Chemical sciences
Article

TO THE PROBLEM OF COMPLEX PROCESSION OF COPPER-, ARSENIC-CONTAINING MULTIMETALLIC MATERIALS
Zhaldobay E.E., Nurlan G.B., Dosmukhamedov N.K. 3

Materials of Conferences

NITRATE- AND NITRITE REDUCING ACTIVITY OF XANTHINE OXIDASE IN GOAT, CAMEL AND HORSE MILK
Dyussembayev K.A., Kussainova A.A., Kulutaeva M.S., Alikulov Z. 6

INFLUENCE OF THE PHYSICOCHEMICAL CONDITIONS ON HYDROTERMAL SYNTHESIS OF Co–Cu AND Co-Cu-Al NANOSYSTEMS
Jafarova S.T., Medjidov A.A., Achmadov M.M., Fatullaeva P.A., Agayeva S.A., Abbasov M. 10

Psychological sciences
Article

MENTAL HEALTH STUDIES OF THE ARAL SEA REGION
Abeuova I.A., Alibaeva R.N., Zhakanova T.A. 11

Economic sciences
Article

THE POTENTIAL OF THE ISSYK-KUL REGION FOR THE DEVELOPMENT OF THE TOURIST MARKET IN THE KYRGYZ REPUBLIC
Bekboeva M.A. 14

Materials of Conferences

THE ROLE OF ECONOMIC INDICATORS FOR THE EVALUATION OF THE EFFECTIVENESS OF ECONOMY FUNCTIONING
Danilina E.I., Chebotarev V.E., Gorelov D.V. 19

METHODOLOGICAL APPROACHES TOWARDS EVALUATION OF BUSINESS
Osipenkova O.Y., Danilina E.I. 22

PERSPECTIVES IN DEVELOPMENT OF RUSSIAN INTERNATIONAL TOURISM FOR DEVELOPMENT OF ECONOMY
Voskresenskiy V.Y. 24

Culturology
Article

THE PROSPECT OF AN INTERNATIONAL PROJECT: UNIVERSAL MODEL OF RECREATING NATIONAL CULTURAL LANDSCAPE OF THE LOCAL AREA
Tkalich S.K., Tkalich A.I. 27

Sociology
Article

POLITICAL REGIONALISTIC IN MODERN SOCIETY
Vergun T.V. 29

Technical sciences
Article

MOBILE DEVICE
Zhangissina G.D., Serikkyzy N. 32

CONTENTS

Materials of Conferences

SCIENTIFIC SPACE CENTERS AND GLOBAL ACHIEVEMENTS
Boyko A.K., Shkuratova M.V. 34

Culture and Arts
Materials of Conferences

APPLIED ART IS A PEAK OF THE ART HERITAGE OF THE KAZAKH NATION
Samuratova T.K., Shibuchikova A.N., Adalbek Nurayym 36

Biological sciences
Materials of Conferences

BASIC HEMODYNAMIC PARAMETERS IN HIGHLY SKILLED ACROBATS
Alexanyants G.D., Zinchenko A.U. 39

ASSESSMENT OF THE STATE OF ENVIRONMENT OF THE CITY OF KRASNOYARSK BY MEANS OF THE FLUCTUATING ASYMMETRY OF THE SHEET PLATE OF ULMUS PUMILA L.
Korotchenko I.S. 40

Medical sciences
Materials of Conferences

BRONCHIAL ASTHMA: IS CARDIORESPIRATORY CONTINUUM?
Ryabova A.Y., Shapovalova T.G., Shashina M.M., Lekareva L.I. 41

Pedagogical sciences
Article

COMPREHENSION OF EDUCATIONAL INFORMATION AS A PROCESS OF THE SELF-ORGANIZATION
Penkov V.E. 43

Pharmaceutical sciences
Article

INCREASING THE SPEED OF TASKS SOLVING BY PARALLELIZATION OF TASKS
Gritsay I.P., Brook A.S. 44

TO THE PROBLEM OF COMPLEX PROCESSION OF COPPER-, ARSENIC-CONTAINING MULTIMETALLIC MATERIALS

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Involvement into procession of multimetallic sulphide ore and concentrates is limited by an increased arsenic content in them. Nevertheless, due to depletion of the initial deposits of materials, rich in basic metals, the mentioned metals are processed by force within the existing production chain ("linkage") with alteration of the productional regime. A critical level of situation that requires urgent measures on creation of approbated technologies, aimed to solve the problem of complete and complex extraction of all valuable components from multimetallic materials, is achieved at certain enterprises. Solution of this problem obtains a special urgency in terms of extracting such valuable material as rhenium which is an additional metal of sulphide multimetallic copper concentrates. This work provides results of complex procession of copper-arsenic concentrates that contain rhenium. It demonstrated principal possibility of high extraction of rhenium into gas phase via carrying out preliminary oxidation glazing. It was established that a relatively high selective extraction of rhenium into dust up to 83 % is achieved in terms of oxidation of sulphide copper-arsenic concentrate within temperature range 400–500 °C, and oxygen consumption blowing coefficient to fuel 1,0–1,5. In the described conditions sublimation of arsenic into gas phase is preserved at a low level of ~17 %. Further extraction of rhenium from the received selective product with the low content of arsenic does not cause any difficulties. The received copper end can be processed after the burning according to the existing technologies with discharge of arsenic remains from the further operation via traditional means.

Keywords: copper-arsenic concentrate, extraction, rhenium, burning, blowing, oxygen

Growth in consumption of mineral-raw materials and energy sources has led to an increase in number of the opened and exploited mineral deposits. Multimetallic ores ad concentrates, complex in their mineralogical and chemical composition, have been involved into procession. The existing technological schemes proved to unable to process such type of raw materials, and it lead to a serious complication of the former. Nowadays nature-users have no motivation to solve the problem of complex procession of multimetallic raw materials while they are receiving great income for selective procession of the rich part of deposit and realization of final product – strictly basic metals. However, clear economic advantage lies in realization of the fact that multimetallic resources can be used in production of import-replacing and export-directed products.

Such approach is basically significant and makes us to pay attention to the problems of extracting such valuable additional metals of copper as rhenium, osmium, ruthenium, and a number of other rare and rare-earth metals for which sulphide copper ores and concentrates are the basic sources of extraction.

In Republic of Kazakhstan production of rhenium has been established on two enterprises – LLC "Corporation Kazakhmys" and LLC "Industrial Corporation "Yuzhmultimetal"". Nowadays, due to the shutdown of LLC "Industrial Corporation "Yuzhmultimetal"" extraction of rhenium is carried out at Djezkazgan copper-melting plant of LLC "Corporation Kazakhmys" from lead converter dust. Let us underline that the existing technology of producing rhenium at Djezkazgan copper-melting plant has been complicated significantly due to an increase in content of other additional elements in the initial material and is defined by low extraction of rhenium at the level of 35–40 %.

It is known [1-3] that valuable additional rare and rare-earth elements of copper ores and concentrates can be divided into three groups depending on which product of melting can be extracted from them most easily and thus reasonably. As the same time the most complex and multisided remains management of behavior of admixture groups that should be extracted into gas phase or sublimes. The following elements, in addition to rhenium, osmium, and ruthenium, can be referred to this group: Zn, Cd, In, Pb, Ge, As, Sb, S, Se, Te, Ta and others. While organizing the process of processing multimetal copper materials one should consider legislations of distribution of the mentioned metals between products of melting.

In its time, a great attention to this problem was devoted by professor A.V. Vanyukov. In his opinion, none of the facilitated processes creates due conditions for distillation of all valuable components. He underlined the fact that behavior of additional elements of copper differs significantly: some of them (In, Pb, As, Sb, S, Se, Os, Re, Ru) require melting under oxidation conditions for extraction into gas phase or sublimes, others (Zn, Cd, Ge) need restoring conditions. Process KIVCET corresponds to conditions of complex sublimation of valuable components to the fullest extent. However, its significant disadvantage is an extremely slow pace of restoration process and sublimation in the electro-thermal area due to a low speed of mass exchange. Considering the change in composition of initial raw materials to the side of degradation, conclusion of A.V. Vanyukov

on that a critical necessity of creating principally new processes that will provide for a high degree of extraction for all valuable copper satellites from multimetal materials at a high speed of process [1] proves to be convincing.

Considering the above-mentioned reasons, we can claim that complex solution of the problem – simultaneous increase in extraction of all valuable elements of the mentioned group within one separate melting aggregate is very difficult to achieve. At refers especially to multimetal copper concentrates that contain arsenic and rhenium. In order to process such materials, in our opinion, it is preferable to carry out their preliminary burning to provide for relatively high extent of selective sublimation of rhenium into gas phase.

Scientific literature knows works [4–6] which develop and suggest various methods of solving this problem. However, regardless of the achieved positive results, these works possess a number of mutual weak points. Particularly, work [4] draws our attention to studying behavior of arsenic while problems of rhenium behavior during the process of burning sulphide material in the boiling layer remain beyond the research. Among the disadvantages of work [5] we can outline complexity of implementing the suggested methods such as spreading rhenium among products of granulation and sulphatizing burning as well as concentration of arsenic in dust together with rhenium. Suggested in work [6] method of processing sulphide arsenic-containing multimetal material is defined by complexity of apparatus mounting and implementation of technological process: before dust collection it is necessary to carry out additional oxidation of arsenic-carrying gassy products. Besides, during the process rhenium sublimes together with arsenic and concentrates in dust. Further procession of dust aimed to extract rhenium leads to increase in material costs.

This work presents results of studying selective extraction of rhenium from sulphide copper-arsenic multimetal concentrate.

Methods and materials of research

The essence of the research lies in definition of optimal technological parameters of oxidizing burning that will establish high extraction of rhenium into sublimes depending on temperature and various blowing regimes.

Experiments were carried out with usage of copper-arsenic concentrate of the following composition, %: Cu – 23; Fe – 34,2; As – up to 10; S – 33; Re – up to 40 g/t.

The initial addition of concentrate in all tests was constant and equaled 100 g. Blowing consumption was varied within limits 0,1 to 0,2 l/g of the concentrate. For blowing we used composition of gases that consisted of fumes of water, carbonic acid, nitrogen, and oxygen that corresponded to products of natural gas burning. Tests took place in aerial ($\alpha = 1,0$) and oxygen-enriched blowing ($\alpha = 1,3–1,7$) under different temperatures. Range of temperature alteration varied from 350 to 550°C. Duration of each test, carried out under certain temperature condition, equaled 30 minutes.

After the set period of burning the received end was exposed to chemical analysis for content of copper, arsenic, sulphur, and rhenium.

Results of research and their discussion

According to the results of chemical analysis of arsenic, sulphur, and rhenium in the initial concentrate the received end, final technological indexes for each test were received – desulphurization degree, dearsenization degree, and extraction of rhenium into gas phase.

The below provided table shows selective massive of test results.

Initial analysis of the received results shows us that extraction of rhenium grows along with growth in temperature and coefficient of blowing enriching with oxygen. At the same time, in the temperature range 350–500°C desulphurization degree grows almost 3 times, while dearsenizatin degree increases almost 6 times

Dependence of rhenium extraction and sublimation degree of arsenic and sulphur on temperature and coefficient of oxygen consupmption

Number	Temperature, °C	Coefficient of oxygen consumption	Rhenium extraction into gas phase, %	Dearsenization degree, %	Desulphurization degree, %
1	350	1,0	15,3	Сл.	Сл.
2	350	1,5	35,1	1,8	3,7
3	400	1,0	58,8	2,3	3,1
4	400	1,3	78,1	4,8	7,5
5	400	1,5	79,5	5,2	8,7
6	400	1,7	81,7	12,9	15,1
7	500	1,0	74,6	15,7	9,2
8	500	1,5	82,7	17,5	12,0
9	500	1,7	83,8	33,8	25,9
10	550	1,0	88,3	44,9	32,5
11	550	1,7	89,0	48,4	34,2

During further increase of temperature we observed a sharp growth in desulphurization and dearsenization degree which testifies for fairly equal high speeds of oxidation of arsenic, sulphur, and their sublimation into gas phase.

According to mathematical procession of total test result massive (43 tests) regressive equation was constructed, and it allows us to predict extraction of rhenium in dependence on various technological parameters of copper-arsenic concentrate oxidation burning. The received equation looks as follows:

$$y = 64{,}220 - 0{,}738x_1 + 2{,}107x_2 - 5{,}207x_3;$$

$$r = 0{,}69,$$

while y is extraction rhenium into gas phase,%; x_1 is dersenization degree,%; x_2 is desulphurization degree, %; x_3 is coefficient of oxygen consumption; r is coefficient of correlation totality.

The received results show us that it is reasonable to carry out oxidation burning before melting in case of processing sulphide copper multimetal material that contains arsenic and rhenium. Under optimal technological parameters of burning process (temperature, oxygen content in blowing) maximal extraction of rhenium into gas phase can be achieved with minimal sublimation of sulphur and arsenic. After the burning the received copper end can be easily processed according to the existing technologies with extraction of arsenic remains from further operations via traditional means.

Conclusion

1. The received results show us that rather high selective extraction of rhenium into dust up to 83 % can be achieved in terms of oxidizing sulphide copper-arsenic concentrate within temperature range 400–500 °C and coefficient of blowing oxygen consumption to fuel 1,0–1,5. Under the set conditions extraction of arsenic into gas phase remains at low level of ~17 %. Further extraction of rhenium into the received selective product does not cause any complications.

2. Process of processing sulphide multimetal concentrates that contain rhenium and arsenic, developed according to the taken research shows us principal possibility of selective extraction of rhenium into targeted product vie carrying out preliminary burning in stove of “boiling layer’.

3. Implementing the described method before melting allows us to increase through extraction of rhenium into merchandise due to decrease in losses of it during the process of melting and converting, defined by “spreading” rhenium between products of these processes.

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NITRATE- AND NITRITE REDUCING ACTIVITY OF XANTHINE OXIDASE IN GOAT, CAMEL AND HORSE MILK

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This study was designed to examine the reduction of nitrite to NO by milk xanthine oxidase (XO) of domestic animals such as camel, horse and goat. We found that XO in fresh milk of these animals catalyzes the reduction of nitrate and nitrite. This redox reaction requires NADH as a natural electron donor and is oxygen independent. Heat treatment of fresh milk in the presence of thiols such as cysteine and molybdenum led to an increase in the catalysis of nitrate and nitrite reduction. The inhibitory profiles by tungsten suggest that reduction of nitrate and nitrite takes place at the molybdenum center of XO.

Nitrate isa natural material in soils. It is primary source of nitrogen for plants and microorganisms. Probably more than 90 percent of the nitrogen absorbed by plants is in the nitrate form. Nitrate- and nitrite-nitrogen is soluble in water and moves with soil moisture. A potential cancer risk from nitrate (and nitrite) in water and food has been reported. Recent human epidemiology studies have shown that nitrate ingestion may be linked to gastric or bladder cancer. The most likely mechanism for human cancer related to nitrite is the body's formation of N-nitrosamines [1]. Nitrosamines have been shown to cause tumors at multiple organ sites in every animal species tested [1, 2]. The nitrite oxidizes iron in the hemoglobin of the red blood cells to form met hemoglobin, which lacks the oxygen-carrying ability of hemoglobin. This creates the condition known as methaemoglobinemia (sometimes referred to as "blue baby syndrome") [3, 4]. Nitrate contamination in groundwater from fertilizer and animal manure is severe and getting worse for hundreds of thousands of residents in Kazakhstan

Thirty years ago we observed that milk xanthine oxidase is able to catalyze the disappearance of nitrates and nitrites in the reaction mixture [5]. More later, it was found that both purified and tissue containing XO catalyzes the reduction of nitrate and nitrite to NO [6, 7].

XO (EC 1.17.3.2) catalyzes the oxidation of hypoxanthine to xanthine and can further catalyze the oxidation of xanthine to uric acid. The enzyme protein is large, having a molecular weight of 270 kDa, and has 2 FAD molecules, 2 molybdenum atoms, and 8 iron atoms bound per enzymatic unit [8]. Comparison of the Mo contents and XO activities of human and bovine XO allowed estimation of activities corresponding to 100% Mo content. This gave estimates of 59% and 55% content of inactive Mo-containing enzyme for human and bovine XOR respectively [9]. XO purified from human milk was shown to contain 0.04 atoms Mo per subunit. Thus, it seems clear that bovine and human XOs contain similar demolybdo-forms of the enzyme [10]. It is likely that the human milk samples usedare usual in that the donors came from Mo-deficient area. Preparation of XO from goat and sheep milk contain only 0,09 and 0,18 atoms Mo per subunit respectively and, although purified bovine milk XOR is clearly much richer in Mo, it is still 40% deficient [11]. Thus, in human and bovine milk XO also exists in enzymatic inactive demolybdo form. However, in goat and camel milk only a limited amount of information has been published concerning this enzyme. Therefore the purpose of this paper is to discuss the results related to nitrate- and nitrite-reducing activity of XO from goat, camel and horse milk.

