciousness of that matchless collection of documents for the legal and social history of the middle ages, which

England had continuously preserved and consistently neglected, of an unbroken stream of authentic testimony, lowing for seven hundred years, of tons of plea-rolls from which it would be possible to restore an image of long-vanished life with a degree of fidelity which could never be won from chronicles and professed histories" [7, p. 60; 8, p. 24-25]. Similar information is contained in the lectures of Oxford Professor A.L. Smith, where he emphasized that P.G. Vinogradoff in his notice in "The English Historical Review" has told us that it was early in 1884 he first met F.W. Maitland. "He has not told us it was he who set Maitland on to what became his real life work. But it was so, and Maitland loved to tell the story" [22, p. 31].

The discussion on the role of P.G. Vinogradoff in F.W. Maitland's faith arose in literature in the 1950-s in connection with the appearance of publications dedicated to the centenary of F.W. Maitland's birth. It was inspirated by T.F.T. Plucknett, who denied H.A.L. Fisher's information, that F.W. Maitland started his study of medieval evidences of Gloucestershire in Public Record Office under the impression of a long conversation with P.G. Vinogradoff in Oxford, May 11. T.F.T. Plucknett asserted that F.W. Maitland worked on Gloucestershire sources in February-April 1884, what was recorded in the registration log [15, p. 10]. C. H. S. Fifoot, H.A. Hollond and other historians followed T.F.T. Plucknett. They came to conclusion, that otherwise F.W. Maitland could hardly study in detail during three months 155 big lists of historical sources, write 50 pages of Introduction and already in the autumn 1884 publish his first serious work "Pleas of the Crown for County of Gloucester" with a dedication to P.G. Vinogradoff – "To Paul Vinogradoff, Professor of History in the University of Moscow". J. R. Cameron in his analysis of the question about P.G. Vinogradoff's influence on F.W. Maitland thinks that the meeting of the historians took place in January 20 on "Sunday Tramps" of the year in question. F.W. Maitland himself admitted inaccuracies in his letters, because the mere fact of the meeting was of far greater importance to him, than the exact day of the event. J. R. Cameron came to conclusion that P. Vinogradoff was the first to appreciate the value of the records stored in the Public Record Office. E.W. Maitland dedicated his first volume of legal records to him [10; 5, p. 9]. One must conclude that it was P.G. Vinogradoff, who first pointed out to F.W. Maitland the treasure in the Public Record Office. "If this is so and Maitland was using the Public Record Office in February, then Vinogradoff must have confided in Maitland at their first meeting in January", - wrote J. R. Cameron [5, p. 9]. G.R. Elton adhered to the traditional point of view, stating that F.W. Maitland made a decision about the need to study the medieval English archives, kept in Great Britain as "impressively absurd piece of Victorian

Gothic in Chancery Lane", after his acquaintance with Russian historian. "There is no doubt that what guided his steps were talks with Vinogradoff and perhaps others, which revealed to him the wealth of information especially on the age of Bracton" [6, p. 8].

There is no reason to doubt that this dispute is important to specify a number of details of F.W. Maitland's biography. But the point is, that none of F.W. Maitland's entourage with such clarity and persuasiveness did not reveal to him the inexhaustible possibilities of records for the studding of the Medieval English history. No one was able to awaken in him a sense of national pride for the unclaimed treasures kept in British archives and even shame for the fact that the German, Russian or Turk will publish Bracton and shame the nation [7, p. 61]. As a result of this meeting in 1887 F.W. Maitland published at his own cost "Bracton's Note Book", founded by P.G. Vinogradoff in the Public Record Office. In the Introduction he took occasion to point out that in "other countries important national records were apt to be published by national enterprise; and that in England the wealth of unpublished records was exceptional" [8, p. 34]. The publication consisted of three volumes, and included the collection of two thousand legal texts 1217-1240, used by H. Bracton in his famous treatise "De legibus et consuetudinibus Angliae". "Bracton's Note Book" of F.W. Maitland was evaluated as a scientific achievement, that served as the basis for his election as Professor of English law of Cambridge University in 1888 [11; 4, p. 287]. The appearance of the Note Book showed that Cambridge possessed a scholar who could edit a big medieval text with as sure a touch as W. Stubbs, and the book received a warm welcome from those who were entitled to judge of its merits [8, p. 34].

During his life-time F.W. Maitland and his works were virtually unknown to a wide range of Russian historians. They were not translated into Russian language, just as they are not translated today, perhaps because of the complexity of scientific issues or the uniqueness of historian's style. In the late XIX-th century learning English was not popular in Russia. So, for example, a delegation of Russians who visited England in 1910 to study local experiences and learn from the British cooperative institutions asked their hospitable hosts find them interpreters to speak German or French, as they did not know English [12, p. 130-131)). In 1912, at a meeting with the British Parliament delegation to Moscow University, A.N. Savin was bothered by the fact, that very few of the Russian professors and students could understand and speak English. It was difficult to organize in the universities seminars for the students in English history, and English medieval history as well (even of studying Magna Carta), since most of them, easily

coping with the reading of French or German sources and literature, could not do the same with literature written in English. As for A.N. Savin he was gifted linguistically and started to study the English language at the University [19, p. 4].

The first work, that introduced F.W. Maitland to Russian readers, was A.N. Savin's extensive article "The English Lawyer in the Role of the Historian", 1900 [16], written delicately in a respectful tone and combining in-depth the scientific analysis of historical, political, religious views of F.W. Maitland, his way to historical science, with the characteristic of his working methods with historical sources, research interests and intellectual contacts. Some years later, after F.W. Maitland's death, P.G. Vinogradoff and A.N. Savin published two obituary essays, dedicated to their eminent British colleague [26; 17]. These obituaries together with A. Savin's article became almost the first historiographical sources in Russia on the great British historian and lawyer. So, P.G. Vinogradoff and A.N. Savin can be considered the ancestors of a special trend in Russian historiography, which studies the life and works of F.W. Maitland – "mejtlendovedenie".

A.N. Savin, recognized as a disciple of P. G. Vinogradoff in Moscow University, as well considered his teacher F.W. Maitland. He met F.W. Maitland several times (1900, 1901, 1905) in London in the Public Record Office where he was on scientific trips, collecting materials for his dissertations – master's and then doctorate. Consulting with the eminent British scholar on the questions of English law, he had a deep respect for his encyclopedic knowledge and was fascinated by F.W. Maitland's simplicity in communication and friendly attitude. Paying last respects to the Cambridge Professor, A.N. Savin wrote: "An abyss separated him from me. But he completely free adapted to my level, and I immediately felt at ease with him though I'm not at all alien "the pathos of distance". … If even short and rare meetings with him cut into the mind, then of course happy were the people who fell to the lot to work for a long time under the guidance of such a teacher" [17, p. 92-93].

So, the decisive role of P.G. Vinogradoff at the early stage of choosing a life path by F.W. Maitland is evidenced by his letters to the Moscow Professor and by the historiographical research. The contacts of F.W. Maitland and "the Russian Englishmen" help to reconstruct the atmosphere of genuine scientific cooperation, intellectual intimacy and friendly participation of the historians. Their personal memory give grounds for asserting that F.W. Maitland considered himself a disciple of P.G. Vinogradoff and A.N. Savin – a disciple of F.W. Maitland.

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MUSIC PEDAGOGY OF ANCIENT RUSSIA

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Abstract. The traditions of the training of church singers were formed in ancient Russia in the 11th century. They can be judged from the materials of manuscripts, starting from the 15th century - on the basis of musical-theoretical guides actively developing until the end of the 17th century. They reflected in various forms the singing material and pedagogical techniques that were used in the training of performers.

Keywords: Church singing, sign, notation, leadership.

The problems of teaching the performance of folklore and professional musical works arise simultaneously with the performance itself. Reproduction of a musical text necessitates a preliminary acquaintance with it, the ability to sound it according to a heard pattern (as an imitation) or by recording, which requires musical abilities and preparation. This fully applies to Russian church singing, the origins of the performing traditions of which date back to the end of the 11th century. Currently, they can only be judged by the organization of the material in the singing manuscripts of that period. Guides on singing appeared in Russia only in the 15th century, on their basis we can make an assumption about the principles of learning at that time. The gradual formation of guidelines, the emergence of new types at each stage, allows us to trace the paths along which the development of Old Russian liturgical singing took place, and to judge the teaching methods that were used in church practice.

The old Russian musical manuscripts preserved only one, recorded in writing, way of learning chants recorded in a znamenny ("sign") notation - singing according to the pattern. The unique manuscript of the end of the 11th century. The Typographical Charter [8] contains a peculiar educational document “Podobnitsy”, in which chants-podobny are written [2]. They served as musical models for the performance of many hymnographic texts.

Most of the old Russian chants were characterized by a simple musical chant of a lowercase structure, where the lines included 6-14 notes. Relatively stable in the lines were the beginnings and cadences, variational - the middle. Therefore, the study of stable cadence and initial constructions, as well as the assimilation of the principles of mid-variation provided the possibility of creating many musical lines in the conditions of their combination. The action of similar models was based on this: they set the rules for chanting texts, denoting constant (beginnings and cadences) and variable (middle) sections of lines. The number and order of lines was arbitrary. The knowledge of a relatively small number of samples made it possible to perform many chants with singing that was not repeated in general. Thus, singing on like was the most important form of teaching and chanting.

Another method of teaching performance was practical, when the singing was formed by the master as an imitation of him [5; 6; 7]. In this case, novice singers memorized the chant of signs, listening to the performance of experienced singers and following the musical text. Since the repertoire of liturgical singing was estimated in thousands of texts, it was theoretically and practically impossible to master it outside the ability to sing by znamens. The fact that learning to sing was not only "by ear", but also by notes, was confirmed by the first surviving musical and theoretical manuals of the 15th century: *alphabet-recitation* [3, p. 25-67]. They open the necessary level of requirements for the student, who was supposed to know the styles and names of the main znamens, as well as melodic formulas - fit and sing. Apparently, their learning was carried out in the process of naming and singing znamens and formulas after the teacher.

In the first half of the 16th century, a new type of musical-theoretical leadership appeared - the *alphabet-interpretation* [3, p. 48-111], which performed the task of not only showing the shapes and names of znamen, but also explaining their performance. Text comments contained information on the number of steps in the chant of a sign, the direction of movement of the chant, pitch, ratio with other znamen, etc. The presentation of the material no longer required the indispensable participation of the teacher, the instructions could be read and understood by the singers on their own. The most important part of the alphabet interpretations was the introduction of information on the melodic features of individual voices within the framework of the eight-voice modal system of liturgical singing ("osmoglasiya").

The next stage in the development of the theory and practice of teaching is associated with the creation in 1604 of the musical-theoretical code

"The Znamennoy Key" of the monk Kirillo-Belozersky Monastery of Christopher [9]. He, on the one hand, summarizes the practical achievements in the development of znamen singing of the 16th century, on the other hand, demonstrates various methods in teaching those aspects of singing that became relevant by the beginning of the 17th century. These include a new good notation and a good chant, as well as a multiply expanded repertoire of melodic formulas (chant and fit).

The explanation of good notation occurs with the help of znamen notation, which in "The Znamennoy Key" appears in a new pedagogical function, where its task is to explain the peculiarities of good melodics and notations, that is, to discover new things through well-known. In "The Znamennoy Key," based on the znamen manuals, a comprehensible alphabet-enumeration and a collection well tunings are compiled, which are compared with znamen tunes. Thus, in terms of traditional, familiar concepts - visual representation and comparison with the usual - there is a theoretical explanation of the new material.

"The Znamennoy Key" shows the way to the forefront of the beginning of the 17th century of the principle of singing according to melodic formulas (songs and feats). Therefore, the monk Christopher, for the first time in the ancient Russian theory of music, affirms a new kind of leadership - a *kokiznik* (collection of chants) and a *fitnik* (collection of fit). Both terms ("kokiznik" and "fitnik"), fixed in manuscripts and established in the theory of ancient Russian music, are based on genuine ancient Russian names. The task of the monk Christopher in this case was to gather together the singing and fit chants formed by the beginning of the 17th century, arranging them mainly in the order necessary for use in singing at worship. As a result, collections of melodic formulas formed a kind of *anthology*, called to be an additional reference in the practice of singing.

One of the new directions in the development of theoretical and pedagogical thought of the 17th century after The Znamennoy Key was the explanation of the system of "cinnabar litters" (red letters). Appearing for the first time next to the znamen in musical manuscripts at the turn of the 16-17th centuries, they went through several stages in their development, which was reflected in musical-theoretical manuals. In the middle of the 17th century an anonymous "Decree on soles" was created, setting out a system of cinnabar litters by the famous Novgorod singer John Shaidur [4]. When formulating the theoretical material in the "Decree on Soles," traditional pedagogical techniques are used: an explanation of the litter is given, accompanied by musical examples. For the first time in practice, a zonal (musical) scale is organized here that organizes all liturgical

chants. It is proposed to learn the scale using the example of a specially composed singing line, a kind of *educational sample*, in the upward and downward directions. Thus, the training system relies not only on singing material, but also on specifically educational material.

The highest achievement of musical theoretical thought was the “Notification” by Alexander Mezenets [1]. Created in the last third of the 17th century, this treatise pursued several important goals dictated by the main one, namely, the need to correct notated books. By this time in singing, the main performing problems were sharply identified, concerning, firstly, the text, which had to be returned to the framework of the "true speech", that is, the correct pronunciation; secondly, the chant, which lost unity and sounded differently in each monastery. If the first problem was solved as a whole only by rewriting the texts with the elimination of unnecessary letters and syllables, then editing the tunes was very difficult. Of the many existing chants, one should choose those that belonged to the most respected masters or singing schools, and consolidate them in the practice of singing.

To solve these problems, in addition to other important innovations, the following was done: 1. The alphabet-listing of znamen with "returned" to them the original musical content, classified by the type of melodic movement (single-stage, two-stage, descending, ascending, etc.) was approved; 2. The principles of performing the songs, melodic-rhythmic subtleties of intonation are explained; 3. The principle of rhythmic correlation of znamen was first introduced; 4. shows examples of the work that each singer had to be able to do independently when singing on uncorrected music books. Thus, in the “Notification” by Alexander Mezenets, this educational area, along with many others, involves the following types of work: presentation of the main elements (individual characters) and their typology, analysis of musical material, independent work of students. In addition, the “Notification” was created at a time when a new five-line notation began to gradually supplant the notational one. Alexander Mezenets and his colleagues had a very serious task: to defend the rights of Russian notation, to prove its viability and effectiveness before the threat of the transition of singing to European notation. Of course, there is no fault of the scientist that this plan was not realized.

