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SECTION 3. Nanotechnology. Physics.

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RADON CONCENTRATIONS IN DRINKING WATER SAMPLES FOR SOME AREA AT AL-NAJAF CITY

Abstract: The radioactivity of radon gas in five samples of drinking water that manufactured in different regions of Najaf city have been measured by RAD7 detector. The results show that, radon concentrations were varied from (0.33) Bq/l to (1.2) Bq/l. This study, prove that the high value of radon concentrations was less than the allowed limit which it is equal (11.1) Bq/l.

Key words: Radon concentrations, drinking water, RAD7 and Al-Najaf, Iraq.

Language: English

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Introduction

Radiation is a fact of life. We live in a world in which radiation is naturally present every-where. Light and heat from nuclear reactions in the sun is essential to our existence. Radioactive materials occur naturally throughout the environment, and our bodies contain radioactive materials such as carbon-14, potassium-40 and polonium-210 quite naturally. All life on Earth has evolved in the presence of this radiation. Means radioactive contamination environmental presence of radioactive elements emitting particles and photons of radionuclide to the environment from various sources such as accidents and nuclear tests and these radionuclide transmitted to the ground, and causes vegetation to its appearance to the outside, and can be transmitted through the food chain to the human body [1]. Radon is the leading source of natural radiation exposure and the second leading cause of lung cancer. Where does it come from? Well, usually from soil, but it is

found everywhere. The ground that we all walk and build our homes upon contains varying levels of naturally occurring radioactive elements that decay into radon gas. Radon from chemically inert gases and radioactive naturally produced from the natural radioactive decay of uranium found in rocks and soil. Emit radon easily from the soil to spread in the air where dissolved to derivatives, short-lived, called the adad radon emission alpha particles and sticking with dust and other particles suspended in the air and when inhaled air accumulate those Aloledat in the cells that cover the bronchial tree where can alpha particles damage to those cells and cause lung cancer [2]. Radiates the human body from the inside by all of the air we breathe and the food and water that reaches the stomach. The air is the main source of dose Radioactive natural that reach inside the human body and their primary source of radon gas found in the earth's atmosphere. Moreover, some dust that falls on the plant contains traces of radioactive

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materials to those that are slightly radioactive our bodies from the inside because of some radioactive elements, such as carbon-14, potassium-40 [3]. Radon gas decays into radioactive particles that can get trapped in lungs when breathe. As they break down further, these particles release small bursts of energy. This can damage lung tissue and lead to lung cancer over the course of lifetime. Not everyone exposed to elevated levels of radon will develop lung cancer [4]. And the amount of time between exposure and the onset of the disease may be many years. Like other environmental pollutants, there is some uncertainty about the magnitude of radon health risks. However, know more about radon risks than risks from most other cancer-causing substances. This is because estimates of radon risks are based on studies of cancer in humans. Smoking combined with radon is an especially serious health risk. Stop smoking and lower your radon level to reduce your lung cancer risk. Children have been reported to have greater risk than adults of certain types of cancer from radiation, but there are currently no conclusive data on whether children are at greater risk than adults from radon [5]. The aim of the present study to find concentrations of radon gas in the drinking water samples for the city of Najaf in different places, using a solid-state detector stems RAD7 radon interest in being a source of danger to people's health because of the breadth of its spread in the water.

PRACTICAL PART:

Solid State Detector RAD7 The solid state detector as shown in Figure (1) was made of a semiconductor material (silicon) converts the energy of alpha radiation resulting from the decomposition of (^{218}Po or ^{214}Po) directly into an electrical signal which if RAD7 can filter the type of isotope discrimination electronic energy related with alpha particles and thus we can distinguish isotopes of radon (^{218}Po) fires the alpha card 6MeV ^{214}Po card or 7.97 MeV [6] . RAD7 has a cell size (0.7L) has

the form of a hemispherical possible that we observe in Figure (2) within the hemisphere coated electrical connector with high voltage equip shipments into the connector to the effort around (2000-2500) volt This creates an electric field across the cell urges the electric field of charged particles positive in the detector cell, degrade atoms ^{222}Rn inside the cell and leave behind a positive charge ^{218}Po which affix to the detector, the nucleus ^{218}Po has a life half a relatively short and when decomposed will have the opportunity (50%) to enter the detector produces an electrical signal and energies of alpha particles [7]. RAD7 a radon- in- air monitor of Durrigde Company of USA was used for monitoring radon concentration in 38 water samples collected from 38 regions different locations within Hilla City and adjoining area using the RAD H2O technique [7]. The RAD H2O is an accessory to the RAD7 that measures radon in water with high accuracy, over a wide range of concentrations, capable of obtaining a reading for radon concentration in water within an hour of taking the sample [10].

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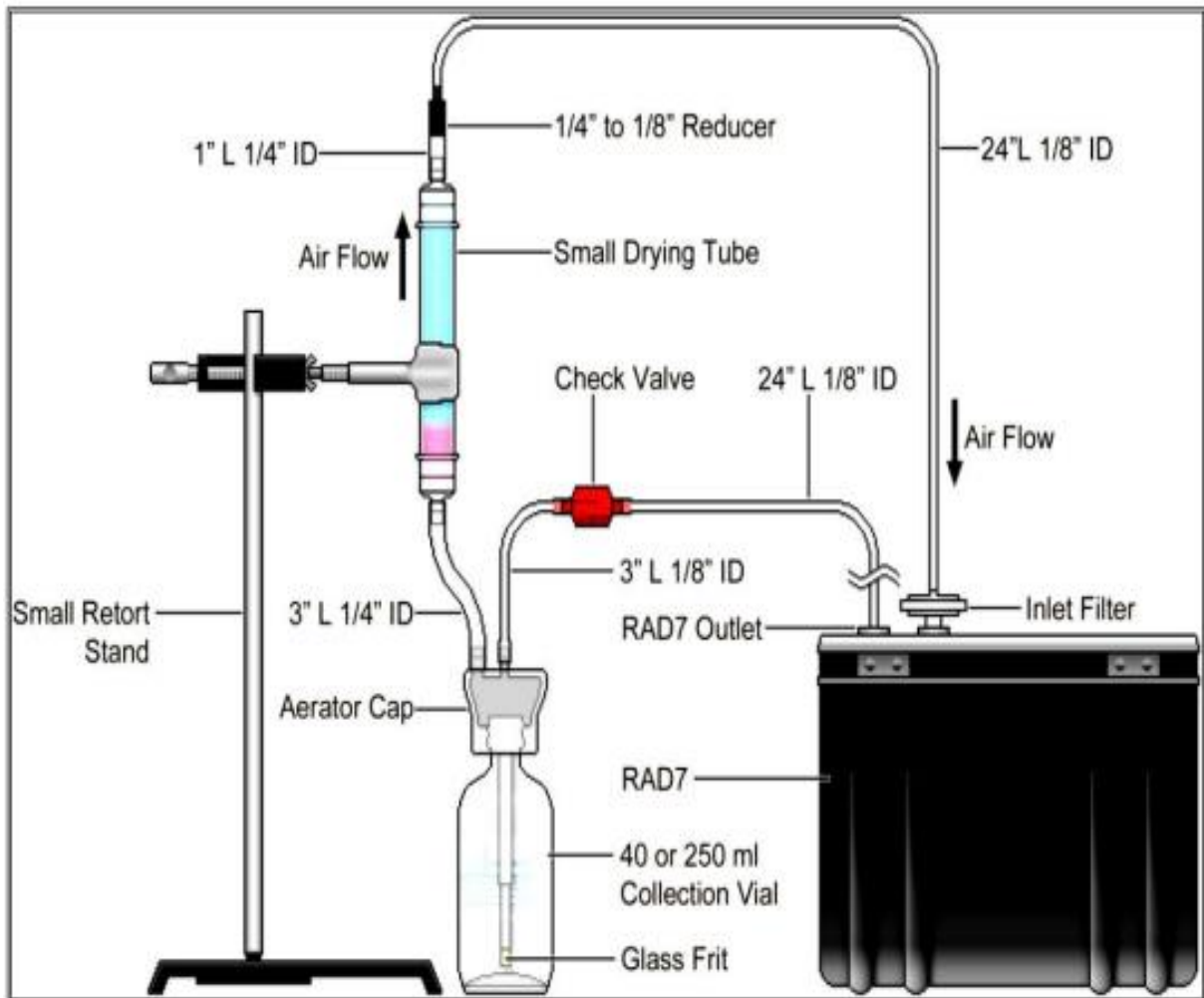


Fig. 1. Schematic presentations of radon-in-air monitor RAD7. Adapted from reference with permission [8].

The RAD H₂O makes use of standard, pre - set protocols, built into the RAD7, which furnish a direct reading of the radon concentration in the water sample, itself. The RAD7 detector has the capability to calculate the concentration of radon in water sample by multiplying the concentration of radon in

the air loop by a fixed conversion coefficient. For a 250 mL vial of water sample conversion coefficient of 4 has been derived from the volume of the air loop, the volume of the sample and the equilibrium radon distribution coefficient at room temperature.

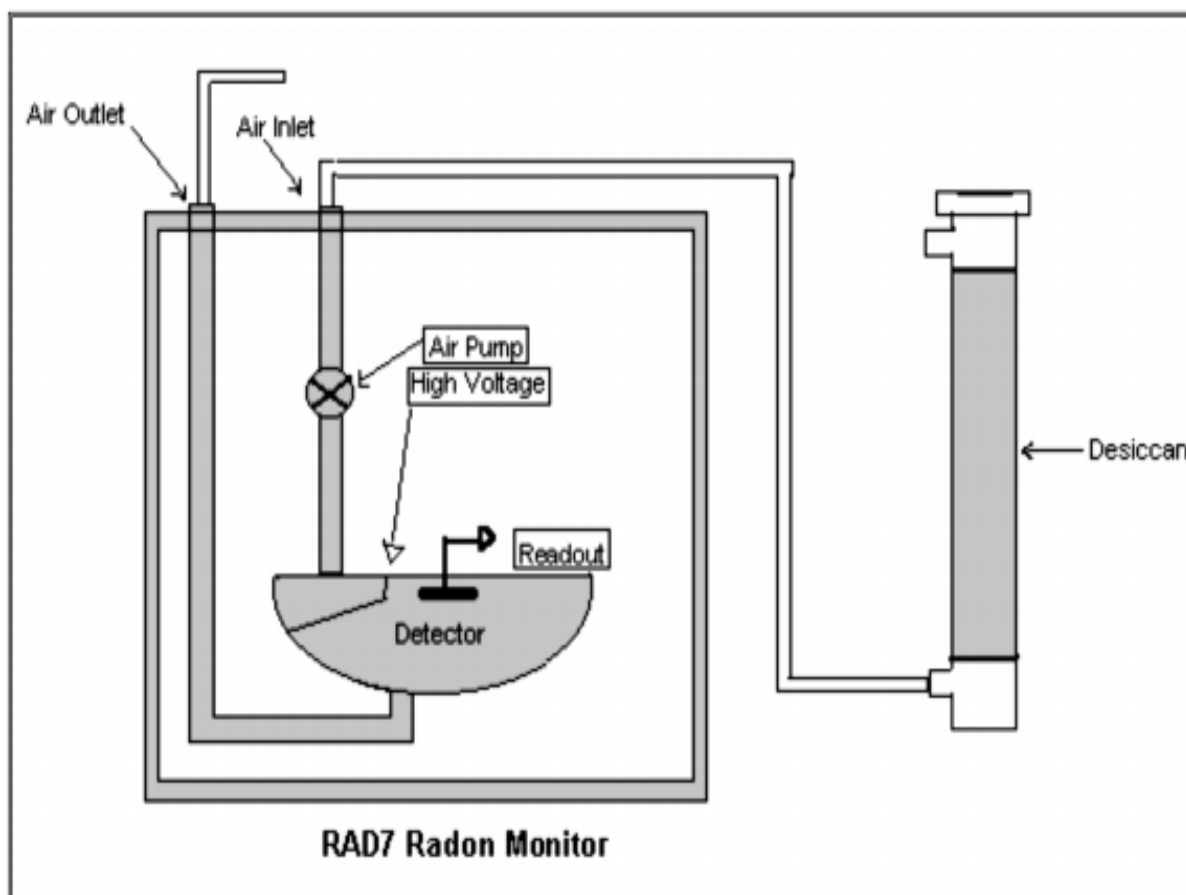


Figure 2. Scheme device RAD7 [9]

The method makes use of a closed loop aeration design in which the air volume and water volume are kept constant and are independent of the flow rate [7,8]. A water test in a pre - set Wet 250 protocol is normally completed in 30 min time. At the beginning of a test the inbuilt pump of RAD7 starts running automatically for 5 min duration, aerating the sample and delivering the degassed radon to the RAD7 measuring chamber. During the 5 min of aeration, more than 94% of the available radon is removed from the water. After 5 min operation the pump stops automatically and the system then wait for a further 5 min interval. After that the system then starts counting. After 5 min, the system prints out a short form report for a 5 min cycle [8,11]. The same thing happens again 5 min afterward, and for two more 5 min periods after that. At the end of the run (30 min after the start), the RAD7 prints out a summary, showing the average radon concentration in four counted cycles each of 5 min duration, a bar chart of

the four readings, and a cumulative spectrum. The radon concentration shown is that of the water, and is calculated automatically by the RAD7 [8,12].

Results and discussion:

Table (1) shows the results obtained in this study. Where (A) refers to the area, Mean represents the average value of concentration, High represents higher-value, Low represents less valuable and all measurements by (Bqreal / liter) Bq/L. To ensure the quality control and reliability of the sampling and measurement methods, Each sample was analyzed in 4 cycles where we calculated the mean of these 4 readings and finally we calculated the mean for the 5 samples' means.

Table (1) show there is difference in measurement results for water according to locations samples, Where the radon concentrations ranged from (0.33 to 1.2) Bq/L .

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Table 1. Samples measurements of sites in Najaf city.

No.	Location Name	Radon concentrations (Bq/L)
1	Al-Ameer	1.2
2	Al-Adalla	1.0
3	Al-Forat	0.9
4	Al-Hussain	0.67
5	Old City	0.33

The main Study finding points that all the readings for wells and springs were lower than the maximum contaminated level (MCL) of 11.1 Bq/L [14,15]. These generally low concentration levels of radon in water tap could be explained from the geological context of the surrounding rocks. Indeed and environmental conditions [16]. As there is no absolute safe value of radiation from radon on general public. Although there are few studies on radon level in the water in Iraq [17,18] no water radon level reference has been established and

therefore, there has been no specific safe limit value for radon until now in Iraq. Even in the neighbor countries, no standard safe level has been developed and they still depend on the U.S or European standard safe levels.

Conclusions

The concentration of radon ^{222}Rn in water samples under study in the city of Najaf reached 0.33 to 1.2 Bq/L, which it is lower than the maximum contaminated level (MCL) of 11.1 Bq/L.

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SECTION 2. Applied mathematics.
Mathematical modeling.

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MODELING EIGENVECTORS WITH GIVEN THE VALUES OF THEIR INDICATED COMPONENTS

Abstract: The paper solves a new problem inverse to the problem from the DSP model: $R_{mn} => (C_{mn}, A_{mn})$ and different from the problem from the model ISP 1[8]: $A_{mn} => (C^{(l)}_{mn}, R^{(l)}_{mn}), l=1, \dots, k_l < \infty$. For the matrix $C_{mn} = [C^+_1 | C^+_2]$ (with the new values $c^+_{kj}, j=1, \dots, l, k \in \{1, \dots, n\}$) is required to find a new pair of matrices (C^+_{mn}, A^+_{mn}) , such that the matrix $C^+_{mn} = [C^+_1 | C^+_2]$ has the same set of pairs of indices (k, j) and the same new values of the components $c^+_{kj}, j=1, \dots, l, k \in \{1, \dots, n\}$ as in the first l eigenvectors $c^+_j = (c^+_{1j}, c^+_{2j}, \dots, c^+_{nj})^T$, located at column submatrices C^+_1 of matrix $C^+_{mn} = [c^+_1 | c^+_2 | \dots | c^+_n]$. Matrix C^+_{mn} and A^+_{mn} satisfy the equations: $C^{+T}_{mn} C^+_{mn} = C^+_{mn} C^{+T}_{mn} = I_{mn}, C^+_{mn} A^+_{mn} C^{+T}_{mn} = R^+_{mn}, \lambda^+_1 + \dots + \lambda^+_n = n, c^+_i A^+_{mn} c^{+T}_j = 1, c^+_i A^+_{mn} c^{+T}_i = r^+_{ij}, r^+_{ij} = r^+_{ji}, i=1, \dots, n; j=1, \dots, n, C^+_{mn} = [C^+_1 | C^+_2]$, where the correlation matrix R^+_{mn} has a new matrix of the eigenvectors and the eigenvalues $A^+_{mn} = \text{diag}(\lambda^+_1, \dots, \lambda^+_n) = n$. $\lambda^+_1 + \dots + \lambda^+_n = n, \lambda^+_1 \geq \dots \geq \lambda^+_n > 0$. Model ISP 2: $C_{mn} => (C^+_{mn}, A^+_{mn})$. The solution of the problem: a pair of matrices $A^+_{mn}, C^+_{mn} = [C^+_1 | C^+_2]$ necessary to implement IM PCA[3]: $(C^+_{mn}, A^+_{mn}) => (R^+_{mn}, Z^{(l)}_{mn}, Y^{(l)}_{mn}), t=1, \dots, k_l < \infty$.

Key words: eigenvectors with given the values of their indicated components.

Language: Russian

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МОДЕЛИРОВАНИЕ СОБСТВЕННЫХ ВЕКТОРОВ С ЗАДАНЫМИ ЗНАЧЕНИЯМИ ИХ ВЫДЕЛЕННЫХ КОМПОНЕНТ

Аннотация: В статье решена новая задача, обратная к задаче из модели ПСЗ[3]: $R_{mn} => (C_{mn}, A_{mn})$ и отличная от задачи из модели ОСЗ 1[11]: $A_{mn} => (C^{(l)}_{mn}, R^{(l)}_{mn}), l=1, \dots, k_l < \infty$. Для матрицы $C_{mn} = [C^+_1 | C^+_2]$ (с новыми значениями $c^+_{kj}, j=1, \dots, l, k \in \{1, \dots, n\}$) требуется найти новую пару матриц (C^+_{mn}, A^+_{mn}) , такую, что матрица $C^+_{mn} = [C^+_1 | C^+_2]$ имеет те же заданные пары индексов (k, j) и те же новые значения компонентов $c^+_{kj}, j=1, \dots, l, k \in \{1, \dots, n\}$, что и у первых l собственных векторов $c^+_j = (c^+_{1j}, c^+_{2j}, \dots, c^+_{nj})^T$, расположенных по столбцам подматрицы C^+_1 матрицы $C^+_{mn} = [c^+_1 | c^+_2 | \dots | c^+_n]$. Матрицы C^+_{mn} и A^+_{mn} удовлетворяют равенствам: $C^{+T}_{mn} C^+_{mn} = C^+_{mn} C^{+T}_{mn} = I_{mn}, C^+_{mn} A^+_{mn} C^{+T}_{mn} = R^+_{mn}, \lambda^+_1 + \dots + \lambda^+_n = n, c^+_i A^+_{mn} c^{+T}_j = 1, c^+_i A^+_{mn} c^{+T}_i = r^+_{ij}, r^+_{ij} = r^+_{ji}, i=1, \dots, n; j=1, \dots, n, C^+_{mn} = [C^+_1 | C^+_2]$, где корреляционная матрица R^+_{mn} имеет новые матрицы собственных векторов и собственных чисел $A^+_{mn} = \text{diag}(\lambda^+_1, \dots, \lambda^+_n) = n$. $\lambda^+_1 + \dots + \lambda^+_n = n, \lambda^+_1 \geq \dots \geq \lambda^+_n$. Модель ОСЗ 2: пары матриц $A^+_{mn}, C^+_{mn} = [C^+_1 | C^+_2]$ необходимы для реализации ОМ ГК: $(C^+_{mn}, A^+_{mn}) => (R^+_{mn}, Z^{(l)}_{mn}, Y^{(l)}_{mn}), t=1, \dots, k_l < \infty$.