Materials and methods of research. Fresh milk from goat, camel and horse were used in our experiments.0,2 M phosphate buffer containing 20 μM was added to fresh milk in 1:1 ratio. XO activity was determined spectrophotometric ally by measuring uric acid formation at 293 nm with xanthine as substrate. One enzyme unit is defined as amount of enzyme required to produce 1 μM uric acid per min per 0,1 ml reaction mixture from 10 μM of xanthine at 37°C, pH 7.4. The mixture is allowed to incubate for 15 min at 37°C. Reaction mixture for NR activity of milk XO contained 0,3 ml of 0,2 M sodium phosphate buffer (pH 6,5) containing 10 μM EDTA, 0,1 ml of fresh milk, 0,1 ml of 0,1 M KNO_3, 0,1 ml of 10 μM natural electron donor (NADPH, NADH, $FADH_2$) or 0,1 ml of 50 μM methylviologen. Reaction mixture for NiR was the same as that for NR activity, but instead of KNO3 was added 0,1 ml of 4 mM $NaNO_2$. Reaction was started by addition of 20 μM of 0,1 M dithionite ($Na_2S_2O_4$) for reduction of artificial electron donor methylviologen. The reaction mixture was incubated for 15 min at 37°C. NR and NiR activities estimated by the amount of nitrite (NO_2^-). NR activity of milk XO converted nitrate to nitrite, i.e. this activity estimated by nitrite content formed after incubation. NiR activity of the enzyme converted nitrite to NO [6, 7], i.e. after incubation the content of nitrite in reaction mixture is decreased or disappeared. Nitrite in reaction mixture after incubation was colored by adding an equal volume (0,5 ml) of sulfanilamide and N-(1-naphtyl) ethylene diamine hydrochloride. Absorption of the colour was

measured at 548 nm of the spectrophotometer. The optical measurements were performed on Spekol 1300 dual beam spectrophotometer (Germany).

Results of research and their discussion. In the earliest experiments we showed that incubation of xanthine dehydrogenase (XDH) from wheat embryo with molybdate and glutathione at high temperature (80°C) resulted in significant increase of enzyme activity. This fact led us to following interpretations. It is known that soils in all regions of Kazakhstan contain molybdenum 3–5 times less than that concentrationsneeded for normal growth and development of plants. Such a deficiency of soil molybdenum causes in the formation of molybdenum-free molecules of XDH. Incubation of the wheat embryo extract containing molybdenum-free molecules with molybdenum in the presence of glutathione made possible the incorporation of molybdenum into the active center of the enzyme and its activation. Glutathione as a strong reductant protects molybdenum-coordinating SH-groups in the active center against oxidation by oxygen.

We carried out the same experiments to activate milk xanthine oxidase of animals. 10mM sodium molybdate (Na_2MoO_4) and 10 μM cysteine (Cys) or glutathione (GSH) in final concentrations were added to the milk. The milk was heated in 2, 4, 6 and 8 minutes at 80°C. The variants were cooled to room temperature and the activity of XO (oxidation of hypoxanthine to uric acid) was determined in their aliquots. Results obtained are present in Table 1.

As shown in Table 1, heating of goat, camel and horse milk for 5–10 min in the presence of molybdate and cysteine resulted in dramatically increase of XO activity in all the milk. Whilst heat treatment in the presence of GSH increased XO activity about 3 times less than cysteine. Enzyme activity after heat treatment in the absence of thiols was negligible.

Study on nitrate- and nitrite-reducing activities of milk XO

In the cells of microorganisms and plants nitrate is reduced by the enzyme – nitrate reductase (NR). The enzyme converts nitrate (NO_3^-) to nitrite (NO_2^-). Another enzyme – nitrite reductase (NiR) converts nitrite further to ammonia ($NH_4^{+)}$. Further ammonia is incorporated directly into organic acids converting them to amino acids.

Since heat treatment at 80°C strongly increased XO activity of fresh milk, we used such pretreatment of the milk for determination of NR and NiR activity of milk XO. In our first experiments for determination of NR and NiR activity of milk XO we used reduced methylviologen as an electron donor (methylviologen was reduced by dithionite) [5]. Therefore first of all we examined different natural electron donors for NR and NiR activities of fresh milk XO. Possible electron donors were tested for their effects on NO_3^- and NO_2^- reducing activity of milk XO and the results are presented in Table 2.

In order to study such a nitrate reducing activity (NR) of XO the milk was heated at 80°C in 2, 4, 6, 8 an 10 min in the presence of optimal concentration of 20 μM molybdate and cysteine. After cooling to room temperature in the milk the appearance of nitrite, a reduced product of NR and disappearance of nitrite as a substrate by NiR activity of milk XO. The activities were determined by using reduced methylviologen.

Table 1

Effect of heat treatment (80°C) of the milk of different animals in the presence of molybdate and glutathione on the activity of *XO

Milk source	Additions	Heating time, min			
		2	4	6	8
Goat	No addition	0,48 ± 0,03	1,53 ± 0,21	1,23 ± 0,34	1,04 ± 0,16
	+GSH	0,52 ± 0,08	1,68 ± 0,27	1,28 ± 0,5	1,06 ± 0,18
	+Mo	1,35 ± 0,12	2,75 ± 0,15	1,54 ± 0,2	1,23 ± 0,16
	+Mo + GSH	2,73 ± 0,32	3,35 ± 0,52	2,76 ± 0,7	2,58 ± 0,2
	+Mo + Cys	8,77 ± 0,83	9,85 ± 1,2	8,93 ± 0,32	8,37 ± 0,53
Camel	No addition	0,98 ± 0,12	2,37 ± 0,32	2,03 ± 0,18	1,53 ± 0,3
	+GSH	1,12 ± 0,12	2,53 ± 0,16	2,23 ± 0,3	1,87 ± 0,2
	+Mo	1,85 ± 0,27	3,47 ± 0,19	2,98 ± 0,21	2,34 ± 0,12
	+Mo + GSH	3,73 ± 0,42	4,56 ± 0,9	4,24 ± 0,2	2,75 ± 0,21
	+Mo + Cys	12,1 ± 1,27	12,64 ± 1,3	12,03 ± 0,6	11,58 ± 0,3
Horse	No addition	0,98 ± 0,72	2,37 ± 0,17	2,13 ± 0,2	1,43 ± 0,3
	+GSH	1,12 ± 0,16	2,53 ± 0,21	2,43 ± 0,22	2,12 ± 0,17
	+Mo	1,35 ± 0,15	3,47 ± 0,63	2,58 ± 0,2	1,74 ± 0,4
	+Mo + GSH	3,52 ± 0,31	4,24 ± 0,28	3,86 ± 0,7	3,57 ± 0,52
	+Mo + Cys	11,8 ± 1,3	12,14 ± 0,13	12,02 ± 1,5	11,43 ± 1,7

N o t e . * XO activity: μmoles uric acid/ min/0,1 ml reaction mixture.

Table 2

Effects of different natural electron donors on the NR and NiR activity of molybdenum-treated milk XO

Milk source	Electron donor	*NR activity	**NiR activity
Goat	NADPH	0,0	100
	NADH	203 ± 16,3	27
	FADH2	83 ± 8,6	60
	Dithionite + MV	215 ± 18,6	0,0
Camel	NADPH	0,0	100
	NADH	114 ± 18,7	27
	FADH2	62 ± 8,6	68
	Dithionite + MV	142 ± 18,9	0,0
Horse	NADPH	0,0	100
	NADH	107 ± 18,6	25
	FADH2	56 ± 13,2	62
	Dithionite + MV	514 ± 58,2	0,0

Note. *NR activity in nmoles NO_2^- formed/min/0,5 ml, **NiR per cent of remained nitrite in reaction mixture after incubation (see "Materials and methods").

Table 3

Dependence of *nitrate reduction (nitrite formed in nanomoles in the reaction mixture) and **nitrite reduction (nitrite in nanomoles disappeared in the reaction mixture) by XO on preheating time of fresh milk

Milk of:	Substrate	Heating time, min				
		2	4	6	8	10
Goat	NO^{3-}	132 ± 28,7	1,1	198 ± 17,6	157 ± 21,8	122 ± 13,2
	NO_2^-	12	0,0	0,0	10	25
Horse	NO^{3-}	141 ± 9,6	1,3	244 ± 19,4	184 ± 42,6	148 ± 13,4
	NO_2^-	8	0,0	0,0	7	13
Camel	NO^{3-}	124 ± 22,3	0,9	163 ± 12,3	122 ± 8,75	82 ± 12,5
	NO_2^-	7	0,0	0,0	5	15

Notes: * NR activity in nmoles NO_2^- formed/min/0,5 ml; **NiR per cent of remained nitrite in reaction mixture after incubation.

At room temperature fresh milk of these animals was notable to reduce nitrate and nitrite or the activities were negligible. However, after heating the milk in 2 min we observed the formation of nitrite (NR activity) and its disappearance (NiR activity, Table). Maximal activity of reduction of nitrate and nitrite observed between 4 and 6 min heating at 80 °C. Further incubation at this temperature led to gradually decrease of these activities of milk XO (Table 3).

In the next experiments we studied the effects of molybdate, cysteine and glutathione on NR and NiR activities of milk XO. Fresh milk was heated at 80 °C in the presence of these compounds in 5 min. The results are presented in Table 4.

Thus, it is relevant that cysteine thiol is generally more effective in the incorporation of the molybdenum into active center of milk XO. All the results present in these Table 4 show that simultaneous presence of cysteine and molybdenum during heat treatment dramatically increased nitrate (NR)- and nitrite-reducing (NiR) activities of milk XO. First, these results confirm that molybdenum really incorporates into XO molecule. Second, reduction of nitrate as well as nitrite is occurred in molybdenum containing center of the enzyme.

It is well known that tungsten is close chemical analog of molybdenum. The atomic and ionic radii and the chemical properties of tungsten are very similar to those of molybdenum [12]. Therefore growing various organisms in the presence of tungstate resulted in the production of W-substituted molybdoenzymes with little or no catalytic activity. W-substituted molybdoenzymes are generally inactive because of the lower reduction potential of the tungsten site with respect to the molybdenum site [12]. Tungsten containing enzymes are inactive because of inability of tungsten to transfer electrons from donor to acceptor in the active center. Therefore, tungsten is widely used for identification

of a new molybdoenzymes. In our experiments the substitution of tungsten for molybdenum under the same conditions gave no detectable NR and NiR activity of milk XO. Tableshows that the nitrate- and nitrite-reducing activity of W-XO decreased drastically and about 97–100 % of its activity was lost in the presence of 0,02 mM tungstate.

Table 4

Effect of heat treatment of fresh milk in the presence of molybdate (Na_2MoO_4) or tungstate (Na_2WO_4) and thiols on NR and NiR activity of XO

Animal	Additions	Associated activities	
		*NR	**NiR
Goat	No addition	> 0,5	98
	+GSH	> 0,5	91
	+Mo	14 ± 1,3	83
	+Mo + GSH	78 ± 8,2	2–4
	+Mo + Cys	241 ± 21,6	0,0
	+W	> 0,1	100
	+W + GSH	0,0	100
	+W + Cys	0,0	100
Camel	No addition	> 0,3	97
	+GSH	> 0,4	90
	+Mo	17 ± 0,8	84
	+Mo + GSH	68 ± 9,6	2–3
	+Mo + Cys	197 ± 28,5	0,0
	+W	0,0	100
	+W + GSH	0,0	100
	+W + Cys	0,0	100
Horse	No addition	> 0,4	98
	+GSH	> 0,5	87
	+Mo	13 ± 0,9	74
	+Mo + GSH	86 ± 12,2	2–4
	+Mo + Cys	245 ± 19,7	0,0
	+W	0,0	100
	+W + GSH	0,0	100
	+W + Cys	0,0	100

Notes: *NR activity in nmoles NO_2^- formed/min/0,5 ml; **NiR per cent of remained nitrite in reaction mixture after incubation.

We believe that these findings suggest natural molybdenum deficiency in milk XO. It has been claimed that molybdenum status influences susceptibility to certain forms of cancer and that the high incidence of esophageal cancer among the Bantu in Transkei (South Africa) is associated with a deficiency of this element in locally available food. Studies in Henan province, China, suggest that a high incidence of esophageal cancer is associated with lower than normal contents of molybdenum in drinking water and food as well as in serum, hair and urine. Esophageal cancer tissue also had lower molybdenum content than normal. It may well be relevant that inclusion of 2 or 20 μg of molybdenum/g in the diet of rats has been found to inhibit esophageal and stomach cancer following the administration of N-nitrososarcosine ethyl ester. Molybdenum in the drinking water of rats at a concentration of 10 mg/l inhibited mammary carcinogenesis induced by N-nitroso-N-methylurea [13, 14].

Molybdenum deficiency has not been identified in free-living animal species. Molybdenum deficiency has also been produced experimentally in goats by feeding them purified diets, very low in molybdenum. In goats, a molybdenum deficient diet was associated with reduced fertility and increased mortality in both the mothers and the offspring. The high dietary Mo contents did not reduce the growth of animals and after Mo-administration the highest Mo levels were found in liver and kidney [15]. However, molybdenum levels in milk of Mo-administrated animals was not yet studied.

To our knowledge, our present report is the first to show the presence of high NO_3^- and NO_2^- reducing activity in milk from goat, camel and horse**.** These results suggested that XO was probably involved in presumably NO production in animal milk. Thus, our results for the first time show nitrate- and nitrite reductase activity of milk XO from horse, camel and goat.

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INFLUENCE OF THE PHYSICOCHEMICAL CONDITIONS ON HYDROTERMAL SYNTHESIS OF Co–Cu AND Co-Cu-Al NANOSYSTEMS

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Hydrothermal synthesis has several advantages (single stage and a high degree of mixing of the reactants, relatively mild conditions of synthesis), and is increasingly used for the synthesis of inorganic materials in a highly dispersed state . In recent years number of publications on the use of such materials as catalysts has increased.

Catalysts containing cobalt oxide or reduced state are well known and are used in many reactions: hydrogen production and the reactions with his participation, such as hydrogenation and obtaining of hydrocarbons according to Fischer – Tropsch synthesis. Intermetallic Co–Ni highly dispersed powders with a particle size of 40–80 nm were prepared earlier [1] by hydrothermal synthesis in hydroalcoholic solutions.

The aim of this investigation is the influence of physico-chemical conditions (temperature, nature of the reductant, etc.) on the synthesis of Co–Cu and Co–Cu–Al systems under hydrothermal conditions. Syntheses were performed in steel autoclaves preferably from stoichiometric mixture of nitrates of these metals in aqueous solutions of formaldehyde and polyols. Ethylenglycol and glycerol were used as polyols. The products of the reaction were characterized using X-ray diffractometer and electron microscope, UV, visible and IR spectroscope.

It is shown that in the system of Co–Cu–Al at low temperatures in the products of reaction regardless of the nature of the reductant presents metallic copper and cobalt oxalate. With a slight increase in temperature in the case of glycerol in the products of reaction aluminium oxide phase is observed, whereas with the ethylenglycol gibbsite is formed.

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MENTAL HEALTH STUDIES OF THE ARAL SEA REGION

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Today, the science of psychology is not sufficiently included in the solution of environmental problems, significantly inferior in "environmental activism" sciences such as sociology, philosophy, political science, law, etc. The problem of the influence of ecology on mental development and health in the Republic of Kazakhstan is being staged by the problem. Meanwhile, the solution to this problem requires urgent action from – the growing number of children with disabilities and developmental delays that were thrown beyond teaching – educational process.

Keywords: self-knowledge, the principle of positivity, the principle of spirituality, the principle of integrity and self-development, helping to build a positive future, foundations of psycho – consultation and psycho – correction

Since 2001, the Republic of Kazakhstan developed the course "Self-knowledge" in the spiritual – moral education. The author of the project is the first lady of the country – S.A. Nazarbayeva. Many educational institutions starting from the senior group of kindergarteners, including secondary school (grades 1–11) and first-year students classes on "Self-knowledge" on a trial basis [1].

The program consists of a number of developmental activities and is focused on:

1) the principle of positivity, meaning the creation of supportive kindness, atmosphere and cooperation;

2) the principle of spirituality, establishes a link between the higher values: goodness, beauty, health, happiness and a particular person, his inner world, the behavior, the meaning of life;

3) the principle of integrity and self-development, helping to build a positive future;

4) the principle of development and self-development, meaning the intensification of creative opportunities, the ability to self-knowledge and self-improvement;

5) the principle of individual approach, meaning the maximum consideration of mental identity and individual experience of each.

Since 2010, the lessons of the "Self-Knowledge" introduces a mandatory component of education. Due to the necessity of training in "self-discovery" Ministry of Educational and Science of the Republic of Kazakhstan approved State Educational standards specialty "Social pedagogy and self-knowledge", which was developed in Kazakh State Women's Pedagogical University, Kazakh National Pedagogical University named after Abayfor Harmonious Development of Man at National Scientific-practical Educational and Wellness center "Bobek" Karaganda State University.

The standard is based on state educational standards of the Republic of Kazakhstan 3.07.034–2001 and sets requirements for the content of education, the teaching load volume and the level of bachelor on specialty 5V012300 – "Social pedagogy and self-knowledge" [2].

Prerequisites include such areas of psychology as general psychology, developmental psychology, social psychology, educational psychology, health psychology, the psychology of self-awareness and self-knowledge, self-knowledge, and a workshop on self-development, psychological – pedagogical diagnostics, foundations of psycho – consultation and psycho – correction.

At the moment the most important task of the development of civilization is overcoming the global environmental crisis and building a post-industrial, information – Ecological Society (S.N. Glazachev, A.D. Ursul and etc.). Environmental well-being is one of the main advantages of Kazakhstan's competitiveness. In this circumstance, President NursultanNazarbayev has repeatedly drawn the attention of domestic and foreign investors. It would seem unlikely to have to someone – that to convince of the need to respect for nature: the history of the twentieth century, full of facts of man-made disasters, is an object lesson to mankind.