Thus, a brief overview of the methods of organizing the material in famous books and musical-theoretical manuals shows that over the centuries, ancient Russian singing art has developed the main teaching methods, which in many respects coincide with general pedagogical principles. It is important that a number of provisions proposed by theorists of the past are preserved in the current system of training musicians.

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ALGORITHM OF DUPLEX ULTRASOUND OF VASCULAR ACCESS FOR HEMODIALYSIS

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Abstract

Purpose of the study. To design the algorithm of vascular access for hemodialysis ultrasound examination.

Materials and methods. Duplex ultrasound was performed in 54 patients before vascular access creation and in 146 patients with functioning access. Inflow artery, anastomosis, outflow vein ware evaluated, vessels diameters, peak systolic velocity and access flow were measured.

Results. In 9.3% of patients forearm vessels of non-dominant arm were unsuitable for vascular access creation, that caused access formation on dominant arm, in 13.0% proximal fistula was created. Anastomosis diameter of failing to mature fistulas was 2.2±0.3 mm. Adequate access functioning was observed in fistulas with access flow of 600–1500 ml/min and 800–1700 ml/min in grafts. Complications were detected in 43.8% of patients, stenosis in 19.9%, outflow vein thrombosis in 13.0%, aneurysmal dilation in 8.2%, hand ischemia in 2.7%.

Discussion. Artery with a diameter more than 2.0 mm and vein at least 2.5 mm with its depth of no more than 5-6 mm suit for creating vascular access. Minimal access flow that can provide effective hemodialysis is 350-400 ml/min, optimal – greater than 600 ml/min in fistula and 800 ml/min in graft. Criteria for stenosis are peak systolic velocity in the stenotic zone more than 400 cm/s, the ratio of peak systolic velocity in the pre-stenotic and post-stenotic zones more than 2.0 and the access flow decrease. Causes of steal syndrome are inflow artery stenosis, excessive access flow due to big anastomosis diameter and pathology of hand microcirculation.

Conclusion. As a result of the study the algorithm for duplex ultrasound of vascular access for hemodialysis was designed.

Keywords: arteriovenous fistula, hemodialysis, duplex ultrasound, stenosis, thrombosis, hand ischemia.

Purpose of the study – to design the algorithm of vascular access for hemodialysis ultrasound examination based on the study of hemodynamic parameters.

Materials and methods. DU was performed in 54 patients before access formation and in 146 patients with already formed vascular access for hemodialysis (134 AVF and 12 AVG) on a Vivid S9 ultrasound scanner with a linear 7-10 MHz transducer. Before the vascular access formation, the walls and lumen of the subclavian, axillary, brachial, radial and ulnar arteries were studied, starting with a non-working arm, zones of stenosis and occlusion were revealed. The vessels diameter, the speed indicators of blood flow and the indices of peripheral resistance were determined. To reduce the likelihood of vasospasm, DU was performed in a warm room using a warm gel. Attention was paid to the presence of concentric calcification zones of the arteries walls, in which subsequently it would be impossible to dilate them to provide the necessary access flow, which can cause primary insufficiency and access dysfunction. The protocol reflected the individual anatomical features of the patient's vessels, such as a high division of the brachial artery into the radial and ulnar (above the ulnar fossa, often in the axillary region), since this structural variant is associated with a greater risk of primary fistula failure [5, 9].

We investigated the superficial and deep veins of the forearm and shoulder along the entire length to exclude zones of stenosis and thrombosis, measured the superficial veins diameters and depth. To improve visualization of the veins, a cuff was applied to the shoulder. DU was performed with minimal compression by the transducer to reduce the inaccuracy in measuring the vessels diameter. If the vessels of the non-working arm did not allow the access formation, then the vessels of the working extremity were examined.

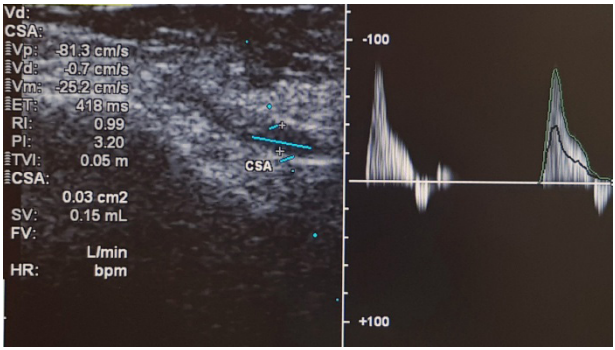
Results. Arteries and veins of the upper extremities at the preoperative stage were examined and access maturation was assessed in 54 patients. The best place to create access is the forearm of a non-working hand, since the patient can minimally use an extremity with a fistula, and the vascular resource is preserved for the new access formation on the arm in case of the first access dysfunction [5]. Therefore, ultrasound should begin with an assessment of the vessels on the non-working arm.

For the fistula formation, a vein with a diameter of more than 2.3 mm at the level of the lower third of the forearm and 2.5 mm at the level of the upper and middle third of the forearm were considered suitable, and for the

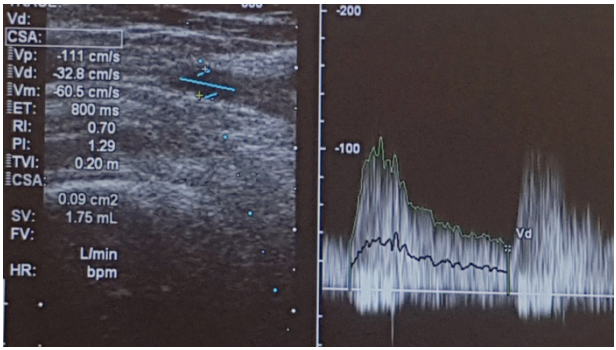
AVG creation - at least 4 mm with a depth of no more than 5-6 mm [3]. In 5 (9.3%) patients, the vessels of the forearm of the non-working extremity were unsuitable for access formation, which led to the fistula formation on the forearm of the working extremity. In 7 (13.0%) of patients, a proximal (brachial) fistula was formed due to the vessels diameter on the forearms, in which maturation and functioning of AVF is impossible. In 3 (5.6%) patients, AVF between the cephalic vein and the radial artery on the forearm, suitable for access creation, did not achieve successful maturation as a result of the small anastomosis diameter and the specificities of central hemodynamics.

To predict the maturation efficiency of the future AVF, a hand squeeze-unclench test was performed for 2 minutes. Normally, due to a decrease in the tone of resistive vessels in response to physical exertion, the three-phase spectrum of blood flow in the artery becomes two- or monophasic (Fig. 1). If at the end of the test the arterial resistance index exceeds 0.7, the probability of developing primary fistula failure reaches 95% [9]. In our study, the value of the resistance index after the test in most of the examined patients averaged 0.63 ± 0.12. In 3 (5.6%) patients with type 2 diabetes mellitus, the resistance index in the radial artery was higher than 0.7, which indicated that the artery was not suitable for the anastomosis formation.

Normally, the vein walls are thin, the lumen is anechoic, the vein is completely compressed during compression by the transducer, blood flow is synchronized with respiration [4, 10]. In the preoperative assessment of the vessels topography, attention should be paid to the detection of large vein inflows with a view to their timely ligation, since they can divert a significant part of the blood and prevent the maturation of AVF [5, 6]. If the cephalic vein did not meet the criteria, we proceeded to study the basilic vein. If it was necessary to form a loop AVG on the arm, axillary artery and vein were evaluated.



1a



1b

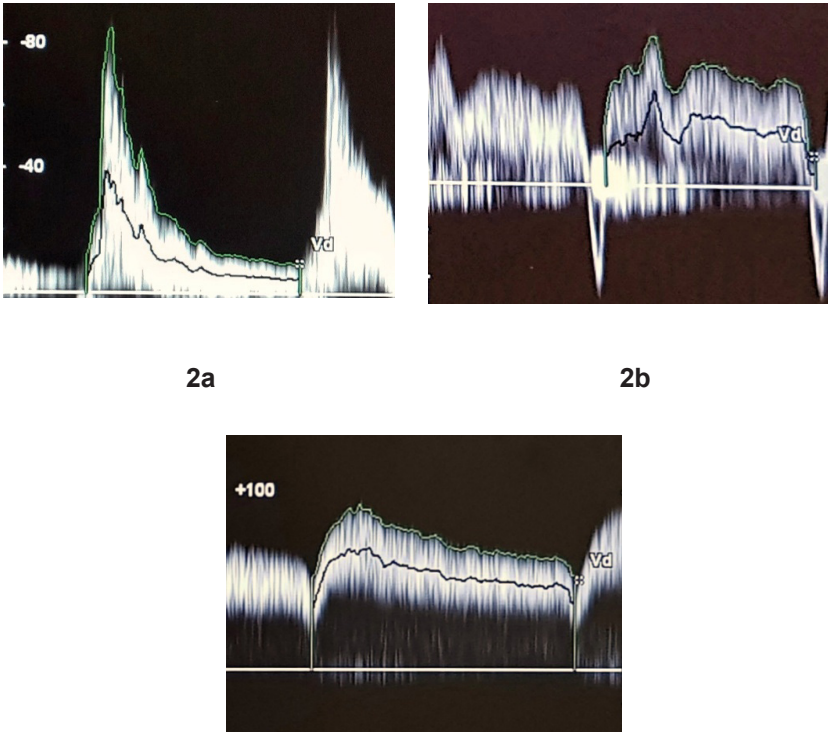
Fig. 1. Ultrasound, longitudinal scanning. Sonogram of the radial artery in pulse wave Doppler mode. Blood flow in the radial artery at rest (a) and after exercise (b).

In addition to evaluating the veins of the arm and forearm, an examination of the subclavian and internal jugular veins was made to exclude stenosis and thrombosis, which can occur as a result of previous vein catheterization [2, 12]. One of the signs of venous thrombosis is the monophasic spectrum of blood flow that is not synchronized with the cardiac cycle and respiration [5, 11]. Timely diagnosis of proximal venous stenosis at the preoperative stage is of particular importance to reduce the risk of vascular access dysfunction.

In case of formed access DU, fistula maturation was evaluated and complications of its functioning were identified. The examination was per-

formed 1, 3, 6 and 12 months after surgery. Access flow was determined three times in areas with laminar blood flow with the subsequent calculation of the arithmetic mean value to reduce the measurement error. On average, the access flow in the fistula after 1 month after the operation was 304 ± 51.3 ml/min, after 3 months - 487 ± 74.2 ml/min, after 6 months - 622 ± 102.8 ml/min. Our study showed that the access flow value of 600–1500 ml/min in the native fistula and 800–1700 ml/min in the prosthesis is optimal. The size of anastomosis plays a huge role in the maturation of AVFs and an increase in access flow. The diameter of the anastomosis that did not achieve successful maturation (5.6%, 3 patients) averaged 2.2 ± 0.3 mm.

The diameter of the outflow vein also gradually increases. AVF was considered suitable for adequate hemodialysis with a vein diameter of at least 5 mm, a depth of not more than 5-6 mm and an access flow above 350-400 ml/min. The anastomosis diameter affects the blood flow in the artery distal to the anastomosis. With a small size of the anastomosis, the blood flow in the artery distal to the anastomosis is antegrade, as the size of the anastomosis increases, the blood flow becomes bidirectional (antegrade in systole and retrograde in diastole). With a large anastomosis, the blood flow completely changes direction to retrograde. In the case of retrograde blood flow in the radial artery distal to the anastomosis, blood flow is carried out along the ulnar artery through the arterial palmar arch to the fistula vein. The volume of blood entering the AVF from the distal part of the radial artery can reach 20–30%. In this case, the blood flow in the ulnar, anterior interosseous arteries and collateral branches on the forearm is normal to compensate for the deficiency of blood supply to the hand [1, 7, 8]. In 92 (63.0%) patients with vascular access, retrograde blood flow was detected in the artery distal to the anastomosis, and 24 (16.4%) showed bidirectional blood flow (Fig. 2). The retrograde blood flow was significantly different (from 12 ml/min to 650 ml/min) and averaged 148.7 ± 94.3 ml/min, therefore, the ulnar, anterior interosseous arteries and collateral branches were the sources of blood supply to the hand.



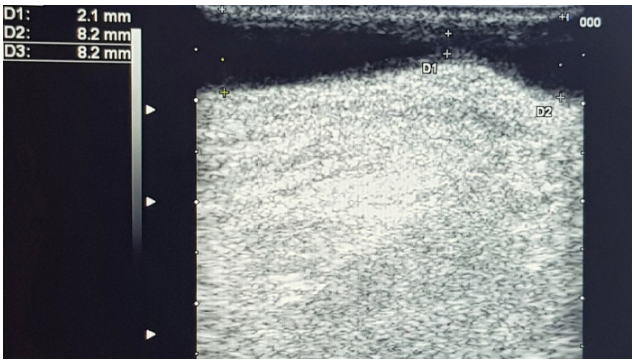
2a **2b**

2c

Fig. 2. Ultrasound. Sonogram of artery distal to the anastomotic zone in the pulse wave Doppler mode: antegrade (a), bidirectional (b) and retrograde (c) blood flow

Complications were identified in 64 (43.8%) patients. The most common complication was outflow vein stenosis (17.1%, 25 people). Stenosis of the anastomotic zone and the inflow artery were diagnosed in 2 (1.4%) patients in each case. The stenosis zone was detected in B-mode as a area of narrowing of the arterial lumen by more than 50%, the diameter of

the free lumen in the area of significant (70–90%) stenosis averaged 1.5 ± 0.4 mm. Blood flow indices were determined at the site of stenosis, in the pre-stenotic and post-stenotic areas, and the ratio of peak systolic velocities in the stenosis zone and in the proximal, distal areas, respectively, was calculated. Peak systolic velocity in the area of significant stenosis of the outflow vein averaged 451.6 ± 53.5 cm/s, in the proximal section - 109 ± 32.4 cm/s. In the inflow artery and distal to the stenosis zone, a decrease in access flow to 150–350 ml/min was noted (Fig. 3). For anastomosis stenosis, the ratio of peak systolic velocities in the stenosis and in the pre-stenotic section was considered equal to 4:1 or more, and an increase in the peak systolic velocity in the anastomosis of more than 400-500 cm/s was taken into account.