Ключевые слова: собственные векторы с заданными значениями их выделенных компонент.

Введение

В программной системе, имитирующей на компьютере мышление человека, процесс мышления человека, решаются определенные задачи или принимаются решения в конкретной

области. Обязательные шаги процесса «добычи» знаний при обработке данных (они представлены ниже): данные, «вычисленные» данные (информация), модуль извлечения знаний, система объяснений фактов и правил для модуля

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извлечения знаний, - воспроизводятся на компьютере. Они соответствуют структуре типовой экспертной системы (ЭС).

Наиболее общими методами представления знаний в ЭС являются: правила, семантические сети, фреймы. Представление знаний в виде правил предполагает наличие фактов и правил, из которых выводятся смыслы (выводы) [1]. Большинство существующих коммерческих ЭС основаны на правилах

В работе [1] найден смысл для комбинации смыслов z -переменных из Прямой [2] и Обратной [3,4] Моделей Главных Компонент. Таких комбинаций смыслов рассмотрено 2. Извлечение знаний происходит из матрицы собственных векторов S_{nn} размерности n -на- n и из $n=6$ названий z -переменных, отражающих смыслы имен z -переменных.

Для системы искусственного интеллекта (ИИ) смыслы играют роль знаний [1]: будущая карьерная успешность школьника существенно зависит от «статуса родителей» и от «средней оценки в школе». Эти выводы [1] получены после обработки приводимых ниже 6 показателей (из их смыслов и значений). При других смыслах показателей и (или) их значений могут быть получены другие выводы. В общем случае, интеллект можно представить как совокупность фактов и правил их использования. Цели в ЭС достигаются с помощью правил и использованием всех известных фактов. Количество фактов и правил может быть любым конечным, а смысл выводов из них – разной степени содержательности: от очевидных до новых. В [1, с.11] приводятся случаи наличия «1 факт + 2 правила», «3 факта + 9 правил». В работе [1] рассматривается случай «3 правила + 2 «вычисленных» факта». Извлекаются неформализованные знания. Формализованные знания формулируются в книгах, руководствах, документах в виде общих и строгих суждений (законов, формул, моделей, алгоритмов и т.п.).

В программной системе, имитирующей на компьютере мышление человека, где формализуются процессы мышления человека, решаются специальные задачи и принимаются формализованные решения, относящиеся к соответствующей конкретной области. Выделяют основные шаги процесса «добычи» знаний и при разработке программных средств воспроизводятся формальные словесные выводы на компьютере по «усеченной» грамматике, синтаксису.

Среди СИИ, широко внедряемых в область автоматизации проектирования систем принятия решений, следует выделить такие экспертные системы (ЭС), в которых находится обширный запас знаний и экспертных оценок о конкретной предметной области.

Будем рассматривать формализованные знания, извлеченные из цифр в таблице объект-свойства. Простые «готовые» формализованные знания формулируются в книгах, руководствах, документах в виде общих и строгих суждений (законов, формул, моделей, алгоритмов и т.п.). Мы добываем знания из цифровых данных. Данные - это совокупность сведений, зафиксированных на определенном носителе в форме, пригодной для постоянного хранения, передачи и обработки. Преобразование и обработка (анализ) данных позволяет получить полезную и применяемую информацию. Информация - это результат преобразования и компьютерного или иного анализа данных. Мы рассматриваем их формы в виде чисел, векторов (собственных чисел, коэффициентов регрессии), матриц (собственных векторов, коэффициентов корреляций), в виде названий и значений так называемых z -переменных, u - переменных, организованных в виде прямоугольных матриц, обладающих известными алгебраическими свойствами. Отличие информации от данных состоит в том, что данные - это фиксированные прямые или косвенные сведения о событиях и явлениях, которые хранятся на определенных носителях, а информация появляется в результате обработки данных при решении конкретных задач. Знания – это зафиксированная и проверенная практикой обработанная информация, которая использовалась и может многократно использоваться для принятия решений. Знания – это вид информации, которая хранится в базе знаний и отображает знания специалиста в конкретной предметной области. Знания – это интеллектуальный капитал. Формальные знания могут быть в виде документов (стандартов, нормативов), регламентирующих принятие решений или учебников, инструкций с описанием решения задач.

Мы ниже рассматриваем косвенные сведения, содержащиеся в матрице собственных векторов, обнаруженные и опубликованные в статьях [1,5,6,7]. Эти матрицы собственных векторов соответствовали определенным данным, относящихся к прошлым моментам времени. Знания основывались на значениях выделенных компонент первых ℓ ($\ell=1,2,3$) собственных векторов, в которых была своя иерархия между значениями выделенных компонент в ℓ собственных векторах.

В настоящее время фактор времени внес существенные коррективы в иерархии между значениями выделенных компонент в ℓ собственных векторах из матриц S_{66} , анализировавшихся в [1,5,6,7]. Обоснование этого будет разным для 4 матриц собственных векторов из указанных работ. Но все матрицы

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имеют размерность 6-на-6. Впредь будем рассматривать матрицу C_{nn} размерности n -на- n . Мы провели расчеты по нашей разработанной модели (ОСЗ 2) по всем 4 матрицам собственных векторов. Приведем результаты только по новой матрице собственных векторов C_{66}^+ из работы [1]. При этом новая матрица собственных чисел Λ_{66}^+ адекватна по выбранным алгебраическим свойствам старой матрице собственных чисел Λ_{66} из [1]. Матрицы C_{66}^+ и Λ_{66}^+ относятся к данным, получаемым в настоящее время. Реальные данные из работ [1,5,6,7] относятся к прошлым моментам времени. Мы моделируем новые данные, относящиеся к настоящему времени, используя относящиеся (по построению) к настоящему моменту времени пару матриц C_{66}^+ и Λ_{66}^+ . Далее при $m=20$ реализовали вариант ОМ ГК[3,4] вида: $(C_{66}^+, \Lambda_{66}^+) \Rightarrow (R_{66}^+, Z_{m6}^{(t)}, Y_{m6}^{(t)}), t=1, \dots, k, k < \infty, m=20$. Стандартизованная выборка Z_{m6} объема $m=20$ имеет корреляционную матрицу $R_{66}^+ = (1/m)Z_{m6}^{(t)T}Z_{m6}^{(t)}$. Элементы спектра $\Lambda_{66}^+ = \text{diag}(\lambda_1^+, \dots, \lambda_n^+)$, $n=6$, являются измерителями количества информации. Матрица $C_{66}^+ = [c_1|c_2|\dots|c_6]$ собственных векторов $c_j^+ = (c_{1j}^+, c_{2j}^+, \dots, c_{nj}^+)^T$, $j=1, \dots, 6$, является преобразователем 6 z -переменных в 6 y -переменных, из которых только ℓ штук y -переменных, $\ell < 6$, имеют содержательный смысл. При известном векторе средних и векторе стандартных отклонений имеем выборку модельных данных, относящихся к настоящему времени. Адекватность по критериям показаны в работах [8-10].

Матрицы собственных векторов и косвенные сведения, содержащиеся в них

Рассматриваемые совокупности смыслов извлечены в нескольких статьях [1,5,6,7] при когнитивном анализе нескольких реальных данных X_{mn}^0 с числом измеряемых показателей $n=6$. Во всех случаях извлечения цифровых знаний из Z_{mn} , вычисленных из X_{mn}^0 подчиняющихся правилам для цифровых фактов, в том числе вычисленных с применением прямой и обратной моделей главных компонент [2,3,4]. Элементы матрицы Z_{mn} являются значениями z -переменной $z = (x^\circ - x_{cp})/s$. Формула $x^\circ = x_{cp} + zs$ показывает структуру разложения измеренного значения x° на слагаемые. Первое слагаемое (x_{cp}) называется ожидаемым значением, его значение является главной частью значения x° реального показателя и имеет единицу измерения. Второе слагаемое (zs) показывает число $z = (x^\circ - x_{cp})/s$ отклонений (стандартных) в отклонении исходного значения x_{ij}° от значения выборочного среднего: $x_{ij} = (x_{ij}^\circ - x_{ij}^{cp})/s_{ij}$, $z_{ij} = x_{ij}/s_{ij}$, где $x_{ij} = (x^\circ - x_{ij}^{cp}) = z_{ij}s_{ij}$.

Основным поставщиком цифровых знаний являются пары матриц $(C_{66}^+, \Lambda_{66}^+)$. Кратко рассмотрим используемые нами при моделировании собственных векторов с заданными значениями их выделенных компонент матрицы собственных векторов и матрицы собственных чисел. Они вычислялись по данным прошлых лет служили источником косвенных и реальных сведений. У нас эти сведения про матрицу $C_{66} = [c_1|c_2|\dots|c_6]$ собственных векторов $c_j = (c_{1j}, c_{2j}, \dots, c_{nj})^T$, $j=1, \dots, 6$, являются отправной точкой при преобразовании ее в новую матрицу C_{66}^+ , содержащаяся в ней информация является неизменной и ценной. Меняем только иерархию между значениями выделенных в работах [1,5,6,7] компонент в ℓ собственных векторах из матрицы C_{66} . При изложении результатов моделирования из [1] мы не приводим значения элементов матриц R_{66} , $R_{66}^{(t)}$, ибо они не используются при когнитивном анализе когнитивной карты узла №1, соответствующей главной компоненте u_1 [1].

В работе [7] разработана «модель представления знаний эксперта в виде ориентированного орграфа (когнитивной карты) $[(Z, Y), C]$. Здесь в двух множествах анализируемые факторы $(Z, Y=ZC)$ интерпретируются как события из $n=6$ z - и из $n=6$ y -переменных, относящихся к одной ($\ell=1$) ситуации. Матрица C_{66} интерпретируется как множество измерений $n^2=6^2$ причинно-следственных отношений между факторами ситуации) и $n=6$ когнитивных методов анализа экономической ситуации в телекоммуникационной отрасли. Орграф когнитивной карты выделяет визуализируемые подмножества факторов» в виде одного фактора u_1 , так как число существенных (доминирующих по величине дисперсии) обобщенных факторов (главных компонент, y -переменных) $\ell=1$. Оно определено по критерию Дикмана-Кайзера: $\Lambda_{66} = \text{diag}(4.6798, 0.7050, 0.3390, 0.2249, 0.0500, 0.0013)$, $f_4(\Lambda_{66}, 1) = 4.6798/6 = 0.78$. Переменная №1 содержит 78% информации о факторах ситуации, определяемой в 44 телекоммуникационных предприятиях Республики Казахстан по 6 значениям Т-факторов. Названия показателей следующие: $z_1=(T1)$ - ВРП; $z_2=(T4)$ - доля прибыльных предприятий; $z_3=(T5)$ - совокупный доход до налогообложения предприятий и организаций; $z_4=(T9)$ - объем промышленного производства на 1 предприятие; $z_5=(T15)$ - количество междугородных разговоров на 1 предприятие; $z_6=(y)$ = междугородный трафик (минуты) для предприятий. Матрица C_{66} единственна и вычисляется в ПМ ГК [2] как решение прямой спектральной задачи (ПСЗ) [1,3,4]. Значения y - переменных вычисляются по формуле

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$y_1=0.4479*z_1+0.3961*z_2+0.4444*z_4+0.4129*z_5+0.4259*z_6+\varepsilon_1$. Выделенные компоненты 1-го собственного вектора равны этим приведенным значениям, так как нами было в работе [7] назначено пороговое значение $c(1)=0.4$. По шкале Чеддока 0.4 входит в интервал $[0,3-0,5]$ умеренной связи. Тогда значения «весов» c_{k1} по модулю превышают пороговое значение $c(1)=0.4$, соответственно только у 5 (из 6) z-переменных с номерами $k=1,2,4,5,6$. Эти выделенные 5 компонент оказывают «ощутимое» влияние на y-переменную №1. Вариабельность этих z-переменных преимущественно обеспечивают дисперсию, равную $\lambda_1=4,6798$ – наибольшую интерпретируемую оценку информативности матрицы $Z_{44,06}$ посредством весов $c_{11}=+0.4479$, $c_{12}=+0.3961$, $c_{14}=+0.4444$, $c_{15}=+0.4129$, $c_{16}=+0.4259$, вычисленных в ПМ ГК. Тогда общий смысл равен сумме смыслов z-переменных с номерами 1,2,4,5,6: $\text{смысл}(y_1)=0.4479*\text{смысл}(z_1)+0.3961*\text{смысл}(z_2)+0.4444*\text{смысл}(z_4)+0.4129*\text{смысл}(z_5)+0.4259*\text{смысл}(z_6)+\varepsilon_1$. Эта линейная комбинация смыслов когнитивно сформулирована как «мощность предприятия по вкладу в ВРП и по объему промышленного производства» [7]. В итоге мы видим, что на единственный обобщенный фактор y_1 воздействует набор Т-факторов: на фактор y_1 влияют Т-факторы Т1, Т4, Т9, Т15, z_6 [7]. В соответствии со своим набором Т-факторов наш обобщенный фактор и интерпретируется когнитивно. При этом чем больше расходов разных, тем больше расходов и на интернет. Это свидетельствует о том, что междугородным трафиком и интернетом пользуется наиболее успешно работающая часть крупных предприятий. Регионы, где работают такие предприятия, имеют развитую телекоммуникационную инфраструктуру. Эти выводы получены для тех лет. Сейчас ситуация совсем иная.

В работе [5] в качестве переменных рассматриваются 6 «доходностей ГЦБ к дате погашения», т.е. имеем 6 финансовых инструментов (ФИ), преобразуемых в новые ФИ (НФИ) при помощи своей матрицы [5, Таблица 2] $C_{66}=[c_1|c_2|\dots|c_6]$ собственных векторов. Рассматриваются НФИ №1, НФИ №2, НФИ №3 ($\ell=3$), обладающих разными портфельными рисками: $\lambda_1=1.8076$, $\lambda_2=1.7936$, $\lambda_3=1.1509$. В этих данных практически учитываемая моделью вычисления рисков изменения доходности типа «доходность к дате погашения» [5], равна $(1.8076+1.7936+1.1509)/6=0,792017=79,2\%$.

Существенную роль для решения задачи из статьи [5] выделенные по своим критериям «веса» из компонент $\ell=3$ собственных векторов $[c_1|\dots|c_\ell]$. Эти «веса» при z-переменных №1, №2 (у 1-го собственного вектора), №4, №5 (у 2-го

собственного вектора), №4, №6 (у 3-го собственного вектора) имеют финансовый смысл и название. Значения новых финансовых инструментов НФИ №1, НФИ №2, НФИ №3, определяются через первые 3 y-переменные вида $y_{11}=0.6529z_{i1}+0.6379z_{i2}+\varepsilon_1$, $y_{12}=0.5142z_{i4}+0.6940z_{i5}+\varepsilon_2$, $y_{13}=0.5614z_{i4}+0.6637z_{i6}+\varepsilon_3$.

Коэффициенты 0.6529, 0.6379, 0.5614, 0.5142, 0.6940, 0.6637 при стандартизованных z-переменных z_1, z_2, z_4, z_5, z_6 являются элементами матрицы собственных векторов C_{66} , бесконечное множество значений вычисляются при применении описываемой ниже модели.

Тот же смысл имеют НФИ №1, НФИ №2, НФИ №3 и при других значениях, выделенных в статье и указанных выше 6 весомых компонентах подматрицы C_1 из матрицы собственных векторов [5, Таблица 3].

Разработанная в предлагаемой статье модель применялась при решении нашей новой задачи для данных из работы [5]. Подробности будут изложены отдельно.

Мы подробно рассматриваем случай $\ell=2$. В работе [6] выделяются «веса» компонент 2 собственных векторов $[c_1|c_2]$ из 6. Эти «веса» $c_{11}=-0.5101$; $c_{31}=0.3820$; $c_{41}=0.3918$; $c_{51}=-0.4447$; $c_{61}=0.4149$; $c_{32}=-0.5719$; $c_{42}=-0.5645$; $c_{52}=-0.3311$; $c_{62}=0.4164$ при z-переменных №1, №3, №4, №5, №6 (у 1-го собственного вектора), №3, №4, №5, №6 (у 2-го собственного вектора) являются элементами матрицы собственных векторов C_{66} . Их бесконечное множество значений 9 элементов из подматрицы C_1 моделируются при применении описываемой ниже модели ОСЗ 2. Линейная комбинация смыслов z-переменных z_1, z_3, z_4, z_5, z_6 , как показано в [6], дает новый смысл y-переменной y_1 новый вид задолженности: будущая муниципальная кредиторская задолженность бюджетов 20 городов США: $\text{вид}(z_1)=\text{БКЗ}$ [6]. Линейная комбинация смыслов z-переменных с номерами 3,4,5,6, дает другой новый смысл y-переменной y_2 , а именно новый вид задолженности: будущая муниципальная дебиторская задолженность бюджетов 20 городов США: $\text{вид}(z_2)=\text{БДЗ}$ [6]. Вычисленная по реальным данным матрица собственных векторов C_{66} «различает» только задолженности 2-х видов: БКЗ, БДЗ. Результаты всех вычислительных экспериментов не будем здесь иллюстрировать.

Следующий случай $\ell=2$ мы рассмотрим подробно и опишем результаты расчетов. В работе [1] выделяются «веса» из компонент 2-х собственных векторов $[c_1|c_2]$ из 6. Эти «веса» $c_{11}=0.5106$; $c_{31}=0.4569$; $c_{51}=0.5129$; $c_{61}=0.4215$. $c_{22}=0.4642$; $c_{62}=-0.6128$ при z-переменных №1, №3, №5, №6 (у 1-го собственного вектора), №2, №6 (у 2-го собственного вектора) являются элементами матрицы собственных векторов C_{66} ,

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конечное множество значений вычисляются при применении алгоритмов описываемой ниже модели вычисления собственных векторов с заданными значениями их весовых компонент.

Решаемая в данной статье задача является другой обратной спектральной задачей, отличной от ОСЗ 1 и от ПСЗ. Для всех матриц собственных векторов C_{66} одинаковой размерности разработана одна программа-таблица для надстройки «Поиск решения» (Solver), но для каждой матрицы собственных векторов C_{66} разработаны отдельные 2-столбцовые таблицы ограничений, реализующие присущие для каждой матрицы $C_{66}^{(+)}$ ограничения вида $|c_{kj}| \geq c(j)$, $j=1, \dots, \ell$, $k \in \{1, 2, 3, 4, 5, 6\}$. Общими для всех программ-таблиц являются соотношения $C_{nn}^{+T} C_{nn}^{+} = C_{nn}^{+} C_{nn}^{+T} = I_{nn}$, $R_{nn}^{+} C_{nn}^{+} = C_{nn}^{+} \Lambda_{nn}^{+}$. Для элементов моделируемого нового спектра $\Lambda_{nn}^{+} = \text{diag}(\lambda_1^+, \dots, \lambda_6^+)$ введено ограничение $\lambda_1^+ + \dots + \lambda_6^+ = 6$, $\lambda_1^+ > \dots > \lambda_6^+ > 0$, $\lambda_1^+ = \lambda_1$, где λ_1 – известный всегда наибольший элемент известного спектра $\Lambda_{66} = \text{diag}(\lambda_1, \dots, \lambda_6)$.

Наше исследование требует особого рассмотрения. Оно касается будущего для нынешних школьников. Как ситуации так и события в системе семья-ученики-школа часто меняются. Требуется частый мониторинг состояния дел, объектов, субъектов, информационного поля и других инфраструктурных факторов. Начнем с пересмотра весов значимости и проявлений измеряемых показателей в сложной системе семья-ученики-школа на настоящий момент в условиях Республики Казахстан. С учетом ментальных и других скрытых (неизмеряемых) особенностей, отличающихся от таковых в западных странах с развитой экономикой, с другими ценностными ориентациями в системе

семья-ученики-школа.