As you know, in terms of wildlife conservation humanity taken certain steps. However, there is already a bitter experience irreversible destruction of man. These problems in Kazakhstan include the nuclear tests conducted during 40 years at the Semipalatinsk test site and the environmental situation in the Aral Sea area.

In Kazakhstan in 2005 at the legislative level have been made to the Law "On Environmental Protection".

Today, the science of psychology is not sufficiently included in the solution of environmental problems, significantly inferior in "environmental activism" sciences such as sociology, philosophy, political science, law, etc.

The problem of the influence of ecology on mental development and health in the Republic of Kazakhstan is being staged by the problem. Meanwhile, the solution to this problem requires urgent action from – the growing

number of children with disabilities and developmental delays that were thrown beyond teaching – educational process.

Children living in the Aral Sea region, different from other populations of Kazakh children higher overall morbidity, increased levels of chronic disease, retarded mental and physical development. Some authors also noted an extremely low level of the quality of life of people in the Aral Sea region, while in other publications this region was characterized as an area of great ecological disaster caused by anthropogenic influence.

Since these findings were made in the analysis of a small number of experimental data is very important to carry out detailed studies that would allow more detailed study of the health of children living in the Aral Sea region, and to identify the main sources of possible negative impacts.

To this end, in the framework of the international project INTAS № 1005 was undertaken multiparameter study aimed to study the physical and mental development and physical health status of children living in the Aral Sea region [3].

To determine the mental state of children unfavorable environmental Priaralie were selected set of techniques that determine the level of anxiety, the emotional state of the behavior and mental abilities of: Raven's Progressive Matrices, a technique of studying the behavior of the child's personality, T.V. Senko test, the test Luscher colour associations, diagnostic, drawing tests: "Drawing Families", "Non-existent animal" self-study techniques, talks with parents.

The control group was selected similar group Balkhash area (Curtin district, Almaty region, pos. Akshi).

According to Raven's Progressive Matrices determined that more than half of all children surveyed have average intelligence IQ (61,4%), which is in itself cause for alarm, and 16,0% have a level of intelligence, even below average and 6,0% of the patients were found extremely low degree of intelligence, irrelevant in this age category.

Compared with the intelligence of children of the Aral Sea region children in Balkhash no children with low intelligence and children with good intelligence is almost 2,5 times higher than in children ecologically unfavorable Aral Sea area. The dependence of the level of intelligence of the child's emotional state, the state of anxiety, the analysis showed drawings "nonexistent animal" and "Draw a man", as the following data:

1) the low level of development thinking, with deviation from the 35,7% of the patients;

2) 5,7% of the children does not meet the level of development of age;

3) 58,6% of children experience anxiety, fear, timidity, shyness.

It was found that children experiencing anxiety, 3 times less than in the relatively environmentally safe area – the village. Akshi, although in the area of children with the level of development is not age-appropriate, and difficulties in communicating a lot of – 44,0%. In what – the extent, such a situation can be explained by the mentality of the children surveyed (children in the village generally unsociable, shy, did not immediately reveal themselves in front of a stranger).

In general, according to a survey of children in the two regions, ecologically unfavorable Aral Sea area and the safe area of Balkhash to the following conclusions:

1) 40,0–60,0% of preschool children are experiencing anxiety, fear, they are shy, timid, are in a state of stress the Aral Sea area;

2) children experiencing anxiety, fear in Balkhash 3 times lower (20,1 vs. 58,6% in the Aral Sea area);

3) the level of thought, the level of intelligence (from 40,0–60,0% of children) is average, below average, does not correspond to their age (in Aralsk);

4) children Balkhash intelligence is much higher than their peers from s. Aralsk (almost 40,0% in the good degree of intelligence);

5) approximately 60,0% of children Aralsk in a state of low performance, stress, choice of yellow colour in the test Luscher indicates that children are emotional, not independent. The children of the village.Akshi only 30,0% with a high degree of anxiety;

6) on the level of activity in the communion received the same data, which, in our opinion, is primarily determined by the mentality of the test.

To identify possible sources of increased anxiety in children aged 5–8 years were analyzed two variants of correlation:

1) morphometric parameters between children and their level of anxiety;

2) between the degree of stress in children and their parents.

The results showed that the level of anxiety among children and the ratio of body weight increase and a negative correlation was found ($p \leq 0,05$).

The group of adults – parents of children – was also represented by two samples. Total surveyed 592 adult humansubjects contingent.

The results of a poll conducted among adult members of the families of all children surveyed showed that in both villages live mainly poor people, whose monthly family income is not more than 5 thousand tenge (about 30 US dollars). Such families in Aralsk was 94,5–92,2% in village Akshi, was about

the same and the unemployment of fathers in these families – 46,2 % in s. Aralsk and 46,0 % in the villageAkshi. Families also did not differ in other indicators.

Assessment of the severity of stress in adults showed that the proportion of people in a state of psychological depression in Aralsk was significantly higher than in village Akshi (51,6–14,5 %, respectively). But the degree of fatigue of adults were slightly higher in village Akshi. While the settlements did not differ in the level of anxiety of adults. The degree of stress, determined by the average individual psychological status of adults, village Akshi was slightly lower than in s. Aralsk($p \leq 0,01$).

To identify possible reasons for the high frequency of psychological depression among adults carried out a correlation analysis of the relationship of the results of psychological and sociological testing. It turned out that only two parameters – the monthly income per family member and the social status of the father – the negatively correlated with the severity of stress ($p \leq 0,05$). Other correlations are not revealed. Thus, the poorer the family, following his father's social status, the more pronounced psychological depression in parents.

Comparing the data obtained for children and adults, we have to state a bleak picture for the city of Aralsk diagnostics.

The findings suggest that mental health, emotional state, intelligence residents ecologically unfavorable areas require further Aralsk (diagnostic and remedial) work.

It is known that in recent years in our country and abroad formed a new scientific direction – "Health Psychology". This branch of knowledge is a synthesis of psychology and valeology.

We offer the following contents of the course "Psychology of health" for the specialty "Social pedagogy and self-knowledge":

1) Introduction. The goal, tasks, subject and content of the course "Psychology of health". Place of the course "Psychology of health" in the system of the human sciences.

2) The problem of health psychology in psychological – pedagogical literature.

3) The problem of health psychology.

4) Psychological health of children.

5) Socio-psychological and psychosomatic maladjustment.

6) The views of Kazakh scientists on national – spiritual aspect of a person.

7) The functions of the social teacher, the psychologist to preserve the mental and psychological health of children and teachers.

8) Effect of ecological environment on the human psyche.

In the study course provides the opportunity to use training to preserve and strengthen the psychological health of the individual.

The course "Health Psychology" we developed on the basis of theoretical analysis, as well as the result of:

1) the experimental lessons of "self-discovery";

2) pilot survey of psychological state, including the psychological health of the inhabitants of the two regions of Kazakhstan.

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THE POTENTIAL OF THE ISSYK-KUL REGION FOR THE DEVELOPMENT OF THE TOURIST MARKET IN THE KYRGYZ REPUBLIC

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This article starts with the overview of the current conditions of the tourism industry in Kyrgyz Republic. Particular accent is made on the fact that the country's tourism industry is represented mainly by recreational tourism, health and swimming resorts, mountain tourism, cultural and rural tourism. There is significant role of the demographic characteristics in forming tourism industry of Kyrgyzstan. Particularly author looks at the country's population, its dispersion and how that affects the industry. The population of the country is about 5 million people where 60% of them live in the rural areas. There are only two cities in the country with the population of over 100 000 people, Bishkek (the capital, over a million people) and Osh (about 300 000 people). Discussion in the further sections of the article is based on the example of the Isykkul region, which is one of the good examples of the regions of Kyrgyzstan with vast opportunities for tourism development. In further sections of the article the author pays attention to the comparative analysis of the tourism development in rural areas and small towns. As a result of that kind of analysis one of the main obstacles in the tourism development was found a lack of experience of the rural areas in tourism services. After looking at the current conditions and conducting some analysis the author presents the trends and suggests possible opportunities for development of different tourism sectors in Kyrgyzstan. As concluding points the author gives some emphasis on the potential for the country's rural tourism development from the international tourists' points of view. While type of tourism means main perspectives for international tourism development, it also carries many problems in these areas.

Keywords: tourism, rural tourism, small towns, tourism policy, natural factors, socio-economic factors, territorial differentiation

Efficient usage of touristic recourses is a focusing question on the grounds of researching different aspects of tourism in rural locality. They are interested in analyzing the development level of tourism outside of the cities in Kyrgyzstan.

For the organization of internal societies actually there are being searched some forming directions, one of which is development of touristic industry in rural area. Touristic policy is connected with problems of service and rational wildlife management. The main activity of tourism shows the indicator of mutual conditionality of natural and social environment in service industry. Partly location of villages depends on natural factors. Natural factors are fundamental for the development of touristic activity. Socio-economical factors make sense in territorial differentiation of touristic industry in regions with small population. The interconnections of natural and social-economical factors lead to integration of researching directions and complex based solution of problems of tourism development in rural areas [6].

More than 5 million people live in Kyrgyzstan. The largest cities are Bishkek – capital (1,2 million.) and administrative centre of the same name region – Osh (more than 300 thousand people) that is more than 30% of whole Kyrgyzstan population. Other cities do not exceed 150 thousand people therefore these cities fit to the range of small localities. By taking into consideration that Kyrgyzstan is agro-industrial country and 60% of population lives in rural areas. So, the problem of analyzing the development of tourism in rural areas is going in the context with the general government policy on development of touristic industry in Kyrgyzstan. The view of this research will be focused on one of the political-administrative regions because of difference in population and density of village's location in Kyrgyzstan [7].

Issyk-Kul region is a large administrative part of Kyrgyzstan. Population is 450 thousand. Demographic content is characterized by multiconfessionalian and multinational features. Basic ethnical groups are Kyrgyz people (70%), Russians (6%), and others are Kazakhs, Uyghur's and Dungans.

Leading religions: Islam and Russian Orthodox Church. There are 3 cities and 192 villages. Statistical correlation is characterized by prevalence of village population. Karakol (80 thousand), Balykchi (45 thousand) and Cholpon-Ata (20 thousand) – 30% of whole residents [8].

Economical disposition: agrarian-manufacturing, comparatively developed touristic-recreation sector in the range of Kyrgyzstan.

The particular importance in the development of rural tourism in Issyk-Kul is based on natural conditions. To the natural components we can relate relief, climate, water, vegetation and fauna.

Natural conditions influence to the formation and development of touristic area, choice of subregion for rests. Tourists are interested in resplendence of flora and fauna, peculiarities of landscape, facilities of different activities during journey. The nature of region is unique and versatile, there are almost all types of geosystems: deserts, semi deserts, prairies, forests,

alpine and subalpine meadows, snow peaks and glaciers.

Issyk-Kul region occupies north-east part of Kyrgyz Republic (410–430 of northern latitude, 760–810 of eastern longitude) and includes closed hollow of the same name and located southward from it highland sifts – Central Tian-Shang. The altitude is from 1600 to 7440 meters high. Total area 43,5 thousand square meters which is 22% territory of Kyrgyz Republic.

The peculiarity of Issyk-Kul region is it's location in center of Eurasian continent among the temperate zone deserts, isolation with spines, considerable elation above sea level and presence of non-freezing saline lake [1].

Formation of touristic territories

Stimulation of touristic sector development in rural area brings number of territories to a particular specialization in performing the servicing functions.

The idea of recreation district in recreational geography is based on labor division theory. Touristic locality means socio-economic category, in most of the works it is interpreted as territorial system for serving recreants.

Method of territory regionalization is the method which is used in physical and socio-economical geography. There are two regionalization: "sectorial" and "integral". Integral regionalization unites natural and socio-economical aspects. Touristic regionalization is all about the integral type of this methodology where stocktaking, assessment of natural and socio-economical conditions and development resources are equally interweaved. The efficient combination of these aspects creates the necessary prerequisites for development of tourism in the scale of region's specialization sector.

The touristic regionalization of rural territories allows evaluating natural recourses and using them efficiently by taking into consideration the environment of the region.

Territories where service and other activities of tourism are so developed that they can be deputized as sector of specialization can be added to touristic rural localities.

Territorial specialization can be expressed via interregional commodities exchange. That is why, by following this principle in touristic activity, rendering services to voyageurs must be estimated as "removal of goods" from the present rural locality. Mass migration of population for the touristic purposes leads to redistribution of money, material and labor recourses, the quantitative expression of which shows rural localities involvement in territorial labor division in economical sense.

Touristic rural locality is defined as a territorial constellation of economically interconnected servicing enterprises, specialized in best servicing to meet all demands of tourists.

For the touristic rural localities it is inherent seasonal prevalence of functioning, stipulated by both the natural rhythmic and a number of aspects of social life organization.

The rural tourism in Issyk-Kul region has characters decompounded with qualitative and quantitative expressions:

a) Existing touristic specialization – sanitaria and health sector, comparatively to world standards it has level of development below the average.

b) There is a presence of relations in territorial servicing the tourists, especially in central sub regions: Karaoy village – Cholpon-Ata – Bosteri.

c) Comparatively to neighboring regions of Kyrgyzstan the development level of touristic service is much higher.

System of rural touristic region's conception is methodically important, as far as function of further development of every individual touristic locality can be estimated within the bounds of whole of Kyrgyz Republic territorial subdivision system.

Only the presence of resources is not enough for further development of touristic functions, there is a necessity of scientifically grounded projection and efficient building of servicing establishments by taking into consideration the economical and ecological politics.

Zonation of Issyk-Kul region's territory for touristic usage bends to purpose of increasing the servicing functions.

Peculiarities of medical and architectural zoning, landscape characteristics are being interested by the level of suitableness for organization of rural tourism.

There are following zones:

– Immediate touristic usage zone.

– Protected and recoverable natural landscapes zone.

The first zone of touristic recreational usage mainly included sea coast in the limit of 1–2 km. These territories are on north shore from Chyrpykty village to Korumdu village, region of Tup estuaries, Jergalan on the east, from Kyzylsuu bay to Jenish village and from Tamga village to Ak-Terek on the south.

In addition, to the first zone we can add forest middle-mountains; in Issyk-Kul region – Kyrchyn hole, in Tup – Kegen hole, in Ak-Suu – Ak-Suu sanatorium region, Karakol gorge and Jeti-Oguz region – Jeti-Oguz sanatorium region.

The second protected and recoverable natural landscapes zone includes territories of whole protected woodlands and wildlife preserves.

Forest subzones include territories of hill's flank and coastal forests. They occupy

117,3 thousand hectares, which is 2,7% of oblast's territory. The second zone also includes one more subzone, territories not used for economic needs: glaciers, rocks, ravines, other broken localities, which are used in recreational purposes that are for sportive mountain tourism and alpinism.

In addition, the Issyk-Kul region territory is zoned into three sub regions: Northern, Eastern and South (with center in Cholpon-Ata, Karakol cities and Tamga villages) with natural potential and tourism infrastructure focusing difference [1; 5].

In Northern Issyk-Kul sub region up to 2012 there are 82,9% boarding houses; 77,7% sports and fitness complexes and camps; 80% camping sites. Most of them are built in fitness centers of Choktal village (25%); Bosteri village (17,6%); Korumdu village (12,1%); Karaoy village (9,3%) and Cholpon –Ata city (9,4%) [8].

Health-improving establishment's location on northern shore of Issyk-Kul lake is connected with the development of this region as a recreational zone, it is the first one; secondly, here is 80% of first claim sanatorium constructions; thirdly, comfortable economic-geographical location of Northern Issyk-Kul sub region. The recreants have direct transportation accessibility to this region. 8,8% of whole health resort establishments are located in eastern subregion (Ak-Suu, Jergalan, Kara-Bulun, and Juuku). The natural environment and diversity of touristic resources call forth development of highland and alpine tourism in eastern subregion. There are interesting courses which pass through this territory. 9 health-improving organizations located in southern region. It is 4.6% of whole tourists flow in this oblast. Among the organizations of subregion the sanatorium "Tamga" confers a distinction with a same name touristic camping site.

Tourism development level

Boardinghouses, sanatoriums, children's health camps, vacation houses, sports bases and touristic bases are the significant places in development of tourism in Issyk-Kul region, in perspective we can find holiday inns, motels and campsites there.

It should be supposed that technology of using touristic zones in rural territories – creating a fund of touristic lands, which have comfortable recreational conditions and large spectrum of high quality resources as natural and cultural-historical; organization of servicing enterprises, accomplishing usage of lands for the purposes of relaxation and tourism. Functional parks organized in rural territories must express existing touristic needs [2].

By general analyzing of people's touristic activity it is obtained that having rest in Issyk-Kul region mostly divided into short and vacation. Short recreation means the activity of dynamic people. It characterizes with city parks, entertaining centers and theatres for short times.

Vacation rest means people's long term activity for the touristic purposes to other locality, model of touristic rest's character (Fig. 1).

Analyzing the rural tourism besides natural resource, socio-economic characteristics are useful tool to pay attention to physiological, psychological, aesthetic, ethical nature of person during his touristic activity [4].