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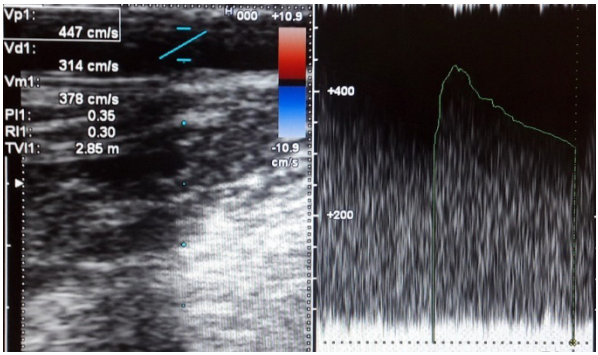

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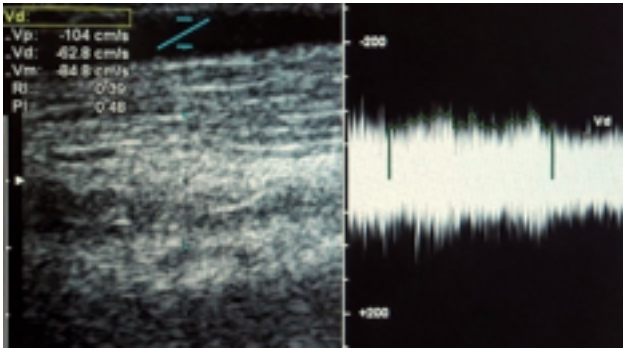

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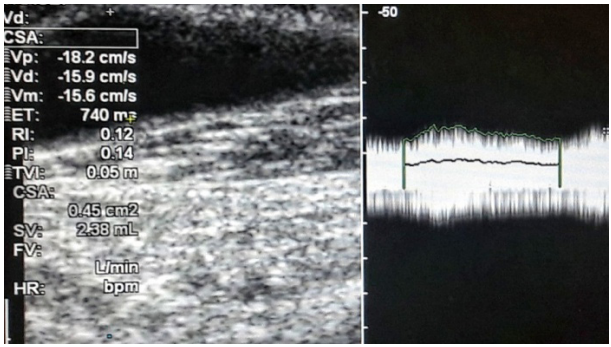

3d

Fig. 3. Ultrasound, longitudinal scanning. Sonogram of the outflow vein: a - stenotic area in B-mode (vein lumen is 2,1 mm), b - velocity in the stenotic area (peak systolic velocity is 447 cm/s), c - velocity in proximal to the narrowing area (peak systolic velocity is 104 cm/s), d – access flow in the outflow vein distal to the stenotic zone (238 ml/min).

In 7 (4.8%) patients with stenosis of the outflow vein, its non-occlusive thrombosis was revealed. Among all patients, non-occlusive vein thrombosis was found in 15 (10.3%) cases, and occlusive - in 4 (2.7%). In addition to visualization of thrombotic masses in the lumen of the vessel, the ultrasonic criteria of AVF thrombosis included the lack of compressibility of the vein during compression by the transducer and non-synchronized with respiration flow. One of the causes of thrombosis is the turbulent blood flow, which

occurs during dilatation of a vein [6, 8]. In our study, aneurysmal dilation of the vein was detected in 12 (9.0%) patients with AVF, of which thrombosis occurred in a third (4 people).

Another complication of the AVF functioning is hand ischemia. Steel syndrome was detected in 4 (2.7%) patients when clinical manifestations of the syndrome (pain, paresthesia, cyanosis and trophic disorders of the fingers skin) were encountered. In half the cases, they were observed in patients with increased access flow (2.3 l/min and 2.8 l/min), and in 2 patients with average access flow values (0.93 l/min and 1.2 l/min) . There were no statistically significant differences in the diameters of the anastomosis and outflow vein in patients with and without steal syndrome. The causes of the steal syndrome were changes in the radial artery against the background of diabetes mellitus and atherosclerosis, which makes it impossible to increase blood flow in the forearm arteries; excessive blood shunting through the anastomosis as a result of its large diameter, leading to significant dilatation of the vein and an increase in access flow; as well as pathology of the microvasculature of the hand and disorder of the resistive vessels regulation mechanisms. Such anatomical characteristics of palmar arches as an incomplete version of their structure predispose to the development of the steal syndrome.

A physical exercise test was performed (clenching-unclenching of the hand into a fist) to assess the compensatory mechanisms of blood flow autoregulation in the hand. During the physical exercise test, the access flow index in 45 (30.8%) of the examined patients increased by 53.8 ± 8.3% less compared to the contralateral arm, which indicates a sharp decrease in the resistive vessels tone and the level of peripheral resistance. This compensatory mechanism contributes to an increase in blood flow into the microvasculature of the hand and is an important mechanism for the hand adaptation to hypoperfusion. There was no reaction to physical exertion in the case of stealing the hand, which indicates a breakdown of the compensatory mechanisms of blood flow autoregulation in the hand. Important to compensate for blood flow in the hand is an increase in blood flow through the ulnar (access flow was 269.5 ± 70.5 ml/min) and the anterior interosseous (access flow is 75.3 ± 26.9 ml/min) arteries, as well as numerous collateral branches on the forearm.

Conclusion. Thus, as a result of the study, the algorithm of vascular access for hemodialysis DU was designed, which includes an assessment of: the inflow artery; anastomosis area of the artery and outflow vein; outflow vein; veins on the arm and forearm that are not used in the AVF formation; ipsilateral subclavian and internal jugular veins; arteries distal to the anastomosis zone.

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SICAM-1 AND SVCAM-1 IN CHILDREN WITH TYPICAL HEMOLYTIC UREMIC SYNDROME

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Abstract. Serum concentrations of soluble adhesion molecules sICAM-1 and sVCAM-1 were determined in children with typical hemolytic uremic syndrome (tHUS) and in children with a history of tHUS. Correlations of these markers with a number of laboratory characteristics of thrombotic microangiopathy activity, inflammation and severety of renal injury were assessed. The results showed that serum concentrations of sICAM-1 are lower and sVCAM-1 are higher in children with acute tHUS than in children with a history of tHUS. But the prognostic value of these markers still remains unclear.

Keywords: hemolytic-uremic syndrome, adhesion molecules, sICAM-1, sVCAM-1

Introduction

Typical (diarrhea-associated) HUS (tHUS) is an acute non-relapsing disease from the group of thrombotic microangiopathies that occurs against the background of intestinal infection (often hemocolitis) and manifests itself in a triad of symptoms: anemia, thrombocytopenia, acute renal failure. The disease most often affects children aged 6 months to 5 years, the incidence in the Moscow region is 5-6: 100,000 children per year [1]. The main role in the development of tHUS belongs to Shiga-toxin , the source of which is Shiga-toxin-producing strains of E. coli . The pathogenesis of tHUS is associated with damage to the capillary endothelium by Shiga-toxin, secondary complement activation, the development of partial or complete occlusion of the microvasculature of the target organs (primarily the kidneys) by thrombs, and, as a result, the occurrence of acute renal failure, platelet consumption (with the development of thrombocytopenia) and with mechanical damage to red blood cells (with the development of microangiopathic hemolytic anemia) [4]. tHUS) is the leading cause of acute kidney injury in childhood [6]. Due to the success of modern medicine, mortality in

this disease has decreased to 2.9-5% [2,6], but the long-term prognosis is quite serious: 25-30% of patients develop chronic kidney disease and arterial hypertension over time [5].Endothelial activation followed by disfunction plays a very important role in the pathogenesis of tHUS [3]. Hense, adhesion molecules as biomarkers of endothelial activation may be useful for assessment of risk of complications and poor outcomes [3,7].

Patients and methods

We examined 17 children in the active stage of TSU (9 boys, 8 girls) on 2^{nd}-4^{th} day after onset of tHUS . The criteria for inclusion in the study were the presence of a HUS triad (anemia <100 g / l with negative anti-erythrocyte autoantibodies and LDH levels above two norms, thrombocytopenia <150 * 109 / l, acute renal damage - creatinine level above normal for a given age), developed after prodromal period of acute intestinal infection with hemocolitis. The study did not include children with other causes of acute renal damage (severe forms of glomerular kidney disease, primary and secondary acute pyelonephritis, multiple organ failure syndrome against sepsis), as well as children in whom the HUS triad developed without acute enterocolitis in the prodrome of the disease. 3 patients with acute tHUS had oliguria, 14 were anuric. 15 patients needed renal replacement therapy.The comparison group included 10 children (5 boys, 5 girls) who underwent tHUS in the period from 6 months to 5 years before the present survey.. All patients with the history o tHUS (control group) were apparently healthy, without any symptoms of intercurrent infections. The age of the patients in the main group and the comparison group was 6-128 months (median 33 months), and 20 - 78 months (median 42 months). Serum concentrations of soluble intracellular adhesion molecule-1 (sICAM-1) and vascular cell adhesion molecule (sVAM-1) were measured by enzyme-linked immunosorbent assay. Leucocyte and platelate counts, hemoglobin, creatinine, urea, LDH, C3 complement levels and estimated glomerular filtration rate were determined as well.

Results

Patients with acute tHUS had significantly lower sICAM levels and significantly higher sVCAM levels than children from control group (table 1).

Table 1. The content of soluble cell adhesion molecules in the serum of children with tHUS (median, Q25-Q75)

	Patients in the acute stage of tHUS (n=17)	Reconvalescents of tHUS (n=10)	p
sICAM, pg/ml*	285 (227-297)	335 (308-408)	0,003
sVCAM, pg/ml*	705 (505-1230)	355 (325-450)	0,003

*p<0,05

Attention was drawn to the large scatter in the serum concentration of sVCAM in children in the active stage of tHUS: from 360 to 5200 pg / ml. It can be assumed that a higher concentration of sVCAM is associated with more pronounced endothelial damage in the active stage of tHUS and, therefore, with a more severe course of the disease. However, when comparing baseline laboratory parameters and indicators of disease severity (duration of anuria, dialysis and hospitalization, timing of normalization of platelet and LDH levels, azotemia at the time of discharge) in children with sVCAM values close to normal (<705 pg / ml, n = 8) and with increased values (≥705 pg / ml, n = 9), no significant differences were obtained (table 2).

Table 2. Initial laboratory parameters in children in the active stage of tGUS depending on the level of sVCAM (median, Q25-Q75)

Parameter	Children with normal levels of sVCAM (n=8)	Children with high levels of sVCAM, (n=9)	P*
sVCAM, пг/мл	482 (372-565)	1230 (1085-1825)	0,0005
sICAM, пг/мл	289 (212-296)	276 (239-309)	0,9
Age, months	18,5 (15-34)	35 (28-70)	0,03
Hemoglobin, g/l	69,5 (62,5-76,0)	76 (61-79)	0,8
Platelets,*10^9/л	67 (48,5-100)	61 (46-81)	0,3
LDH mg/ml	1021 (695-1073)	1002 (844-1155)	0,9
Leucocytes, *10^9/л	15,1 (13,1-19,5)	14,5 (11,7-18,6)	0,8
CRP, mg/ml	6,9 (2,1-43,7)	13,9 (3,2-32,1)	0,7
C3, mg/ml	69 (65-84)	76 (73-88)	0,5
Urea, mmol/l	23,1 (18,6-40,1)	29,5 (28,5-38,5)	0,3
Creatinin mcmol/l	278 (170-470)	483 (310-551)	0,15
EGFR, mg%	8,0 (6,0-15,0)	10,5 (6,7-14,5)	0,6

*p U- Mann-Witney test

Conclusion

tHUS is a rare but severe disease with a fairly high risk of complications both in the early and in the long term. As a rule, in the early days it is difficult to predict the likelihood of an adverse course by the main clinical and laboratory parameters. At the same time, identifying predictors would make it possible to adjust patient management tactics. Based on the pathogenesis of tHUS, these candidates may be adhesion molecules and their soluble forms. The results of this study demonstrated that serum concentrations of sICAM-1 are lower and sVCAM-1 are higher in children with acute tHUS than in children with a history of tHUS. This pattern of altered adhesion molecules suggests that different endothelial regulation factors

are at play. Despite the fact that in the present study no reliable correlations between the level of sICAM, sVCAM and the severity of the disease were obtained, which may have been associated with a small number of patients, it is advisable to continue the study of these markers, as well as various cytokines with tHUS.

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ENVIRONMENTAL SUSTAINABILITY OF SOIL HUMIC SYSTEM

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Abstract. The paper deals with conception of environmental sustainability (ES) of the system of humic substances at example of main automorphic soil types of Western Siberia. The main problem in studies of ES consists in determination of its most informative criteria. Besides the bioclimatic indices, the characteristics of humus such as its total content, type of humus and degree of humification of organic matter were ascertained to be included into the number of obligatory criteria of ES. At the same time, some molecular characteristics of humic acids were also proposed in the study of their ES. The most representative data on ES are obtained at simultaneous study of virgin and arable soils.

Keywords: soil, humus, humic acids, humic system, environmental sustainability, anthropogenic impact

Introduction

The term “sustainability” appears for more than 30 years in numerous research publications, especially in environmentology. Since 1992 this term came to be considered actively in mass media when in Rio de Janeiro the United Nations Conference on Environment and Development was held. Its objective was to set a course for sustainable development around the world. That Conference on sustainable development was of global and historical significance, and since then it is held one time in every ten years and is aimed at reconciling the economic and environmental goals of the global community. The more simplified general idea of sustainability implies the capability of natural media to withstand human impact but in general the sustainability is a very broad topic. It can be associated with biological species, communities, ecosystems, landscapes or even separate natural compound as well as with farming on the whole. Even rather old review of world literature showed that nonsustainable long-term

farming was a result of considerable loss of soil organic matter (SOM) [1]. Therefore, the ecological sustainability of soil as a natural bioinert body depends on the nature and properties of organic and mineral constituents. Moreover, the losses of SOM depend on time of soil cultivation and size of soil granulometric fractions as well as on soil management [2-4]. In general, the loss of SOM is manifested by many changes of soil physical and chemical properties such as compactibility, friability, water-holding capacity, air and water infiltration, humus supply, soil quality and soil productivity as a whole [5], as well as cation exchange capacity (CEC) and even structure of basic groups of humus acids). The long-term experience of science and practice is evidence of simultaneous study of disturbed and undisturbed soil to understand the problem of ecological sustainability of SOM and its humic system in particular. Long-term studies are extremely beneficial to our understanding and evaluation of changes in SOM status and its sustainability in the course of management practices.

On sustainability of soil humus

As for sustainability of soil humus it was still mentioned to some degree in several classic papers of the past century, such as its chemical stability, resilience or its stable connection with soil mineral part [6 - 8]. At the same time, the topic “sustainability” is not a new one in general soil science as well. For example, soil buffering capacity can be considered as its resistive capacity to withstand change in pH of soil solution. One should point out that over the last 50-70 years the study of soil humus was greatly progressing. Nevertheless, the conception of humus ES is still uncertain and in general outskirts means the reaction of humus to human impact and its capability to be restored to relatively initial state. In this paper the special attention is paid to humic acids (HA) as one of the most chemically and ecologically stable part of SOM.