Для современных представлений о будущей карьере школьника имеет огромное значение реальная оценка своих способностей и оценка факторов, влияющих на оценки проявлений «граней» способностей. Оценки проявлений тех или иных «граней» способностей у детей осуществляют на государственном уровне через баллы по дисциплинам, преподаваемом в учреждениях среднего образования. Они соответствуют стандартам и могут служить критерием оценки проявлений «граней» способностей. По оценкам ученика по дисциплинам за школьные годы можно реально оценить свои способности. Одним из важных и первичных критериев будущей карьеры, предопределяющих уровень успехов ученика, являются школьные оценки по дисциплинам. Но на эти оценки влияют, кроме личных качеств ученика, факторы родителей, семьи, школы, учителей. Величины их проявлений измеряются количественно, имеют адекватный смысл и коэффициенты корреляции. Практическое значение наших выводов, предназначенных для самого школьника, не раз проверялось в беседах с студентами младших курсов. В старших курсах меняется их сознание. Они в большей степени доверяют модели из статьи [4], чем личным успехам в учебе.

Собственные векторы с заданными значениями их выделенных компонент

Проанализируем элементы Таблицы 2 и сформулируем экспертным путем фразу «о чем и что говорят данные». Данные состоят из чисел - значений 6-ти показателей у 20 школ США (Таблица 1) [1,4,12].

Таблица 1. Данные по 6 показателям 20 муниципальных школ США.

X1	X2	X3	X4	X5	X6
28.87	7.20	26.60	6.19	37.01	3.83
20.10	-11.71	24.40	5.17	26.51	2.89
69.05	12.32	25.70	7.04	36.51	2.86
65.40	14.28	25.70	7.10	40.70	2.92
29.59	6.31	25.40	6.15	37.10	3.06
44.82	6.16	21.60	6.41	33.90	2.07
77.37	12.70	24.90	6.86	41.80	2.52
24.67	-0.17	25.01	5.78	33.40	2.45
65.01	9.85	26.60	6.51	41.01	3.13
9.99	-0.05	28.01	5.57	37.20	2.44

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12.20	-12.86	23.51	5.62	23.30	2.09
22.55	0.92	23.60	5.34	35.20	2.52
14.30	4.77	24.51	5.80	34.90	2.22
31.79	-0.96	25.80	6.19	33.10	2.67
11.60	-16.04	25.20	5.62	22.70	2.71
68.47	10.62	25.01	6.94	39.70	3.14
42.64	2.66	25.01	6.33	31.80	3.54
16.70	-10.99	24.80	6.01	31.70	2.52
86.27	15.03	25.51	7.51	43.10	2.68
76.73	12.77	24.51	6.96	41.01	2.37

Полученные после расчетов по когнитивному моделированию [1] новые знания следующие. Они получены из заданных известных смыслов исходных показателей. Смыслы 6-ти показателей (в данных) 20 школ США следующие.

№1 - оплата школьного персонала в расчете на одного школьника;

№2 – процент отцов - белых (выделяемых ментальным сознанием) у 6-классников;

№3 - социально-экономическое положение (СЭП), складывающееся из средних (у 6-классников) - размера семей, полноты семей, образования отцов, образования матерей, процента отцов – белых, размера квартиры;

№4 - средняя школьная оценка за устную речь;

№5 - средний образовательный уровень матерей 6-классников (единице измерения соответствует 2 класса, матери имеют только школьное образование);

В реалиях Республики Казахстан этот показатель имеет другой, но похожий смысл:

№5 - средний образовательный уровень матерей 6-классников (единице измерения соответствует наличие аттестата о среднем образовании (10летнее);

№6 (оценка за устную речь (за 6 классов).

Они разделены на 3 группы:

а) показатель № 1 характеризует учителей с точки зрения школы.

б) показатели № 2, 3,5 характеризуют семью и родителей.

в) показатели № 4 и №6 характеризуют успехи ученика в школе.

В соответствии с ментальным представлением ранжируем 3 группы показателей в порядке уменьшения значений их «весов» - начиная с больших и заканчивая меньшим «весом». Под термином «вес» имеем в виду абсолютное значение $|c_{k1}|$ или $|c_{k2}|$, превышающее пороговое значение $c_0=0.48$ [1].

Четыре значений «веса» c_{k1} по модулю превышают пороговое значение $c(1)=0.48$. Их значения $c_{21}=+0.4803$, $c_{31}=+0.4982$, $c_{51}=+0.4805$, $c_{61}=+0.4816$ приблизительно одинаковы, что, по нашему мнению не соответствует реалиям социально-экономической ситуации РК, не соответствует ментальным верованиям, менталитету населения РК. Мы употребляем слово «менталитет» так как в Википедии. «Менталитет - это или «склад ума» (от фр. mentalite), или социально-психологические установки, способы восприятия, манера чувствовать и думать. «Понятие mentalite утвердилось в интеллектуальной жизни Запада как поправка 20 в. к просветительскому отождествлению сознания с разумом. Mentalite означает нечто общее, лежащее в основе сознательного и бессознательного, логического и эмоционального, т.е. глубинный и потому трудно фиксируемый источник мышления, идеологии и веры, чувства и эмоций».

Представим значения «весов» согласно нашим новым ментальным представлениям упорядоченности «весов». Одно из их бесконечного множества имеет вид: $c_{21}=+0.4803$, $c_{31}=+0.4982$, $c_{51}=+0.4805$, $c_{61}=+0.4816$. Соответствующие 4 «веса» (из 6) при z-переменных с номерами $k=2,3,5,6$, $c_{21}=+0.4803$, $c_{31}=+0.4982$, $c_{51}=+0.4805$, $c_{61}=+0.4816$.

Они оказывают разное «ощутимое» влияние на у - переменную №1 (в том числе преимущественно обеспечивают дисперсию $\lambda_1=3.6258$ - наибольшую информативность, пропорциональную дисперсии) посредством весов $c_{21}=+0.4803$, $c_{31}=+0.4982$, $c_{51}=+0.4805$, $c_{61}=+0.4816$.

Показатель № 1 характеризует учителей с точки зрения школы. Показатели № 2, 3,5 характеризуют семью и родителей. Показатели № 4 и №6 характеризует успехи ученика в школе, их значения коррелируют с значениями показателей №1, 2, 3,5 (Таблица 1). Эти факторы нулевого

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уровня содержат простые сведения и могут быть использованы вместо данных, соответствующих современным реалиям в среднем образовании. Эти факторы нулевого уровня содержат простые сведения и могут быть использованы вместо данных, соответствующих современным реалиям в среднем образовании.

Значения элементов строк таблицы 1 хорошо отражают силы выраженности и связи между понятными показателями. Анализ значений 6 измеренных показателей ученика (успехи при овладении знаниями, навыками по дисциплинам), учителей (оценка их работы с точки зрения руководства школы), показателей семьи (социально-экономические характеристики) и родителей (мать и отца). Таблица значений 6 показателей по 20 школам США приведена в работах [1,12].

Эти данные имеют смысл нулевого уровня. Например, 1-ая строка нашей таблицы данных содержит значения 6 показателей: 28.87; 7.20; 26.60; 6.19; 37.01; 3.83. Число 28.87 означает (столбец №1 - оплата школьного персонала в расчете на одного школьника. Равно количеству долларов, равных сумме всех затрат, деленных на общее число учеников). Число 7.20 (столбец №2) равно проценту отцов - белых у 6-классников из школы №1. Число 26.60 из столбца №3 означает - рейтинговая оценка социально-экономическое положение (СЭП), складывающееся из средних арифметических (у 6-классников): размера семей, полноты семей, образования отцов, образования матерей, процента отцов - белых, размера квартиры. Число 6.19 (столбец №4) означает среднюю школьную оценку за устную речь по 10-балльной системе. Число 37.01 из столбца №5 означает средний образовательный уровень матерей 6-классников (единицей измерения равна 2 класса школы. Матери учеников муниципальных школ имеют чаще всего школьное образование, их дети учатся в муниципальных школах, где обучение бесплатное. Данное число, если поделить на 2, равно 18 классам, что означает, что она училась больше 8 лет или училась не только в одной школе. Число 3.83 в столбце №6 равно средней оценке за устную речь (за 6 классов).

Аналогично можно изменить данные по американским школам, ученикам, родителям на значения показателей казахстанских школ неэлитного статуса.

В работе [1] дан анализ элементов данных 2-го уровня - матрицы собственных векторов S_{66} и выявлены новые цифровые знания, не извлеченные при обработке другими методами [12].

Нас не удовлетворяют значения выделенных компонент у двух собственных векторов $c_j=(c_{1j},c_{2j}, \dots,c_{nj})^T$, $j=1,2$, из 6 [1]. Эти значения:

они примерно одинаковы, - не присущи для школ Республики Казахстан. Покажем это, правильно интерпретируя абсолютные величины выделенных 5 компонент двух собственных векторов $c_j=(c_{1j},c_{2j}, \dots,c_{nj})^T$, $j=1,2$. Они названы нами «весами». Все «веса» удовлетворяют критерию $abs(c_{kj})=corr(y_k,z_j) \geq 0.44$. Этот критерий применили для для всех номеров собственных векторов: $abs(c_{kj})=corr(y_k,z_j) \geq 0.44$. Для данных по школам РК применяем 3 пороговых значений: $abs(c_{k1})=corr(y_k,z_1) \geq 0.44$, если $k=2,3,5$. Применяем критерий $abs(c_{61})=corr(y_k,z_1) \geq 0.3816$, если $k=6$, а для компонент 2-го собственного вектора применяем критерий $abs(c_{k2})=corr(y_k,z_1) \geq 0.6014$. Для данных по школам США как мы видели применился один критерий $abs(c_{kj})=corr(y_k,z_j) \geq 0.44$.

Обоснование новых значений для выделенных значений компонент двух собственных векторов опирается на субъективное восприятие величины c_{kj} как коэффициенте корреляции между k -ым y -переменной и j -ой z -переменной $c_{kj}=corr(y_k,z_j)$. Корреляция $corr(y_1,z_2) = -0,4805$ равна степени связи статуса родителей с измеряемым показателем, z_2 (процент отцов - белых (выделяемых ментальным сознанием) у 6-классников), а Корреляция $corr(y_1,z_5) = -0,4803$ равна степени связи статуса родителей с измеряемым показателем, z_5 (средний образовательный уровень матерей 6-классников (единице измерения соответствует наличие аттестата о среднем образовании). В реалиях РК вместо показателя «процент отцов - белых» (имеется в виду более «статусные» национальности, чем негры, латинос) нужно рассматривать показатель «процент отцов - чиновников». И коэффициент корреляции $corr(y_1,z_5)$ должен быть равен не $-0,4803$ - как в США, должен равняться большей по абсолютной величине, например, $corr(y_1,z_5) = -0,5603$. А коэффициент корреляции $corr(y_1,z_2) = -0,4805$ должен быть заменен, например, на $corr(y_1,z_2) = -0,4405$.

Ниже мы сформируем для казахстанских показателей, аналогичных американским, значения и архитектуру номеров индексов выделенных элементов в подматрице S_1 матрице S_{66} . Экспертным путем назначим упорядочим величины назначенных элементов матрицы $S_{66}=[c_1|c_2|\dots|c_6]$ собственных векторов $c_j=(c_{1j},c_{2j}, \dots,c_{nj})^T$, $j=1, \dots, 6$. И преобразуем независимо от соответствующих им, но неизвестных выборок $Z^{(t)}_{m6}, Y^{(t)}_{m6}$, $t=1, \dots, k, k < \infty$, $m=20$, в новую матрицу S^+_{66} . Используя содержащуюся в ней информацию. Она отражает нашу компетенцию и восприятие и является для школьника на данный момент времени неизменной и ценной. Мы вынуждены поменять только иерархию между значениями выделенных в работе [1] компонент c_{kj} в ℓ собственных

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векторах из матрицы C_{66} . Из нее по цифровым фактам нулевого уровня (Таблица 1) были вычислены другие («вычисленные») цифровые факты в виде матрицы C_{66} . Они - новые агрегаты цифр – значения элементов матрицы линейного преобразования $C_{66}=[c_1|c_2|...|c_6]$. Эта матрица формально является матрицей собственных векторов $c_j=(c_{1j},c_{2j},...,c_{6j})^T, j=1,...,6$, образующих ортонормированную матрицу $C_{66}=[c_1|c_2|...|c_6]$, согласованную с матрицей собственных чисел (спектром) $\Lambda_{66}=\text{diag}(\lambda_1,\lambda_2,...,\lambda_6), \lambda_1>...>\lambda_6>0$, таким образом, что выполняются равенства $R_{66}C_{66}=C_{66}\Lambda_{66}, C_{66}^T C_{66}=C_{66} C_{66}^T=I_{66}$, где $\text{diag}(R_{66})=(1,...,1), \text{tr}(R_{66})=1+...+1=\text{tr}(\Lambda_{66})=\lambda_1+...+\lambda_6=6, [1,2,3]$. Матрицы C_{66} и Λ_{66} вычисляются одновременно по известной корреляционной матрице R_{nn} . Матрица R_{66} вычисляется по стандартизованной выборке Z_{m6} объема $m=20$: $R_{66}=(1/m)Z_{m6}^T Z_{m6}$. Элементы спектра $\Lambda_{66}=\text{diag}(\lambda_1,...,\lambda_6)$, являются измерителями количества информации. Внесем в ее первые столбцы изменения. И вычислим при наличии такой матрицы C_{66} новую пару матриц $(\Lambda_{66}^+ C_{66}^+)$. При этом учитываем, что наша матрица, как и матрица $C_{66}=[c_1|c_2|...|c_6]$ собственных векторов $c_j=(c_{1j},c_{2j},...,c_{6j})^T, j=1,...,6$, является преобразователем 6 z-переменных в 6 y-переменных, из которых только ℓ штук, $\ell<6$, y-переменных имеют содержательный смысл. Наличие смыслов обеспечивают только те компоненты первых ℓ собственных векторов $[c_1|...|c_\ell]$.

Обозначим элементы этих ℓ собственных векторов в виде подматрицы C_1 размерности 6 - на -2. Разбиение матрицы $C_{66}=[C_1|C_2]$ соответствует разбиению множества собственных векторов на 2 и на 4 векторов. Условно назовем матрицу C_1 «весомой» («weighty»). Матрица C_1 всегда имеет элементы c_{kj} , подчиняющиеся условиям $|c_{kj}| \geq c(j), j=1,...,\ell, k \in \{1,2,3,4,5,6\}$.

Здесь положительное число $c(j)$ служит пороговым значением для «веса» $\text{abs}(c_{kj})=\text{corr}(y_k,z_j) \geq c(j), j=1,...,\ell$. В разных данных [1,5-7] при $n=6$ весомыми признаны элементы c_{kj} с разными индексами $(k,j), k \in \{1,2,3,4,5,6\}, j \in \{1,2,3,4,5,6\}$.

При моделировании матрицы C_{66}^+ мы оставляем без изменений результаты когнитивных смысла из работы [1]. А когнитивный анализ выявил следующие цифровые знания. Карьерная успешность американских школьников муниципальных школ США зависит 1) от статуса родителей, 2) от личных оценок по предметам. Точная «цифровая» интерпретация переменная №1 передается фразой «ощутимое общее влияние родителей, СЭП семьи и учителей на школьника». В более развернутом виде эта фраза выглядит так: «общее влияние на школьника,

состоящее из 3 частей: влияние родителей, имеющих отцов-белых, матерей (с образованием не больше 8 классов), влияние СЭП семьи (размер семьи, полнота ее, размер квартиры) и влияние учителей (средняя оценка за устную речь, выставленные за все 6 классов)». Точная «цифровая» интерпретация переменная №1 передается фразой «влияние на школьника (с точки зрения школы) состоит из 2 частей: стимулированное оплатой школой влияние штатных учителей и влияние учителей-профессионалов, оценивших успеваемость учеников в баллах (баллы присутствуют при вычислении средней школьной оценки за устную речь)».

При проведении вычислительных экспериментов применялись ранее хорошо апробированные модели. Вычисленные элементы корреляционной матрицы и матрицы собственных векторов при анализе исходной таблицы данных из [1] применялись программы, реализующие алгоритмы решения ПСЗ и ПЗ АГК. ПЗ АГК имеет единственное решение Y_{mn} и связанное с ним ассоциированное решение $Z_{mn}=Y_{mn} C_{nn}^T$. Решаемая ниже обратная спектральная задача (назовем ее ОСЗ 2) является другой обратной спектральной задачей, отличной от ОСЗ 1 [3]: $\Lambda_{nn} \Rightarrow (C_{66}^{(\ell)}, R_{66}^{(\ell)}), \ell=1,...,k, k < \infty$, и от ПСЗ: $R_{66} \Rightarrow (C_{66}, \Lambda_{66})$. Схематично обозначим ОСЗ 2 так: $C_{66} \Rightarrow (C_{66}^+, \Lambda_{66}^+ R_{66}^+)$. ОСЗ 2 не решается путем модификации алгоритма решения ОСЗ 1. ОСЗ 2 является новой задачей. ОСЗ 2 являлся недостающим звеном в спектральных задачах с симметрической матрицей. ПСЗ: $R_{66} \Rightarrow (C_{66}, \Lambda_{66})$ - это прямая задача *диагонализации* известной выборочной корреляционной матрицы R_{66} , решаемая для симметрической матрицы $R_{66}=R_{66}^T$. Задача ОСЗ 2 формулируется следующим образом.

Задача моделирования собственных векторов с заданными значениями их выделенных компонент

Сформулируем новую задачу (назовем ее Обратная спектральная Задача №2: ОСЗ 2).

Пусть имеем ортонормированную матрицу собственных векторов C_{nn} (решения ПСЗ), согласованную со своим спектром $\Lambda_{nn}=\text{diag}(\lambda_1,...,\lambda_n)$ таким образом, что выполняются равенства $R_{nn}C_{nn}=C_{nn}\Lambda_{nn}, C_{nn}^T C_{nn}=C_{nn} C_{nn}^T=I_{nn}, \text{diag}(R_{nn})=(1,...,1), \text{tr}(R_{nn})=1+1+...+1=\text{tr}(\Lambda_{nn})=\lambda_1+...+\lambda_n=n, \lambda_1 \geq ... \geq \lambda_n \geq 0$.