We should distinguish for major kinds of touristic systems by taking into account social character of tourism in Issyk-Kul region:

– Medical.
– Health-improving.
– Sporty.
– Cognitive

All these kinds basically the touristic systems solve quite complex medico-biological and social tasks. If the first type is mainly pointed at preventing chronic diseases progressing, suppression of inflammatory process activity, rising the hemodynamic, restoration and process in organism, then the second and third types of areas pointed at building up one's health and diseases prophylaxis. That's why they are closely connected with each other.

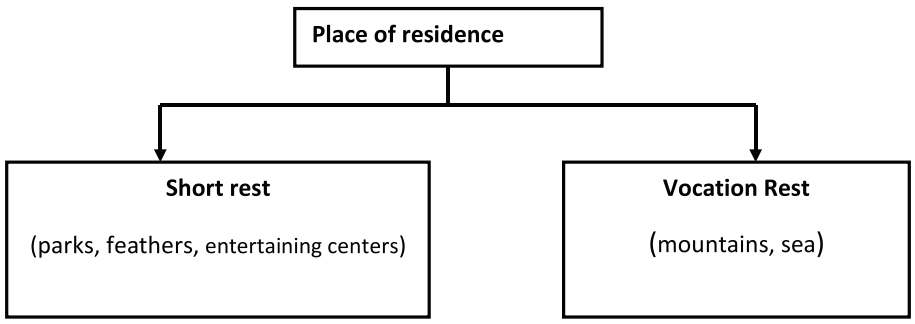

Fig. 1. Character of touristic rest

Remedial actions in first kind of touristic system are put into effect with assistance of natural factors: mineral water (baths and drinks), therapeutic mud (applications), and climatherapeutic procedures. In first kind specialists raise great demands before medical complexes, especially to balneological ones, as far as different elements of these complexes inter into germaneness with important systems of organism and focused at treatment and strengthening health.

The second and third kinds of general health-improving arrangements are used for healthy people and these arrangements are focused at removal of fatigability, restoration of important organism systems in connection with fatigue and working ability growth.

For these purposes measured out walking, trips, excursions, entertainment actions, air and solar baths, sea and river bathing, and e.g. acquire essential value. Medico-biological and social meaningfulness of these two kinds of touristic systems are great as far as they are focused strengthening people's health.

The fourth kind mainly affects aspects necessary for cognition of new phenomena, new processes underlie development of treatment and general health-improving arrangements on the one hand and widening the general horizon, understanding their culture level and intellectual wealth on the other.

In Issyk-Kul region the rural tourism characterized with:

1. Cognitiveness – meeting tourists with sights.

2. Activity – accomplished with staying on touristic bases and different categories of mountain courses with various complexity and duration.

3. Health-improvement – presented by touristic health-improving objects aiming medical treatment and human organism relaxation.

Analyzing the present development level of rural tourism in Issyk-Kul region we can mark that it's unripe and does not meet world touristic standards, there is no proper interconnection within subsystems. The infrastructure and its development go by an extensive way and there were shown unreasonable exploitation of naturally-recreational resources by touristic sector.

Tourism development perspectives

Basically Kyrgyzstan is rural country, where most of the population has agrarian mentality and associated with provincial life. The territory of Issyk-Kul region has great natural resources – minerals, water, stern, forest, recreational zones where agriculture is widely developed.

Original combination of natural recourse potential of mountains, marine climate, unique nonfreezing basin, landscape's extraordinary diversity, health resort's and sanatoria presence make favorable ecological conditions for organization labor, mode and relaxation. The natural resource potential is not always and everywhere used reasonably and efficiently. Especially we can clearly observe ecologically unfavorable status of mountain landscapes. By the intensive usage of natural recourses almost all the component of mountain landscape are involved to the process. As a result, the natural or naturally-transformed ecologically-conservator situation formed during long terms and it will become worse. First of all it understands by sharp changes in structure of ground intercession, disappearance of traditional kinds of plants and animals.

Tourism outside the town is being researched as a significant complex in servicing sector [3].

Attention is paid to aspects of rural tourism as for a perspective sector of tourism in Kyrgyzstan. The system of rural tourism can be presented as a component sector of development (Fig. 2).

The rural tourism is the main part of social-economic relations in touristic sector development in Kyrgyzstan. It interests people with its well-being material and high cultural level to be outside of town of Kyrgyzstan.

The rural tourism must have a fundamental development – bearing in mind the place's historical-cultural potential including the whole socio-cultural environment with traditions and customs, peculiarities of everyday and economical activity. Any locality can give a minimal set of resources for tourism perspectives, but for its' bulk development it is necessary to concentrate objects of culture heritage, followings are distinguished:

- socio-cultural infrastructure;
- objects of ethnography national crafts and useful arts, applied art centers;
- historical settings;
- ethnography monuments.

The rural tourism absorbs into itself aspects of voyage and recreation where tourists can get acquainted with life, culture and customs of our people. The socio-cultural factor's development in rural are is a tool for widening the resources to attract traveling flows. Therefore it must be included to the general doctrine of cultural-historical complex development.

The rural tourism development level is used for creating a favorable image on servicing markets.

Elements and factor of rural culture can be channels for distribution information about touristic facilities of a region or country.

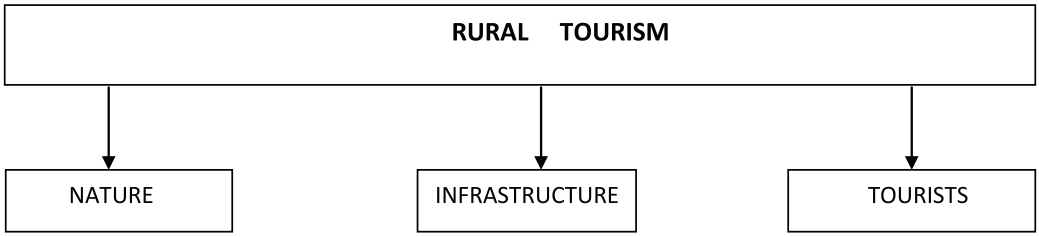

Fig. 2. Rural tourism system

Successfulness of rural tourism development depends not only on material and technical basis which suit general standards and requirements but also on uniqueness of cultural-national heritage.

Objects of cultural-national heritage must present in reasonable and creative shape. The technology and touristic product can be everywhere but there is no place for absolute uniformity in culture. That is the main point of rural tourism development perspectives in Kyrgyzstan.

Any province desires to become popular in tourisms, possess unique, have cultural complexes and offer them on the touristic market.

Evaluation of rural potential for touristic purposes can be conducted by two major methods:

– division of cultural complexes according to their significance in world and domestic culture;

– duration of time for getting acquainted with sights, that allows evaluating perspectives of historical cultural potential for tourism.

Of course these methods are basically subjective (cultural complexes that rated high by various specialists do not cause adequate reaction among tourists). The mail value of cultural complex is its correspondence with the criteria that tourists have. This factor maybe related with tourist's interests in objects of cultural heritage. Therefore, rural touristic activity organizations have a goal to build up cultural touristic complex.

Based on contemporary status of rural tourism, and taking into account natural resources of the region, existing infrastructure, objects of tourism and relaxation are necessary to stress point on investments that doesn't require significant capital costs and providing quick investments return. In this case the development of different sectors must be conducted by paying special attention to nature-conservative measures.

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Materials of Conferences

THE ROLE OF ECONOMIC INDICATORS FOR THE EVALUATION OF THE EFFECTIVENESS OF ECONOMY FUNCTIONING

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The article considers the issues of improving the efficiency of the economy, the role of the economic mechanism in market conditions, the international experience is shown, reflected the criterion of efficiency of production and the necessity of developing a system of economic indicators to evaluate the functioning of the economy.

Development of the economic mechanism consistent with the new market conditions of managing acts as an essential element for enhancing economic efficiency. Thus rather relevant is the understanding of the new content that is embedded in the concept of efficiency in the context of individual production resources, economic categories, a variety of business entities on individual levels of management of the national economy and the economy as a whole.

In any human society, the most important industrial relations are the relations arising in the process of production and consumption. The latest appears as a crucial condition for the existence of human society, and the first as a means to secure it and to meet social needs. With limited resources production, society is not indifferent to the price it pays for the implementation of this process and obtaining the final result. In other words there is a problem of balance expense and the final result or the problem of production efficiency.

In modern conditions, it changes the actual content of "efficiency", since the company's success is determined by the volume of sales because just a fact of the realization would indicate that really needed products and services were manufactured, which would be recognized by consumers. In this regard, immeasurably increased the role and significance of transaction costs, as well as trade and overall infrastructure divisions. "As a result, in the cost of goods increasing role is being played by the payment service provider and not the cost of materials and payment for production workers. Added value is increasingly created in the service sector. Losing the sense of separation of the economy into productive and unproductive sector, the first and second division, and so on" [3, p. 237]. Thus, in a market economy, it puts not only the traditional question of raising the efficiency of the use of productive resources but also the entire enterprise and improves its competitiveness. This significantly expands the list of study of external and internal factors affecting the results of the enterprise, including market conditions, relationships with suppliers and consumers of finished products, the use of strategic management, information, and choice of different strategies of enterprise development and new management methods.

On improving the efficiency of the company and its competitiveness is strongly influenced the task of facing society as a whole. They, in turn, vary depending on the understanding of the wealth, which differently understood in each historical time period. If in the Middle Ages, it was associated with the volume of agricultural production in the early stages of capitalism – with the production of the most significant for the economic development of products, including coal, steel, oil and so on, to in modern society is of paramount importance of the development of computerization, information, technology, high technologies. In the early stages of development of human society, its goal was in the comprehensive increase in material goods and services. And from that, how much and how effectively they have been produced, depended the fate of a person, that is, commodity fetishism was not overcome until the end. Obviously, in the long term the company will be the main resource person, his intellectual and scientific potential, its ability to quickly adapt to changing environmental conditions and effectively manage it.

In this view the role and importance of non-productive sphere, including culture, education and health is rising. If until now the education served as the reproduction of skilled labor, the future is increasingly called upon to educate comprehensively developed personality. Health contributes to increasing life expectancy and thus extends the "age of wisdom" – "when a man begins to give the public more, than he takes" [2, p. 166].

Thus, the non-productive sphere has a direct impact on the effectiveness of social production. In this regard, the viewpoint on non-production sphere, existed in the planned economy, must be overcome as the secondary sphere, which does not create national income, so that the task was all-round reduction of funds allocated for its development, which led to a backlog of its level of development in comparison with other countries. It is necessary to abandon the principle of residual financing unproductive adopted in the planned economy, when the first funds were allocated for the development of the production sector. As for the minimum funds available for the development of non-production sphere, becoming only the task of the development of mandatory irrespective of the result of the effectiveness of their use.

The challenge now is to create a new branch of the economy – the economy of non-productive sphere with the division on economy, education, health, culture, consulting services, etc. with mandatory consideration of the effectiveness of means allocated for their development. In this connection, no accident in the industrialized countries to invest in the human factor is considered to be more promising and effective. "In the works of G.Bekkera (Nobel Prize 1992) J. Mincher,a T. Schultz, E. Henisona and others proved that the investments in human capital (education, development initiatives, mobility, social skills, physical and mental health) are not a deduction from the national income, and the most effective, although with a long payback period, type of investment" [3, p. 146].

Along with the aforementioned, there are other features of a functioning market economy, which estimate the direct impact on its effectiveness, and that should be considered when determining the efficiency of production. In modern conditions, in addition to quantitative characteristics of the factors of production are important quality characteristics of the means of labor, objects of labor and labor itself, the level of progressiveness of applied technologies and development strategies. Significantly increases the role and importance of information and management. Since the market economy is very dynamic, market conditions are constantly changing, to make rational management decisions dramatically increases the need for constantly changing operational, reliable and relevant information. And as it usually is not enough, the profession of manager becomes akin to art, it strengthens the role of the professional skill and intuition. At the same time requirements to general manager are rising in the transition from the administrative and commanding to economic methods, which imply flexibility and adaptability to changing environmental conditions, the widespread use of professional, systemic and situational approach.

An obligatory condition of effective functioning of the economy of any type is to ensure it's balanced, which means the proportion in the production of certain types of related products and individual units of production and non-production sphere. In a market economy, it puts a difficult task, namely, the achievement of balanced, proportionate development on the basis of improving the economic mechanism in the direction of self-financing to meet the interests of producers in terms of expansion of their independence through comprehensive development of horizontal linkages between them, while respecting the economic proportions.

Certain features exist in the use of production capacity. Committed to their most fully loaded is a common feature characteristic of any mode of production. However, in a market economy it allowed them a certain reserve, so that businesses can quickly adjust production, the need for which turned out unsatisfied. It is important to conduct a feasibility study of production capacity derived in reserve, in order to profit from the additional production would be higher than the damage that is caused by their disuse.

In modern conditions the role and significance of the environmental component in the functioning of the market economy, in the direction of increasing costs for the improvement of the environment, and increase the impact of the environmental measures. In developing an investment policy foreign economists, along with taking into account the purely financial factors of development of innovations in equipment and technology, pays great attention to the organization of production, management, marketing, accounting and coordination of interests of various social groups, changing patterns of thinking and economic behavior, the revival of the spirit of thrift and enterprise [3, s. 383].

On the basis of the above it can be concluded that under current conditions the commercial success of economic agents depends on the action of the set of external and internal factors, the effect of which is marked by interrelationship, complexity, dynamism and uncertainty. In this regard the characteristic is widely used mathematical methods to describe economic phenomena and processes, and development on this basis of economic – mathematical models and new products in the form of stand-alone programs and computational models. In countries with developed market economies to determine the effectiveness it is used up to 100–150 indicators and ratios. In some cases, for these purposes are invited to use the index of electricity since its production and consumption are synchronous, so that more accurately reflects the impact of economic activities. There are the proposals to phase out the monetary – valuation of economic efficiency and use them instead of the average life expectancy of the population.

However, in the economic literature the disadvantages of these methodologies for assessing economic activity are noted [1, s. 42–43]. Application of mathematical methods for the analysis of economic systems involves the use not only of the objective laws, but also the subjective perceptions and judgments of people. At the same time, concepts used by people from the point of view of classical mathematics have a vague sense. A similar situation occurs when dividing complex systems into separate subsystems, the boundaries between which do not actually exist. Besides the models used by foreign countries are generally not used in domestic enterprises due to the lack of appropriate indicators in the statistical reporting. In the study of the efficiency of all social production, its separate areas, departments, production resources, including the design of the mechanism of formation and use of working capital is important to study the criterion of production efficiency.

This criterion is meant by distinguishing feature, the basic principle, a measure of evaluation of

an object or phenomenon. It is caused by the existing relations of production, the economic laws peculiar to a given social-economic formation. Since social production appears decisive condition for the existence of human society, the problem of increasing the efficiency of production is not only a production and economic, but also a social problem, which underlines the relationship produced costs, on the one hand, and the needs of the people – the other. In this regard there is the desire of many scholars to justify the needs as a criterion for the efficiency of production often at the expense of the use of value indicators. In particular, the planned economy in the justification test the efficiency of production came from the fact that it should contribute to meeting the needs of society, so that this criterion should act as a set of material and spiritual goods suitable for this purpose. This downplay the role of profits, because it was thought that it could not serve as a criterion of efficiency, because society is not interested in profit as such, but a set of consumer values can satisfy different needs. In addition it was assumed that the profit is mainly intended for industrial consumption in the future, although the company is not only interested in this kind of consumption, but also the current consumption. That is why the post-war years in the collective sector of the economy in general not calculated cost of production is, that is, it must be done at any cost. In other words, the ratio of benefits and costs, which is the problem of the efficiency of production as it did not exist. This point of view so far held by some scientists. A. Ptushenko believes that the primary task of the company – "to meet all their urgent needs", offers as the criterion of economic efficiency average life expectancy of the population. At the same time the author opposes the "total abstracted" profits of the whole society or type ND GDP like any other value criterion to assess the efficiency of the economy. "The reason for this, he sees that in the application of the cost criterion "Private and deliberate deceit": after all, nothing prevents authorities from spending national money to include in the "final results of economic activity", a dozen yachts for the members of the government, the cost of keeping too large protection and subservient etc. and so on [p. 161–162].

I would like to draw attention to the fact that in this case it is not about a lack of organically characteristic cost criteria, and of the shortcomings associated with its use. This explains why there is a provision governing the validity of the inclusion of various expenses in the cost of manufactured products.

The estimated average life expectancy of the population as a criterion of efficiency in our opinion hardly applicable not only at the primary level of the economy – enterprises, associations, businesses, and other levels of government and subsystems of the economy, including in the different sectors, in general, in material production, in the non-manufacturing sector and the economy as a whole. This is due to the fact that it is practically impossible for life expectancy to judge the effectiveness of the individual sub-systems and the economy as a whole, not only on analytical but also on the correlation level. This is due to the fact that there is no basis for the development of the coefficient of reduction of these indicators as a variety of the human condition characterized by numerous specific, including the value indicators, often with mixed trends, while life expectancy is calculated only in years. Besides individual factors operate not directly, but indirectly through the action of other factors and their number may be significant. For example, it is difficult to imagine the impact of education on life expectancy. However, the level of education in the country will certainly affect the efficiency of material production and through the life expectancy of the population. The same is true of culture, art, law, etc. In our opinion, the challenge is to move from the use of funds allocated from the budget as a residual, as it was in the planned economy, to the creation of an independent branch of economics, namely the economy of non-productive sphere, including the economics of education, health, culture and etc. This is explained by the fact that the services of various departments unproductive in the market economy are the specific commodity and they should be subject to the existing laws of the market economy.