The term SOM is generally used to describe complex and multicomponent system of organic substances of the soil. This system mainly consists of plant, soil fauna and soil microbes’ residues at various stage of decomposition and newly formed substances of microbial synthesis. At present SOM is considered to include two parts a) specific (humic substances) and b) nonspecific (non-humic substances). This communication deals with humus (humic substance) sustainability. Soil humus (humic substances) is known to be as a very complex system of specific macromolecular, polydisperse heterogeneous and heterochronous substances such as humic acids (HA), fulvic acids (FA) and humins (HM). The accumulation of humus in soils, its nature and properties and the structure of all its constituents, especially those of specific, are closely related to the type of soil forming

conditions on the whole and to bioclimatic conditions first of all. In view of complex nature of humic substances their ecological sustainability (ES) or so-called sustainability of ecological development can be considered in various aspects. It is enough to give only two rather well-known examples of absolutely different kinds of humus sustainability: 1) SOM response to long-term soil use after ploughing and as result its essential decline in content and change of its properties and even nature of its constituents and 2) interaction of some humus compounds with different pollutants, detergents, pesticides, heavy metals as well as mineral fertilizers etc. [1].

It was convincingly noted the vital role of organic matter in the maintenance of sustainable farming as well as the fact that sustainable farming is not possible without sustainable soil. But soil cannot be sustained without satisfactory SOM [9]. At the same time, SOM is largely dependent on organic matter (OM) additions (organic fertilizers, straw, peat, biosolids, composts, biochar, oxidized lignin etc.) and their influence on physical, chemical and biological properties of soil [10, 11]. It has been shown that single large applications of organic amendments can accelerate initial reclamation and lead to self-sustaining soil productivity. Readily decomposable organic amendments may provide immediate, but transient, effects, whereas stable, less decomposable materials may provide longer-lasting effects. These facts allow us to arrive at the notion that application of traditional organic fertilizers and organic amendments is one of the principle ways in maintaining sustainability of SOM system.

Materials and methods

Western Siberia is an extensive area of the Globe that occupies the middle part of Russia. This area includes the largest in the world flat plain, i.e. the West Siberian lowland, and the mountainous system of the southern Siberia on its border. The tremendous area is extended from the west to the east more than 3000 km and from the north to the south more than 1500 km, it is characterized by diversity of natural conditions.

In the Western Siberia as in no other region of the world the latitudinal and vertical (in the mountains of the southern part) zonality of soil and plant cover is more clearly pronounced. Soil zonality is visually becomes apparent at the example of so-called soil row or transect stretched from tundra in the north to the dry steppes in the south. In this soil sequence as it is evidenced from review [12] one can observe gradual and regular change of all climatic indices and soil physical, chemical and biological properties.

The main automorphic soils of this transect have been chosen as an object of the study. It should be elucidated that according to the conception of Russian soil science, automorphic soils imply the soils formed under

the influence of atmospheric moisture only, groundwater table is relatively profound in these soils. Just because of this tundra soils are not included into research. On the other hand, these soils are used in agricultural practice very restrictedly, for example in local agriculture in the vicinities of towns and settlements appeared in connection with the development of oil and gas extraction in the north of the Western Siberia. The automorphic soils under study were sampled from humus-accumulative horizon A by generally and universally accepted method. The extraction of humic acids (HA) was proceeded by method described elsewhere [13] and accepted throughout Russia. One of the main and important SOM characteristics, e.i. humus composition, has been obtained by generally accepted method [14]. The soils under study cover practically all the latitudinal belts (zones) of the Western Siberia such as middle taiga (podzol soils), southern taiga (soddy podzolic soils), subtaiga (gray forest soils), forest steppe (podzolized and leached chernozems) and steppe (ordinary and southern chernozems as well as chestnut soils).

Results and discussion

It is well known that ploughing up of the virgin land and its following long-term use in agriculture is the most ancient soil human impact. In the course of long-term farming practice, the overall soil organic matter and its humus part (humic substances) in particular proved to be the most vulnerable, even at weak erosion processes [1]. At the same time, in natural biogeocenosis SOM is as a system of resilient organic compounds which is formed in course of peculiar natural selection [15]. Although, humus is more stable than the organic materials from which it is derived, humus is transitory in nature and will break down although very slowly [9]. In multicomponent mixture of organic material, the lightly decomposable compounds, such as proteins and carbohydrates, are transformed in the first instance, more sparingly soluble are fats; as for lignin it is known to be the most stable compound [16, 15]. It can be summarized that sparingly decomposable components serve as biothermodynamically resilient system of humic substances the sustainability of which is nevertheless reduced with time in disturbed arable soils. Therefore, it seems to be more obvious and reasonable to consider ES of humic substances simultaneously both in disturbed and undisturbed soils. Moreover, to some extent such study will also permit to assess comparatively the degree of soil disturbance, although more comprehensive and cardinal assessment can be received in studying ES of soil as a whole. Such studies seem to be necessary to elaborate measures on soil conservation and prevention of further loss of soil fertility.

One of the most difficult problem in the study of ES of humic substance system is the determination of its criteria, i.e. distinctive features of this system, its definition or even classification. Some records of this problem can be found in the monograph by R. Tate III [16]. Subsequently, we tried partly to assess ES of humus system of West Siberian soils [1, 17]. Different compounds of SOM proved to be distinctive not only by chemical nature but also by ES. As regards indices of ES of humic substances, three indices have been taken into account such as bioclimatic, humus state and some structural characteristics of HA. Bioclimatic indices imply a) period of biological activity (annual day number with positive temperature more than 10°C and stock of productive moisture 1-2%), b) mean annual temperature, c) moistening factor (precipitation/evaporation ratio). Humus state [13] means a) humus content (%), b) humus stock (ton per ha) in 1-m soil thickness, c) degree of humification of SOM (HA carbon percentage of total soil organic carbon), d) humate or fulvate type of humus (according to HA/FA carbon ratio), e) percentage of movable (free) HA of total HA content. Two indices of molecular characteristics of HS are included as well for description of ES, namely H/C ratio in HA molecules and degree of aromaticity of HA as defined by elemental analysis and modified Van-Krevelen formula. It should be added that HA have been preferred for consideration because they were earlier shown to be the most resilient forms of humic substances [16]. The proposed indices of ES and their values for ecologically sustainable humic systems of West-Siberian soils are given in Table. All necessary data for determination of bioclimatic and HA indices and their values have been used from available publications [1, 12] and summarized in Table.

Values of ES indices for humic substances

Values for ecologically weakly sustainable humic systems	Indices	Values for ecologically sustainable humic systems
a) Bioclimatic indices		
Less than 120 days per annum	Period of biological activity	More than 120 days per annum
Less than +0.5°C	Mean annual temperature	More than +0.5°C
More than 1.0	Moistening factor	Less than 1.0
b) Indices of humus state		
Less than 5	Humus content, %	More than 5
Less than 300	Humus stock (ton per ha) in 1-m soil thickness)	More than 300

Values for ecologically weakly sustainable humic systems	Indices	Values for ecologically sustainable humic systems
Less than 30	Degree of humification, %	More than 30
Less than 1.0	Humus type according to HA/FA carbon ratio	More than 1.0
More than 40	Content of movable (free) HA, % of total content of HA	Less than 40
c) Indices of molecular characteristics of HA		
More than 1.0	H/C ratio in HA molecule	Less than 1.0
Less than 30	Degree of aromaticity, %	More than 30

The above-mentioned indices are relative to a certain extent, but in its turn, they permit to subdivide soil humic systems into two groups 1) ecologically sustainable systems assessed by values given in the right column of the Table and 2) ecologically weakly sustainable systems which are respectively assessed by values given in the left column of the Table. Moreover, it is assumed that erosion processes are very weak or do not become apparent practically because as it is known, erosion-damaged soils of Western Siberia may lose up to half of humus stock [18, 1]. The delimitation of the groups under question takes place in the subtaiga. At this stage of the study the sharp criterion for ES of humic system is still not revealed. In order to reveal the most prominent criterion of ES of humic systems the forthcoming additional studies with new approaches should be performed. In general, it should be concluded that the soils and their humic systems formed under conditions of prolonged biological activity and elevated mean annual temperature as well as high humus supply with predominant HA should be characterized as being ecologically sustainable as compared to other ones. Some available data on humus composition are supposed to be used for relative estimation of ES of soil humic system. In this case soil transect is considered to be the most suitable model for comparative study of ES.

Conclusion. One of the possible approaches to the study of ES of overall humic system is under consideration in the proposed paper. While studying ES the main complication consists in determination of sustainability criterion. To obtain values for ecologically sustainable humic systems it is recommended to use the climatic, humus state as well as some indices of molecular characteristics of HA as being the most chemically stable compounds of SOM. As a rule, the comparative simultaneous study of virgin and arable soil analogues may result in more representative data.

The study was carried out according to the state assignment of SB RAS and sponsored by Ministry of Science and Higher Education of the Russian Federation.

The author is grateful to his colleagues for their many-sided help during carrying out this work.

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WATER RESOURCES OF TAJIKISTAN. « THE PEARL OF TAJIKISTAN IS THE GLACIER FEDCHENKO!»

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Annotation. In this article I want to continue my story about the Fedchenko glacier, where I spent several years of my life and scientific work. Participating in many international conferences in Russia, China, Germany and the near abroad, the invariable theme of the speech was Fedchenko glacier, which I call "The Pearl of Tajikistan!". Back in the thirties of the last century, scientists considered that the construction of a stationary facility in the center of the glacier would allow obtaining unique scientific material. The constructed meteorological station has already turned more than 80 years old, but since 1994, the weather station is on conservation. All scientific work is stopped. I think the material, which will be discussed in this article, and now remains relevant.

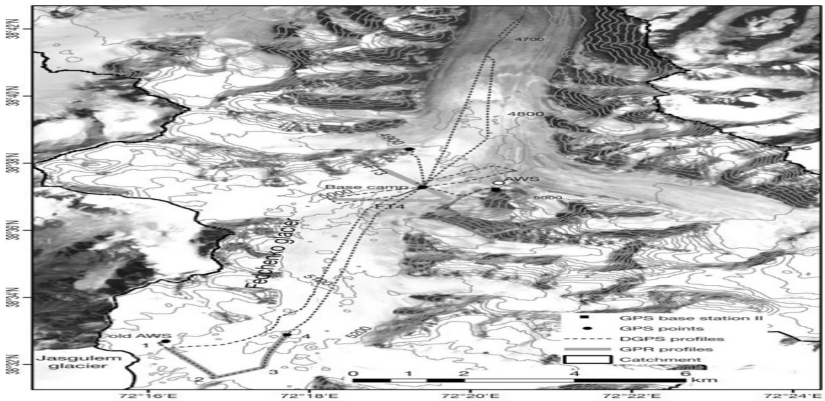
Keywords: global warming, snow cover, degradation of the glacier, aerosols, rare earth elements, sum of precipitation, measurement of snow cover, excessive humidity, microclimate.

From historical documents, we know that during the Pleistocene the Muksu glacier reached a length of 172 km and it came very close to the Kyzylsu river. The width of the glacier near the frontal part reached 4 km, in the middle of its current - 5 km, and in the upper part of the snowy valley it reached 6 km. Today the length of this glacier now named Fedchenko exceeds just over 77 km and practically reaches the Muksu River. It was

noted that during the periods of its activity in the late 30s of the last century, the Fedchenko glacier often blocked the riverbed of the Muksu River. It was noted that during the periods of its activity in the late 30s of the last century, the Fedchenko glacier often blocked the riverbed of the Muksu River. In my previous article, I tried to talk about the new activation of the glaciers of the present century in the Fedchenko glacier basin. On the example of a large glacier Bivachny, which has been in the active regression stage for the last 8 years to the present day. And also numerous small nameless glaciers show their activity and connection with the main plateau of the glacier. But the general estimate for the Fedchenko glacier is of course with a minus estimate. Annual total precipitation and snow cover does not make up for its general melting. He has changed a lot and his pure ice is not now such. The causes of the glacier glaciation degradation are the ongoing global warming and the increase in glacier pollution, which increases the intensity of melting. The reason for the contamination of the glacier recently called circulation in the atmosphere. The aerosols contained in it, as a rule, fall mainly with precipitation, but often settle in a dry state. The ongoing synoptic processes only intensify this process of pollution. The frequency of atmospheric phenomena on the Fedchenko glacier is almost insignificantly dependent on the passage of air masses around it and the formation of a cyclone with subsequent precipitation is all due to the local microclimate. I will give an example from the records of the diary of my first wintering in 1984: « December … morning and afternoon wind of 6-10 m / s, temperature minus ten degrees, dry snow does not stop for 13 consecutive days. In the evening, at 20.00 local time, the wind increased to 20-25m/s. His impulses reached 38-45 m / s, knocking hard on the metal case of the station. At the station, a 30-meter antenna strip broke off and to restore it we leave in a bundle of threesome. We were wrapped in one nylon halo and kept on a leash. Perform simultaneous movements at the beginning of the right foot, and then left sticking with one hand the body of the station, and the second ahead of the going - it was like a dance of "white swans." Raised three legs - three valenoks hung in the air and did not want to obey. A strong wind with snow was blowing into my face and I had to open my eyes slightly in order to find pieces of ragged antenna cloth under the light of the beam from the flashlight. For half an hour the three of us stood in an open area blown with a terrible wind and held a ragged antenna bed while the radiotelegraph operator on duty rattled the weather telegram with Morse signs. Going to the station was even more difficult, because you had to do the same movements, but only in reverse. We held fast to the wind to knock us out into the night abyss. Already sit-

ting at the station and warming their noses, vigorously discussed what had happened. Meanwhile, a device for measuring wind speed recorded a maximum burst of 48 m/s. It was morning, a little cloudiness and finally the snow, which lasted fourteen days without a break, ended. All the winterers went to repair the damage …».

In 2015, during the "3rd International Pamir Geophysical Expedition" on the Fedchenko glacier, German scientists from the Bavarian Glaciology Center dealt with atmospheric aerosols and contamination of snow and ice cover. Having completed the work on diagnostics of the transverse and longitudinal profiles in the upper glacier with the help of passive radar, they started to work on the sampling of snow and ice. In the beginning, samples of snow were taken to the depth of annual precipitation, and then an ice sample was taken. All samples of snow were packed in special plastic containers, on which the depth marking was placed. Getting a sample of ice was a little more complicated. Here we had to use a special screw drill for ice. In total, for the analysis of the snow cover samples of a 3 m snow cover were taken and a two-meter ice sample was drilled.



* Scheme of transverse and longitudinal sounding of the ice plateau at an altitude of 4700-5400 meters

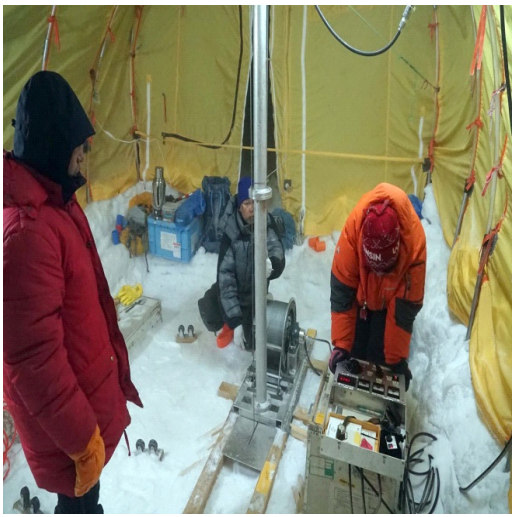
Only five meters of painstakingly collected samples at an altitude of 5,400 meters above sea level. German scientists conducted not only an analysis of the snow and ice samples taken on the Fedchenko glacier, but also compared them with research data from different points of the Earth.