Пусть заданы пары индексов (k,j) и новые значения заданных нами выделенным компонентам $c_{kj}=c_{kj}^+, j=1,...,\ell, k \in \{1,...,n\}$ у первых ℓ собственных векторов $c_j=(c_{1j},c_{2j},...,c_{nj})^T$, расположенных по столбцам матрицы $C_{nn}=[c_1|c_2|...|c_n]$, согласованной со спектром

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$\Lambda_{nn} = \text{diag}(\lambda_1, \dots, \lambda_n)$ таким образом, что выполняются равенства: $R_{nn}C_{nn} = C_{nn}\Lambda_{nn}$, $C_{nn}^T C_{nn} = C_{nn} C_{nn}^T = I_{nn}$, $\text{diag}(R_{nn}) = (1, \dots, 1)$, $\text{tr}(R_{nn}) = 1 + \dots + 1 = \text{tr}(\Lambda_{nn}) = \lambda_1 + \dots + \lambda_n = n, \lambda_1 \geq \dots \geq \lambda_n \geq 0$. Для матрицы C_{nn} (с новыми значениями $c_{kj} = c^+_{kj}$) требуется найти новую пару матриц $(C^+_{nn}, \Lambda^+_{nn})$, такую, матрица C^+_{nn} имеет те же заданные пары индексов (k, j) и те же новые значения $c_{kj} = c^+_{kj}$ компонентов c^+_{kj} , $j=1, \dots, \ell$, $k \in \{1, \dots, n\}$ у первых ℓ собственных векторов $\mathbf{c}_j = (c_{1j}, c_{2j}, \dots, c_{nj})^T$, расположенных по столбцам подматрицы C^+_1 матрицы $C^+_{nn} = [c^+_1 | c^+_2 | \dots | c^+_n]$. Матрицы C^+_{nn} и Λ^+_{nn} должны удовлетворять равенствам: $C^+_{nn} C^+_{nn} = C^+_{nn} C^+_{nn} = I_{nn}$, $C^+_{nn} \Lambda^+_{nn} C^+_{nn} = R^+_{nn}$, $\lambda^+_1 + \dots + \lambda^+_n = n$, $\mathbf{c}_j^+ \Lambda^+_{nn} \mathbf{c}_j^+ = 1$, $\mathbf{c}_i^+ \Lambda^+_{nn} \mathbf{c}_j^+ = r_{ij}$, $r_{ji} = r_{ij}$, $j=1, \dots, \ell$. $C^+_{nn} = [C^+_1 \ C^+_2]$, где корреляционная матрица R^+_{nn} имеет новые матрицы собственных векторов и собственных чисел $\Lambda^+_{nn} = \text{diag}(\lambda^+_1, \dots, \lambda^+_n) = n$. $\lambda^+_1 + \dots + \lambda^+_n = n$, $\lambda^+_1 \geq \dots \geq \lambda^+_n$.

В результате решения ОСЗ 2 вычисляются 2 матрицы: ортогональная матрица C^+_{66} собственных векторов $\mathbf{c}^+_j = (c^+_{1j}, c^+_{2j}, \dots, c^+_{6j})^T$, расположенных по её столбцам: $C^+_{66} = [c^+_1 | c^+_2 | \dots | c^+_6]$ и согласованная со спектром $\Lambda^+_{66} = \text{diag}(\lambda^+_1, \dots, \lambda^+_6)$ таким образом, что выполняются соотношения $R^+_{66} C^+_{66} = C^+_{66} \Lambda^+_{66}$, $C^+_{66} C^+_{66} = C^+_{66} C^+_{66} = I_{66}$, $\text{diag}(R^+_{66}) = (1, \dots, 1)$, $\text{tr}(R^+_{66}) = 1 + \dots + 1 = \text{tr}(\Lambda^+_{66}) = \lambda^+_1 + \dots + \lambda^+_6 = 6$, $\lambda^+_1 \geq \dots \geq \lambda^+_6 \geq 0$.

Решениями ПСЗ являются 2 матрицы C_{66} , Λ_{66} , а ортогональное преобразование - матрица C_{66} , примененное к матрице z-переменных $Z_{131,6}$. ОСЗ 1- обратная спектральная задача - обратная к ПСЗ задача симметризации известной диагональной матрицы Λ_{nn} , со свойствами из ПСЗ, в результате решения которой вычисляются 2 матрицы: ортогональная C_{nn} и симметрическая R_{nn} со свойствами из ПСЗ. Среди бесконечного множества пар матриц $(C^{(\ell)}_{66}, R^{(\ell)}_{66})$, $\ell=1, \dots, k_\ell < \infty$, существуют такие, которые удовлетворяют тем или иным критериям [1,5,6,7]. Для решения ОСЗ 2 необходима матрица собственных векторов, являющаяся либо решением ПСЗ: $R_{nn} = \Rightarrow (C_{nn}, \Lambda_{nn})$, либо решением ОСЗ 1: $\Lambda_{nn} = \Rightarrow (C^{(\ell)}_{66}, R^{(\ell)}_{66})$, $\ell=1, \dots, k_\ell < \infty$.

В модель ОСЗ 2 заложено выполняться условие равенства произведения матриц $C^+_{nn} \Lambda^+_{nn} C^+_{nn}$ матрице R^+_{nn} коэффициентов корреляции: $C^+_{nn} \Lambda^+_{nn} C^+_{nn} = R^+_{nn}$. Это условие присутствует в модели ОСЗ 2 в виде функций ограничений для целевой функции вида $\lambda^+_1 + \dots + \lambda^+_6 = 6$.

Функции ограничений для целевой функции имеют вид $\mathbf{c}_j^+ \Lambda^+_{66} \mathbf{c}_j^+ = 1$, $\mathbf{c}_i^+ \Lambda^+_{66} \mathbf{c}_j^+ = r_{ij}$, $r_{ji} = r_{ij}$, $j=1, \dots, \ell$. Незвестными переменными являются элементы подматрицы C^+_1 и наличие ее элементов в модели ОСЗ 2 обязательно.

Но основное свойство ортонормированной матрицы собственных векторов корреляционной матрицы $C^+_{66} C^+_{66} = C^+_{66} C^+_{66} = I_{66}$, требует наличия

подматрицы C^+_2 . поэтому модель ОСЗ 2 должна использовать полную матрицу $C^+_{66} = [C^+_1 | C^+_2]$ или полную матрицу $C^{+(\ell)}_{66} = [C^{+(\ell)}_1 \ C^{+(\ell)}_2]$. При этом эти матрицы собственных векторов не должны иметь одну и ту же матрицу собственных чисел. Решение оптимизационной задачи (смотрите ниже) обеспечивает моделирование матрицы Λ^+_{66} как матрицы собственных чисел, а матрицу C^+_{66} - как матрицу собственных векторов для корреляционной матрицы R^+_{66} . А не любой симметрической матрицы. Условие, налагаемое на тип матрицы R^+_{66} требует ввода в соотношения модели ОСЗ 2 дополнительных ограничений на ее элементы. Эти ограничения существенны в решаемой оптимизационной задаче.

Отметим, что в модели ОСЗ 2 допустимо назначение неизменным элементы подматрицы C_2 (C^+_2). В программе-таблице модели ОСЗ 2 допустимо назначение нулевых значений элементам матрицы C^+_2 : $C^+_{66} = [C^+_1]$ или $C^{+(\ell)}_{66} = [C^{+(\ell)}_1]$ при числе используемых столбцов $n - \ell = n, \ell = 0$. Это повышает вычислительную сложность надстройки «Поиск решения» к ЭТ Excel (Solver).

Мы рассматриваем случай $n=6$ из-за использования нами разных «конфигураций», образуемых индексами (k, j) элементов c_{kj} j -ых собственных векторов $\mathbf{c}_j = (c_{1j}, c_{2j}, \dots, c_{nj})^T$, $j=1, \dots, 6$. В разных матрицах C_{66} мы выделяли по разным критериям пары номеров (k, j) разных компонент элементов c_{kj} . Все элементы находятся в подматрице C^+_1 . Мы не исследовали влияние числа $n - \ell$ столбцов подматрицы C_2 при $n > 6$ на точность вычислений элементов матрицы C^+_{66} . При $n=6$ использование только 4 столбцов матрицы C_{66} не повлияло, не отразилось на точность вычислений процедуры.

Решения C^+_{nn} ОСЗ 2 существенно облегчают задачи моделирования пар матриц $(C^+_{nn}, \Lambda^+_{nn})$, удовлетворяющих тому или иному критерию [1,5-7] и соотношениям $C^+_{nn} C^+_{nn} = C^+_{nn} C^+_{nn} = I_{nn}$, $R^+_{nn} C^+_{nn} = C^+_{nn} \Lambda^+_{nn}$, $R^+_{nn} = R^+_{nn}$.

ОСЗ 1 подробно описана в работах [2, 11]. Подматрица C_1 матрицы C_{66} имеет весомые значения, являющиеся выделенными компонентами собственных векторов $[c_1 | \dots | c_6]$. Выделенные компоненты присутствовали в ПСЗ (в матрице C_{66}) и активно участвовали при извлечении цифровых знаний [1,5-7], где подматрица C_1 была единственно доступной.

Наша ОСЗ 2 моделирует множество других подматриц C^+_1 , каждая из них является источником косвенных сведений и «выдает» те же цифровые знания [1,5-7]. Одни и те же знания соответствуют нашему множеству цифровых данных, адекватных реальным данным (таблицам «объект-свойства»). В данной статье ОСЗ 2 решается после решения ПСЗ, так как в работах

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[1,5-7] при извлечении цифровых знаний применялась ПМ ГК. Но можно использовать и решение ОСЗ 1. Случаев необходимости использования решений ОСЗ 1 существует много. Здесь их не рассматриваем.

Моделирование матрицы $C^{(+)}_{66}$ и матрицы Λ^{+}_{66}

Введем в ячейки ЭТ Excel известные значения элементов матриц C_{66} и Λ_{66} [1]. Проверяем в программе-таблице (Таблица 2) выполнение и точность равенств $C^{T}_{66}C_{66}=C_{66}C^{T}_{66}=I_{66}$, $R_{66}C_{66}=C_{66}\Lambda_{66}$. Далее реализуем ниже приведенные Шаги 1-7.

Шаг 1. Выделяем индексы (k,j) и значения элементов c_{kj} из подматрицы C_1 с выделенными индексами. Так как $\ell=2$, то введем пары ячеек ЭТ Excel (имени и значения элементов) из 1-го столбца: $c_{21}=-0,5603$, $c_{31}=-0,4982$, $c_{51}=-0,4405$, $c_{61}=-0,3816$, из 2-го столбца: $c_{12}=-0,7048$, $c_{42}=-0,6014$. Эти элементы не изменяют своих значений.

Шаг 2. Ввод в ячейки ЭТ Excel скалярных равенств, взятых из матричных равенств $C^{+T}_{66}C^{+}_{66}=C^{+}_{66}C^{+T}_{66}=I_{66}$, $R^{+}_{66}=C^{+}_{66}\Lambda^{+}_{66}C^{+T}_{66}$. Для элементов моделируемого нового спектра $\Lambda^{+}_{66}=\text{diag}(\lambda^{+}_1, \dots, \lambda^{+}_6)$ введем ограничения $\lambda^{+}_1 + \dots + \lambda^{+}_6 = 6$, $\lambda^{+}_1 > \dots > \lambda^{+}_6 > 0$, $\lambda^{+}_1 = \lambda_1$, где $\lambda_1 -$

известный всегда наибольший элемент известного спектра $\Lambda_{66}=\text{diag}(\lambda_1, \dots, \lambda_6)$.

Шаг 3. Назначить ячейку с формулой $\lambda^{+}_1 + \dots + \lambda^{+}_6$ целевой функцией процедуры Solver.

Шаг 4. Назначить в качестве изменяемых ячеек (неизвестных переменных задачи) ячейки подматрицы C_1 и ячейки элементов столбцов №3, №4 матрицы C^{+}_{66} .

Этим действием достигается неизменяемость компонентов собственных векторов № 5 и 6, если это требуется.

Шаг 5. Назначить в качестве изменяемых еще 6 ячеек с значениями $\lambda^{+}_1, \dots, \lambda^{+}_6$.

Шаг 6. Ввод в трюке окна Solver ограничений для чеек с их значениями вида $\lambda^{+}_1, \dots > 0$, $\dots, \lambda^{+}_6 > 0$, $\lambda^{+}_1 = \lambda_1$.

Шаг 7. Нажать кнопку «Выполнить».

Примечание 1. В Шаге 4 в качестве изменяемых ячеек мы назначили столбцы №3, №4, №5, №6.

Примечание 2. В зависимости от «конфигураций», образуемых индексами (k,j) элементов c_{kj} j-ых собственных векторов $c_j=(c_{1j}, c_{2j}, \dots, c_{6j})^T$, $j=1, \dots, 6$, и величин элементов c_{kj} возможен ввод ограничений вида [3,4] $f_s(\Lambda^{+}_{66})=f_s$, $s \in \{2,4,5,6\}$.

Таблица 1. Программа-таблица.

ROW 1	-0,1363	-0,7048	0,0000	-0,5100	0,4139	-0,2307	1,0000
ROW 2	-0,4405	-0,0910051	-0,6725	-0,0414	-0,4162	-0,4128	1,000
ROW 3	-0,4982	-0,2740117	-0,2114	-0,4171	0,0615	0,6740	1,0000
ROW 4	0,2821778	-0,6014	0,0000	0,6746	-0,1000	0,3060	1,0000
ROW 5	-0,5603	-0,011149	-0,0033	0,0145	-0,8010	0,2100	1,0000
ROW 6	-0,3816	0,2410112	-0,7092	0,3301	0,0000	-0,4294	1,0000
	1,0000	1,00000	1	1,00000	1,0000	1,0000	
Ljambda	3,184478	1,7729569	0,8114	0,2311649	0,0000001	1E-07	6
1	1,0000						
2	0,3098	1,0000					
3	0,6078	0,1177	1,0000				
4	0,5495	0,2060	-1,0182	1,0000			
5	0,2554	0,7894	0,8935	-0,4893	1,0000		
6	-0,1744	0,8803	0,5782	-0,5484	0,6791	1,0000	
	1	2	3	4	5	6	
	3,6258	1,3953	0,5702	0,2942	0,0731	0,0415	

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	1	
c21	-0,5603	-0,4803
C31	-0,4982	-0,4982
C51	-0,4405	-0,4805
C61	-0,3816	-0,4816
c12	-0,7048	-0,6548
c42	-0,6014	-0,7014

Таблица 2. Собственные числа и собственные векторы C₆₆ [1]

VECTOR VL(1:6): WHIT 6 COMPONENTS						
	λ_1	λ_2				
ROW 1	3.6258	1.3953	0.5702	0.2942	0.0731	0.0415
MATRIX C(N,N) 6 ROWS 6 COLUMNS						
	1	2	3	4	5	6
	c.1	c.2				
ROW1	-0.1790	0.6548	-0.6852	0.2430	0.0153	0.1020
ROW2	-0.4803	-0.2093	-0.2202	-0.3517	0.7021	-0.2457
ROW3	-0.4982	-0.0947	0.0908	0.4384	-0.3481	-0.6490
ROW4	-0.1622	0.7014	0.5510	-0.3854	0.0181	-0.1708
ROW5	-0.4805	-0.1622	-0.1779	-0.5193	-0.5784	0.3271
ROW6	-0.4816	-0.0112	0.3722	0.4548	0.2252	0.6098

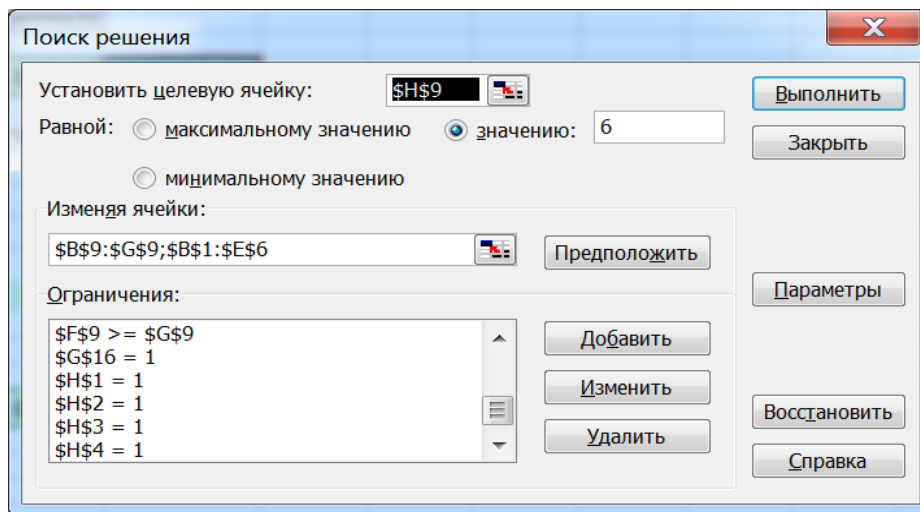


Рисунок 1. Окно надстройки «Поиск решения» для программы-таблицы из Таблицы 1

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Параметры поиска решения

Максимальное время: 1000 секунд

Предельное число итераций: 1000

Относительная погрешность: 0,000000001

Допустимое отклонение: 0 %

Сходимость: 0,00000000001

Линейная модель Автоматическое масштабирование

Неотрицательные значения Показывать результаты итераций

Оценки: линейная квадратичная

Разности: прямые центральные

Метод поиска: Ньютона сопряженных градиентов

OK Отмена Загрузить модель... Сохранить модель... Справка

Рисунок 2 Окно параметров надстройки «Поиск решения» для программы-таблицы из Таблицы 1

В результате решения ОСЗ №2 получены ее решения–новый спектр $\Lambda_{66}^+ = \text{diag}(\lambda_1^+, \dots, \lambda_6^+) = \text{diag}(3.184478, 1.7729569, 0.8114, 0.2311649, 0.0000001)$ и новая матрица C_{66}^+ собственных векторов с заданными весовыми значениями элементов из 1-го столбца: $c_{21} = -0,5603$, $c_{31} = -0,4982$, $c_{51} = -0,4405$, $c_{61} = -0,3816$, из 2-го столбца: $c_{12} = -0,7048$, $c_{42} = -0,6014$ (Таблица 1). Выполнение запрограммированных в Шагах 3-6 условий видны из распечатки программы-таблицы (Таблица 1).

Новый спектр немного отличается от исходного спектра $\Lambda_{66} = \text{diag}(3,6258, 1,3953, 0,5702, 0,2942, 0.0731, 0.0415)$ соответствующего своей матрице C_{66} (Таблица 2).

Для спектра $\Lambda_{66}^+ = \text{diag}(3.184478, 1.7729569, 0.8114, 0.2311649, 0.0000001)$ получены (с применением программ из ППП «Спектр» [13]) Λ_{66}^+ -выборки $Z_{mn}^{(t)}$ объема $m=20$, $t=1, \dots, k_t=1000$. Они будут применяться в исследованиях по результатам работ [1,5-7].

Заключение

Разработанная модель ОСЗ 2 применяется при моделировании матрицы собственных векторов и матрицы собственных чисел. Но с заданными значениями их выделенных компонент из матрицы собственных векторов. Наша модель является результатом решения одной из 13 обратных задач [14]. Для 5 объектов ОМ ГК в качестве входных объектов отобраны следующие полезные для пользователя подмодели [14]: $(R) \Rightarrow, (Y) \Rightarrow, (Z) \Rightarrow, (\Lambda, C) \Rightarrow,$
 $(\Lambda, R) \Rightarrow, (\Lambda, Y) \Rightarrow, (\Lambda, Z) \Rightarrow, (\Lambda, C, R) \Rightarrow, (\Lambda, R, Y) \Rightarrow,$
 $(\Lambda, Y, Z) \Rightarrow, (\Lambda, C, R, Y) \Rightarrow, (\Lambda, R, Y, Z) \Rightarrow,$ $C_{66} = [C_1^+ | C_2] \Rightarrow (C_{nn}^+, \Lambda_{nn}^+) \Rightarrow (R_{nn}^+, Z_{nn}^{(t)}, Y_{nn}^{(t)}), t=1, \dots, k_t < \infty$, где слева от стрелки \Rightarrow обозначены входные объекты из ОМ ГК, а справа от стрелки \Rightarrow подразумевается присутствие обозначений выходных объектов из ОМ ГК. Все схемы обратных подмоделей реализованы программно.