As mentioned in the economic literature, in modern conditions of "Theoretical basis of evaluation of the effectiveness and the choice of model of reform becomes weefare economics – a special area of economics, designed to determine, what is good and what is bad in the development of modern society as sound management solutions taking into account not only market indicators, but above all the interests of different social groups and society as a whole" [3, p. 145]. It is no coincidence "the indexes of human development, used by the statistics of the United Nations, takes into account each country's three main indicators – life expectancy, literacy and per capita income" [3, p. 146–147].

It can be concluded, that although the economy is a holistic system of industrial relations, including many spheres of human activity, but also on the level of its development, cannot judge the human society as a whole. We believe the economy can serve only as a subsystem and partially characterize the level of development of human society. In this regard, the average life expectancy of the population cannot be summarizing the criteria of economic efficiency. This criterion is more general and characterizes the level of development of the individual and society as a whole and not as the sole indicator, but as part of the other.

In light of this construction of the economic mechanism should be made towards improving the efficiency of social production. Obviously, the successful solution of this problem is achieved by the subject to the greatest result produced per unit cost, i.e., provided a higher level of productivity of labor. In our opinion, it is the productivity of social

labor, including the use of labor and materials, can act as a criterion for the efficiency of the economy as a whole, individual departments and use of production resources. On this basis, the system of economic indicators for evaluating the performance of the economy must be developed at different hierarchical levels of management.

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METHODOLOGICAL APPROACHES TOWARDS EVALUATION OF BUSINESS

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The article studies problems of necessity to implement new approaches towards improvement of business evaluation mechanisms, recommendations for procedures of its evaluation are suggested and grounded.

As it is known, total value of an evaluation object depends on correct identification and description of it with further grounding of evaluation process method. The result of it is an increase in significance of a company's business evaluation in a certain sector of economy in case of sale of liquidation. According to the fact that the basic criterion of market value of business, used in management processes, is increase in an enterprise's value, evaluation of business is aimed to solve the following problems: preparing strategic plans of company development; management estimation (according to its efficiency); evaluation of managing measures' efficiency; definition of a share's market value.

According to Russian law, nominal value of all common shares, issued by a certain joint stock company, must be equal, as well as rights that they provide to shareholders. In this case law supports interests of stock market participants for whom equality of common shares of the same joint stock company is more convenient from the point of setting a single market value that situation when common shares with different characteristics of a certain company are present at the market simultaneously [1, p. 27].

Authorized fund defines minimal size that a given joint stock company should possess in order to guarantee interests of its creditors.

Further we should transfer to the concept of "market value". Market value of an evaluation object is considered as the most probable price for which the object of evaluation can be alienated at an open market in terms of competition when parties of transaction act on their own will and possess all necessary information, and price value is not affected by any extraordinary circumstances, in other words, when the following conditions are set:

– one of the transaction parties is not obliged to alienate evaluation object, and the other party must not accept execution;

– transaction parties are well informed of the subject of transaction and act according to their own interest;

– evaluation object is presented at open market via public offer, typical for similar objects of evaluation;

– transaction value represents a sensible reward for evaluation object and no enforcement towards committing a deal has taken place from a transaction party;

– payment for evaluation object is expressed in monetary form.

During estimation of market value it is possible to realize comparative, cost-based, or income-based approaches or reject their implementation. Evaluator must provide grounding of his selection of the implemented evaluation method in terms of cost-based, comparative, or income-based approach or rejection of using approached in his evaluation. In case of impossibility to implement certain method, explanation of implementing any other evaluation method or explanation of rejection is provided [3, p. 32].

For income-based approach the basic factor of value is income, generated by actives (property) of an organization in process of their utilization as it defines price value of an object. The greater income, provided by evaluation object is, the great is value of its market price, all other factors held equal. In this case other significant factors are: period of receiving possible income, degree and type of risks that attend to this process. Income-based approach is calculation of present value of future income that will arise as a result of utilizing property and its possible future sale. In this case principle of expectation is applied [2, p. 24].

Comparative approach is especially effective when an active market of similar property objects exists. Accuracy of evaluation depends on quality of the collected data as, while utilizing this approach, evaluator must collect reliable information on recent sales of similar objects. This data includes: economic characteristics, period of sale, location, terms of sale, and terms of financing. Reality of this approach degrades in case: few transactions took place; moment of transactions and moment of evaluation is separated by a significant period of time; market is in abnormal condition, and rapid changes of it have led to distortion of indexes. Comparative approach is based upon principle of replacement.

Cost-based approach is the most appropriate method of evaluating enterprises that have diverse actives, including finance, and also when business does not provide stable income. Methods of cost-based approach should be also implemented while evaluating large production enterprises and also specific types of business (hotels, motels, etc.), insurance. The collected intel includes data on the evaluated actives (prices of land, construction specifications, etc.), information on salary level, material costs, costs of equipment, income and invoice costs of constructor at local market, etc. The required information depends on specific features of the evaluated object. Cost-based approach is difficult to implement during evaluation of unique objects that possess certain historical value, aesthetic characteristics, or outdated objects.

Theoretical foundation of the comparative approach that proves possibility of its implementation and objectivity of the final market value of an enterprise, are the following statements:

– evaluation of an enterprise using comparative approach implies utilization of real prices for similar enterprises (shares) that have formed at the market as a reference point;

– investor who invests into a business, uses principle of alternative investments, in other words, looks to receive maximum income per placed capital with equal level of risk;

– for similar companies correlation between price and the most important financial parameters such as income, monetary flow, dividend payments, volume of realization, balance value of actives is mostly equal [5, p. 21];

Depending on goal, object, and specific conditions of evaluation comparative approach can include the following methods:

– method of company-analog (method of capital market) implies using of real sale price that has formed at a certain market for the basis of comparison;

– method of transactions (method of comparing sales) is based upon using sale price of controlling interest (50 % + 1 share) and also the whole enterprise (100 % of shares);

– method of sector coefficients. Possibility to use sector coefficients to define market value of a company can exist in case the following conditions are met:

a) the necessary statistic data, required to define dependence between sale price of a company and set of its activity within sector is sufficiently provided in the accessible sources;

b) statistic data is representable;

c) the corresponding sector has had a continuous and stable overtime development.

Comparative approach includes the following basic steps of evaluation [4, p. 53].

Step 1. Collection of the required data (Market (price) and financial information).

Step 2. Composition of list of similar enterprises. At the first stage so-called “circle of suspects” is defined, it included maximum possible number of enterprises that have a set sale price at the market. Selection criterions at this stage include: similarity of sector, product, production output, correlation between own and borrowed funds. At the second stage final list of similar companies is composed. Including a company into this list is based upon thorough analysis of additional information (level of output diversification, place on market, competition nature, etc.).

Stage 3. Financial analysis. Financial coefficients are calculated, balance, income and loss reports for several years is analyzed. Financial analysis allows us to define position (rank) of the evaluated company within a list of analogs, and also is the foundation of introducing any corrections that will provide for increase of comparability or explanation of the final value.

Stage 4. Calculation of multipliers. 4 groups of multipliers are used:

– group 1 – price/value, price/money flow;

– group 2 – price/dividend payments;

– group 3 – price/income of realization, price/physical volume of output;

– group 4 – price/balance value of actives.

Multiplier group price/income, price/money flow is the most common method of defining price as information on profits of the evaluated company and similar enterprises is the most accessible data. As the financial basis of multiplier one can use any indicator of profit that can be calculated by analyst during the process of its distribution. The main requirement towards this calculation is identity of multiplier financial base [6, p. 52].

Multiplier price/profit is significantly dependent on method of accounting, therefore, it is necessary to bring systems of profit definition to single standards. As a foundation of calculating multiplier, one can use not only totality of profit, received during the recent year before evaluation, but also average annual sum of profit, calculated per five latest years.

The basis of calculating multiplier price/money flow can be any indicator of profit, increased by sum of the credited amortization.

Multiplier price/dividends is calculated both on the basis of actually paid dividends and potential dividend payments. Potential dividend payments are defined as typical dividends of the group of similar enterprises, calculated in percent value to clear profit.

Multiplier price/income of realization is widely used during evaluation of service sector enterprises. Advantage this multiplier is its universality, as its value does not depend on methods of accounting.

Multiplier price/physical volume is a variety of the former multiplier. In this case price is compared to natural index that can reflect physical volume of production, size of production area, etc.

Multiplier price/balance value of actives is used in evaluation of holding companies or in case of necessity to realize a large amount of shares

rapidly. Financial basis of calculation are clear actives of the evaluated company and similar companies.

Stage 5. Selection of multiplier value. This stage is the most difficult one as there are no equal companies, and value range of the same multiplier can be wide for several companies.

Stage 6. Definition of final price value. Comparative analysis allows us to use maximum number of all possible multiplier options, therefore, the same number of prices will be received within the process of calculation. Depending on specific conditions, goals, and object of evaluation, reliability of information, evaluator can assign its own weight to every multiplier. According to the weighing total value of price is received, and it can be taken as foundation for undertaking further corrections.

Stage 7. Introducing final corrections. Final price value must be corrected depending on specific circumstances. The most typical are the following amendments: correction according to actives of nonproductive purpose, surplus/lack of own turnover capital, correction of low liquidity, correction of control nature of bundle.

Results, received during implementation of comparative approach, have a good objective foundation level of which depends on possibility to attract a wide range of similar companies [7, p. 36].

Possibility of using sector coefficients in defining market value of companies exists in case the following conditions are met:

– presence of the required statistic data in available sources of information is required for establishing dependence between company sale price and set of its activity indexes in terms of sector;

– representable nature of statistic data;

– long-term stable development of the corresponding sector.

Due to objective reasons there is no possibility to use this method of evaluating market price for the most of sectors in Russia nowadays. Thus, this method can't be implemented to evaluate price of evaluation object in terms of comparative analysis.

Method of similar company or method of capital market is based upon using prices, formed by an open stock market. Evaluator studies information on enterprises, minority bundles, shares of which have been sold at stock markets with consideration of the required criterions. At the same time evaluator considers data of Russian stock market as well as intel of foreign stock markets.

In order to define current value of future economic income it is necessary to undertake multiside analysis of a company's financial activity including analysis of income, costs, investments, capital structure, enterprise value after the end of predicted period and discounting rate. According to foreign specialists, in 90 % of cases implementation of income approach this method is used to evaluate moderate and large companies.

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PERSPECTIVES IN DEVELOPMENT OF RUSSIAN INTERNATIONAL TOURISM FOR DEVELOPMENT OF ECONOMY

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This article studies problems of development for different types of tourism, part of touristic recourses in market conditions, shows foreign experience, and explains the necessity of increase in efficiency of tourism development.

During recent years the problem of economic recession in Russia has become urgent. One of the reasons of the crisis is the one-sided nature of its development, related to export of fuel and raw materials and preserved since Soviet period. Attempts, made by government to develop national innovative model of economy face serious complications and are not going to take effect in nearest future.

Specific social-economic problems are solved in each historical period. Modern Russia (early XXI century) faces the problem of increase in economic growth rate and decrease in dependence on oil and gas export. For developed democracies, such as Norway, for example, that has rich deposits of oil, such dependence means no harm, but for the polarized Russian society, as well as for many developing states, modern situation turns out as "recourse curse".

In recent years the basic strategy of developing Russia has been creation of innovative model of economy due to organization of technical parks and innovative centers. However, as practice shows, development of innovative economy is impossible in a short period.

28 technical-introductive, industrial-productive, touristic-recreational areas and ports operate

in Russia. A significant growth in income in investment was achieved in Elabuga SEA (Tatarstan) where the world's greatest plant on mineral wool output was constructed, glass and carbon fiber plants are underway. Belgian, Japanese, and German organizations operate successfully in Lipetsk SEA, transnational corporations Pfizer and Novartis – in St. Petersburg. In the areas of overtaking developments such as Far East, Siberia, and Crimea investors have received land with the operating infrastructure, property tax liberation, benefits for income tax and VAT, special customs terms.

Recourse model of economy makes Russia dependent on oil price. In case of their degradation ruble devaluation strike hard upon wallets of common Russian citizens, accelerating spiral of inflation. Regretfully, economic policy of Russia remain ineffective, therefore, level of real income decreases among citizens. In case of crisis situations actions, attempted by authorities, are limited by operative implementation of monetary policy: increase in refinancing rate of Central bank, currency intervention, etc.

We consider steps in returning to Keynes's model of economic growth to be the most sensible and actual in modern conditions. Such steps can include financing important infrastructure objects, for example, reconstruction of railroad arteries, creating of social-household objects of touristic infrastructure, etc. This direction seems to be the most correct and can take effect upon all areas of economy [2, p. 68].

Russia is an enormous country by territory that always based its development upon its rich natural resources. Even during times of tzar Russia its basic export products were grain and wood. For example, government of Vitte conducted contracts on export of wood, grain and contributed greatly to development of transport infrastructure of Russia. We can also refer to policy of P. Stolypin of mastering Siberian territories by peasants. In times of USSR and government of A.N. Kosygin the foundation of social economic complex became oil and natural gas of Western Siberia that have been providing for our society since then.

Economic theory knows theorem of Heckscher–Ohlin according to which a country most often base upon factors of production that is possesses during the process of tis development. Experience of a number of developing countries such as Jamaica, Cuba, Zimbabwe, SAR, shows us that thought they used to construct their economies around procession of mineral deposits, they re-directed to international tourism in modern conditions [1, p. 102].

In our domestic reality small towns ought to transform into industrial-trading and intellectual centers of rural districts. In order to achieve this goal financial flows must be decentralized, taxing foundation of municipal formations – fortified. Twenty big cities (with population over 1 million citizens) produce half of Russia's total GDP. Further resettlement of population to metropolises can have an unfavourable effect upon national security. In order to develop small cities and villages it is critical to create modern sector of services for the recovering people, elderly, disabled people, developing markets of cultural, touristic, informational, and other services creates the greatest demand for specialists. In USA income received from internal tourism exceed 2 billion USD. Over 100 thousand people are involved into Touristic sector in Russia, considering infrastructure. However, number of work positions in many regions (about 3 per 1 thousand of population) is much less than in comparable regions of EU and does not correspond to international level.

In this case in seems more logical for Russia to transform raw material model of development rather than reject it totally. Large-scale development of international tourism in Russia is supported by natural and social-economic conditions. Russia is the largest country in the World and has a great variety of natural areas, unique natural objects such as lake Baikal, geysers of Kamchatka, cedar forests of Altay. Our country is rich in monuments of orthodox history and culture. A special significance in this case is obtained by sights of Moscow and St. Petersburg, relics of cities of Golden and Silver ring – Vladimir, Suzdal, Jaroslavl, Pskov.

Alterations in demographic structure of population and structure of labour recourses of society also provide for development of international tourism. While during Soviet period high level of professionalism and education was typical for labour resources, in post-reformation times situation changed: education has degraded, population has grown older, army of bureaucrats has grown big, territory of Russia has been flooded with hordes of low-qualified immigrants from former USSR republics, China, Vietnam, and other countries. We should underline the fact that such relatively young workforce is suitable for enterprises of tourism and hospitability [3, p. 50].

Here arises problem of financing. As registered in statistical sources, a great overseas capital flow exists in our Country, and it is becoming one of important problems of our economy. In terms of decreasing oil prices and economic sanctions of the West budget recourses are being depleted rapidly. Population grows older quickly, and therefore, more and more funds must be directed to pension. New labour recourses produce less and less product in terms of degradation of higher education. In these terms we can refer to experience of Russian companies in direction of improving investment climate. Thus, banking holding and "Republican financial corporation" (over 9 thousand employees) have created 14 investment companies, agency of impro-financing, insurance house, that realizes 97 insurance products in 12 types of insurance, the list of financed companies includes: construction enterprises in Moscow region, touristic firms

in Moscow, Tula, Tver, and Astrakhan region, medical centers in Moscow and Korolev. Agency of real estate has drawn about 2 thousand hectares of earth for construction of offices, warehouses, logistic centers, etc.

Considering the fact that touristic flow into Russia has never been large, our country still remains little-investigated for the majority of potential tourists. Modern society is interested in sensation and novelty. In France, the most visited country of the world, most of tourists have already seen Eifel tower. Big Ben and river Themes are well-known since the times of founder of touristic movement – T. Cook. Of course, Moscow Kremlin and Hermitage are also well known to everyone. However, there are a lot of other places in Russia that have great touristic attraction, but have not yet earned proper attention of tourists and are not advertised. There are a lot of interesting places at the territory of Russian North, Altay, Siberia, Far East. For example, how many people know of cave of "black devil", located in Khakasiya? According to legends, this cave is one of the most mysterious places on earth. Speleologists claim that experience special nervousness in its grottos that can transform into panic fear. There is an opinion that Russian Robin Hood – Emilian Pugachev hid his stolen treasures in this cave almost three centuries ago. Also, do many know of lake Baskunchak that is one of the most salty lakes in the world? The lake received its name thanks to its special healing muds and clays that can help in treatment of skin diseases and joint pains. Air of this place, rich with salty steams, is also healthy and can help overcoming certain lung diseases.

The name Sayany emerged from name of a turk-speaking tribe Sayany that used to live in riverheads of Siberia – Enisey, it was a part of republic Tyva. The first information of tribe was delivered by Cossacks who visited these placed in early 17th century. Mountain ridge Sayany is a prolongation of Altay mountain system and serves as a border between Chineese and Russian territories. There is located the highest point Eastern Siberia and Sayany – mount Munku-Sardick, Northern part of which is located in Russia. Nowadays Sayany is a perfect region for modern extreme kinds of tourism – rock climbing, alpinism.