		Al ng g^{-1}	S ng g^{-1}	Ca ng g^{-1}	Ti pg g^{-1}	V pg g^{-1}	Cr pg g^{-1}	Mn pg g^{-1}	Fe ng g^{-1}	Co pg g^{-1}	As pg g^{-1}	Sr pg g^{-1}	Cd pg g^{-1}	Sb pg g^{-1}	Cs pg g^{-1}	Ba pg g^{-1}	Tl pg g^{-1}	Pb pg g^{-1}	Bi pg g^{-1}	U pg g^{-1}
Pamirs, Fedchenko	Ave	46	60	262	1402	137	146	4199	48	60	119	951	12	11	12	817	2	461	3	7,4
	Mid	100	132	810	3356	345	301	10 599	121	146	254	1814	56	29	25	1958	3,1	1004	7	12.5
Abramova (h)[4]	Ave			50																
Tien Shan (a)	Mid	1007	246	5192					485											
Altai (l)	Ave	12				80		1820	5.8	10	340	2120	210			1200		1470		
European Alps (g, j)[6]	Mid													31						
East European Alps (j)[6]	Mid													11						
Pamirs, Fedchenko	Max	424	750	3171	15 171	1735	1455	55 965	478	672	1045	11 550	375	115	113	8790	15	4543	27	57
	High	260	544	2031	10 628	892	750	25 419	343	370	671	5279	184	79	70	5212	8,1	2682	18	33
Tien Shan (a)	High	5478	264	33 398					2306											
Altai (l)	Max	147				350		5530	50	100	1900	11 810	3830			3450		7360		
Altai (e)[5]	Max							5900					100			5400		3000		5
Alps (g, j)	Max							16 000								6300		3100		38
East Alps (j)	Max													6200				38		
Mont Blanc (j)[6]	Max													109						
Greenland (g, i)	Max							236						4.4				90		
Arctic (k)[6]	Max													108						
Antarctica (f)[6]	Max							20								6.1		10		0.21
Pamirs, Fedchenko	Min	2	4	3	95	9	12	81	3	5	8	27	1	1	1	29	0	26	0 2	0.3
	Low	24	39	140	644	73	72	1820	22	28	64	497	7	7	6	418	1.2	183		3.5
Tien Shan (a)	Low	421	221	2896					224											
Altai (l)	Min	1.5				30		300	1	10	60	65	53			79		108		
Altai (e)	Min							1800					20			810		480		2
Alps (g, j)	Min							95								365		65		0.7
East Alps (j)	Min													1.7				0.7		
Mont Blanc (j)	Min													0.2						
Greenland (g, i)	Min							21						0.2				14		
Arctic	Min													0.5						
Antarctica (f)	Min							0.6								5		0.3		0.01

Now, looking at the result of the research, I want to become a football fan of our local team and shout: "Pamir is Champion!" - although there is little joy in this, as these data point to big problems in the field of clean drinking water from a clean ecological area. This is one of the tables of a large material for specialists, which shows how polluted the upper snow cover, and the upper layer of ice in the highland part of the Fedchenko glacier.

This area was considered "snow-white snows" and "crystal ice", but atmospheric aerosols and rare earth elements have long received a residence permit in the highland part of the Pamirs.

The main stage for the study of ice in the Pamirs was to pass in 2016. To carry out the necessary work, Japanese specialists with a drilling rig should arrive. Let me remind you that German scientists have chosen, one might say, an ideal place with an ice depth of 800 meters. The third attempt at an official study of the Glaciation Center in the Republic of Tajikistan within the framework of the "3rd International Pamir Geophysical Expedition" did not take place. The task, which according to the work plan of the expedition was facing international experts in 2016 on the Fedchenko glacier, was urgently rescheduled. International scientists and special equipment stood idle at the border. There was little time left for the work, and scientists had to urgently decide on the second stage of the drilling of ice. Now it is no secret that the second year of the international expedition took place on the territory of the Kyrgyz Republic on a glacier adjacent to Lenin Peak (7134 m), at an altitude of 5600 meters above sea level. Time to probe the thickness of the ice was not and the ideal place for drilling had to be looked for "blindly".



*** Japanese specialists and drilling equipment**

*** Drill pipe**

Two attempts to drill did not give the proper result. Ice drill reached the mark of 30 meters and rested against the rock. The mood of all specialists was on the verge of collapse, to this added worsening weather in the highlands. Japanese experts, headed by the head of the expedition, Professor

Vladimir Aizen, from the third attempt drilled the well to the bottom of the glacier. The depth of ice was only 130 meters, which is six times less than the conventional point chosen by Fedchenko glacier. Ice samples were packed in specially prepared containers and transported by helicopter to the settlement of Darout-Kurgan where there was a car with a refrigerator and a freezer. This car has transported an ice cargo to the city of Almaty (Republic of Kazakhstan). Further investigations of the obtained ice sample are now in Germany, where it was delivered by «Luft Gansa» aircraft. Here it should be noted that the work of German scientists who have probed the plateau of the Fedchenko glacier and found the ideal place for an ice sample will probably remain for future international expeditions, but for now there is a sample of ice that was obtained on the territory of Kyrgyzstan. One has only to think about the chronology of the years that the obtained sample of ice will open, and what the result will be in aerosols. Of course, there is still a lot of work ahead and world scientists will compare the results with the results obtained at other ice areas.

According to the initial results obtained, the ice sample, Professor Vladimir Aizen reported that the age of the ice at its foundation was 6500 years - according to the analysis of 14C. This means that in the Pamir, as in the Tien Shan, the small glaciers completely melted, but then recovered again. The disappearance of small glaciers and the severe reduction of large glaciers, the scientist assumes, could change the water balance of rivers in that remote period of history. The Fedchenko glacier, along with other large glaciers of the central Pamir, has been preserved. The professor claims that a sample of the ice of Fedchenko glacier will help to read the chronicle for the last 500 thousand years. In connection with global warming, the obtained data could help in unraveling the climate in Central Asia.

*** Christopher Mayer takes an ice sample**

We will not divide the glaciers of Tajikistan and Kyrgyzstan, because I believe that they, the single Glacier Center in

Central Asia and how successfully we will get results - so confidently predict the problem of water flow in the river.

In the previous publication "Riddle - Glacier Fedchenko" (2017), I conducted an analysis and comparison of meteorological data on temperature and precipitation around the Glaciation Center in the Republic of Tajikistan - the Fedchenko glacier. According to the data of four weather stations it was clear that the temperature background in recent years began to increase and, accordingly, a tendency to increase precipitation is observed. But these data are not sufficient, since the special microclimate of the Fedchenko glacier with an annual temperature background from minus 25° to plus 12° and the number of days with precipitation 220-240 days, varying in intensity in the form of snow, is now practically not investigated by anyone. Working, in my youth, on Fedchenko glacier, I had firsthand experience of all the "delights" of the harsh wintering at the weather station. Daily observations of meteorology, actinometry, and snow cover observations, monthly observations of ice movement and total precipitation measurements, and with the onset of summer, an observation was made of the melting of the ice plateau. In the meteorological station area there were two snow-measuring routes, where the maximum snow increase for the year was 80 cm, and more than 4 meters, respectively. The third snow-measuring route was on a glacier and on it the height of snow for a year did not exceed 2 meters. During the year, the density of the snow cover and its moisture content were studied. Taking into account the negative temperatures, it was possible to make forecasts for spring-summer melting of snow and water runoff. It can be said that the glacier had a peculiarity of recovering during the ten months of the year, after two months of intensive melting in June and July - snow cover, and in August - ice (up to 1 meter). Here are the data of the 90th years of the last century on the results of the weather station at an altitude of 4169 meters. Now there

*** Sounding the thickness of ice with a passive radar**

is no new data in the archives of the Agency for Hydrometeorology and it is almost impossible to draw any conclusions on the Fedchenko glacier. The first meteorological data, which appeared due to new technologies, do not give a full assessment of the current meteorological processes. The installed Automatic Weather Station during the "3rd International Geophysical Pamir Expedition" at an altitude of 5,520 meters in the upper reaches of the Fedchenko Glacier provides information on several meteorological parameters: air temperature, maximum and minimum temperature for day and night, atmospheric pressure at the installation site, duration sunshine, wind speed and direction. Now there is data for the two-year period of operation of the Automatic Station. For two years, the station was visited twice by local Tajik mountaineers who, with knowledge and skills, conducted and eliminated small damages. The only thing they could not replace the broken device for observing the wind, which still could not withstand the severe weather conditions of the second year. So in the first year of operation of the Automatic station it was noted that the coldest air temperature was in December and equaled it minus 36 degrees below zero. During the summer period, the temperature was recorded plus 3 degrees of heat.

Full monitoring of the biennial meteorological data received has not yet been fully carried out. I note that the meteorological data from the Automatic Station comes hourly first in the US, and then with a long delay to the Agency for Hydrometeorology.

*** Automatic station «Cambell Sci.Co» 2015 (USA)**

*** Automatic station "SUTRON" 2017 (USA)**

In September 2017, the Agency for Hydrometeorology succeeded in installing the second Automatic Station on the meteorological site of the Fedchenko glacier station. The new, second station transmits operational meteorological information to the Center for Automatic Communication of the Agency for Hydrometeorology. Discreteness of information delivery is every 10 minutes. This model of the Automatic Station has a gauge device and its installation was a great, but necessary, risk. After all, with expensive equipment it was necessary to assess the suitability of work in extreme weather conditions. This Automatic Station was provided by SUTRON (USA). The meteorological parameters that the instruments measure are the temperature of the air and the Earth, the maximum and minimum air temperature, atmospheric pressure, sunshine, snow cover height, atmospheric precipitation, wind speed and direction. Based on the meteorological data obtained, it is possible to obtain both graphical figures and a tabular form for recording weather data in real time. The station just started its work in extreme conditions, and the first conclusions on the reliability of its work, we will do in a year.

A person invents automatics and installs it in hard-to-reach areas, and Nature herself arranges the exam. And now the Fedchenko glacier proves that only professional meteorologists can work here.

In conclusion of my article I want to say:

Firstly, glaciers with their huge reserves can not be considered eternal and unchanged. They need to be attributed to changing natural resources.

Secondly, in order to thoroughly know the "life" of glaciers and the changes that occur in them, it is necessary to carry out numerous comprehensive studies on meteorology, hydrology, actinometry, glaciology, and chemical analysis, which in recent times has been practically done in the absence of funds and specialists.

Thirdly, I repeatedly emphasize that the resumption of the work of the meteorological station on the Fedchenko glacier should be carried out by any means with the involvement of national experts, foreign donors and international scientists working in the field of Cryosphere studies. A unique meteorological station, which in fifteen years will turn 100 years old - just waiting for the new winterers.

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EXPERTOPEDIA AS A MEANS OF DEVELOPING A BANK OF ENGINEERING KNOWLEDGE

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Annotation. Currently, artificial intelligence technologies have begun to attract special attention at the state level. The development of artificial intelligence technologies will make quick and optimal decisions based on the analysis of large amounts of data, and will also give great advantages in the quality and effectiveness of engineering design and production management.

The foundation of artificial intelligence is knowledge. Knowledge is initially classified according to the attributes “clarity”, “accessibility”, “propositionality” and “level of abstraction”. To build a bank of engineering knowledge, on the basis of clarity, knowledge must be explicit, on the basis of accessibility, interorganizational, on the basis of propositionality, active, and on the level of abstraction, common.

There are two categories of knowledge - passive and active. Passive knowledge is text documents stored in books, methods, and the like. To transform this knowledge into artificial intelligence systems, a highly efficient technology is needed that allows knowledge carriers to create knowledge bases without the involvement of programmers. This technology is described in this article.

Keywords: artificial intelligence, Industry 4.0, digital manufacturing, intelligent systems, intelligent design and management systems.

1. Introduction

At present, the fourth industrial revolution (4PR) is taking place worldwide. The leadership of the Russian Federation (RF) sets the task of creating a digital industry based on knowledge in the country. The government of the Russian Federation has approved the program “Digital Economy of the Russian Federation”. The program identifies goals, objectives, directions and deadlines for the implementation of basic measures of state policy to create the necessary conditions for the development of a digital economy in Russia, in which data in digital form is a key factor in production. This article is dedicated to solving this problem.

The term Industry 4.0 is commonly used to designate 4PR. The essence of the new revolution lies in the fact that the material world is connected to the virtual one, as a result of which new cyber-physical complexes are born, united in one digital ecosystem. The fourth industrial revolution means the increasing automation of absolutely all processes and stages of production.

The foundation for 4PR is the Internet of things. The Internet of Things (Internet of Things, IoT) is the concept of a computer network of physical objects ("things") equipped with embedded technologies for interacting with each other or with the external environment, considering the organization of such networks as a phenomenon that can restructure economic and social processes, excluding parts of actions and operations need human involvement.

However, as noted above, 4PR should cover the automation of absolutely all stages and processes, including digital product design, creating a virtual copy of it, the joint work of design engineers and technologists in a single digital space, etc. That is, a revolution should cover the stages when products are not yet things, but exist in the virtual world in the form of information models.

To integrate the industrial and digital revolutions, it is necessary to consider together two worlds: the virtual world realized by the Internet of knowledge and the real world realized by the Internet of things (Fig. 1). It is advisable to build the Internet of knowledge on the ontological methodology [1].

Before the digital revolution, written sources were knowledge carriers. As a result of the digital revolution, software became the carriers of knowledge. Software was originally built on an algorithmic basis using algorithmic languages. Non-programmer knowledge carrier could not enter them into the computer. Intermediaries were needed: a developer (algorithmist) and a programmer (Fig. 2a). At the beginning of the development of artificial intelligence, rather complex languages for describing knowledge were created. As a result, the scheme of the process of entering knowledge into a computer has not changed. Again intermediaries were needed in the form of knowledge engineers and programmers (Fig. 2b).

In this case, between the participants of the process, as a rule, there was a semantic gap. Each of the intermediaries represented knowledge, introducing their own considerations. As a result, knowledge does not fully reflect the point of view of the knowledge carrier.