Обратные задачи решены с применением ОЗ АГК[3,4]: $\Lambda_{nn} \Rightarrow (R_{nn}^{(t)}, C_{nn}^{(t)}, Y_{nn}^{(t)}, Z_{nn}^{(t)}), \ell=1, \dots, k_\ell < \infty, t=1, \dots, k_t < \infty$. ОСЗ 2 использует косвенные сведения, содержащиеся в матрице собственных векторов $C_{nn}^{(t)}$, обнаруживаемые, например, при когнитивном анализе реальных данных. Применение модели ОСЗ 2 в задачах моделирования цифровизации валидных и измеряемых показателей предприятия [15] актуально из-за периодического появления дополнительных сведений, отличающихся от тех, что были учтены в момент времени извлечения цифровых знаний. Необходимо выявление причины наличия только одной заметной z-переменной для каждого из 6 валидных переменных. Измеряемые z-переменные №3,4,5 не дополнили ни одну заметную z-переменную. Почему отсутствуют пары (тройки) заметных z-переменных для каждого из 6 валидных переменных?. Вопрос касается случая $n=9$. Это – часть примеров, когда «данные образуют смыслом». Что касается случая $n=6$, то мы имеем дело не с сенсорной, а с контекстуальной информацией из отрасли телекоммуникаций. «Интернет всего» обращается к информационному потоку посредством стратегий и технологий, которые связывают между собой данные из разных источников. Для нового спектра $\Lambda_{66}^+ = \text{diag}(3.184478, 1.7729569, 0.8114, 0.2311649, 0.0000001)$ получены (с применением программ из ППП «Спектр» [13]) Λ_{66}^+ -выборки $Z_{mn}^{(t)}$ объема $m=20$, $t=1, \dots, k_t=1000$. Программы из ППП «Спектр» [13] моделируют данные, используя информацию разных уровней, но

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моделируют значения 5 матриц из ОМ ГК. Реальные данные из разных источников служили входным объектом ПМ ГК, выходные объекты применяются в исследованиях результатов работ [1,4-7]. Эти исследования повышают эффективность применения наших моделей и позволяя нам перейти к решению других, более интересных задач.

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SECTION 29. Literature. Folklore. Translation Studies.

ON SOME ASPECTS OF POETIC STYLE OF SHAVKAT RAKHMOM

Abstract: Peculiar features of Shavkat Rakhmon's poetic style are revealed in the article.

Role and place of poetic figures and their features are analyzed based on the poems of Shavkat Rakhmon.

Key words: Poetic speech, metaphor, special literary tropes, epithet, apostrophe, impersonation, gradation, strengthening figures, climax, anticlimax, literary repetitions.

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Introduction

A talented poet Shavkat Rakhmon, who had a unique style, left huge literary heritage in the Uzbek poetry of XXth century. The reader who thoroughly observes the poems of the poet, thinks deep, and tries to understand every word. The artistic creativity of the author draws on his soul, like the rest of the world. When you read Shavkat Rakhmon's poems, you are serious about it. You look at yourself as you look at the mirror. Vigilance, attention, responsibility begin to cover your body. The weaknesses of the inner "me" are triggered by the rebellious spirit. Adjustment becomes pride. Under that pride, you will become the hero of the immortal selflessness, the ardent love for the mother nation. In poetry, it is crucial to analyze the poetic speech in order to study the poet's creativity.

"Poetic language is a complex, versatile, specific speech. Without knowing poetic speech, a poem and poetry can not be thoroughly eroded," says the literary scholar T. Boboev. [2, p. 323] It is difficult to understand poetic speech attractiveness without the use of poetic sketches, artistic arts, poetic figures and special artistic imagery. In this sense, it is evident that the style of the poet is obvious, as you study the artistic image and poetic images used in the poetry of Shavkat Rakhmon.

Literature scientist, Abdugafur Rasulov said: "Real literary work is a complete and complicated structure. It is created as a text. Whether a text is meaningful is, firstly, depends on writer's talent, the

reality of sentences he or she is going to say and the variety of balance"[6, p.44]. Poetic literature description details, rhyme, rhythm and harmony of meaning show the individual character of poet's poetic style. As a consequence, the word, intelligence and expression used by the poet represent individual style features.

Materials and Methods

Poet's unrepeatable literary world attracts everyone like a magnet. After you start reading Shavkat Rakhmon's poems you feel serious at least for a short period of time and you start looking at yourself as if you were looking at the mirror. Carefulness, concentration and responsibility involve your deepest soul. In his short life span he wrote works considerably. An abundance of works of his were published such as "Colourful times" ("Rangin lahzalar"), (1978), "Heart edges" ("Yurak qirralari") (1981) "Open days" ("Ochiq kunlar") (1984), "Flourishing stone" ("Gullayotgan tosh") (1985), "Awaken mountains" ("Uyg' oq tog'lar"), (1986), "Hulvo" (1987) "Selection" ("Saylanma") , (1997), and "through eternity" (Abadiyat oralab) (2012) written by himself but published after his death. In 1979, He also twice translated the Spanish poet Federico Garcia Lorca's poetic collection named "The most sorrowful happiness" from Russian to Uzbek, and in 1989, from Spanish to Uzbek.

As it is known, "tashbekh" (metaphor) is one of the most common types of spiritual art in poetry.

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“Tashbekh” (Arabic “tashbekh” - analogy) - poetic art in classical literature, in which two objects and notions, activities or actions and other such things are compared to each other. It is one of the most widespread and ancient arts [5,p.319.] “Tashbekh” is called an analogy in the contemporary Uzbek literature. The analogy assumes comparability between two or more things or event and feature. In Shavkat Rakhmon's poem "On the Streets", we find a beautiful example of analogy. We can see the beautiful sample of tashbekh in Shavkat Rakhmon's poem named “Tor ko'chalarda” (“In Narrow Streets”),

Ҳамал – боғ нафаси
тонглари – пушти
куёш қахрабо май тўла косадир
Гуллаган ўриклар
жон ўргатувчи –
оқ хижоб ёпинган шўх раққосалар
Садлари оқ, мовий ранга бўялган
ҳовлилар устидан тошган булутлар. [7, б.38]
(March – breath of gardens)
dawns - pink
the sun is full dish of dark vine
blossoming apricots giving life
dazzling dancers wearing white pegs
White walls, painted in blue
Clouds over the yards) [7, p.38]

In this poem, you observe the beauty of “hamal” (spring). “Hamal” is compared to breathe of a garden, dawn is compared to pink color, the sun is compared to a dish full of vine, apricots are compared to dazzling dancers wearing a white pegs, clouds are white and blue, in this way the artist virtuously uses the art of analogy in his poem.

It is well-known that epithet is interpreted as poetic anaphora in literature. This is a way of explaining things, events, and characters in people. “Epithet doesn't come on its own, however, it comes copying its meaning and features to the word collocation. This kind of phrase is called metaphoric epithet” [4,p.205.].The first verse of the poem “Dastkhat” (Autograph) is a magnificent example of this:

Гўзаллик, покликдан уялиб,
Қисилиб, кимтиниб турасан,
Қоп- қора деворга суяниб.
Ёп - ёруғ хаёллар сурасан. [8, б.112]

(Beauty, hesitating of purity,
Standing having scruples,
Leaning on a black wall,
Having bright dreams.) [8, p.112]

In this verse "black wall" and “bright dreams” come as an epithet. In the following verse, the poet utilizes apostrophe, which is one of the forms of

prosopopeia: It is well known that the inanimate form of this poetic anaphora is to resort to the subject or phenomenon as if it were a living thing:

Илоҳам, тонг каби юзингга
ҳирсланиб, ҳезланиб боқарлар,
кўзларин қоқарлар кўзингга,
қалбингни азоблаб ёқарлар.
Йиқилма, ўзингни ўйлагин,
отсинлар жаҳолат тошини.
лабингни қаттиқроқ тишлагин,
кўрсатма кўзларинг ёшини. [8, б.112]
(My Goddess, they look at your face
they are frowning and gnawing,
Eyes look at your eyes,
they will afflict your heart.
Think, do not bother,
they are ignorant.
bite your lips,
Hide your tears.) [8, p.112]

In this poem, we can observe impersonation in lines "they look at your eyes," and "they will afflict your heart", "do not bump, think about yourself", "bite your lips" and "guide your eyes" as if there were a personal touch. The poet's poem "Primitive, Acute Rocks" is characterized by the simplest forms of simulation and characterization:

Ибтидоий, ўткир қоялар...
Бу тоғларнинг осмони мовий.
бунда гуллар фаришгасимон,
бунда хатто тошлар самовий. [9, б.59.]

(Primitive, sharp rocks ...
The sky of these mountains is blue.
in which the flowers are angelic,
even the stones are heavenly.) [9, p.59.]

In the poem, the words "primitive", "sharp rocks", "blue sky", the phrases "angelic" and "heavenly" are respectively metaphors and anaphors.

The impersonation is a way of manifesting images that are characteristic of human beings through inanimate objects, natural phenomena, birds, and animals. In Shavkat Rakhmon's poem "The morning lazily opens eyes" we can find examples of impersonation by revitalizing a beautiful image of nature:

Тонг очар кўзларин эриниб,
севинчдан йиғлайди қиёқлар,
чечаклар жилмаяр севиниб,
шамолда чўмилар гиёҳлар.
Ўйноқи шуълалар – болалар
жимгина тарқалар сайҳонга.
ўргимчак тўқийди толалар,
хонқизи боради меҳмонга. [10, б.15.]
(The morning lazily opens eyes,
joyfully weeping,
the flowers smile,
bathing in the wind.

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The lightnings are children
quietly spread out into the ditch.
spider webs,
Ladybug will go to the guest.) [10, p.15.]

In Shavkat Rakhmon's poem, the sun is shining like people, the tears of rejoicing flowers, the bathing of the herbs, and the visit of a ladybug – all this is an example of impersonation.

Poetic figures in poetry serve to express the mood, feelings of a lyrical hero. Sometimes the poet uses the whole phrase, repetition, short vocabulary and phrases in describing the lyric hero's situation. The poet chooses among the words, phrases, composition, and pays proper attention to correctly using them. There are many types of poetic figures. In aggravating figures, the character of the lyrical hero is expressed in an exaggerated, intensified manner in his speech. There are several forms of intensifying figures. Gradation is also a type of intensifying figures, in which the meaning is intensified from word to word. Gradation also has two different forms: climax and anticlimax. Poetic figures in Shavkat Rakhmon's poetry are also unique. Let's draw your attention to the poem, which begins with the verse "Life - a sandstone, half remained":

Умр – кумсоат ҳам
яримлаб қолди.
қўнглим тўлгани йўқ билганларимдан
Ёдимни оғритар кечирганларим,
қўпдир қилмаганим, қилганларимдан.
Кечалар тобора ойдинлашади,
қўзингда қуёшнинг чечаги сўлмас
яшагим келади
фақат умрни
қумсоат сингари тўнкариб бўлмас. [9, б.188.]
(Life is a sandstone
half remained.

I do not know how full my heart is
What I'm sorry about,
I did not do much, I did.
The nights are becoming increasingly clear,
you will not lose the sun in your eyes
I want to live a life that
can not be smashed like sandstone.) [9, p.188.]

The poet began to review his life as a whole. The poet is in the process of telling his story, and in the following passages, his emotions begin to flourish, and his speech changes. Here are some examples of the gradation of climax. The poet cannot control his emotions to increase the meaning. The special day of the poet came to light. Each time the same "important" day is emphasized, attention is drawn to that day:

Кун келди,
оҳларинг учадиган кун,
юрагинг оламга сиғмайдиган кун,
юзингни босганча ернинг юзига,

силкиниб - силкиниб йиғлайдиган кун.[9,
б.188.]
(The day has come,
the day of flight of your woes,
the day when the heart can't fit in the world,
the day of leaning your face to the face of the
earth,
and crying in a shake.) [9, p.188.]

In the poem, the poet begins to summarize his mistakes and short comings in his life. His heart is not in harmony with his past. Today is his day. But the poet still feels guilty before ancestors and future generations:

Кимни бахтли қилдим
кимни умидвор,
кимларга қўнглимни ёриб сўйладим.
Қўлимни бердимми мозий қаъридан
чўзилган саноқсиз ожиз қўлларга?!
Қуёш далдасида эгилганларнинг
енгилроқ қилдимми оғирлигини?
Айтдимми кимларнинг асл дўстлигин,
кимларнинг ҳақиқий ёғийлигини?! [9, p.188.]

(Whom did I make happy?
Whom I gave hopes,
To whom I opened my heart?
Did I give my hand?
To the countless weak hands that extend from
depth of the past!
For those who are bowing to the Sun
Did I lighten their weight?
Did I tell who is my true friend,
And who is my true foe?!) [9, p.188.]

The poet really feels his civil duty. He thinks that living just like others is not enough. The poet's responsibility to the nation and the homeland is not limited, so dozens of questions arise in his mind, asking himself whether he gave someone happiness, whether extended a helping hand or tell who is his true friend and enemy. From the poet's perspective, the day has come when he should answer all this, and the poet repeats again and again that the day has come. That is: "*the day has come when you bow your head even for the sins of others, facing your face on the face of the earth, and cry in a shake.*" At the end of the poem, it is possible to observe the anticlimax form of the gradation:

Мендан нима қолаб,
абдий нурлар
барқ уриб яшнаган дунё томонда?
Уриниб - уриниб сира тўлмаган
бир қўнгил қолади
қолса ҳам мендан.[9, б.188.]

(What I leave behind,
In the world where eternal rays flourish?
A heart not filled
No matter of many attempts) [9, p.188.]

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Instead of the joy now the poet is calm and quiet. The poet ends the poem with a poetic expression depicting the mood of his life, in which he describes the anticlimax state of the poem.

The role of artistic repetitions in the poetry of Shavkat Rakhmon is invaluable. The poet's poignant feelings also depend on how repetition of words and sentences are used in his poems. In his poem "Charxipalak" (Watermill) one can see various repetitions of few words and sentences:

Ғижир - ғижир,
ғижир - ғижир,
айланасанг – жонинг ҳалак.
айланасан кун - тун демай,
чархипалак,
чархипалак. [9, б.227.]

(Gijir -gijir,
Gijir -gijir
You evolve without tiredness.
You evolve not knowing a day or a night,
Watermill,
Watermill.) 9, p.227.]

In this poem, the words "ghijir - ghijir", "evolve", "watermill" are used repeatedly. As it turns out, a watermill rotates smoothly and returns to the place where it began to rotate. The symbolic significance of watermill is also expressed. That's why many people liken the world to a watermill. The world seems to be turning round like a watermill.

In his poem "Not yet late", the verse "not yet late, there is still a chance" is repeated in the beginning, midst and the end of the poem, in the poem titled "Asad poem", the verse "life has gone as usual in a day, like a flower of lilac" is repeated in 1-5-9 lines. This is of great importance in explaining the essence and meaning of the poem.

"The sorrow of poem – the pains of great sense of beauty, realizing its spirit, that is, meaning and creating new poetic beauty on new land." (1,p.91), - said literature scientist, Botirkhon Akramov. To tell the truth Shavkat Rakhmon lived in his whole life with the sense of poem. He greatly paid attention to each verse of the poem. The combination of the words used by the poet and poetic idea caused it to appear original poems.

Conclusion

In poetry, the meaning and the sensitivity of the idea lies not in the poet's ability to choose only beautiful words. The ability to synthesize words emotionally, to empathize with each other, and to reach perfection on every sentence, requires a great deal of talent. In Shavkat Rahmon's poetry, this unique feature is evident and reflects the peculiarities of the poet.

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A DETERMINATION OF THE QUANTITY OF ORNAMENTAL COMPOSITION ELEMENTS DEPENDING ON THE PREASSIGNED PROPORTION

Abstract: Harmonization of the dimension proportions of the elements of architectural composition in most cases of a creative approach to architectural design is one of the basic tasks. For many thousands years of architecture development, the authors of the projects have tried a large number methods of proportioning elements. The mathematical formalization method of empirical data considered in the article allows to determinenumber of elements in the composition, the accentuation of which allows solving the question of its general harmonization. A particular case of this method is optimal for determining the number of ornamental compositions elements.

Key words: ornament, architectural composition, proportions of elements, harmonization of sizes.

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Introduction

Modern architecture demonstrates many examples of the active use of thematically different ornaments, not only as separate elements or inserts, but also in the sense-forming solutions of surfaces of different configurations that form an array of very interesting material for analysis (B.C.Brolin, 2000; A.U.Mal'chik, 2010; J.H.Gleiter, 2012; S.G.Khmelnitsky, 2013; D.D.Omuraliev, O.V.Wolitschenko, 2013; O.N.Priemetz, K.I.Samoilov, 2013 and other). Among the typical examples of this century, such buildings as: The Restaurant «Zhety Kazyna», Almaty, Kazakhstan, 2002(Arch. S.Usenko, K.Samoilov – «Autotechnika – Architectural workshop»); The Acqualina Sunny Isles Condos., Sunny Isles, Florida, USA, 2006 (Arch. R.M.Swedroe – «Robert M.Swedroe Architects & Planners»); The dwelling house – reconstruction, Almaty, Kazakhstan, 2007 (Arch. «Etnomura»); The «Cardinal Group» headquarters –

«The Orange Cube», Lyon, France, 2011(Arch. D.Jakob and B.MacFarlane – «Jakob+MacFarlane Architects»); The Schoolchild Creativity Palace, Astana, Kazakhstan, 2012 (Arch. N.Yavein – «Studio 44 Architects», «Basis-A»); The Republic of Kazakhstan National Museum, Astana, Kazakhstan, 2014 (Arch. V.Laptev – «VL», «Bazis-A»); The «Novotel-Almaty» Hotel, Almaty, Kazakhstan, 2016 (Arch. «AHR»); The National Museum of African American History and Culture, Washington D.C., USA, 2016 (Arch. P.Freelon); The Mall, Addis Ababa, Ethiopia, 2016 (Arch. X.Vilalta – «Vilalta Arquitectura»); The «Astana Ballet» Theatre and the «Kazakhstan National Academy of choreography» Education Center, Astana, Kazakhstan, 2016 (Arch. «Studio 44 Architects», «Bazis-A»); The «AmurE» Triumph Palace, Almaty, Kazakhstan, 2016 (Arch. K.Samoilov – «Europolis») and others.

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Materials and methods

As the analysed material used complexes of buildings and structures. The sizes of these buildings are analyzed in terms of their ratios. At each position within the complex, these ratios are perceived differently. Graphical analysis method allows you to define groups of harmonious relationships.

Results and discussion

In general, architectural ornament, as an element of a building composition, in the best works of architecture is in a harmonious proportional link with all its parts. However, in most cases this concerns only the overall characteristics of the ornamental component itself. The structuring of groups and individual elements of ornamental components in the context of the general proportional structure of a one-time perceived composition is an interesting creative task that can be translated from a largely intuitive plane into a relatively simple sphere of computing (especially given the modern parameters of computer capabilities), which are included in a set of computational technologies and methods of architectural design, with an interesting history of application (Wolitschenko, O.V., 2011). At the same time, in the field of personal creative interpretation, the main thing remains - the choice of the most proportional system, which the author considers most harmonious for the composition being formed.

Thus, the problem is reduced to determining the sequence of dimensions of all components in the composition in the gap between the known values of the largest and smallest elements (Samoilov, KI 1987). The idea of the possibility of calculating parameters for the identification of harmonious relationships is based on the analysis of the perception of the complex of buildings and structures of Microdistrict No. 1 "on Strelka" in Ust-Kamenogorsk, Kazakhstan (arch. L.Baitanova, A.Dushenin, B.Zakharov, A.Kalinichenko, A.Laptev, S.Khristoforov). The microdistrict occupies the most responsible plot in the town planning aspect at the confluence of the rivers Ulba and Irtysh.

The compositional solution of this microdistrict is based on the combination of 5-, 7-, 9-, 12-, 14-, 16-storey houses with 1-, 2-, 3-storey public buildings. The peculiarity of the perception of the microdistrict due to its location is the absence of an average perception plan, since the whole complex is visible either from the opposite embankments of the Ulba River and the Irtysh River, or from the side of the boat traveling along the Irtysh River. The remaining points of perception are inside, in the "interior" of the microdistrict. This is facilitated by the compositional solution. On the Ulba side, along the perimeter, there are 5, 7 and 9-storey houses, curved in plan, alternating with 9-storey towers. Number of buildings storeys increases in the

direction of the arrow of the rivers confluence. By Ulbinskaya embankment, from where the whole microdistrict is visible, the traffic is pedestrian, and the roadway is hidden by rows of trees. The range of perception and speed of movement cause a slight change in perspective. Therefore, from this side, a dynamic spatial composition is formed with an increase in volumes. The more distant points of perception on this side are characterized by short-term perception (when passing through a bridge across the Ulba river), which justifies the dynamism of one-time perception composition. And as the microdistrict adjoins here a 3-5-storey building, a smooth scale transition to 14-16-storey tower houses on the arrow is created.