Everybody knows of American Grizzly bear, French cock, Australian kangaroo. But do many know of Tambov wolf? "Tambov wolf is your friend", – states Russian saying. Works on creating museum of wolf began in Tambov region, it also could attract tourists.

Nowadays researches and discoverers are no less demanded than in times of great geographical discoveries. Anomaly tourism is not a new phenomenon, but is not well known by most of people. Touristic companies and even whole regions have involved into anomaly tourism recently. For example, in the area of village Molibeck of Perm region monument to aliens has been placed, it is believed that they visit these places regularly. Besides touristic routes between places where unknown flying objects were registered are being developed. And here the first ufological park in the world is being created.

Development of new and unusual types of tourism, for example, tourism of treasure hunting, in Russia also deserves certain attention. Russian land keeps great treasures that remained from the times of its unstable past, various revolts and revolutions.

Thus, Russia is not only interested in further development of touristic service market, nut also has a great foundation for it. As a result, stable expansion of this sector can serve as an active support of economy restoration, provide for creation of workplaces and its stable development.

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THE PROSPECT OF AN INTERNATIONAL PROJECT: UNIVERSAL MODEL OF RECREATING NATIONAL CULTURAL LANDSCAPE OF THE LOCAL AREA

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The present situation of permanent military events and climate disasters requires prompt reflection on the disappearance of the masterpieces of world culture. The destruction of the national cultural landscape in any area requires a combination of teachers, culture, museum, sociologists. We offer organizational and pedagogical model reconstructing the national rod of the local culture. The training of specialists-designers with the competence "expert consultant" to rebuild the cultural landscape of the local area should be organized at the graduate level in high school of the pedagogical high school.

Keywords: national-cultural landscape, designer – expert, corporate training module, magistracy "design multimedia"

The modern reality of permanent war events, climatic disasters has become a topic of daily news. The result of the climatic or military upheaval for each territory is dangerous due to the total destruction of the cultural landscape, synthesizing a conglomerate of the spiritual foundations, art and graphic achievements. We believe it is not necessary to explain what it means for the territory of the disappearance of artifacts, monuments, iconic rarities that demonstrate achievements and national and cultural core of the people. Facts of destruction of cultural landscapes in local areas require a combination of teachers, culture, museum, sociologists around initiative projects.

Thesis 1. Training professionals with the competence "expert, consultant" for the reconstruction of the national cultural landscape of the local area is possible on the basis of magistracy of high school.

The theme recreating national cultural landscape is always in sight of the indigenous inhabitants, the heirs of the traditions, the sights of local and world media. Short-term courses on the principle of "training" for the mobile units for special purposes will not be productive. The role of expert, consultant in projects for the reconstruction of the national cultural landscape of the local area should not be confused with the role of international observers.

Thesis 2: "Experts and consultants must not only understand the historical and cultural value of artifacts, but also to be able to visually identify the artistic achievements of the graphic markers of natives on the local territory".

Let's specify our thesis. Under the conditions of the destruction and disappearance of material objects-artifacts, the resuscitation of national-cultural panorama of achievements is possibble. Today, computer technology can solve humanitarian and technical problems. This means that under the special program prepared by the Judiciary designers owning computer technology, according to the description, sketches, photographs can recreate the missing masterpiece cultural monument, and even large-scale complex.

The plan- project to rebuild the national and cultural achievements of the deformed local area should be based on a phased sequence of actions. Pedagogical technology to recreate the national cultural landscape of the local area will include 3 blocks: 1 block: corporate training, 2 block: practical implementation of training projects, 3 block: creation of an information card of the national cultural landscape of the local area.

The final result of educational technology we have identified as a multimedia product, showing national and cultural achievements of natives of the local area to climate disaster or military destruction.

Professional training (in prospect it is *mobile search teams*) is based on the scientific level of cognitive knowledge, anxious to recreate the theme of every people *national and cultural achievements in* the visual mode of information content. Most sensitive to the sign symbolic of ethnoart heritage and graphic heritage are graphic designers.

An important condition for the preparation of masters with a special qualification competence "designer-expert consultant" is that in magistracy among teachers, possessing computer technology, it must necessarily be the head of an educational project that posesses the method of differentiation of national and cultural markers of the heritage of indigenous inhabitants of the local area.

Organization of the collection of information on cultural achievements of a particular local area should be carried out according to various cumulative sources, regardless of location. This private library collections, museum

exhibits, the paintings and graphic arts galleries. Advanced horizontal and vertical vector of information gathering is organizing an international route of search activity. Consequently, the search should *include mobile teams* and designers with the knowledge of the language, linguists and translators.

For example, let us turn to the study of the cultural heritage of the local area in the far northeastern Russia (1990–1998 years). Introducing the masters of arts and crafts in the villages of Chukotka Autonomous Okrug it possible to determine the specificity of traditional schools of natives of the local area: Chukchi reindeer herders, Eskimos, Evens, Yukagirs. However, seminars and creative workshops revealed a more detailed differentiation. Thus, the traditional mastery schools of masters-evenok from the villages of Chukotka Autonomous Okrug and evenok-skilled workers from the villages of the neighboring Magadan region differed in technique of decorating items from natural materials. The unique technique of "reindeer neck hair embroidery" and sophisticated equipment "prodërzhka straps" were distributed only in the coastal villages of the Bering Strait. Graphic achievements of the natives on the local territory has been structured: drawings manufactured in the skin of a deer, rock petroglyphs, plot and ornamental engraving on the surface of a circular walrus tusk, a tattoo of the hands and face, pictographic message of the hunters- yukagirs on the inner bark of the tree.

In 1990–1997 years there has been an active communion of the visitor population to the local fisheries. There were original works of art for the interior of the skeletal bones of large marine animals. Handled whalebone, intervertebral discs, colored engraving on walrus tusks replaced the traditional black-and-white engraving.

As you can see, the cognitive vector of the study allows to structure in detail the cultural achievements of the local territory. Visual observations of travelers, explorers, pioneers, members of scientific expeditions since the 16th century, recorded by a pencil drawing, graphic design, then the photograph appeared. Today, this unique material scattered throughout the archives of museums in Germany, St. Petersburg, Khabarovsk helps recreate ethnoart and graphic achievements of the inhabitants of the local area before the start of the industrial development of the Far North (1930).

Thus, a given circuit of the universal model recreating national cultural landscape of the local area is proposed as an international route studies. Education professionals are psychologically prepared for the mobile system of professional activity, to be organized on the basis of the corporate form of master degree university.

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POLITICAL REGIONALISTIC IN MODERN SOCIETY

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Value of regional elite in modern Russian society is considered in article. It is noted that today the main result of evolution of regional elite is universal recognition of their crucial role in a new paradigm of the Russian policy.

Keywords: political regionalistic, regional elite, political reality, elitism, regional elite, political relations, theory of elite, classification of models of elite, elite

When considering regional elite it should be noted that the last usually is understood as set of professionally prepared leader groups independent from each other focused in departure of the power on interests of concrete regions and using in them a certain prestige, to the corresponding volume of institutional influence and level of active participation in all significant processes of society.

As a rule, the political reality appears in two differing states: first, it exists as interaction, functioning of the states (for example, the CIS), the parties, institutes invested by the power of their plenipotentiary heads, secondly, it is a difficult chain of actions, contacts of people and their communities with the specific motives, the bases and results. As reflection of this situation existence in political science of two aspects serves: the institutional, focusing attention on the analysis of the organizational, structural party political relations, and behavioural which sense consists in representation of policy as systems of actions of people and their consequences.

As formation of political system in Russia is noted in researches of many domestic political scientists, both on federal, and at the regional level is connected with gradual acquisition by the political relations of a number of essential signs. Among which are allocated: first, steady interdependence of various elements of political life; secondly, orderliness of the political relations, existence of an optimum combination of their stability and development; thirdly, hierarchy of values, set of political symbols, the belief accepted by members of a political community; fourthly, joint response of all elements of system to external influence.

In the Russian reality the formation of structure of political system which dropped out for post-socialist social transformation in many respects had spontaneous character.

Function of the bearing design was assumed by regional elite for a long time to fix the situation received by means of "parade of sovereignties" in the aspirations not to allow new redistribution of resources.

As if further there was no political destiny of regional elite, this unique education quite long period will define nature of social and economic and political transformations in the country.

Studying of elitism in our country rather young direction in science. The need for it is revealed to life by the changed paradigm of functioning of political knowledge in Russia. The specified ideas of officially ruling elite, not only have universal demand, but also are used as for comprehension, and creative modeling of reality. In the scientific plan the comparative analysis of regional elite is quite independent direction of new branch of political science – a political regionalistic. There is nothing surprising therefore that to the comparative political sociology which is successfully developing in the country, comparative political science also such interdisciplinary education as a comparative political regionologiya makes the way. It is the most perspective component of a political regionalistika.

The comparative political regionologiya at the present stage represents set of the interdisciplinary political researches, mainly empirical character only declaring the future subdistsiplinarnost through specifics of a method and knowledge of regional policy within a federal state. Its conductor is the increased interest in regional political processes in general, and the term "regional elite" in relation to them is strategic.

Regional elite acts as the guarantor of search of the tolerant hostel now. Also give the chance of consideration of institutional arrangement of regional elite and their behavior as the defining indicator of the happening political processes.

According to Institute of sociology of the Russian Academy of Sciences, more than 75,0% of modern political and 61,0% of business elite – natives of ranks of the Soviet nomenclature. These results predicted last decade the XX centuries allow to characterize a modern political regime as certain nomenclature democracy. Such situation is perceived differently, but nevertheless it isn't necessary to simplify a problem. As if that wasn't, evolution of the Russian elite considerably resounds with democratic prospects of social development,

not to mention realities. One of the most important reasons of it that the question of genesis of the Russian elite at all the comprehensive study, isn't solved.

Today the main result of evolution of regional elite is universal recognition of their crucial role in a new paradigm of the Russian policy. The vector of their further transformation is enough, but at any scenarios a way of transformation of regional groups to more significant community of regional elite, the separate control functions having along with the federal center necessary for stability of system, will lie through achievement of compromises on the main divergences in interaction of elite of different level.

It should be noted what exactly development of system of the relations of federal and regional elite groups is defining at the characteristic of the present stage of transformation of ruling class. Thus key tendencies are: restoration of hardware domination, integration of political and economic groups, the proceeding processes of regionalization of elite. Consolidation of new ruling class is carried out first of all at the regional level, the called tendencies exactly here are most brightly shown. Regional elite acts in system of relationship with the Center as the posreduyushchy subject, for control over which there is a serious fight of parties and politicians in the center.

The special role of economic contradictions in system of the relations of federal and regional ruling groups is connected with that through the central governmental bodies and system of personal interrelations at the level of federal ruling elite some transregional economic subjects have opportunity to carry out the political influence in the region. Besides, in the conditions of increase of political independence of regions the central authorities were even more often very limited in the influence on local authorities, and regional political process was completely monopolized by local ruling elite recently. The economic pressure channel on administration of the region became defining. Political penetration of the central authorities into the region perhaps today, first of all, thanks to control over economic and financial resources and decisions. The alliance between the enterprises, branches, other economic subjects and the central political elite is the most effective way of realization of such strategy.

More and more obvious is that fact that installation of regional ruling elite on political independence from the Center which or is already generally reached, or just and was found in the course and after present elections, replaced by emphasis on achievement of economic independence now. However the last is understood not as formation of the closed and self-sufficient market, but as mastering control over economic resources and economic decisions more often.

Achievement of the similar purpose can lead to two consequences. First, integration of political and economic elite groups will be carried out first of all and generally at the regional level. Secondly, process of consolidation of new ruling class won't be able to be provided in scales of all country. Key feature of new Russian elite is that it represents a conglomerate closed and in many respects self-sufficient regional structures. Thus the federal ruling elite not only isn't consolidated, but isn't the uniting structure of ruling class in scales of all country. In these conditions the destructive potential of processes of disintegration and is compensated today almost only not by interest of economic elite in destruction of economic infrastructure and its regionalization.

The characteristic of the present stage of regional development as the system of the relations based on politicization by regions of own economic requirements, nevertheless, is insufficient. The aspiration of regional elite to gain political and economic independence faces the fact of the increasing multiplication and differentiation of both the federal, and regional elite groups participating in definition of tendencies and nature of development of these or those territories.

Thus, if political and public structures also play a part in political life of the region, it is connected or with consideration of local political process in the context of the all-Russian policy, or with functioning of some party or public organization as political infrastructure of the party in power of regional level. The low political institutional capacity of parties and public associations at the regional level doesn't allow leaders to build the relation with representatives of administrative elite on the principles of partnership.

Allocation of regions in which there was a consolidation of the party in power is possible, political process is completely controlled by local administration. The similar situation takes place in many regions of our country. The most striking examples of controlled political process in modern Russia are presence of the "etnokratiya" and "agrokratiya" elements. We will note as well that fact that these models are rather often combined and supplement each other.

Monopolization of regional political process by the party in power puts a political class, political parties in dual situation. On the one hand, the certain pre-election agreement with local government creating very favorable situation and considerably increasing chances on

elections. On the other hand, possibilities of political parties in such regions sometimes become very limited as the need of the power for party support decreases.

Finding of legitimacy by the state institutes at the present stage doesn't contact in the opinion of the Russian society activity of political parties. The main criteria of legitimacy are efficiency and professionalism. The ruling elite constantly emphasizes the unwillingness to participate in any political peripetias.

Important feature of regional elite is their quite rigid hierarchy, orientation on persons, whether it be the head of regional office of political structure or the man of weight in the leaders of area, edge, republic. They act more likely as echelons of support of one of the top officials of political establishment of the region. It predetermines clan nature of relationship, aspiration to stand apart, negative expectations from recruitment of new politicians who are considered, first of all, as competitors in fight for influence on the Center. More and more deep division of elite on ruling and political is a consequence of clan model of political behavior of regional elite. Thus, there is an influence on consolidation of ethnocultural marginal groups by means of lobbying of programs in the government of regions, and also by means of various cultural actions, days of national culture, promoting painless entry of ethnocultural outcasts into an inoetnichesky cultural field.

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MOBILE DEVICE

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Stay ahead of the competition and work smarter and faster. Mobile devices can help your workforce perform their jobs more quickly and accurately, communicate more easily, and better respond to customer needs.

Keywords: mobile collaboration, Mobile internet devices, Mobile Web, Calculators, Handheld game consoles, Portable media players, Ultra-mobile PCs, Pagers, Personal navigation devices (PND), Robots, Smart Cards

A **mobile device** is a small computing device, typically small enough to be handheld (and hence also commonly known as a **handheld computer** or simply **handheld**) having a display screen with touch input and/or a miniature keyboard and weighing less than 2 pounds (0,91 kg). Samsung, Sony, HTC, LG, Motorola Mobility and Apple are just a few examples of the many manufacturers that produce these types of devices.

A handheld computing device has an operating system (OS), and can run various types of application software, known as apps. Most handheld devices can also be equipped with Wi-Fi, Bluetooth, NFC and GPS capabilities that can allow connections to the Internet and other devices, such as an automobile or a microphone headset or can be used to provide Location-based services. A camera or media player feature for video or music files can also be typically found on these devices along with a stable battery power source such as a lithium battery. Increasingly mobile devices also contain sensors like accelerometers, compasses, magnetometers, or gyroscopes, allowing detection of orientation and motion.

Early pocket-sized devices were joined in the late 2000s by larger but otherwise similar tablet computers. Input and output of modern mobile devices are often combined into a touch-screen interface.

Smartphones and PDAs are popular among those who wish to use some of the powers of a conventional computer in environments where carrying one would be impractical. Enterprise digital assistants can further extend the available functionality for the business user by offering integrated data capture devices like barcode, RFID and smart card readers.

Characteristics

Device mobility can be viewed from several dimensions:

– Physical dimensions.

– Whether or not the device is mobile or some kind of host to which it is attached to is mobile.

– What kind of host devices can be bound to.

– How devices are attached to a host.

– When the mobility occurs.

Strictly speaking, many so-called mobile devices are not mobile. It is the host that is mobile, i.e., a mobile human host carries a non-mobile smart phone device. An example of a true mobile computing device, where the device itself is mobile, is a robot. Another example is an autonomous vehicle. There are three basic ways mobile devices can be physically bound to mobile hosts: accompanied, surface-mounted or embedded into the fabric of a host, e.g., an embedded controller embedded in a host device. Accompanied refers to an object being loosely bound and accompanying a mobile host, e.g., a mobile phone can be carried in a bag or pocket but can easily be misplaced. Hence, mobile hosts with embedded devices such as an autonomous vehicle can also appear much larger than pocket-sized.

As stated earlier, the most common size of mobile computing device is pocket-sized that can be hand-held, but other sizes for mobile devices exist too. Mark Weiser, known as the father of ubiquitous computing, computing everywhere, referred to device sizes that are tab-sized, pad and board sized, where tabs are defined as accompanied or wearable centimetre-sized devices, e.g., smart phones and smart cards, and pads are defined as hand-held decimetre-sized devices, e.g., laptops and tablet computers. If one changes the form of the mobile devices in terms of being non-planar, one can also have skin devices and tiny dust-sized devices. Dust refers to miniaturised devices without direct HCI interfaces, e.g., micro electro-mechanical systems (MEMS), ranging from nanometres through micrometers to millimetres. See also Smart dust. Skin: fabrics based upon light emitting and conductive polymers and organic computer devices. These can be formed into more flexible non-planar display surfaces and products such as clothes and curtains, see OLED display. See also smart device.