The digital revolution should radically change this scheme and allow non-programmer knowledge carriers to enter them into a computer without intermediaries (Fig. 2c). This became possible using the methodology of

expert programming [2, 3]. In this methodology, knowledge is described in the language of business prose, as close as possible to the literary language, but so formalized that it is possible to automatically generate software corresponding to the source texts. Below are examples of the application of expert programming.

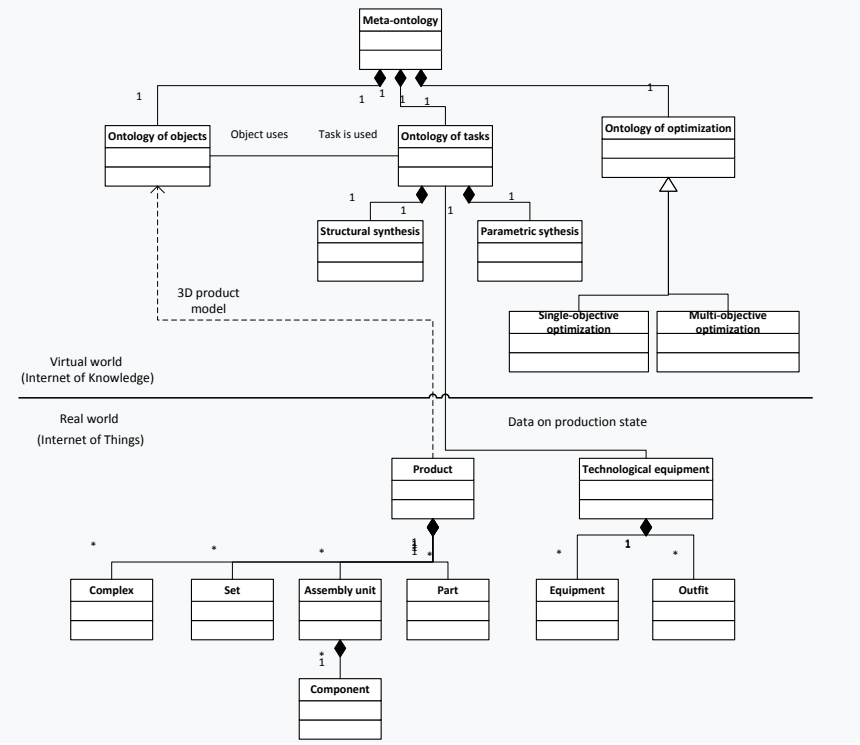

Fig. 1. Integrated structure of the Internet of knowledge and the Internet of things

The Internet of knowledge is built on an ontological basis [1], the root object of which is metaontology. From the point of view of the problems associated with artificial intelligence (AI), ontology is an explicit specification of the conceptualization of knowledge. Metaontology operates with general concepts and relationships that do not depend on a specific subject area. Metaontology should contain concepts and relationships that are necessary both for subject ontology and for ontologies of tasks and optimization.

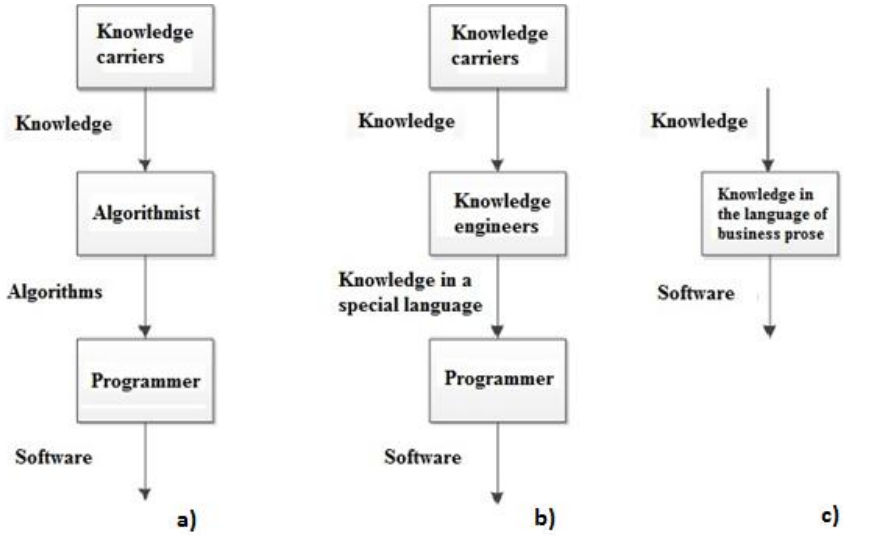

Fig. 2. Knowledge entry schemes

Metaontology includes three components: a subject ontology, an ontology of tasks and an ontology of optimization.

Formally, a subject ontology consists of a hierarchy of concepts, their definitions and attributes, as well as associated axioms and inference rules. Subject ontology based on the use of tasks provides on the basis of technical specifications the generation of 3D models of products that adequately represent products in the virtual world and satisfy the requirements of the tasks.

The ontology of tasks includes the tasks of structural and parametric synthesis of models of products and processes. It provides generation of digital models of processes and production.

The third component of metaontology is the ontology of optimization, which includes the components of single-criteria and multi-criteria optimization.

In the described approach, the world of things consists of products made with the help of 3D printers or machine tools and robots that make up the equipment as part of the technological equipment of a particular production and its devices. The manufacturing process is governed by digital models generated using appropriate systems, including the necessary tasks.

The design of processes is carried out using data on the state of production obtained from the Internet of things.

2. Wikipedia and Expertopedia

The most common computer encyclopedia currently is Wikipedia (Fig. 3). Wikipedia is an open-source, multilingual, universal Internet encyclopedia with free content. Its conceptual principles are multilingualism and the ability of users to replenish and adjust content.

An encyclopedia is a review of all branches of human knowledge or a range of disciplines cumulatively constituting a separate branch of knowledge. In this case, we are interested in the metacategory "Technique". Only information about various devices, mechanisms and devices that do not exist in nature and are manufactured by humans should be directly placed in this category.

Traditional wiki systems have a number of flaws, among which, in particular, is the lack of consistency in the content. Due to the frequent duplication of data on wikis, the same information may be contained on several different pages. When changing this information on one wiki page, users should ensure that the data is also updated on all other pages.

Another drawback is the difficulty of accessing the knowledge available on wikis. Large wiki sites contain thousands of pages. Performing complex search queries and comparing information obtained from different pages is a task that is quite laborious in traditional wiki systems.

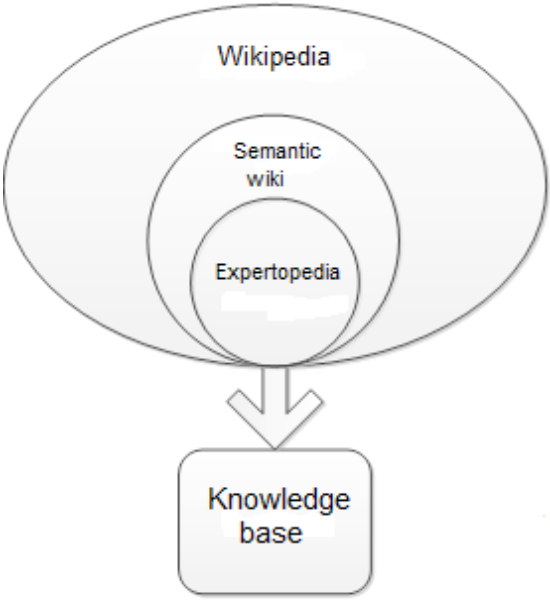

Fig. 3. Wikipedia and Expertopedia

The program can only show the text of a Wikipedia article in a certain context and cannot take additional steps related to the object.

Traditional wikis use flat classification systems (tags) or classifiers organized in taxonomy. The inability to use typed properties generates a huge number of tags or categories.

In this regard, semantic wiki appeared (Fig. 3).

A semantic wiki is a web application that uses machine-processed data with well-defined semantics in order to extend the functionality of the wiki system.

Regular wiki systems are filled with structured text and untyped hyperlinks. Semantic wiki systems allow you to specify the type of links between articles, the type of data within articles, as well as information about pages (metadata).

A variety of such systems, based on the technology of expert programming described below for creating knowledge bases, can be called “Expertopedia” (Fig. 3).

The semantics of Expertopedia is determined by the metaontology used in all cases and presented in Fig. 4.

There is an opportunity to work with databases. For this it is necessary to make a choice of a database from among the available ones and the table in it. Next, the access conditions are formed and the fields and properties used in the database and in the creation of the knowledge base are coordinated. Actually the operation is performed by the corresponding DBMS.

It is possible to create and modify geometric 3D models based on the results of calculations, using the capabilities of various CAD systems. At the same time, it is necessary to form a model and parameterize it.

Another type of mathematical knowledge necessary for performing calculations are models of continuous systems based on differential-algebraic systems of equations.

To be included in an intelligent design system, there must be a tool that has the capabilities to generate the models mentioned, and provides: support for object-oriented modeling technology that is compatible with the UML language; convenient and adequate description of the model in the generally accepted mathematical language without writing any program code; automatic construction of a computer model corresponding to a given mathematical one, with the possibility of autonomous use of this computer model.

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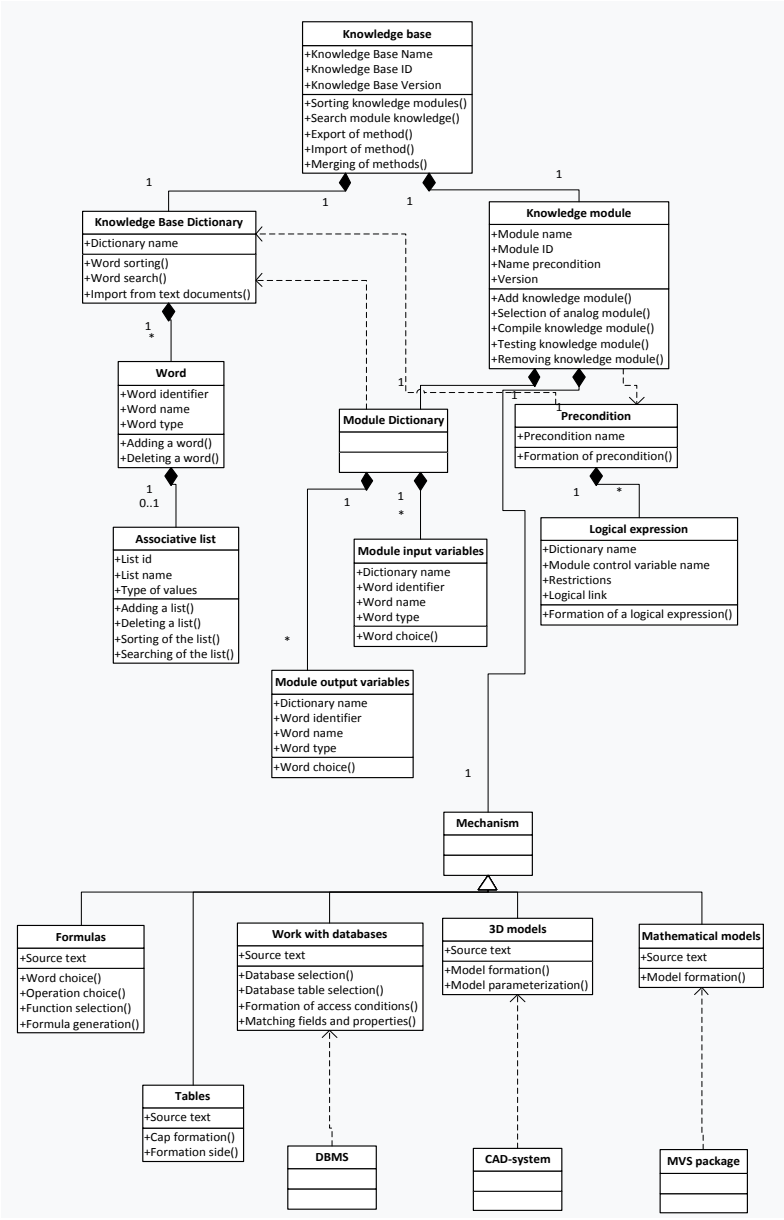

Fig. 4. Expertopedia Metaontology

3. Conclusion

Based on the above, the following conclusions can be made. A knowledge representation technology has been developed that meets the requirements for creating a knowledge engineering bank: it uses explicit interorganizational knowledge built on the principle of propositionality, that is, the use of complex utterances formed from simple and their interrelationships. The expert programming technology allows, without the help of programmers, to create knowledge bases in any “business prose” languages with automatic generation of program codes in various programming languages.

The expert programming technology integrates the methods of production systems and semantic networks. At the same time, the ranked semantic network of knowledge modules in the aggregate is a knowledge module, which can be considered as a frame, which is the third basic method of knowledge representation. A frame in knowledge engineering is a structure containing a description of an object in the form of attributes and their values. So, expert programming integrates all the basic methods of knowledge representation.

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UDC 614.8.086.5 – 052

HEALTH BENEFIT OF HUMAN STAY IN THE SALT MINE IS CONDITIONED BY A LOW BACKGROUND LEVEL OF ATOMIC RADIATION

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Annotation. Currently, the Health benefit of people staying in salt mineis explained by the fact that people inhale salt spray. In the article on the basis of experimental research it is proved that this Health benefit is the result of super-small levels of atomic radiation observed in the space of mine.

Keywords: salt mine, Health benefit, super-small levels of atomic radiation.

1. The Health benefit of a person staying in a salt mine

In Solotvyne salt mine of Transcarpathia since 1968, treatment is carried out by leaving patients with bronchial asthma for a night's rest. Medical statistics show that 84% of adults and 96% of children get rid of bronchial asthma in this way. The health benefit of salt mines is explained by the purity of air and its pronounced negative ionization[1].

The source[2] listed a large number of diseases that can be treated as a result of human presence in the salt mine, and also lists 31 scientific sources that confirm this health benefit.

However, the scientific community does not have a adamant view on what is thehealth benefit of patients staying in salt mine. A large number of theories explain the mechanism of the health benefit. According to some, tiny particles of salt enter the lungs when inhaled, while killing the microorganisms that cause disease. Others say that the atmosphere of the salt mine reduces inflammation and reduces the formation of mucus. Still others represent mixtures of different hypotheses. The American pulmonary association recognizes that the stay of patients with pulmonary diseases in the salt mine is more than the placebo effect, but does not recognize that the salt is involved in the treatment of pulmonary diseases.

2. Assessment of the level of atomic radiation observed in the space of salt mine

Due to the fact that until now there is no clear understanding of the mechanism of action of the health benefit as a result of the stay of sick people in salt mine, we decided to check whether atomic radiation is involved in this. For this purpose, we conducted experiments to assess the level of atomic radiation observed in the space of three salt mine. The results of the experiments are presented in Table 1.