There are only 9-storey houses on the Irtysh side. But after all, perception from this side is possible only from the side of the high-speed hydrofoil vessel, the speed of which ensures a constant change in the perceptions of the building bent wall. That is, static diversity is replaced by a dynamic one. In addition, the building adjacent to the neighborhood on this side consists mainly of 12-storey houses. On this border is the final stop of several bus routes and the movement of the bulk of the inhabitants to their homes begins.

The longitudinal axis of the microdistrict composition (which is also the axis of pedestrian traffic, since the entrance to the houses is organized from the embankments) coincides with the underground pass-through communication channel, which "shows up" on the surface with a clear rhythm of ventilation devices and observation wells. They serve as the first large-scale units located in close proximity to the main pedestrian flow. The next step is the transformer and pumping stations located somewhat in depth and comparable to 2-3-storey public buildings, providing a visual transition directly to residential development.

Visually legible subordination is confirmed, albeit approximately, by mathematical analysis. So, if we express the values of the vertical components of the architectural and spatial environment of the microdistrict in terms of the rows number of brickwork (as the main applied building material), then a sequence almost coincides with the proportion of the "Golden Section" in the form of the Fibonacci series: benches and elements of improvement - 6; forms of children's playgrounds - 9; ventilating devices - 15/16; people - 18/24; manholes - 39/42; substations - 63/64; two-story buildings - 98/102; the main trees are 165; five-story houses - 210/267; nine-storey houses - 364.

The composition of the building is such that at least 75% of possible directions of view from any point inside the microdistrict have a restriction in the form of a nine-storey wall of perimeter houses, and all other elements are perceived against its background or in combination with it. Therefore, we

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calculate the possible values of the vertical components of the microdistrict, taking for the constant final values the height of the nine-story house (364 rows of brickwork) and the average human perception horizon (18 rows of masonry). The pronounced clarity of the rows of brickwork in the walls of buildings and structures makes it possible to judge quite clearly the magnitude of the element, even taking into account visual prospective cuts. Therefore, let us consider the totality of rhythmic series, uniformly increasing according to the law of geometric progression.

To obtain the corresponding formulas, we transfer the known geometric constructions of the method of finding the sequence on the basis of the side and the diagonal of the square in the first quadrant of the coordinate plane (Fig. 1). Then the required quantities (ordinates "Y") of the terms of the series obtained are determined from the points that fix the intersections for each of the two straight lines:

$$\begin{aligned} \text{№1 } (X_1, Y_1) &\sim (Y = AX + C; Y = X); \\ (Y_1 = AX_1 + C; Y_1 = X_1); \\ \text{№2 } (X_2, Y_2) &\sim (Y = AX + C; Y = X - X_1); \\ (Y_2 = AX_2 + C; Y_2 = X_2 - X_1); \\ \text{№3 } (X_3, Y_3) &\sim (Y = AX + C; Y = X - X_2); \\ (Y_3 = AX_3 + C; Y_3 = X_3 - X_2); \\ \text{№m } (X_m, Y_m) &\sim (Y = AX + C; Y = X - X_{m-1}); \\ (Y_m = AX_m + C; Y_m = X_m - X_{m-1}), \end{aligned}$$

where:

A – coefficient of slope of the line, that is, the denominator of the geometric progression (in general: $0 \leq A < 1$);

C – ordinate of the initial term of the series.

Therefore, it is necessary to first determine the abscissa "X".

1). $Y_1 = AX_1 + C; Y_1 = X_1$, that is $X_1 = AX_1 + C; C = X_1(1 - A)$, respectively $X_1 = C / (1 - A)$. To shorten the recording, we accept

$$(1 - A) = F, \text{ then } X_1 = C / F.$$

2). $Y_2 = AX_2 + C; Y_2 = X_2 - X_1$, that is

$$\begin{aligned} X_2 - X_1 &= AX_2 + C; \\ X_2 - C/F &= AX_2 + C; \\ X_2 - AX_2 &= C + C/F; \\ X_2 F &= C(1 + 1/F); \\ X_2 &= (C/F)(1 + 1/F), \end{aligned}$$

respectively $X_2 = C [(F + 1) / F^2]$,

3). $Y_3 = AX_3 + C; Y_3 = X_3 - X_2$, that is

$$\begin{aligned} X_2 - C[(F + 1) / F^2] &= AX_3 + C; \\ X_3 F &= C + C[(F + 1) / F^2]; \\ X_3 &= C / F + C[(F + 1) / F^3]; \\ X_3 &= C [1/F + (F + 1) / F^3]; \end{aligned}$$

respectively $X_3 = C [(F^2 + F + 1) / F^3]$.

Using the method of mathematical induction, we assume that for the term of the series with the serial number "m" the following expression is valid: $X_m = C [(F^{m-1} + F^{m-2} + \dots + F^{m-m}) / F^m]$, or $X_m = C (1 / F + 1 / F^2 + \dots + 1 / F^m)$.

If the total number of members in the series is "n", then:

$$Y_n = AX_n + C; Y_n = X_n - X_{n-1}.$$

Assuming this value of the extreme term as "D" ($Y_n = D$), as a constant value (in the case under consideration - the overall size), we get:

$$\begin{aligned} D &= AX_n + C; \\ D &= X_n - X_{n-1}; \\ D - C &= AX_n; \\ A &= (D - C) / X_n; \\ -A &= (C - D) / X_n; \\ 1 - 1 - A &= (C - D) / X_n; \\ (1 - A) - 1 &= (C - D) / X_n. \end{aligned}$$

Taking into account the previously accepted $(1 - A) = F$, we obtain: $F - 1 = (C - D) / X_n$;

$$F - 1 = (C - D) / C(F^{n-1} + F^{n-2} + \dots + F^{n-n}) / F^n;$$

$$C(F - 1) [(F^{n-1} + F^{n-2} + \dots + F^{n-n}) / F^n] = C - D.$$

$$(C / F^n) (F - 1) (F^{n-1} + F^{n-2} + \dots + F^{n-n}) =$$

$$= (C / F^n) [(F - 1)F^{n-1} + (F - 1)F^{n-2} + \dots + (F - 1)F^{n-n}] =$$

$$= (C / F^n) (F^n - F^{n-1} + F^{n-1} - F^{n-2} + \dots + F - F^0) =$$

$$= (C / F^n) (F^n - 1).$$

$$C(F^n - 1) / F^n = C - D;$$

$$(F^n - 1) / F^n = 1 - D / C; 1 - 1 / F^n = 1 - D / C;$$

$$1 / F^n = D / C; F = (C / D)^{1/n},$$

returning the replacement: $1 - A = (C / D)^{1/n}$,

$$A = 1 - (C / D)^{1/n}.$$

That is, the slope (denominator of the progression) "A" for a series with "n" members is determined by the formula:

$$A_n = 1 - (C / D)^{1/n}.$$

The value of the abscissa "X" for a member of this series with the serial number "m": $X_m = [(C / D)^{(m-1)/n} + (C / D)^{(m-2)/n} + \dots + (C / D)^{(m-m)/n}] / (C / D)^{m/n}$,

where: $m = 1, 2, \dots, n$

($\lim A_1 = 1$, at $D < \infty$; $\lim A_n = 0$, at $n < \infty$).

Thence:

$$Y_m = X_m - X_{m-1}; X_m = C (F^{m-1} + F^{m-2} + \dots + F^{m-m}) / F^m;$$

$$X_{m-1} = C (F^{(m-1)-1} + F^{(m-1)-2} + \dots + F^{(m-1)-(m-1)}) / F^{m-1};$$

$$X_m - X_{m-1} = C \{ [(F^{m-1} + F^{m-2} + \dots + F^{m-m}) / F^m] -$$

$$- [(F^{(m-1)-1} + F^{(m-1)-2} + \dots + F^{(m-1)-(m-1)}) / F^{m-1}] \};$$

$$X_m - X_{m-1} = (C / F^m) (F^{m-1} + F^{m-2} + \dots + F^{m-m} - F^{(m-1)-1} - F^{(m-1)-2} - \dots - F^{(m-1)-(m-1)});$$

$$X_m - X_{m-1} = (C / F^m) (F^{m-1} + F^{m-2} + \dots + F + 1 - F^{(m-1)-1} - F^{(m-1)-2} - \dots - F);$$

$$X_m - X_{m-1} = (C / F^m) 1; X_m - X_{m-1} = C / F^m; Y_m = C / F^m.$$

Given the previous,

$$F = (C / D)^{1/n}; Y_m = C / (C / D)^{m/n}; Y_m = C / (C^{m/n} / D^{m/n});$$

$$Y_m = (C / C^{m/n}) D^{m/n}.$$

Accordingly, the ordinate "Y" for a member of the series with the serial number "m" with the number of members in the "n" row is determined by the formula:

$$Y_m = C^{1-m/n} D^{m/n},$$

where:

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C, D – are the known ordinates of the extreme terms of the series;

m – is the ordinal number of the desired term of the series ($m = 1, 2, \dots, n$);

n – is the number of members of the given series ($n = 1, 2, \dots, k$);

k – is the total number of rows.

Thus, for closed spaces of urban complexes (as in the example of a microdistrict), a constant

presence of a visual frame of the limiting building is characteristic, while other elements disappear or appear as the motion moves (an analogous situation occurs in other types of spaces in unidirectional motion - this allows us to apply calculation and for the stationary perception of individual compositions with harmonically linked components, as a special case of the general methodology).

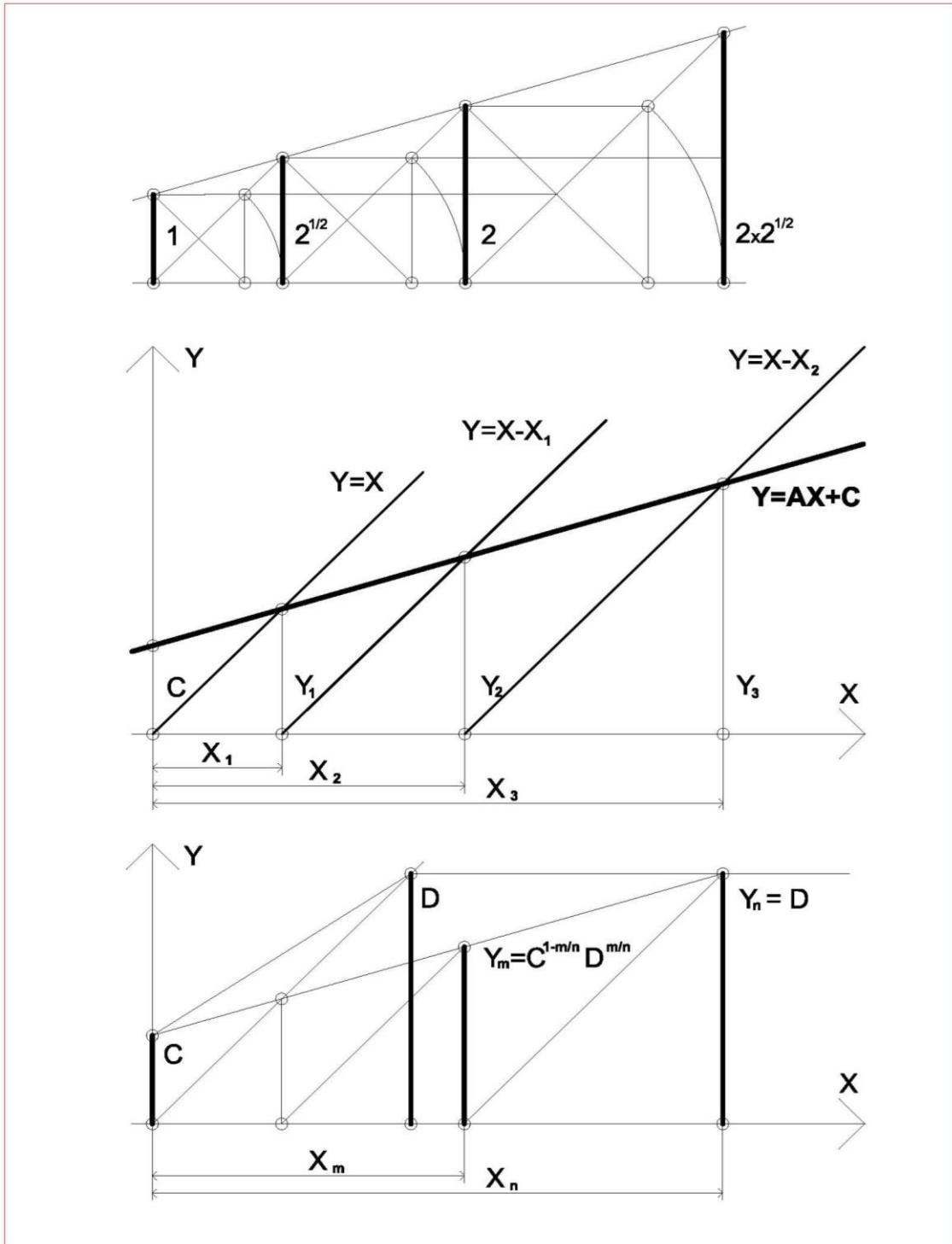


Figure 1 - Geometric construction of the method of finding the sequence on the basis of the side and the diagonal of the square.

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Consequently, we obtain a system of verticals with constant extreme terms (the horizon of perception and height of building), the values of which, depending on the number of them in the visual frame, are determined by the indicated formula. Moreover, in the particular case, if the number of terms in the series is factorized, then elements of the same value appear in adjacent rows,

for example: a row of 6 terms ($m/n = 1/6, 2/6, 3/6, 4/6, 5/6, 6/6$) has common terms in the 2-, 3- and 4-membered series - $2/6 = 1/3, 4/6 = 2/3$ ($1/3, 2/3, 3/3, 3/6 = 1/2$ ($1/2, 2/2$)). Since " m/n " is a power exponent, numbers that are very close in value can occur for a given degree of accuracy, for example: $C^{1-5/8} D^{5/8}$ и $C^{1-3/5} D^{3/5}$; $C^{1-5/11} D^{5/11}$ и $C^{1-9/20} D^{9/20}$.

Thus, it will be justified to assume the existence of such spatial combinations of elements in which, as they are sequentially perceived, compositions with harmonious rhythmic regularity, a ratio of the heights of the elements will appear at certain points. You can specify two simple cases, where 4 or 6 elements are combined: a composition of 4 elements can be represented for dynamic perception in this order (the exponents giving the equality are given) - 1: 4; 3: 4; 1: 2; 1, when elements of the two- and four-member series are used; composition of 6 elements - 1: 6; 5: 6; 1: 2; 1: 3; 2: 3; 1, when elements of two-, three- and six-membered rows are used.

The main thing is the trace of the survey route, that is, the programming of perception. The zone of transition from one position with a harmonious perception of the elements to the other is divided by areas where the panoramic perception is "switched off" by changing the nature of the paving of the track, the presence of a ladder or ramp, bridge, fountain or cascade, trees or bright flower beds, pergolas or tunnels and other distractions attention receptions.

For an example of applying the calculation, take the following values (the number of rows of brickwork): $C = 18; 20; 22; 24$ (horizon of human perception with growth of 150, 165, 180, 195 cm); $D = 364$ (the height of a nine-storey perimeter building); $k = 25$ (the number of considered series is the total number of elements of perception). Then the resulting set of numbers makes it possible to identify series in which the ratios of members are close to those that have become classical proportions (the values are rounded to integers):

- a series of 25 members: "Zholtovsky's function" is $2:5^{1/2}$ or 17:19, that is: 18, 20, 23, 26, 29, 33, 37, 42, 47, 53, 60, 68, 76, 86, 97, 109, 123, 139, 157, 177, 200, 225, 254, 286, 323, "364";

- series of 22 and 21 members: "The Divine Proportion" of Luke Paccioli di Borga - $2:3^{1/2}$ (D.Petrovich (1979) in the book "Theoretical

proportions" shows that the often found identification of this name with the "Golden Section" is erroneous, since it proceeds from the incorrect, from his point of view, interpretation of the illustrations of the work of L. Pachcholi di Borg (1508) "On the Divine Proportion", that is: 18, 21, 24, 27, 31, 36, 41, 47, 54, 62, 71, 81, 93, 106, 122, 140, 160, 184, 211, 242, 277, 318, «364» и 18, 21, 24, 28, 32, 37, 43, 49, 57, 65, 75, 87, 100, 116, 134, 154, 178, 205, 237, 273, 315, «364»;

- a row of 8 members: $1:2^{1/2}$, that is: 18, 26, 38, 56, 81, 118, 172, 250, "364";

- a row of 6 members: "Golden Section" is $(1 + 5^{1/2}):2$ that is: 18, 30, 49, 81, 134, 221, "364";

- a number of 4 members: $1:5^{1/2}$, that is: 18, 38, 81, 171, "364".

Comparison of the obtained data with the actual values of the elements of the microdistrict under consideration revealed a certain closeness of the values. And the analysis of various points of perception in the microdistrict showed the presence of individual points, the perception from which confirms the possibility of mathematically predicted compositions with a harmonious ratio of magnitudes. Only approximate coincidence of the values with the calculated and the rarity of the points of perception of the indicated compositions is explained by the absence of the stated mathematical apparatus in the authors of the project of the microdistrict. And on the other hand, it testifies to the legitimacy of its application, since the dimensions determined by the authors of the project, taking into account the internally sensed empirical sense of harmony, are confirmed by mathematical calculations.

As for the harmonization of ornamental compositions on the basis of this technique, it, as was noted, is a particular case of the method considered. In it, as the fixed values, the general dimensions and the smallest element, for example, of an ornamental panel, can be adopted. Then all the intermediate values of the individual sets are determined on the basis of the calculation. It is possible to choose rows with a harmonious ratio of numbers. This will determine the total number of elements in the panel composition that are in one or another harmonious dimensional ratio.

Conclusion

Accordingly, when differentiating differently sized on the basis of color, texture and height of the relief, it is possible to form a combination of different proportional relationships in one composition. Thus, it becomes possible to harmonize the ornamental composition, varying the number and size of its components, depending on the author's design.

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SECTION 19. Management. Marketing. Public administration.

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PROBLEMS OF IMPROVEMENT OF THE STATE REGULATION MECHANISM OF ACTIVITY OF PRIVATE INSTITUTIONS OF HEALTH CARE IN AZERBAIJAN.

Abstract: The relevance of problems of improvement of the state regulation mechanism of activity of private institutions of health care in Azerbaijan is given in the article. The essence of state regulation of a health care system and its main mechanisms is analyzed. Important aspects of the effective organization and development of medical institutions and enterprises are considered. The current state of a health care system in the post-soviet republic - in Azerbaijan is investigated. The state and the existing problems of development of a health care system in the country are analyzed. Dynamics of paid medical services and activity of the medical enterprises rendering paid services is considered. A number of recommendations and offers on problems of improvement of the state regulation mechanism of activity of private institutions of health care in Azerbaijan are generalized in the end of the article.

Key words: a health care system of Azerbaijan, state regulation of a health care system, problem of improvement of mechanisms of activity of the medical enterprises, ways of improvement of activity of private institutions of health care, development of the private medical enterprises in Azerbaijan.