Although mobility is often regardedas synonymous with having wireless connectivity, these terms are different. Not all network access by mobile users, applications and devices need be via wireless networks and vice versa. Wireless access devices can be static

and mobile users can move in between wired and wireless hotspots such as in Internet cafés. Some mobile devices can be used as mobile internet devices to access the Internet while moving but they do not need to do this and many phone functions or applications are still operational even while disconnected to the Internet. What makes the mobile device unique compared to other technologies is the inherent flexibility in the hardware and also the software. Flexible applications include video chat, Web browsing, payment systems, NFC, audio recording etc. As mobile devices become ubiquitous there will be a proliferation of services which include the use of the cloud.

Although a common form of mobile device, a smart phone, has a display, another perhaps even more common form of smart computing device, the smart card, e.g., used as a bank card or travel card, does not have a display. This mobile device often has a CPU and memory but needs to connect, or be inserted into a reader in order to display its internal data or state.

Uses

Handheld devices have become ruggedized for use in mobile field management. Uses include digitizing notes, sending and receiving invoices, asset management, recording signatures, managing parts, and scanning barcodes.

Recent developments in mobile collaboration systems employ handheld devices that combine video, audio and on-screen drawing capabilities to enable multi-partyconferencing in real-time, independent of location.

Handheld computers are available in a variety of form factors, including smart phones on the low end, handheld PDAs, Ultra-Mobile PCs and Tablet PCs (Palm OS, WebOS).

Users can watch television through Internet by IPTV on mobile devices. Mobile television receivers have existed since the 1960s, and in the 21st century mobile phone providers began making television available on cellular phones.

Nowadays, mobile devices can create, sync, and share everything we want despite of distance or specifications of mobile devices. In the medical field, mobile devices are quickly becoming essential tools for accessing clinical information such as drugs, treatment, even medical calculation.

Due to the popularity of Candy Crush and other mobile device games, online casinos are also offering casino games on mobile devices. The casino games are available on iOS, Android, Windows Phone and Windows. Available games are roulette, blackjack and several different types of slots. Most casinos have a play for free option.

In the military field, mobile devices have created new opportunities for the Army to deliver training and educational materials to soldiers around the world.

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SCIENTIFIC SPACE CENTERS AND GLOBAL ACHIEVEMENTS

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The modern stage of economic development and the forecast of its future are characterized by rapid penetration of high technology into all areas of human activity.

Aerospace, robotics, information technology, telecommunications, new technology, heavy-duty plastic materials, energy saving technology and other promising areas of modern science and technology are radically changing the lifestyle of people, create new opportunities for solutions of social, economic and defense issues.

Space activities should be allocated to the highest priorities of Russia, it is necessary to provide comprehensive and sustained public support. That's why in Russia was created many scientific centers such as "The Russian Federal Space Agency, Roscosmos", "Keldysh Research Center", "The Skolkovo Innovation Center".

The Russian Federal Space Agency, Roscosmos provides state services and administration of the state space assets, as well as management of the international cooperation in joint space projects and programs. In order to maintain effectively socioeconomic and political interest of Russia as a space nation, the Federal Space Agency, together with other federal executive authorities, Russian Academy of Sciences and regions of Russia, actualizes the following primary areas of the space activities:

- monitoring of the natural environment, control of critical emergencies and accident management, exploration of the natural resources, improvement of the Earth remote sensing systems on the basis of the following projects: immediate acquisition of hydro and meteorological data; study of the Earth natural resources and ecological monitoring; multi-zone high-resolution photographing of the Earth; development of the advanced Earth remote sensing system (the system for environmental space monitoring, natural disaster and emergency situation caution);
- support of global communication and TV-broadcasting over entire territory of the Russian Federation, improvement of space communication and TV-broadcasting on the basis of direct TV-transmission, fixed communication, TV-program transmission and mobile satellite communication projects;
- evolution of the orbital crew missions, including the activities under the international crew mission program and implementation of the international agreements on the International Space Station (ISS) development and support;
- validation of new and high-pure material production space technologies, evolution of space technologies and production of the materials with unique properties; scientific research of the near-Earth space, outer space and planets;
- creation and improvement of the space vehicles, and launchers.

Keldysh Research Center is the leading organisation in Russia in the field of rocket engine manufacturing and space power. Keldysh Research Centre is included in the structure of the Federal Space Agency and takes an active part in formation and realization of the Federal Space Program. It develops, manufactures and tests promising prototypes of various types of rocket engines, space power systems, high-energy beam generators and particle accelerators.

At the present the Centre keeps its famous traditions both in the field of rocket production and introduction of ecologically-safe space technologies and processes into the national economy owing to its active scientific work. The Keldysh Research Centre has succeeded to enter the world market. It has the direct contacts with leading aerospace companies of USA, Europe, and Asia.

The Skolkovo Innovation Center is a planned high technology business area built at Skolkovo near Moscow, Russia. This building is a highly modern complex created to encourage science and technology companies, to develop start-ups and to market them correctly. The Space Technology and Telecommunications cluster is intended to strengthen Russia's position in the respective industries. The scope of activity is wide: from space tourism to satellite navigation systems. Russian companies aim to increase their market share in this global market, the total volume of which is estimated at $300 billion.

There are many scientific achievements in Russian and International space programs. In November 1993, the International Rosetta Mission was approved as a Cornerstone Mission in ESA's Horizons 2000 Science Programme.

Since then, scientists and engineers from all over Europe and the United States have been combining their talents to build an orbiter and a lander for this unique expedition to unravel the secrets of a mysterious 'mini' ice world, a comet.

Initially scheduled for January 2003, the launch of Rosetta had been postponed due to a failure of an Ariane rocket in December 2002. The adventure began March 2004, when a European Ariane 5 rocket lifted off from Kourou in French Guiana.

During a circuitous ten-year trek across the Solar System, Rosetta will cross the asteroid belt and travel into deep space, more than five times Earth's distance from the Sun. Its destination will be a periodic comet known as Comet 67P/Churyumov-Gerasimenko. The Rosetta orbiter will take up with Comet 67P/Churyumov-Gerasimenko and remain in close proximity to the icy nucleus as it plunges towards the warmer inner reaches of the Sun's domain. At the same time, a small lander will be released onto the surface of this mysterious cosmic iceberg.

In December 2015 the Rosetta will touch the ground. By then, both the spacecraft and the comet will have circled the Sun and be on their way out of the inner Solar System.

The Rosetta mission will achieve many historic firsts.

- Rosetta will be the first spacecraft to orbit a comet's nucleus.
- It will be the first spacecraft to fly alongside a comet as it heads towards the inner Solar System.
- Rosetta will be the first spacecraft to examine from close proximity how a frozen comet is transformed by the warmth of the Sun.
- Shortly after its arrival at Comet 67P/Churyumov-Gerasimenko, the Rosetta orbiter will despatch a robotic lander for the first controlled touchdown on a comet nucleus.
- The Rosetta lander's instruments will obtain the first images from a comet's surface and make first analysis to find out what it is made of.
- Rosetta will be the first spacecraft ever to fly close to Jupiter's orbit using solar cells as its main power source.

Scientists will be eagerly waiting to compare Rosetta's results with previous studies by ESA's Giotto spacecraft and by ground-based observatories. These have shown that comets contain complex organic molecules: compounds that are rich in carbon, hydrogen, oxygen and nitrogen.

Intriguingly, these are the elements which make up nucleic acids and amino acids, the essential ingredients for life as we know it. Did life on Earth begin with the help of comet seeding? Rosetta may help us to find the answer to this fundamental question.

In conclusion, I'd like to say that it is essential to understand that space activities allows us to use the unique possibilities of the Space in the interests of strengthening the economic, military and defense security of Russia, and also to ensure the welfare of its citizens and to solve global problems of mankind on the planet Earth.

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APPLIED ART IS A PEAK OF THE ART HERITAGE OF THE KAZAKH NATION

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Article is devoted to the definition of the philosophical foundations of applied art of the Kazakh people. Folk art is a reflection of an idea of the universe, understanding the complexity and ambiguity of existence, an aspiration to fix this knowledge by the symbols. In the article are discussed, symbols which are used in ornaments, in household items decoration were designed to resemble the important spiritual truths in everyday life by creating a line of continuity from ancient ancestral knowledge to succeeding generations. The author argues that a comprehensive study of these problems determines the relevance of scientific and pedagogical training of future specialists on the basis of folk and applied art.

In the VIII–IX centuries applied arts was continued by the tribes kypshaks, karluks lived in Kazakh territory. In that period stone processing, jewelry making were developed well. Kypshaks made their jewelry products in the form of birds and sky.

In the period men made products from stones, bones, horn, metal and wood and decorated them, women sewed clothes from hide, women were engaged with embroidery, yorn, wick winding, making felt, and many others. The carpets, coverings demanded from the women a lot of aesthetical choice, masterpiece and qualifications. Mostly Kazakh ornaments were used to decorate the house utilities. In general applied arts were used for decorating home utilities and became the products which have a special meaning.

A.A. Bogolubov wrote that "In the life of Central Asian nomads we can see pictures describing the carpets made by several generations not only regarding their individual personality or tribes but also aesthetical necessities" [1; 3]. The magic activity of jewelry arts importance was proved in the work by Okladnikov.

One of the best works of applied arts is stone processing. Its main kinds are monuments and sculptures. A. Margulan told that stone sculptures have saved since the early periods: firstly, respect parents' spirit, pray to the sky and sun, secondly, to make four corners and put four corner stones, thirdly, they considered the realistic direction and didn't move away from the truth, they aimed at making human's portrait like himself.

Carvings in stonethat describe young women were named "girl stone", "young married woman stone", and older women were called "old lady stone". The external architectural character of "old lady stone" and "shepherd stone'are similar. Both of them pin arms to their breast and hold a pot higher of belly-button. And it is the symbol of worships to the day, to sky; wishingtheir cattle be much. There are large masonry burial grounds which have two long "wings" (ways), and those carvings in stone were set to the east side of them. And front face of carvings in stone was turned to the Sun. They worshiped to the rising Sun, and waited from him some kindness.

Pecked on the stone national epics, like "Kultegin", "Bilge Kagan", "Tonykok" told us about people's dream, wishes of freedom and happy life, their imagination, fantasy and for centuries fighting heros" courage and heroism for independent life. Those epics left educational impression, an ideal of conduct to future generation. Art is a style that will grow from dream-fantasy. It discloses a secret of the other eternal, future life, society, people's being and existence. Consequently, in stone tamgas notions and essence of tertiary structure in the nature, of four parts of the world are imagined in materialized universe and time (real, conceptual, and perceptual). Because, in early times nomads managed to convey the opinions through applied (decorative) art.

One of the types of applied art works" is Jeweler's art. Since early times jewelry's peculiarity and value has had great educational and protrepticsence. Firstly, their certain elements and harmony are connected with the notions about the structure of the universe and nature. Secondly, they believed wearing jewelry would protect them from hobgoblin, slander, danger, and intimidation. After forty days of the girl's birthday they prick her ear-lobe with panicum and first wear silk thread, later change it with silver ear-ring "not to be maleficated". When the girl becomes a teenager her parents make a present of ear-ring to learn her courtesy, modesty in her behavior. According to beliefs and persuasions, like "A part of man's soul live in a person's hair" young girls wear charms with tinkler, bells to be away from dangers, intimidation.

Some scholars made big contribution to researchingapplied art. For instance, Y. Altynsarin opened first trade school in 1861 in Kazaly, in 1889 in Yirgiz, Torgay and paid big attention to pupils" education in applied (decorative) art and he considered that pupils should learn applied art. For instance, in Y. Altynsarin's works we can find these lines: "When a fiancée's father prepare his daughter's main dowry, a fiancée's mother adorn adornment for her lovely daughter secretly things

like bracelet, ear-ring, dresses … and all the girls" dowry are not always similar to each other" or at school in Torgai, opened for Kazakh girls "… girls were taught to things that women should do, for example sewing clothes, cutting into patterns, knitting shawls, knitting plumulaceouskerchief, spinning yarns that are necessary for ordinary people's living, and hand weaving, rolling cloth, weaving a carpet with and without pile made of wool, cattle hair that Kazakh people usually have [2; 176–179, 287].

Ybrai's goal by describing the school's activities – to show people's high aesthetic view, attitude and that Kazakh people's aesthetic taste and style was admirable. And Ybrai wanted to motivate the children at those times. Nowadays some customs and traditions are being blown over, that's why some of them are worth to remember, and young generation should become familiar with valuable, useful customs and traditions, they should imbibe knowledge with high aesthetic taste. It is one of the requirementsof modern society.

By educating children and teenagersaesthetically national heritage's educational power is great. It was highly estimated by Abai. Abai didn't write any specific work on aesthetic education, but his verses and Words of Edification include people's aphorisms, sayings, proverbs, national customs and traditions. This influence to formation of aesthetic view, style and taste, feeling of learners" to universe's existence.

A. Kunanbayev, in his works, mentions take for a model foreign countries" peoples" art too. In his notions and views about nature, society, human AbaiKunanbayev considers learning art, education, cognizing beauty, and elegance as the most necessary things in a person's life. Great poet, and philosopher says, that cognition and knowledge, perception are behavioral, natural property to human being. Abai concludes a person is interested in everything from his birthday, he wants to know, to see and cognize everything around him [3, 96–164].

Shokan Ualikhanov proved ways of taking care and development of national special aspects (customs and traditions, art, language, morals) of applied art [4; 92]. In works of Shokan Ualikhanov are found traditional national nature of Kazakh fine arts in the sphere of universe and time. In scientist's any pictures, universe – moral-ethnical development that identify artistic stylish nature of art that having been formed in definite cultural-historic area, national environment. Time – earlier existence and being of our ancestors, their heritage left for today's generation, orientation of future.

That's why, the main content of occurrence of universe and time in Shokan's works are: – he identified connection of people's art with worldview, national nature, ethnical peculiarities, national pedagogic; in Ualikhanov's works are expressed historical-epochal, narrative, gene biological, ethnographic, ecological, natural views of universe and time. The ideological and educational importance of scientist's works" could be identified through analyzing peculiarities of national character, national behavior, and ethnic traditions in his works.

One of the most particular efforts in artist's creation is "View by looking from Southern slope to Northern slope of Alatau". In this creation spectators are attracted at once by imperious Alatau and Northern mountains in Kazakh and Kyrgyz lands that covered ageless with ice. Blocks of ice are viewed like long Caravan track, and this view makes you acknowledge and appreciate that the nature is itself an artist. Ystykkol that is situated at the foot is a symbol of historical-ethnic interrelation between two countries. He considers ethnic unity of these two countries through ocean's depth. Blocks of ice on mountains on the both sides of the ocean accompanyeach other; harmonize with horizon pointing outto the Sky. Here three measures of the universe depth, height, infinity are known as cognitive background, and different colours are full of eagerness to live, they are symbols that enrich person's belief to the future, they are romantic full of feeling. Firstly, symbolized meaning and content, picturesque, beautiful views like "at a root of clean air mountains, at the beach of clean Ystykkol" make an artist and a spectator closer. Secondly, it takes into account accuracy and ornaments, style and elegancy.

In portraiture of Shokan Ualikhanov time corresponds to ordinary people's being and nature. For instance, in his watercolor creation "Zhatak" (House) convincing picture of yurt and camelherd shows poor peasants" town outskirts life in past century. Picturesque values of his creation bound with units of Time, Place, and Event. In Ualikhanov's creation, time means last century, place means town outskirts, and event means social way of life of the representative of ordinary people. Apart from these pictures "Meeting the bureaucrat in the village of Syrymbet", "The house under the Cottonwood" are described ecological universe and time.

And his picture "Horse training of horsemen and Kyrgyz people" proves that Kazakh and Kyrgyz are people of different nationality but friendly, nationalities that they are kinsfolk whosecustoms and traditions are connected with each other. By comparing two nationalities" scene the author describes each of them separately, with their individual national trait and gives national characteristic. The author managed to pass over our nationality's past through tamga stone, masonry sculptures in ancient ancestors" civilization. Those creations are called "Tamga stones in Kapshagai gulch on Ile", "Masonry sculptures on Ayagoz river", "Masonry sculptures on the north bank of Ystykkol".

In his portraits «Young Kazakh», «Sovereign Ruler», «Kizyak aristocrat», «The Image of Kazakh» and others peculiarities of Kazakh ethnographic behauvior, their complicated fate, dreams and wishes comprise the main plot of pictures. We can notice great proficiency of discovering human's

psychology and of creating a character in portraits "Sartai", "Kashkar girl", "Kankozha", "Boranbai". More specifically, we can realize from Kashkar girl-tenderness, from Sartai severity, from Boranbai inaccessibility, from Kankozha humaneness.

Consequently, the educational content of pictures of universe and time in Sh. Ualikhanov's creations are:

– Pictures of national nature, national customs and traditions, way of life, everyday life, ethnic behaviors comprise Middle Asian and Kazakhstani people's ethnographic peculiarities; in time measuring he managed to describe our previous century's life and today's achievements. The scientist that is well-grounded in history and art of Turkic originated people, proves history of Kazakh art origin, and ways of its becoming and their similarities with national verbal literature.