Table 1. The results of estimating the background level of atomic radiation in the space of salt mines using a radiometer Eberline E-600

Company name of salt manufacturer (a country)	Cover thickness of salt mine, metres	The average (out of 7 measurements) the power of the background ambient dose equivalent of gamma radiation on the surface of the mine, Nano Sievert / hour (10^{-9}Sivert / hour)	The average power of the ambient ambient equivalent of the dose of gamma radiation in the space of the mine, Nano Sievert / hour (10^{-9}Sivert / hour)	Number of measurements in the space of the shaft	Measurementerror (%)
“Belarus-potassium” (Republic of Belarus)	460	115	22	18	7
“Russol” (Russian-Federation)	330	130	29	39	7
"Avan Salt Combine" (Republic of Armenia)	235	120	4	18	7

3. Mechanism of the health benefit over small doses of atomic radiation

We confirm that the health benefitresulting from a person's being in a salt mine for a certain time is due to the low background level of atomic radiation observed in the space of the salt mine. A level that does not occur anywhere on the Earth.

Life as a phenomenon originated on Earth 3.5-4 billion years ago with the accompaniment of acceptable or life-friendly physical, chemical, cosmic and radiation factors in favorable living conditions on Earth. Radiation factor in this case means all types of radiation, ranging from infrared to cosmic and gamma radiation, created by radioactive elements, more or less evenly disseminated (scattered) into the ground. The average effective dose rate of the external natural radiation of atomic radiation on Earth is currently 2.4 mSv / year[5], and 3.5-4 billion years ago, when life was born

on Earth, it was 3 times higher than now[6]. In such a manner, the moment of the birth of Life on Earth was the product of all the list of factors, including the radiation factor. There is no doubt that the background level of atomic radiation is anecessary component (factor) of the existence of life on Earth. It has at all times and in all places accompanied life from its inception to the present, and its level has been monotonously decreasing. Metabolism of all living things always and everywhere has proceeded in the presence of a background level of radiation. There are data indicating that life is impossible without a background radiation level."A number of experiments have shown that creatures (unicellular, plants, mammals) artificially placed in conditions with a lower radiation background felt a noticeable oppression, a decrease in many functions[6]. This is what we should expect. Biochemical processes occurring in living organisms have always occurred accompanied by background radiation levels. The removal of radiation from the condition of the course of biochemical reactions must inevitably lead to a violation of their course with subsequent disruption of the metabolism of living organisms.

«People, bacteria, algae, mushrooms, fish, mammals, dinosaurs, grasses and trees - we all owe our existence to the last universal common ancestor (LUCA, Last Universal Common Ancestor). This one-celled creature dwelt in the ocean 3.5-4 billion years ago. If LUCA had contemporaries, they all died out, leaving no trace: LUCA became the progenitor of all life forms on Earth. This means that the properties of LUCA have determined the entire subsequent evolution of life on Earth. Therefore, we can conclude that any signs characteristic of all creatures, once were signs of the most recent common ancestor and passed to all of its descendants with varying degrees of modification. Therefore, we can conclude that any signs characteristic of all living organisms, once were signs of the most recent common ancestor and passed to all of its descendants with varying degrees of modification. The traditional view that continents and shallow seas have been sterilized by cosmic rays can no longer withstand criticism. New facts prove that resistance to oxygen and radiation appeared in the earliest terrestrial organisms. The significance of this fact for evolution and for our life with you is extremely great»[4].

The mechanism of starting the therapeutic process and the subsequent health benefitin humans (next we will talk about a person) as a result of his stay for a certain time in the salt mine is as follows. As soon as a person finds himself in a salt mine, where the level of atomic radiation differs significantly from the world average, observed on the Earth, his organism perceives this as a mortal threat to his existence. The fact is that neither

this person nor his ancestors up to LUCA knew the conditions of the environment where there would be no atomic radiation. Moreover, LUCA was formed under the influence of a level of atomic radiation three times greater than the one currently observed[6]. Almost instantaneous decrease in the intensity of atomic radiation leads to a violation of metabolism in the human body. And although the human body (like any creature on Earth) does not have an organ for identifying (recognizing) atomic radiation, it has to react to its decrease by raising to the limit all its functionality, because he does not know what function he will need to eliminate the specified threats. And these possibilities depend on the functioning of all human organs, including the brain. Therefore, all human organs must function at the limit of their capabilities. After all, we are talking about the life or death of the body and it begins to prepare for unknown and dangerous experiments, which will follow after a decrease in the level of intensity of atomic radiation. Such a reaction of the human body when it enters a space devoid of the usual background level of atomic radiation follows from Charles Darwin's theory of natural selection: "Since there is a constant struggle for existence, it follows that any creature that, in the complex and often changing conditions of his life, although slightly, will change in the direction for which it is beneficial, will have more chances to survive and, thus, will be exposed to the natural selection "[7] And an advantageous direction for the human body in this situation will be an increase to the limit of absolutely all its functional capabilities. In this case, he will have more chances to survive and, thus, subjected to natural selection. For example, in case of a landslide in a salt mine and subsequent immurement of a person in an isolated space, he will have more chances to survive. Firstly, he will have more forces to disassemble the blockage, as there will be more physical and mental forces (it is necessary to think about where to begin to disassemble the blockage), and secondly, it is more likely that rescuers will find him alive, as he will live longer (human organs function at the limit of their capabilities). If the body of a person who got into the salt mine did not perceive this as a mortal threat to their existence, then he would have less chance to survive in the situation described in the example. Natural selection continues.

Thus, activation and expansion to the limit of absolutely all functional capabilities of all organs and functions of the human body, including the brain, takes place. All this leads to treatment or relief of the symptoms of various diseases, improvement of health, immune stimulation, etc. A similar situation occurs when the human body is under ice water. Once a person is in ice water, his body almost instantly begins to consider the situation created as a deadly threat to his existence. This is the basis for the method

of hardening the human body with ice water. Immersion of a person in ice water is accompanied (at rest) by an increase in arterial tension by 15-20 percent and an increase in oxygen consumption by 76 percent.8 Thus, with an immediate existential threat to its existence, the human body mobilizes absolutely all its resources to increase and expand its functionality to their limit. This leads to the treatment or alleviation of the symptoms of various diseases, improvement of health, immune simulation and so on. In other words, the human body is easier to fight with the disease, when all the organs and functions do not work in the daily routine, but in the emergency mode. All this is perceived by the human body, and by the person himself, as a therapeutic process with the subsequent health benefit. In short, this is called hardening with ice water. Thus, the therapeutic procedure and the subsequent health benefit observed as a result of human presence in the salt mine is, similar to the health benefit observed when hardening with ice water. Then this procedure and effect can be called radioactive hardening. A person caught in ice water dies in no more than 30 minutes. A completely analogous situation will occur if the person in the salt mine is not limited to safe time. There is good reason at the source2 indicated that the residence time of a person in a salt mine is 45 minutes per day. Apparently, after this time, the first symptoms of metabolic disturbance in the human body begin to appear. The book1 says that the treatment is done by leaving a person for the night in the salt mine. In this case, it can be assumed that the level of atomic radiation in the salt mine is not much lower than the background level on the ground. Just as insufficiently cold water requires a longer exposure of a person to water in order to obtain the desired therapeutic effect.

4. Facts of the health benefit of radioactive hardening

The source[2] says that many diseases are cured or their symptoms appeased when a person is found for a certain time in a salt mine. This should be the case with radioactive hardening. All the organs and functions of the human body are activated and operate in the limiting mode, which makes the body easier to pull together with many diseases.

The American pulmonary association does not recognize that pulmonary diseases can be treated with a salt spray, but recognizes that the stay of people with pulmonary diseases in the salt mine is more than the placebo effect[3]

The source[2] on the basis of scientific research emphasizes that in salt mines a sterile situation is observed resulting in the killing of microorganisms and microbes that cause pulmonary diseases.The source on the basis of scientific research emphasizes that in salt mines a sterile situation is observed resulting in the killing of microorganisms and microbes that

cause pulmonary diseases. And this is attributed to a salt aerosol containing 0.1 - 7 grams of salt per 1 m3 of air. However, the average salinity of the world ocean is 35 grams of salt per 1 liter of water (35,000 grams of salt per 1 m3 of water), which is thousands of times higher than the salt concentration in the air of the salt mine, and microorganisms, including pathogens, in the world's oceans are full.

But in fact, microorganisms and microbes die in the salt mine as a result of the super-low level of atomic radiation observed in it. Microorganisms and microbes, like all other creatures on Earth, are used to background levels of atomic radiation. But much lower doses, in comparison with the average background radiation of atomic radiation on Earth, microorganisms and microbes have never been experienced for the reason that there were no such places on Earth. Because of their small size, primitive metabolism and short life expectancy, microorganisms and microbes must die in salt mines within a few minutes as a result of disruption or cessation of metabolism. Apparently, gamma quanta, at a certain intensity, somehow play a key role in the metabolism of living organisms. In the absence of gamma quanta or with their insufficient intensity, metabolic processes stop, which leads to the death of any organism[6].

In all sources[1,2,3] it is indicated that the person's stay in the salt mine leads first of all to the treatment of pulmonary diseases. This is because the signs of improving the health status are directly related to the person's stay in the salt mine. The case is that pathogenic microbes, apparently, are killed within a short period of time (in a matter of minutes) so that the visual result of the health benefit (cessation of coughing) manifests itself almost immediately after visiting the salt mine or even during a person's stay in the salt mine. While other health benefits are masked by taking medication, medical procedures and other manipulations of the human body, which may not bind the indicated healing effect to staying in the salt mine.

Finally, it seems quite improbable that a large number of unrelated diseases, including neuropsychiatric diseases, can be treated by inhaling a salt aerosol at a concentration of 0.1 to 7 grams of salt per 1 m^3 of air. Conversely, the treatment of these diseases is explained by the fact that during the radioactive hardening, all human organs, as in the case of quenching with ice water, are activated and operate in the limiting regime, as a result of which the body copes with many diseases more easily.

Conclusions

The therapeutic procedure and the subsequent health benefit as a result of human presence in the salt mine is the result of low levels of atomic radiation that are not observed on Earth. The health benefit depends on

the background level of atomic radiation in the salt mine, the time of the person's stay in it, the state of his health, age and other parameters of the human body. This procedure and the subsequent health benefit we called radioactive quenching. Due to its therapeutic effect, radioactive quenching is completely analogous to quenching with ice water, with the essential difference that quenching with ice water is an extremely unpleasant procedure. Therefore, radioactive quenching is becoming increasingly popular all over the world. The phenomenon discovered - radioactive quenching - is an effective means of combating radiophobia.

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MULTI-LAYER COATINGS TI-CU

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Abstract. In this work, we used the cathodes Ti and Cu. The coatings were deposited on the steel samples by the ion-plasma method on the HNB-6.6I1 vacuum unit while simultaneously spraying the above cathodes. Multi-layer coatings were created as follows: Ti was applied for 2 minutes, then Ti+Cu for 2 minutes. A total of 100 layers were applied in an atmosphere of argon and nitrogen.

The Ti-Cu-N coatings synthesized by us possessed hardness with an average value of up to 32 GPa, an elastic modulus of 400-550 GPa, a degree of elastic recovery of 0.69, and a plasticity index of about 0.15, which in terms of parameters is one of the best examples among the well-known hardening coatings.

Keywords: multilayer coatings, hardness, plasticity, friction, wear resistance

According to the International Manufacturing Technology magazine (Canada), the world leaders in PVD coatings are IHI Hauzer Techno Coating B.V. (Netherlands) and INFICON (a combination of Balzers, Leybold, Pfeiffer and Us Inficon). The cost of equipment of such companies is $ 1.2-1.45 million (German installation CC800 - $ 1.2 million, Japanese UBMS-707 of Kobe Steel Co. - $ 1.45 million, Dutch HTC-1000 - $ 1.2 million.), and corrosion-resistant coatings are formed by creating a galvanic way sublayer before applying the PVD coating. Today's share of these companies in the EC countries is 38%. According to research by Trykor Inc

(USA), for a significant growth in the market for electroplating substitutes, the cost of PVD equipment should be halved. The price of equipment for applying PVD protective - decorative coatings of the company "Elan-Praktik" (Russia) is $ 0.6 million.

The cost of our software-controlled vacuum unit containing an original plasma generator for cleaning and nitriding parts; original magnetron sputtering system with copper targets; and two arc evaporators with titanium cathodes do not exceed $ 0.14 million. Along with the low cost of our installation, we can get cheap coatings due to the simultaneous atomization of various cathodes and their multilayer alternation. This is what the real work is about.

In the present work, Ti and Cu cathodes were used. Coatings were applied to steel samples by the ion-plasma method on an NNV-6.6I1 vacuum unit while spraying the above cathodes. Multilayer coatings were created as follows: Ti was applied for 2 minutes, then Ti + Cu for 2 minutes. A total of 100 layers were deposited in an atmosphere of argon and nitrogen. Electron microscopy research (SEM) was carried out using a TESCAN MIRA 3 scanning electron microscope. The studies were carried out at an accelerating voltage of 20 kV and a working distance of about 15 mm. For each sample, 4 pictures were taken from 4 surface points at different magnifications: 245 times, 1060 times, 4500 times and 14600 times. An energy dispersive analysis (XPS) was also carried out at 4 points on the surface of each sample. The optical microstructure was studied on Epiquant metallographic microscope, and at the nanoscale, on an NT-206 atomic force microscope. The microhardness of the coatings was studied on an HVS-1000A microhardness tester. Tribological studies were carried out on the setup described in [1]. Figure 1 shows a SEM image of a Ti/Ti+Cu multilayer coating;

Figure 2 - a multilayer EMF map and in Figure 5 - spectrum of XPS.