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ПРОБЛЕМЫ СОВЕРШЕНСТВОВАНИЯ МЕХАНИЗМА ГОСУДАРСТВЕННОГО РЕГУЛИРОВАНИЯ ДЕЯТЕЛЬНОСТИ ЧАСТНЫХ УЧРЕЖДЕНИЙ ЗДРАВООХРАНЕНИЯ В АЗЕРБАЙДЖАНЕ

Аннотация: В статье изложена актуальность проблем совершенствования механизма государственного регулирования деятельности частных учреждений здравоохранения в Азербайджане. Проанализирована сущность государственного регулирования системы здравоохранения и его основных механизмов. Рассмотрены важные аспекты эффективной организации и развития медицинских учреждений и предприятий. Исследовано современное состояние системы здравоохранения в бывшей постсоветской республике - в Азербайджане. Проанализировано состояние и существующие проблемы, мешающие развитию системы здравоохранения в стране. Рассмотрена динамика платных медицинских услуг и деятельность медицинских предприятий, оказывающих платные услуги. Обобщен и дан ряд рекомендаций и предложений по проблемам совершенствования механизма государственного регулирования деятельности частных учреждений здравоохранения в Азербайджане в ближайшей перспективе.

Ключевые слова: система здравоохранения Азербайджана, государственное регулирование системы здравоохранения, проблемы совершенствования механизмов деятельности медицинских предприятий, пути совершенствования деятельности частных учреждений здравоохранения, перспективы развития частных медицинских предприятий в Азербайджане.

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Introduction

Финансовый кризис в мире и его последствия сильно повлияли на социальную жизнь населения наравне с ее экономической составляющей. Так, нестабильность в экономике непосредственно отражается и на процессах государственного регулирования сфер здоровой жизнедеятельности населения, уменьшается возможность предоставления социальных гарантий населению государством на предкризисном уровне. В контексте стратегических задач повышения уровня и качества жизни населения выделяются процессы развития частной деятельности здравоохранения и вопросы конкуренции предприятий этой сферы, как между собой, так и с государственными медицинскими учреждениями. Поэтому необходимость в предоставлении качественных медицинских услуг гражданам страны, в оказании своевременной медицинской помощи используя весь потенциал здравоохранения страны, включая частные медицинские предприятия, является одним из важных детерминирующих критериев всей совокупности социальных задач государства.

Materials and Methods

Однако, стоит отметить, что исторически государственное регулирование частного сектора здравоохранения в постсоциалистических и постсоветских республиках обладает свойствами фрагментарности и бессистемности, что выражается в недостаточных ограничительных мерах относительно частных медицинских предприятий, выборочными и нерегулярными контрольными мероприятиями, а это, в свою очередь, свидетельствует о нечетких границах между государственным регулированием данной отрасли и ее саморегулированием с помощью рыночных механизмов. Вследствие этого возникает необходимость определения оптимального уровня государственного вмешательства, нахождения наиболее эффективного сочетания государственного и рыночного регулирования динамично развивающейся и более конкурентоспособной отрасли здравоохранения - частной медицины. А данные вопросы всегда вызывали определенные дискуссии среди ученых экономистов. Задачей государственного механизма регулирования является повышение «выпуска» медицинских услуг до оптимального с точки зрения всего общества уровня. Отмечается так же, что сфера здравоохранения имеет отличительные особенности от других социальных сфер деятельности, что объясняет несостоятельность ее рыночных механизмов и естественных экономических регуляторов и которые являются причиной государственного регулирования

взаимоотношений поставщиков медицинских услуг (больниц и врачей) и потребителей данных услуг (пациентов), а так же обуславливают важность системы страхования [1]. Здесь считается целесообразным разработка так называемого стратегического партнерства государства и бизнеса в здравоохранении. Под ним подразумевается система мероприятий, которые реализуются органами государственной власти в сфере здравоохранением и частным партнером для увеличения качества и доступности оказания медицинской помощи гражданам страны, роста эффективности пользования государственным имуществом и создание условий для достижения поставленных целей медицинской отрасли страны [2]. Термин «государственно-частное партнерство» возник в 1990-х годах XX века на примере британской модели «частной финансовой инициативе», которая предполагала совершенно новую концепцию управления собственностью государства. Так, в рамках проектов государственно-частного партнерства предполагалось предложить бизнесу инвестиции в объекты социально-культурной и производственной инфраструктуры, находящиеся в собственности государства [3]. Отметим, что по организационной структуре существуют 3 основные базовые модели всех существующих мировых систем здравоохранения:

- Государственно-бюджетная - в основном финансируется за счет бюджетных фондов (около 90 %);
- Социально-страховая - финансируется за счет целевых предпринимательских взносов, работающих граждан страны и субсидий государства;
- Рыночная или частная (к примеру, США, Израиль, Южная Корея).

Государственной модели характерна доминирующая роль государства, в частности, налоговым поступлениям. Данная модель состоит из государственных медицинских учреждений, и управляются государственными органами исполнительной власти. Социально-страховая модель так же находится под государственным управлением, однако, в отличие от государственной, характеризуется наличием системы обязательного медицинского страхования. Суть обязательного медицинского страхования заключается во взаимодействии двух принципов: общественной солидарности (здоровый гражданин страны платит за больного, молодые - за пожилых, более состоятельное население - за менее обеспеченную его часть) и участия в издержках (оплата медицинских услуг населением кроме общественных фондов самостоятельно, путем софинансирования).

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Рыночная или частная модель характеризуется отсутствием единой системы государственного медицинского страхования и главным регулятором необходимого уровня удовлетворения потребностей в медицинских услугах является платный рынок.

Стоит отметить, что за последние десятилетия позитивные тенденции развития экономики и связанное с этим ростом увеличение благосостояния населения в Азербайджане дает толчок к переходу экономики на новый этап развития, в котором человек как индивид станет главной целью и ценностью. Так, в утвержденной распоряжением Президента Азербайджанской Республики от 15 сентября 2008 года Государственной программы по сокращению бедности и устойчивому развитию Азербайджана на 2008-2015 гг. и других основополагающих социально направленных законодательных актах в качестве самого значимого приоритета выступают реформы образования и здравоохранения, которые непосредственно связаны с развитием человеческого потенциала в стране [4]. В этом же году чуть ранее (10 января 2008 года) была принята Концепция реформы системы финансирования здравоохранения и применения обязательного медицинского страхования в стране, утвержденная распоряжением Президента Азербайджанской Республики [5], с помощью которой планируется усилить инфраструктуру системы здравоохранения и тем самым способствовать увеличению притока инвестиций в данный сектор. Далее с целью последовательной реализации и усиления процессов совершенствования такой необходимой отрасли здравоохранения как медицинское страхование Указом Президента Азербайджанской

Республики от 6 сентября 2017 года было учреждено Государственное агентство по обязательному медицинскому страхованию при Кабинете Министров Азербайджанской Республики и утвержден его Устав [6]. Согласно с Указом, Агентство является лицом публичного права, которое обеспечивает применение обязательного медицинского страхования путем покупки услуг здравоохранения и располагает ресурсами для финансирования медицинских услуг в рамках базового пакета (основных услуг). Цель деятельности данного Агентства - это привлечение граждан страны к обязательному медицинскому страхованию, претворение в жизнь мероприятий по улучшению качества медицинских услуг, консолидирование денежных средств для обеспечения финансирования услуг здравоохранения в рамках базового пакета услуг, улучшение условий для повышения доступности для населения медицинских услуг и др. Таким образом, считаем, что данные мероприятия создадут благоприятную среду равных условий получения медицинских услуг населением страны, существенно повысит эффективность и качество предоставляемых услуг здравоохранения и защиты здоровья граждан страны. Отметим так же, что первичный уставной фонда Агентства формируется за счет финансовых средств государственного бюджета и составляет 4 млн. манат [7].

Далее считаем целесообразным рассмотреть общее состояние системы здравоохранения в Азербайджане. На Рисунке 1 отражены показатели численности врачей в стране, в том числе, общая численность врачей и численность на каждые 10 тыс. человек по всем специальностям.



Рисунок 1. Число врачей по всем специальностям в Азербайджане, 2006-2018 годы, на начало года (разработано на основе материалов ГСКАР. <http://www.stat.gov.az>).

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Как видно из Рисунка 1, за 2016-2018 гг. рост общей численности врачей и на каждые 10 тыс. чел. практически не наблюдался. Более того, по сравнению с 2011 годом в 2018 году наблюдается сокращение численности врачей в республике на более чем 1 тыс. врачей.

На Рисунке 2 отражены показатели числа заболеваний населения по основным классам болезней в стране, в которых, к сожалению, наблюдается динамика роста за период 2005-2017 гг.

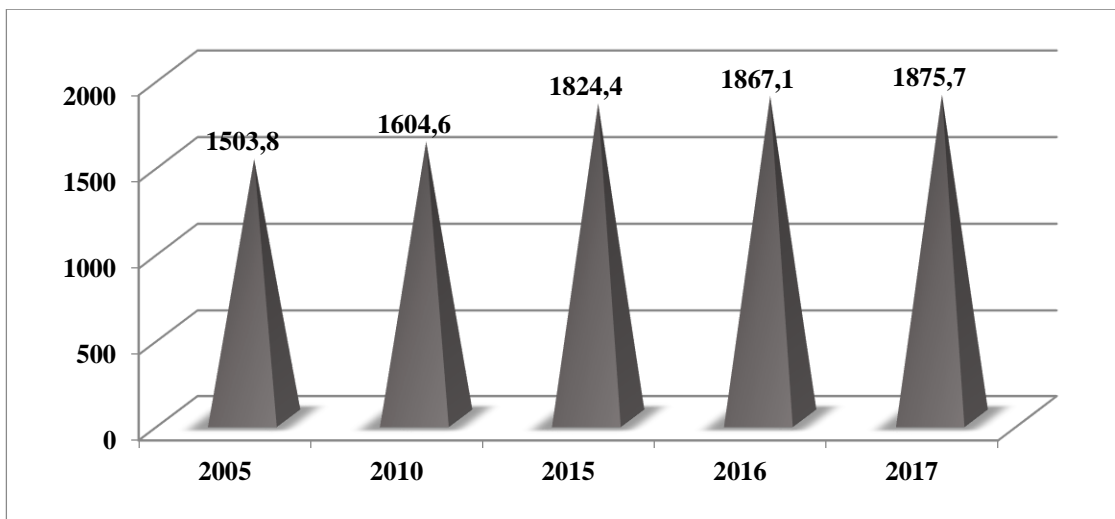


Рисунок 2. Число заболеваний населения по основным классам болезней в Азербайджане, 2005-2017 годы, тыс. чел. (разработано на основе материалов ГСКАР. <http://www.stat.gov.az>).

Таким образом, анализируя Рисунок 1 и 2, можно заметить несоответствие роста числа заболеваний в стране и сокращением квалифицированных медицинских работников-врачей по всем специальностям. Считаем, что государству необходимо создать благоприятные условия для развития не только государственных медицинских учреждений, а уделить особое внимание развитию частной медицины и учетом

ее конкурентоспособности с государственным сектором в современных условиях. Так, рассмотрим более подробно частный сектор медицины и показатели его развития за последнее время.

Рисунок 3 отражает динамику объема платных услуг населению на предприятиях здравоохранения Азербайджана за 2012-2017 гг.

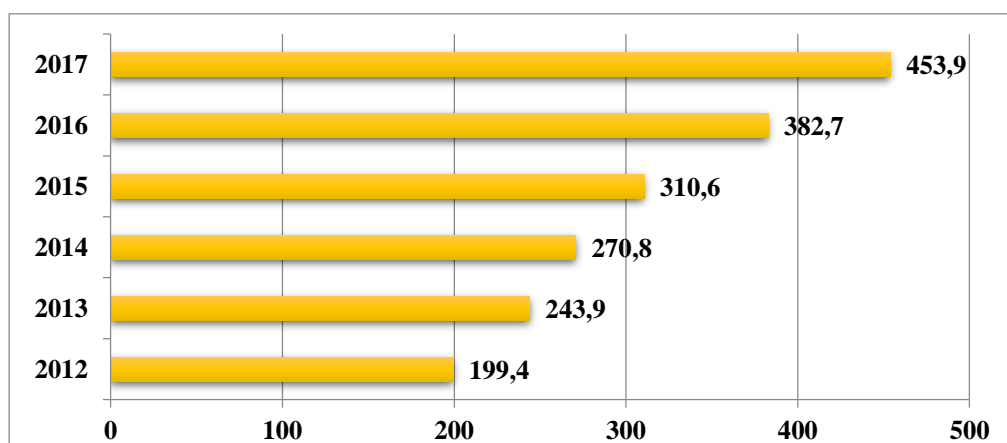


Рисунок 3. Объем платных услуг населению на предприятиях здравоохранения Азербайджана, 2012-2017 гг., млн. манат (разработано на основе материалов ГСКАР. <http://www.stat.gov.az>).

Из Рисунка 3 видно, что в период 2012-2017 гг. объем платных услуг вырос почти в 2,3 раза и

по итогам 2017 года был на уровне 454 млн. манат. И хотя в динамике объема платных услуг

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населению на предприятиях здравоохранения Азербайджана за 2016 и 2017 гг. отмечен рост, однако в реалиях этот рост связан с девальвацией национальной валюты, так как в долларном выражении в объеме платных услуг не имеется особого роста. Эти факторы обуславливают интенсификацию совершенствования действующих механизмов деятельности медицинских предприятий частного характера, и способствуют созданию более благоприятных условий для развития частных предприятий

здравоохранения с дальнейшим повышением их эффективности. Таким образом, государству необходимо активизировать рынок медицинских услуг и расширить финансовые источники развития медицинских предприятий и учреждений.

Далее рассмотрим долю предприятий здравоохранения в общем объеме предоставляемых платных услуг населению в Азербайджане за 2012-2017 гг. (Рисунок 4).

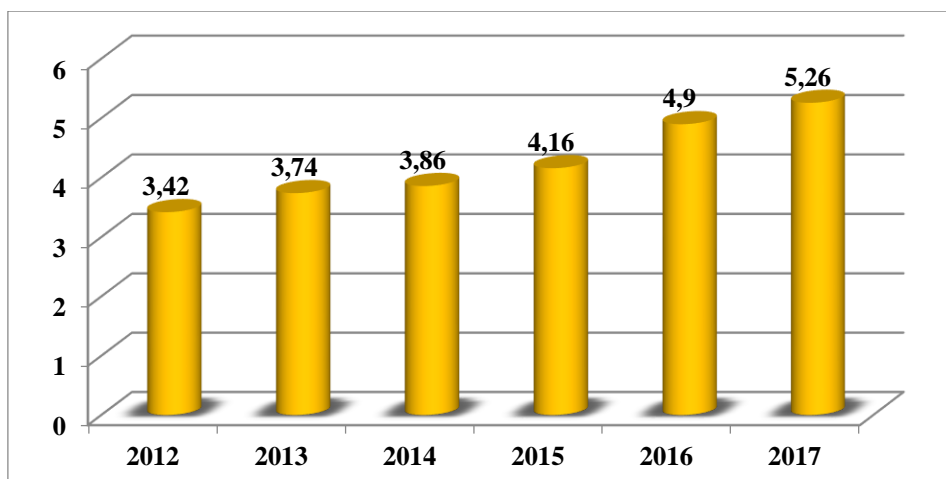


Рисунок 4. Доля предприятий здравоохранения в общем объеме предоставляемых платных услуг населению в Азербайджане, 2012-2017 гг., в %-ах (разработано на основе материалов ГСКАР. <http://www.stat.gov.az>).

Анализируя Рисунок 4, можно отметить, что динамика показателя доли предприятий здравоохранения в общем объеме предоставляемых платных услуг населению за исследуемый период имеет положительную тенденцию, что говорит о росте доверия граждан страны частным предприятиям здравоохранения,

а данная тенденция в целом должна повлиять на развитие конкурентной среды в этой области и способствовать повышению качества предоставляемых платных медицинских услуг населению. На Рисунке 5 даны показатели стоимости платных медицинских услуг на душу населения Азербайджана за период 2012-2017 гг.

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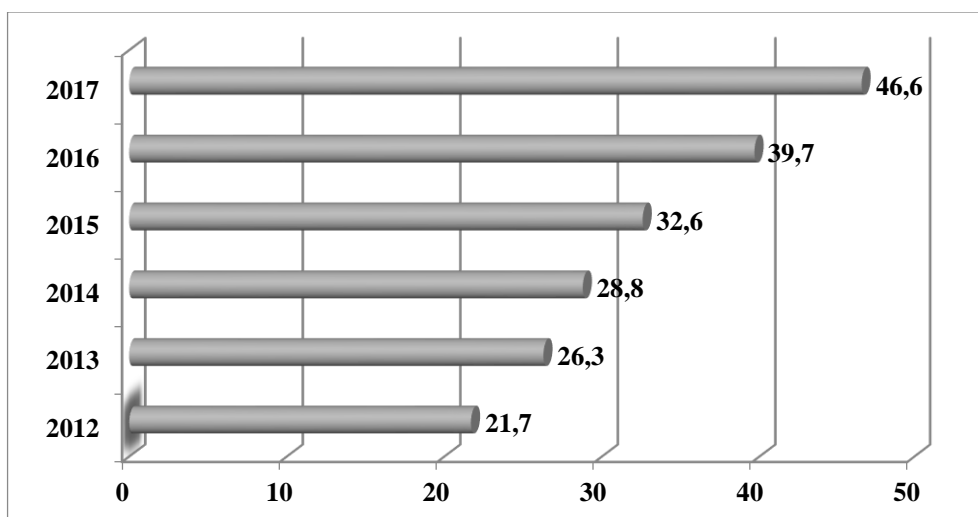


Рисунок 5. Стоимость платных медицинских услуг на душу населения в Азербайджане, 2012-2017 гг., в манатах (разработано на основе материалов ГСКАР. <http://www.stat.gov.az>).

На Рисунке 5 видно, что в динамике показателя стоимости платных медицинских услуг на душу населения в Азербайджане за 2012-2017 гг. наблюдается рост в более чем 2 раза, по итогам 2017 года этот показатель был зафиксирован на уровне - 46,6 манат [8, с.15]. Рост данных показателей имеет двойное влияние на экономику страны - с одной стороны увеличение доли платных медицинских услуг в сфере здравоохранения уменьшает предоставление бесплатных услуг государственных медицинских учреждений, и платность медицинских услуг образует ряд сложностей для повышения их доступности. С другой стороны, интенсифицируются процессы компенсации данного пробела за счет предоставления медицинскими учреждениями платных услуг, которые повышает их качество, так как функционирование частных медицинских предприятий в рыночных условиях сосуществует со здоровой конкуренцией и, как следствие, более высоким уровнем предоставления услуг. Так, при возникновении необходимости оперативно пройти обследование или получить результаты анализов, а так же при желании гражданина страны обратиться за медицинской помощью к более высококвалифицированному врачу частная медицина становится желательной и необходимой [9]. Таким образом, считаем, что в условиях современной системы рыночного хозяйствования частная медицина должна развиваться и государству необходимо всячески содействовать и мотивировать данное развитие. Более того, необходимо диверсифицировать источники финансирования данных направлений и стимулировать предпринимательство в сфере частной медицины [10]. Кроме того, особо требуется существенное поднятие

конкурентоспособности предприятий частной системы здравоохранения и доверия к ним [11]. Для этого, в первую очередь, необходимо обеспечить совершенствование организационно-экономических механизмов развития рынка медицинских услуг в условиях модернизации здравоохранения [12]. С развитием деятельности и здоровой конкурентной среды в сфере предпринимательства частной медицины со временем будет формироваться более здоровая конкуренция, которая будет способствовать существенному повышению конкурентоспособности частных предприятий системы здравоохранения [13].