– Sh. Ualikhanov managed to form artistic, imaginative view in spectator's perception about universe and time through looking at his pictures: he managed to discover the inscrutable secret's content of nature and being with his particular point of view; he left inimitable sign in Kazakh art's history; he managed to describe ageless might and changeable characteristics of nature properly.

– Measures of time and place in art reach nationwide value in national colour, lineal ornaments, form harmony. In his creations universe takes its root from historical truth, and rely on factual local names; he collects people's living according to that century's history. Connected with time, period and place are centralized around the definite nationality's tradition. His necessary instrument by describing nation's art is reverence; respect the customs and traditions of his nation. Consequently, the artist's creations play great educational role in traditional national art; they are the peak of national artistic heritage.

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BASIC HEMODYNAMIC PARAMETERS IN HIGHLY SKILLED ACROBATS

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It has been established that interpretation of various physiological mechanisms of organism adaptation among acrobatic athletes requires information on condition of functional systems [1, 2].

Cardiorespiratory system, being the most important component in provision for organism adaptation, can also limit level of development in adaptation reactions and is an indicator of integrated adaptive processes [3, 4].

The objective of this research is to define basic hemodynamic indicators among high-qualified acrobats.

Male acrobatic pairs took part in the research. Considering their qualification they have been divided into two groups. The first group included ($n = 22$) high-qualified sportsmen (masters of sport and masters of sports of international degree – active members of national teams of Russia and Krasnodar region); the second group ($n = 28$) included sportsmen of average qualification (1st degree and candidates for master of sports). Age of the studied sportsmen varied from 17 to 21 years. Observation took place during training classes at the base of State Budget Institution of Krasnodar region "Center of sports training of G.K. Kazadjiyev" and Municipal Budget Educational Institution of additional education for children Children-Youth sports school № 1 of the city of Krasnodar.

The sportsmen participated in the research on their free will, written informational confirmation was received.

Considering possibility of differences in physiological gifts and in dependence on program content of acrobatic exercise, the whole observed contingent of research was divided into "higher" sportsmen, whose basic activity consisted of balance and volt elements, and "lower" ones, who perform supports, balance, throws and catches of partners. All of the tested parameters were registered on off-training days.

The following indications were defined: heart contraction rate (HCR) if idle (evaluated with automatic apparatus 'Omron" (Japan); arterial pressure (AP) according to the method of Korotkov; systolic pressure (SAP) was defined at the moment of the first tone emergence, and diastolic pressure (DAP) – at the moment of tones disappearance); index of pulse pressure (IPP) – defined via calculation method – exclusion DAP from SAP).

We should outline that no differences were revealed between acrobats of "higher" and "lower" groups during the comparative analysis according to basic hemodynamic indexes.

As the received data shows, heart rate ($65,1 \pm 1,8$) was reliably higher among sportsmen of the first group ($65,1 \pm 1,8$; $p < 0,05$) in comparison to the observed of the second group, and it supports the fact of economization of chronotropic function of heart. Decrease in heart rate is also defined by increase in parasympathetic impacts upon function of heart automatism due to systematic sports training.

No reliable difference in systolic AP between the observed sportsmen of groups 1 and 2 was discovered in process of studying arterial pressure level. However, indexes of diastolic AP among the qualified acrobats (group 2) was reliably higher that the same index among the studied sportsmen of group 1, and this fact reflects increase in blood vessel tone. Increase in diastolic pressure testifies for disturbance in adaptation of blood flow apparatus to strain and can be referred to the signs of overtraining.

Thus the presented research provide for understanding of sport effect upon certain indexes of cardiovascular system among high-qualified acrobats.

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ASSESSMENT OF THE STATE OF ENVIRONMENT OF THE CITY OF KRASNOYARSK BY MEANS OF THE FLUCTUATING ASYMMETRY OF THE SHEET PLATE OF ULMUS PUMILA L.

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Popular method of an assessment of influence of an anthropogenous factor is the assessment of quality of environment in size of the fluctuating asymmetry (FA) of leaves. FA is interconnected with violation of stability of development of a vegetable organism as a result of action of various anthropogenous factors.

The research objective consisted in an assessment of pollution of districts of Krasnoyarsk in size of the fluctuating asymmetry of a sheet plate of an elm stocky. Determination of asymmetry of a sheet plate at an elm stocky and the assessment of stability of development was carried out by V. M. Zakharov's technique with coauthors. Selection of vegetable samples was made on a radial grid from the main sources of emissions of the polluting substances of Krasnoyarsk: The heat power plant – 1 on a site number three – Festivalnaya St. (Leninsky district), heat power plant – 2 on a site number two – Lesopilshchikov St. (Sverdlovsk area), as control chose a site number one on E. Stasova St. (Oktyabrsky district). Collecting material was carried out after completion of intensive growth of leaves at the end of September, 2015. Selection of leaves was done from several close growing plants, about one age, on 100 leaves from each site.

As a result of researches removed that the integrated indicator of FA of a leaf of an elm in points of sampling varied from 0,056 to 0,076. In sites number two and three of FA of a leaf of an elm characterizes a state of environment as critical that corresponds to the fifth point on a scale of an assessment of quality of the environment in size FA. The greatest values of FA are revealed in a zone of influence of a heat power plant – 2. The analysis of FA of separate morphological indicators says that such morphological features of a leaf as length of a vein of the second order, the second from the basis, and distance between the ends of these veins most sensitively react to environmental pollution. Research of the fluctuating asymmetry of an elm of stocky Krasnoyarsk allowed to reveal various extent of violation of stability of development depending on the area of growth of plants. More considerable deviation in development of leaves of a poplar balsam are revealed around influence of a heat power plant – 2. We can explain this phenomenon to that influence plants not only emissions of a heat power plant – 2, but the cement works which is in the studied area. Thus, the indicator of FA of an elm can be used monitoring of a state of environment.

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Materials of Conferences

BRONCHIAL ASTHMA: IS CARDIORESPIRATORY CONTINUUM?

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This article is devoted to the issues of cardiac remodeling of the patients with asthma, which can be defined as cardio-respiratory continuum. Key steps of the continuum – increase in diastolic dimension, wall thickness of the right ventricular remodeling and development of chronic heart failure. Discover the main predictors of pathological remodeling. Remodeling process involves not only the right but the left side of the heart. The models predict cardiac remodeling system.

Introduction. The last decade of chronic nonspecific pulmonary disease located on the 3rd place of incidence, morbidity and mortality rates among other types of pathology. BA suffered the world's 300 million people [1]. According to some estimates, the death from asthma is about 250,000 people per year [2]. The definition of functional state heart is essential to assess the severity of the clinical course of the disease, their prognosis and therapy.

The aim of the study was to identify cardiac remodeling in asthma, the construction of a mathematical model to optimize its forecasting diagnostics.

Materials and methods of research. It studied 283 asthmatic patients of varying severity. All patients underwent a comprehensive examination, which included clinical, immunoenzymometric (determining the level of N-terminal fraction of brain natriuretic propeptide (NT-proBNP), the activity of angiotensin-converting enzyme (ACE) inhibitors) and instrumental methods of respiratory function, ECG, echocardiogram, ambulatory Holter electrocardiography (HMECG) with the assessment of heart rate variability (HRV).

Results of research and their discussion. HMECG revealed increased activity sympathoadrenal system (SAS) as the weighting of the severity of asthma. At the same time it noted aggravating rhythm disorders, in particular arrhythmias. Its frequency and nature correlate with disease severity. Increased total pulmonary resistance have been identified in patients with asthma of moderate severity receiving oral corticosteroids. From this group of patients, hypertrophy of the prostate detected. With increasing severity of asthma we found increased work of the right ventricle. Diastolic dysfunction occurred when strikers and became more frequent at the patients with severe asthma. The left ventricle remodeling took place parallel to the right. Concentric the left ventricle remodeling was observed starting with mild asthma. In patients with severe number of patients who had similar remodeling, it grew to 33%. Asymptomatic left ventricular diastolic dysfunction in severe asthma was found in 14% of cases.

Neurohormonal activation was detected systems that participated in the remodeling of the pancreas. First, the activation of SAS revealed that illustrated the results of the analysis of heart rate variability. With increasing severity of asthma were identified offset the sympatho-vagal balance (LF/HF) towards SAS. Hyperactivity SAS led to the development of arrhythmias are compounded with disease severity. It has been found to influence the parameters of SAS right ventricle. A moderate correlation between tightness LF/HF and diastolic size of the right ventricle, the thickness of the anterior wall of the right ventricle ($r = 0,41$ and $r = 0,45$, respectively).

Secondly, RAAS activation is detected, which was confirmed by increased levels of ACE. With moderate asthma ACE level was elevated in 60% of patients. The most frequently raising ACE was patients with severe asthma (in 94% of patients). It was in group that have the highest level of pulmonary and body vascular resistance. RAAS activation is known to participate in the development of cardiac remodeling. With increasing severity of asthma has increased the number of prognostically unfavorable types of remodeling. The correlation of right ventricle parameters of ACE level was weak.

Third, the observed activation of natriuretic peptides. It is manifested by increased levels of NT-proBNP in patients, since patients are with the strikers. In this group, the activity of NT-proBNP in 40% above normal, yet 30% had borderline significance. In severe asthma in 71% of patients it exceeded 350 fmol/ml, in the remaining cases were borderline significance. Increased activity of NT-proBNP has acknowledged the violations of myocardial function. Detected a moderate correlation tightness of NT-proBNP and diastolic size of the right ventricle ($r = 0,35$). So, we can talk about cardiorespiratory continuum in asthma.

In view of the adjusted coefficient of determination were selected potential predictors affecting the thickness of the anterior wall of the right ventricle in asthma. These included NT-proBNP, ACE, LF/HF, FEV1, the total pulmonary resistance. The prognostic model of hypertrophy of the prostate in patients with asthma, presented in the form of a linear multiple regression equation:

$$Y = 0,768 + 0,0001 \cdot X1 - 0,0001 \cdot X2 + \\ + 0,018 \cdot X3 - 0,005 \cdot X4 + 0,0001 \cdot X5,$$

where Y – the thickness of the anterior wall of the right ventricle (see); $X1$ – the level of NT-proBNP (fmol/ml); $X2$ – ACE (mg/ml); $X3$ – LF/HF; $X4$ – the level of FEV1; $X5$ – the level of the total pulmonary resistance (din.s. cm-5).

The standard error of the regression equation $s_y = 0{,}093$. Multiple correlation coefficient $r = 0{,}639$. The thickness of the anterior wall of the right ventricle by 40,8 % is determined by the abovementioned predictors. Hence the above equation can be used to predict remodeling RV.

Discussion. Analysis of the results shows that patients with asthma observed structural, geometric changes in the myocardium of both right and left ventricles. As the worsening conditions they grow. Given that we found no major violations in the examined blood gas, as well as significant changes in pulmonary hemodynamics, we can assume neurohumoral effect on the myocardium. Indeed, it was found to offset the autonomic regulation of the cardiovascular system in the direction of sympathic. Our studies have shown that high blood pressure is not an exclusive contributor to the remodeling of the pancreas. Along with hemodynamic factors are equally important neurohormonal activation of local systems, primarily myocardial. It is obvious that the main role in the process of remodeling plays SAS, RAAS and extremely important, synthesized in the myocardium, natriuretic peptides. It is the activation of neurohormonal systems in patients with asthma could be explained by changes in the structure and friendly left ventricular function. Analysis of the relationship between the concentration of NT-proBNP and diastolic size of the prostate in patients with asthma showed a moderate correlation. We found a weak correlation between the size of the right ventricle diastolic thickness and the anterior wall of the right ventricle. Analysis of the relationship between the thickness of the anterior wall of the right ventricle and the balance of the autonomic nervous system index revealed a significant relationship.

Conclusion. It can be concluded that the development of cardiac remodeling of the patients with asthma comes the amid neurohumoral changes involving hyperactivation SAS, RAAS system of natriuretic peptides.

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Materials of Conferences

COMPREHENSION OF EDUCATIONAL INFORMATION AS A PROCESS OF THE SELF-ORGANIZATION

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The modern world is more and more sated with new information. In this regard, the problem of modern education consists not so much in giving new knowledge to students in schools and Universities, but mostly in teaching them how to work with the information they receive.

Within the concept of self-organization process comprehension of new information can be presented as formation of an order from the chaos with transition through a bifurcation point. During the process, the consciousness of the pupil will work as the self-organizing system.

Let us present the cumulative experience of the pupil as a unit consisting of separate blocks of information. The relative number of communicative links between information blocks defines its integrity and stability. The newly received information enters student's consciousness and it has to fit into the available structure. The quicker and more stoutly the fitting in process of information is going, the stronger the process of assimilation of data will be. Such methodological approach works when the studying material can be coordinated with the previous material, which is available in consciousness.

If we begin studying of essentially new subject, which material is difficult to coordinate with the personal experience begins (for example, axiomatic in Geometry, symbolism of chemical elements, etc.) For description of this, process the model of formation of self-organizing system. Separate fragments of material are perceived as chaos – the system accepts information to a certain limit then there comes the moment when further absorption of information is impossible. The following step is the formation of the new information block, through the uniting of the separate elements chaotic information into the parameters of the order – this process reminds of the "creating an archive" of information, and the whole new block is perceived as system of knowledge with certain parameters of an order. The student who has minimum of facts memorized, can "extend" all information from the new block as the links of a chain. After such "processing" it will be much easier to enter, the new block of information into the available structure using the methodology stated above.

It is necessary to consider that the consciousness of the person is capable of generating the new information and to create essentially new blocks, which will help to comprehend the incoming of material and to accelerate process of structuring system of knowledge.

From all that was mentioned before, there is a possibility to interpret all well-known systems and methods of education a little differently. Firstly, while explaining the new material it is necessary to place emphases on the questions which are closer connected with the previous material and are the most important in perception of new information (to allocate parameters of an order of system). Secondly, the new material should be given with a large number of examples, coming from different approaches, it is important to have the maximum number of possible associations, according to the different experience of each student (to provide the choice between the information).

Thirdly, to give the student a freedom of choice to establish of interrelations of the new and "old" available information – not to force them simply to retell the textbook or the abstract of the lecture, and to give them a chance to express the opinion on the= studied question. That means to understand the material at the creative level. At such approach, everyone will have their own structure of knowledge, however the basic elements of any of them will be same – namely, parameters of an order of the system, from which the new block of knowledge is formed. Although, the interrelations between the separate blocks are going to be different for each student (nonlinearity in development of the self-organizing systems).

That way, the methodological concept that was described above, gives the chance to look at the educational process and well-known didactic methods and receptions in a new light.

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Materials of Conferences

INCREASING THE SPEED OF TASKS SOLVING BY PARALLELIZATION OF TASKS

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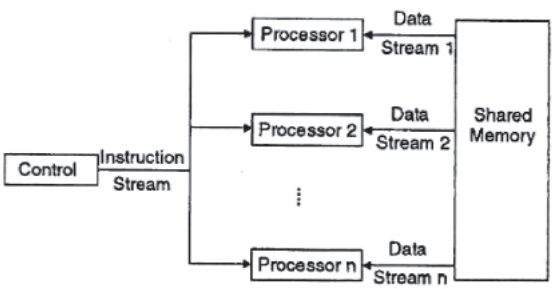
Parallelization method is using successfully in dealing with complex and time-consuming tasks. This method can significantly increase the speed of execution of the task.

The method of parallel computing:

- A problem is broken down into several subtasks that are performed on different processors.
- Programmer is writing program for each subtask, which work in the background mode.
- Programs exchange the data with each other, and the programmer is following the progress of the programs and the exchanging of data stream.
- After completing the subtasks, the programmer makes data analyze.



At first glance, more CPUs are involved in solving the task, as many times and must win time. In practice, this acceleration is never achieved. The reason for this law Amdahl:

$$S \le 1/(f + (1 - f)/P),$$

where S – the acceleration of the program on P – processors, and f – fraction non-parallel code in the program.

This formula implies that P-fold acceleration can be achieved only when the share of non-parallel code is 0. That is virtually impossible. Accelerating the program depending on the proportion of non-parallel code.

Amdahl's law shows the maximum number of processors on which the program will be carried out with a heavy performance, depending on the proportion of non-parallel code.

Therefore, this method is not always speeds up the task. Execution speed is also dependent on an enabled computer architecture, operating parallel processors, competently composed algorithm for solving tasks and subtasks, and the style of writing programs.

The number of processors	Share serial computing, %				
	50	25	10	5	2
Acceleration Program					
2	1,33	1,60	1,82	1,90	1,96
4	1,60	2,28	3,07	3,48	3,77
8	1,78	2,91	4,71	5,93	7,02
16	1,88	3,36	6,40	9,14	12,31
32	1,94	3,66	7,80	12,55	19,75
512	1,99	3,97	9,83	19,28	45,63
2048	2,00	3,99	9,96	19,82	48,83

When using this method, the programmer can use the following tools:

- *OpenMP* – a standard application interface for parallel systems with shared memory.
- *POSIX Threads* – standard implementation of solving flows.
- *Windows API* – threaded applications to C ++.
- *PVM (Parallel Virtual Machine)* – it connects computers to the general computational resource.
- *MPI (Message Passing Interface)* – standard messaging systems between the parallel working processes.

Therefore, to achieve maximum efficiency, you must first optimize all existing processes, analyze the technical capabilities of computers and determine whether to apply the method of parallelization of the problem in this situation.

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