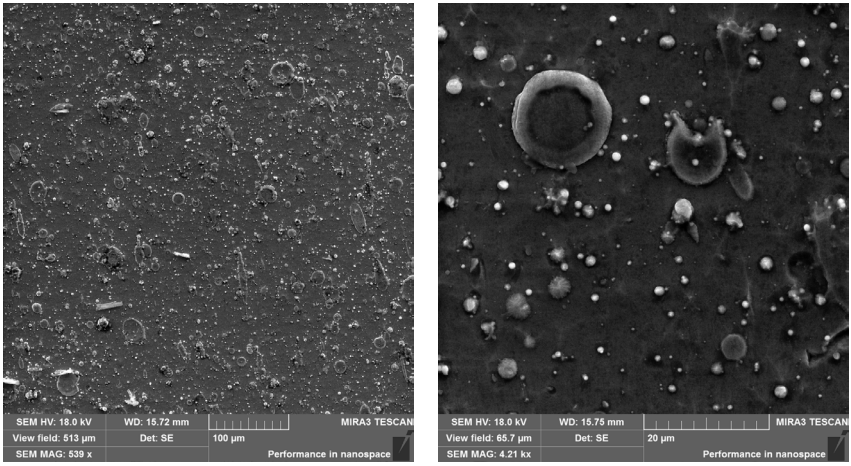
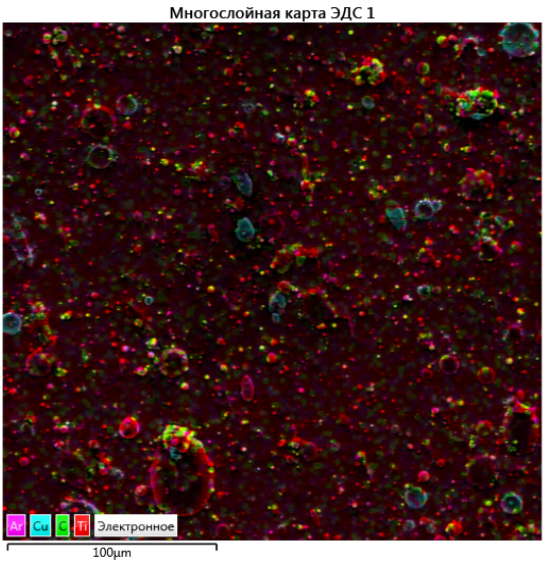


Figure 1 - SEM images of Ti/Ti+Cu at 2 magnifications



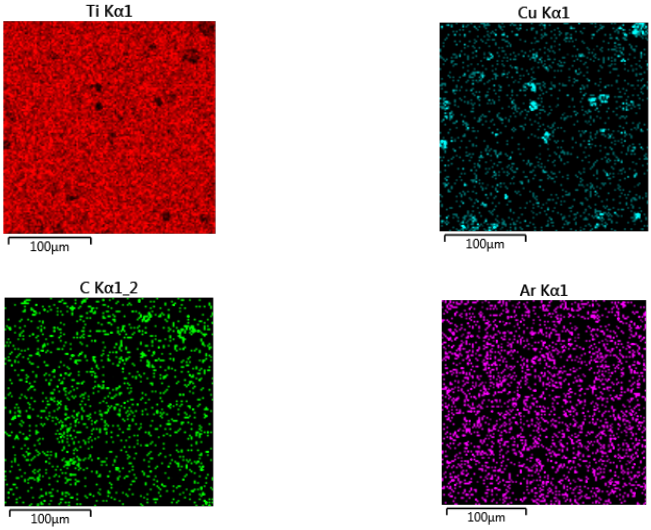


Figure 2 - Multilayer EMF map

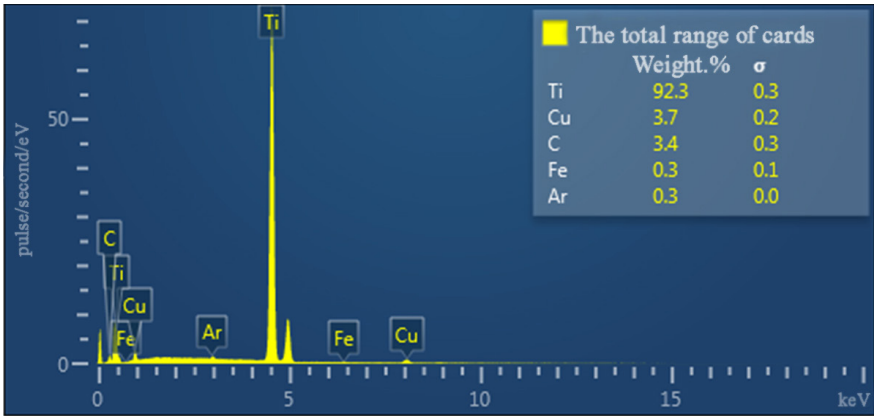
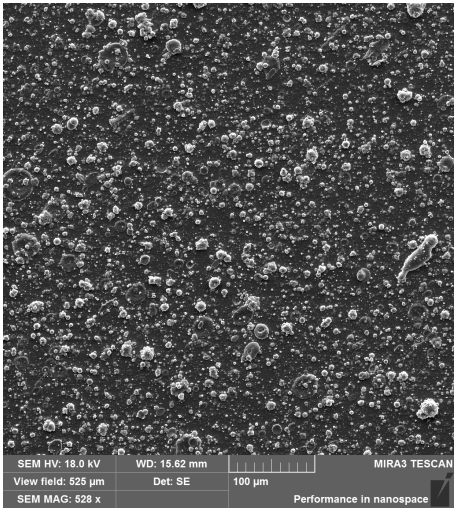


Figure 3 - XPS spectrum of Ti/Ti+Cu coatings

Figure 4 shows a SEM image of a multilayer coating of TiN/(Ti+Cu)N, Figure 5 - multilayer EMF map and Figure 6 - spectrum of XPS



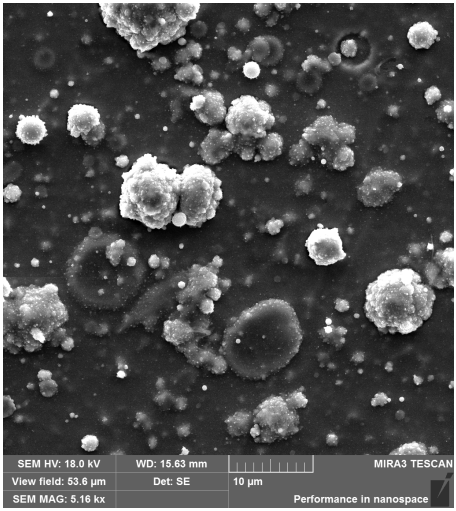


Figure 4 - SEM images of TiN / (Ti + Cu) at 2 magnifications

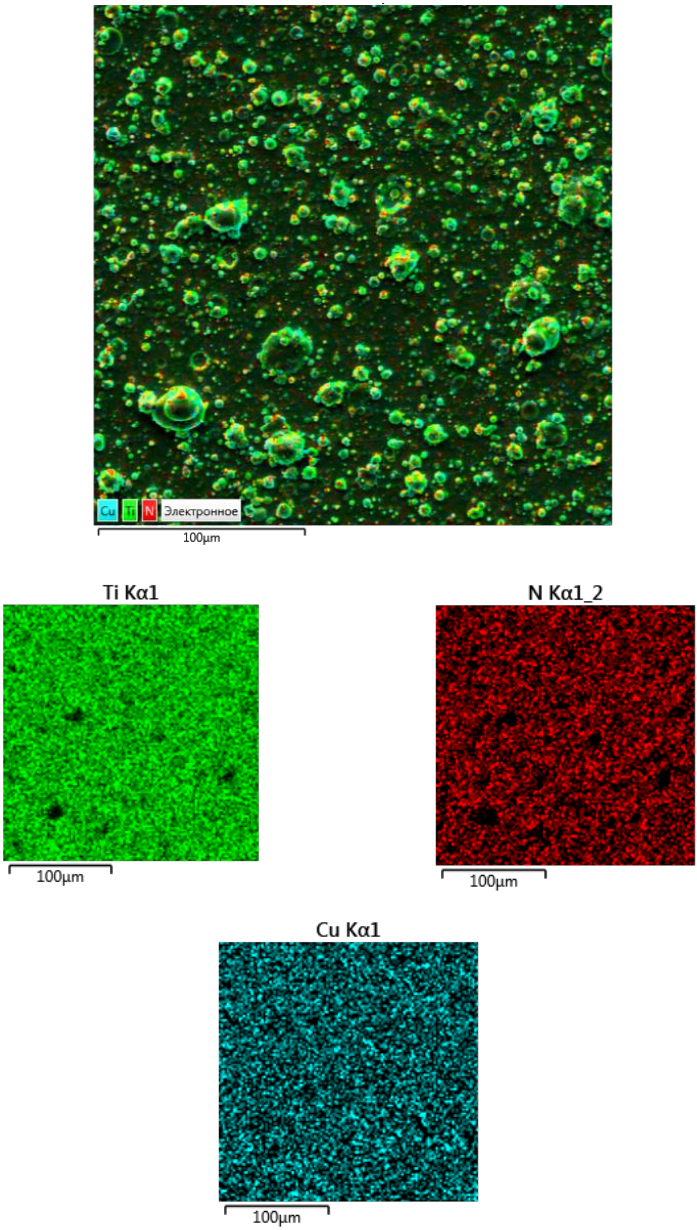


Figure 5 - Multilayer EMF map

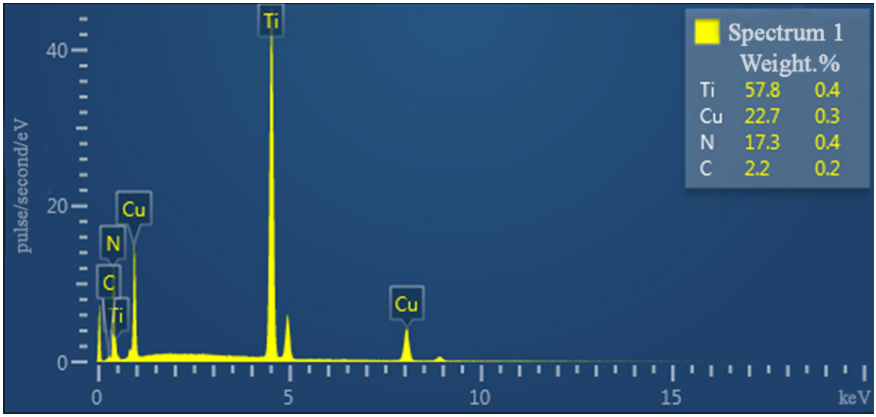


Figure 6 - XPS spectrum of TiN/(Ti+Cu)N coatings

The microhardness measurements of Ti+(Ti+Cu) in argon and TiN+(Ti+Cu)N in nitrogen are presented in Table 1, and optical images in Figures 9 and 10.

Table 1 - Microhardness of Ti+(Ti+Cu) in argon and TiN+(Ti+Cu)N in nitrogen

coating	HV0.1	HV0.025	HV0.01
Ti+(Ti+Cu)	499,4	539,9	559,8
TiN+(Ti+Cu)N	2288,2	2828,5	3227,3

The average μ = 2781 HV in nitrogen is 5 times greater than in argon μ = 533 HV.

The results of measuring the friction coefficient Ti+(Ti+Cu) in argon and TiN+(Ti+Cu)N in nitrogen are presented in Table 2.

Table 2 - Coefficient of friction of coatings Ti+(Ti+Cu) in argon and TiN+(Ti+Cu)N in nitrogen

coating	μ_1	μ_2	μ_{cp}
without coating	0,154	0,148	0,151
Ti+(Ti+Cu)	0,247	0,220	0,234
TiN+(Ti+Cu)N	0,306	0,310	0,308

We now discuss the results of studies, taking into account the data of previous studies [2-5]. By varying the discharge current of the PINK plasma source and the substrate potential, it is possible to control the

plasma concentration, the ion current density on the substrate, the energy of ions entering the substrate, which allows etching the surface layers of the material of the required thickness and obtaining the necessary surface characteristics (hardness, roughness), at the stage of cleaning, heating and activation before spraying the coating. The obtained data on the rate of etching of stainless steel in an argon plasma of a non-self-sustaining arc discharge, depending on the plasma parameters, can also be used to optimize the etching process of substrates as an independent finishing process of ion-plasma treatment.

In this case, a non-porous coating is formed (without the introduction of gas atoms), and the continuous bombardment of the growing coating with low-energy ions of the working gas allows to remove adsorbed residual gas from the surface and grind the size of the crystallites of the growing coating. The hardness of the TiN coating is 23 GPa, which is lower than the hardness of the Ti-Cu-N multilayer coating (Table 1). The degree of elastic recovery of Ti-Cu-N coatings is ≈2 times higher than that of TiN coatings. For resistance to abrasive and adhesive wear, coatings should have high hardness and high value of elastic recovery, which is especially important in conditions of shock, abrasive and erosive influences. A value such as H / E, which characterizes the stability of the material to elastic fracture deformation and is called the plasticity index, can be used to assess the wear resistance of coatings. The H/E ductility index for superhard coatings should be ≈ 0.1 or more. For this, a coating with high hardness H must have a relatively low elastic modulus E.

The Ti-Cu-N coatings we synthesized had a hardness with an average value of up to 32 GPa, an elastic modulus of 400-550 GPa, a degree of elastic recovery of 0.69, and a ductility index of about 0.15, which is one of the best examples among the known strengthening coatings. The results of tribological studies (Table 2) showed that the Ti-Cu-N coating deposited by the optimum vacuum-arc evaporation of the composite Ti – Cu cathode with plasma assisting on a solid substrate has a low friction coefficient, the average value of which is μ = 0 , 31. The results of x-ray fluorescence analysis, shown in Fig. 6 confirm the presence of copper in the test coating. Therefore, it can be assumed that copper, without forming its own crystalline phase and not being in the crystal lattice of other phases, is located at the crystallite boundaries in an amorphous state. The time during which copper atoms form a closed shell around the growing TiN crystallite determines the crystallite growth time and, accordingly, its size.

The results of studies of the structural-phase, tribological, and physicomechanical characteristics at high temperatures confirmed that multilayer Ti-

Cu-N nitride coatings can be used as wear-resistant to protect carbide products in the temperature range 25–700 ° C. At temperatures above 700 ° C, the structure and properties of the protective layer undergo changes, the coating degrades and does not perform protective functions. Multicomponent superhard (≥ 30 GPa) coatings (1–5 μm) with a nanocrystalline structure based on titanium nitride, such as Ti-Cu-N, can be used to protect parts, tools, and other products from premature wear. The deposition of such coatings increases the operational properties of products: wear resistance, service life, etc.

Thus, the application of wear-resistant Ti-Cu-N coatings, both monolayer, and as part of a two- or multilayer coating, guarantees a multiple increase in the wear resistance of parts and products from high-speed steels, hard alloys and composites. The results obtained confirm that Ti-Cu-N coatings can be used to increase the operational characteristics of parts and products in mechanical engineering, metalworking and tool industry, etc.

Thus, it was shown in the work that the addition of a copper element with a concentration of up to 12 at.% To a titanium-based coating allows one to obtain Ti-Cu-N nanocrystalline multilayer nitride coatings with a vacuum-arc plasma-assisted method, where TiN crystallites with an average size of ≈20 nm are surrounded by an amorphous copper layer with a thickness of 2–3 monolayers.

The work was carried out under the program of the Ministry of Education and Science of the Republic of Kazakhstan. Grants No. 0118PK000063 and No. Ф.0781.

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Scientific publication

International Conference
"Process Management and Scientific Developments"

Birmingham, United Kingdom
(Novotel Birmingham Centre, January 16, 2020)

Signed in print 22.01.2020 г. 60x84/16.
Ord. No. 82. Circulation of 500 copies.
Scientific publishing house Infinity, 2020.