Conclusion

Отметим, что вышеприведенные проблемы и положения практически свойственно и характерно для частных предприятий системы здравоохранения Азербайджанской Республики. В связи с этим, по нашему мнению, является целесообразным разработку следующих мероприятий по интенсификации развития частных предприятий системы здравоохранения, увеличению ассортимента и повышению качества предоставляемых частных медицинских услуг населению:

- ✓ необходимо содействовать улучшению инвестиционно-инновационной среды в данной сфере путем разработки государственных программ развития и улучшения деятельности частных предприятий здравоохранения в Азербайджане;
- ✓ нужно усовершенствовать и создать новую законодательную базу в сфере системы здравоохранения согласно мировым стандартам;

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- ✓ необходимо усилить и мотивировать развитие конкурентной среды на рынке медицинских услуг для повышения качества здравоохранения;
- ✓ нужно обеспечить медицинские предприятия более современным оборудованием и ускорить применение новых технологий в данной сфере;
- ✓ необходимо создать благоприятные условия для повышения квалификации медицинских работников с целью повышения эффективности деятельности частных предприятий здравоохранения и т.д.

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PECULIARITIES OF LIFETIME PREDICTION OF TRACK STRUCTURE FASTENINGS WITH APPLICATION OF NUMERICAL MODELLING

Abstract: ANSYS stress-strain analysis of track structure with track panel fastenings of KB-65 and ARS types was performed and number of cycles before failure was assessed using special software. Influence of load value at different speeds on fastening lifetime was analyzed. Comparison with field measurements was made.

Key words: track structure, number of cycles before failure, stress-strain state, finite element method, track panel fastenings.

Language: Russian

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ОСОБЕННОСТИ ПРОГНОЗИРОВАНИЯ РЕСУРСА СКРЕПЛЕНИЙ ВЕРХНЕГО СТРОЕНИЯ ПУТИ С ПРИМЕНЕНИЕМ ЧИСЛЕННОГО МОДЕЛИРОВАНИЯ

Аннотация: Выполнен анализ напряженно-деформированного состояния верхнего строения участков пути со скреплениями рельсошпальной решетки КБ-65 и АРС посредством программы ANSYS, а также оценка числа циклов до разрушения с помощью специализированного программного обеспечения. Проанализировано влияние величины нагрузки при различных скоростях на ресурс скрепления, произведено сравнение с данными реальных замеров.

Ключевые слова: Верхнее строение пути, скрепление рельсошпальной решетки, физико-математическое моделирование, напряженно-деформированное состояние, число циклов до разрушения.

Введение

Задача контактного взаимодействия колесо-рельс обладает большой актуальностью, поскольку данные процессы чрезвычайно широко

распространены в технических системах. Важным частным случаем данной задачи является анализ контакта колес железнодорожного подвижного состава с верхним строением бесстыкового пути [1-5].

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Целью работы являлось получение картины НДС для различных рельсовых креплений бесстыкового пути при воздействии нагрузки 23.5 тс и 27 тс. Проводилось сопоставление с результатами натурных замеров напряжений. Также выполнены ресурсные расчеты, оценены сроки выхода креплений в зависимости от нагрузки [6-8]. При расчетах рассмотрены два типа крепления - АРС-4, КБ-65, конструктивное исполнение креплений принято согласно действующих нормативных документов РЖД. Неровности и дефекты рельсов в расчетах на данном этапе не рассматриваются. Передача нагрузки на путь производилась через модель колесной пары для кривого участка пути и через модель колеса для прямого участка пути. Вертикальная сила прикладывалась к оси колеса, боковая - к гребню. Расчеты проведены в

квазистатической постановке [9]. В результате моделирования получены напряжения во всех элементах верхнего строения пути в графическом виде. Верификация моделей проведена на основе результатов сопоставления расчетных и фактических напряжений в шейке и подошве рельса.

Расчетная схема

При расчете моделировалось контактное взаимодействие. Параметры контактного взаимодействия зависят от принятой конфигурации профиля колеса и рельса, их номинальных размеров. Во время движения колесо и рельс могут принимать различные взаимные положения. На рисунке 1 представлены варианты расположения зон контакта для различных взаимных смещений колеса и рельса.

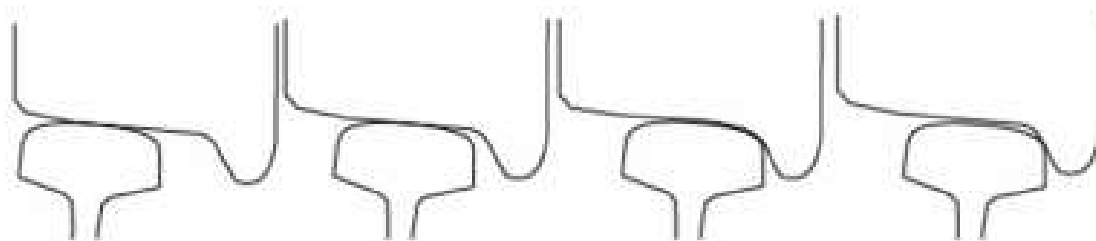
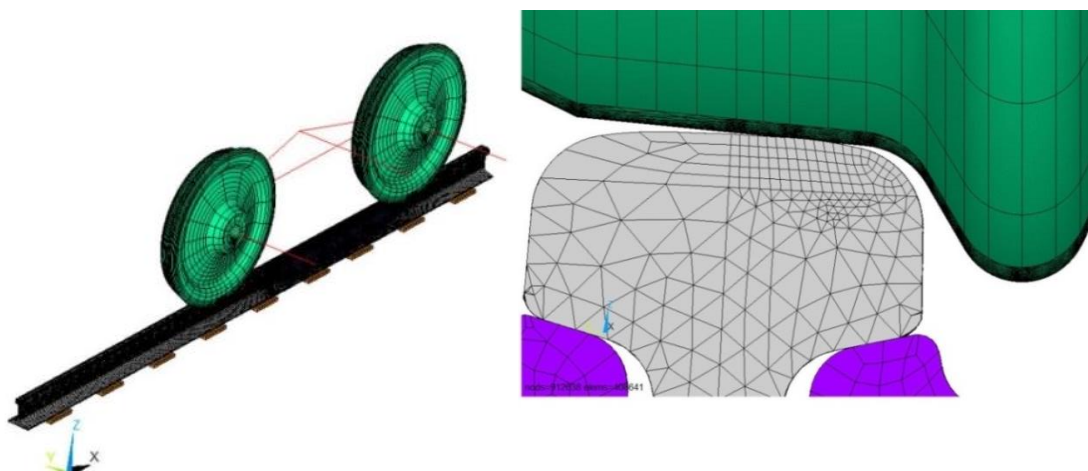


Рисунок 1 – Варианты взаимного расположения колеса и головки рельса

Обычно контактные напряжения на поверхности катания колеса грузового вагона находятся в пределах 1300 – 1700 МПа. Увеличение осевой нагрузки приводит к возрастанию герцевских контактных напряжений пропорционально степени 1/3 от ее величины [8]. На рис.2 представлены используемые расчетные

модели в среде ANSYS Mechanical APDL, на рис.3 – уточненная расчетная модель в среде ANSYS Workbench, результаты расчетов по которой передавались в модуль ANSYS NCode Design Life для оценки усталостной долговечности. Параметры кривых Веллера для колеса и рельса были взяты из [10].



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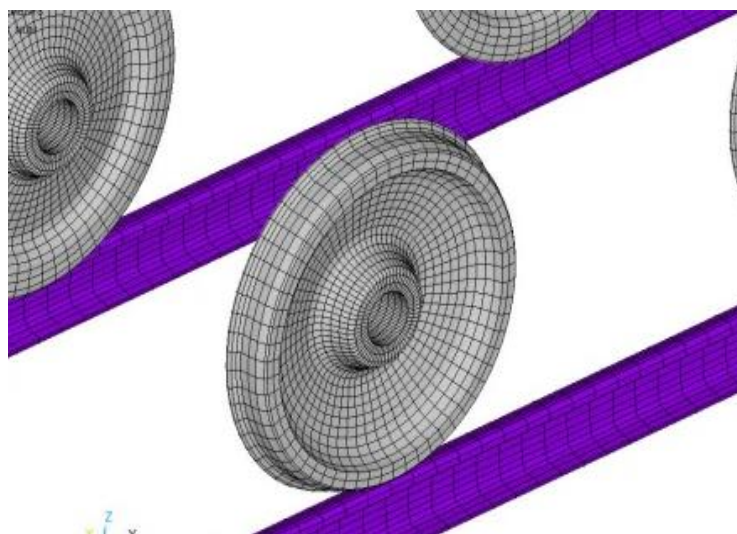


Рисунок 2 – Модель для оценки напряженно-деформированного состояния в зоне контакта колеса-рельса.

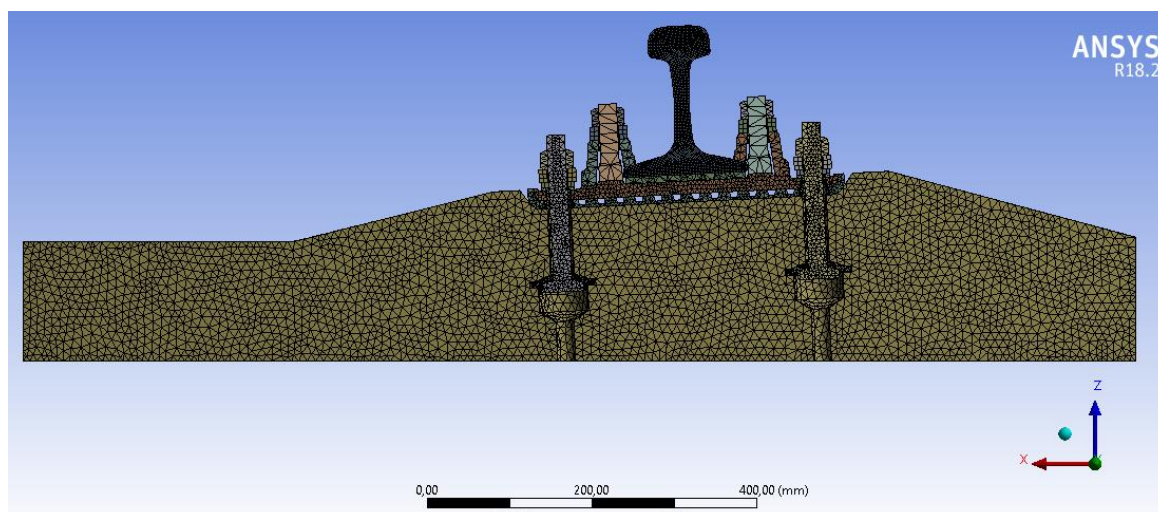


Рисунок 3. Модель верхнего строения пути со креплением КБ-65 в ANSYS Workbench и ANSYS nCode.

Ось координат X направлена по движению, Z -вертикально вверх. Значение $X=0$ соответствовало центру межрельсового зазора (принят здесь 10 мм), $Z=0$ - центру подошвы рельса.

Предусмотрена возможность задания различных типов контакта (не менее четырех вариантов), в зоне контакта введено сгущение сетки, достаточное для определения напряжений в зоне болтовых соединений с практической точностью. Модель формировалась с различными величинами фасок у дополнительного отверстия.

Поскольку при замерах на различных участках пути свойства грунтового основания отличались, при моделировании использованы условные физико-механические свойства материалов слоев рассматриваемого типа балластной призмы:

- щебень (фракция 25-60 мм) в уплотненном состоянии с толщиной слоя в балластной призме в диапазоне от 0,4 до 0,45 м; с плотностью в диапазоне 1,6-1,8 т/м³; модуль упругости от 200 до 260 МПа; коэффициент Пуассона от 0,26 до 0,29;

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- защитный слой из щебеночно-гравийно-песчаной смеси (фракция 0,05-40 мм) в уплотненном состоянии 0,3 м (и более для высокоскоростного движения); с плотностью в диапазоне 1,8-2,4 т/м³; модуль упругости от 150 до 200 МПа; коэффициент Пуассона от 0,3;
 - грунт состоит из следующих фракций: песок с плотностью в диапазоне 1,4-1,7 т/м³; модуль упругости от 25 до 110 МПа; коэффициент Пуассона от 0,3 до 0,35; супесь с плотностью в диапазоне 1,3-1,6 т/м³; модуль упругости от 25 до 100 МПа; коэффициент Пуассона от 0,25 до 0,35; глина с плотностью в диапазоне 1,75-2,3 т/м³; модуль упругости от 50 до 100 МПа; коэффициент Пуассона от 0,38 до 0,4.
- Максимальная размерность модели составила около 1 миллиона узлов и примерно 600 тысяч конечных элементов для участка прямого пути, 4 миллиона узлов и 2 миллиона конечных элементов для кривого участка пути.

Основные результаты моделирования

По результатам предварительных расчетов для вариантного анализа режима тарировки была выбрана модель, включающая две шпалы с наложением граничных условий симметрии (то есть фактически четыре шпалы на участке 2 м.). При тарировке модель нагружалась вертикальной силой 100 кН при различных точках ее приложения к колесу на прямом участке пути. Опираие в грунте выполнялось заданием коэффициентов постели, определенных из решения тестовой задачи. Расчетная схема при тарировке с наложением конечно-элементной сетки представлена на рис.4, результаты моделирования напряженного состояния в участке пути – на рис.5. По результатам моделирования выполнено сравнение с данными замеров ВНИИЖТ, приведенное в таблице 1. Анализ результатов свидетельствует о хорошем совпадении расчетных и экспериментальных значений напряжений для различных точек на головке, шейке и подошве рельса.

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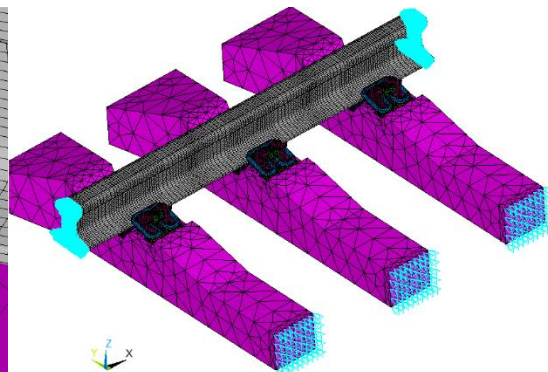
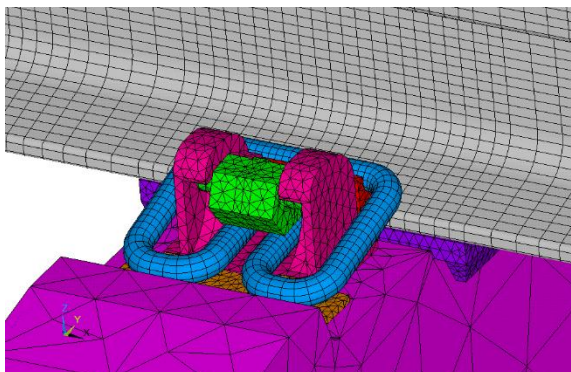
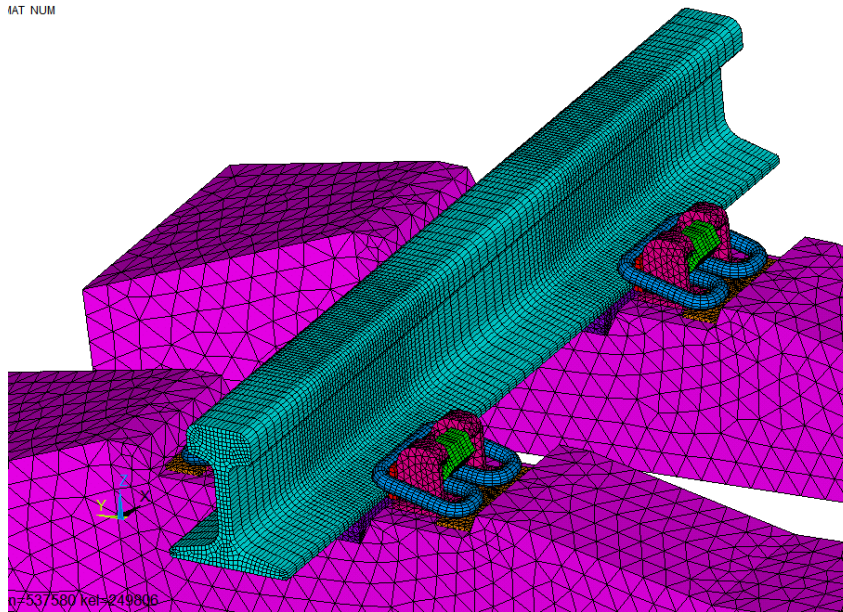


Рисунок Ошибка! Текст указанного стиля в документе отсутствует. – Расчетная модель для режима тарировки.

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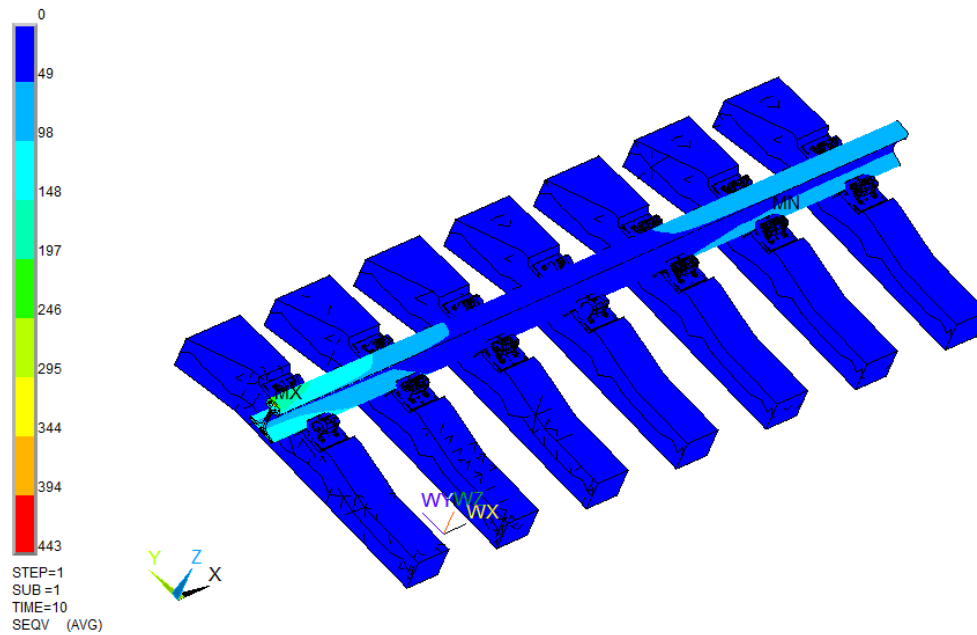


Рисунок 5 – результаты моделирования напряженного состояния.

Таблица 1 – Кромочные напряжения (МПа) при тарировке.

Вариант	Внутренняя кромка		Наружная кромка	
	Диапазон в экспериментах	Расчеты	Эксперименты	Расчет
1	78-106	80-90	78-80	70-75
2	4-11	0-5	171-180	140-160
3	83-103		72-86	
4	83-106		66-82	

Деформируемая модель железнодорожного пути для расчетного анализа его напряженно-деформированного состояния построена при различных нагрузках от колес подвижного состава. Нагрузки от колес заданы в виде распределенных по площади контакта сил, эквивалентных осевой нагрузке от 6 тонн/ось до 30 тонн/ось, при расстоянии между колесами тележки грузового вагона 1850 мм.

Для удержания рельса в скреплениях, в зависимости от конструкции, непосредственно заданы нормативные моменты затяжки болтов и шурупов, а также положение фиксирующих монорегуляторов в нормативном положении. Между элементами верхнего строения пути, а также земляного полотна заданы контактные взаимодействия.

Нагружение модели выполнялось в два этапа:

1) моделирование прижатия рельса к подрельсовым опорам с помощью затяжки клеммных и закладных болтов, шурупов, изменения положения монорегулятора, а также учет деформаций, возникающих вследствие собственного веса конструкции

железнодорожного пути (ускорение свободного падения);

2) моделирование нагрузки от подвижного состава за счет приложения распределенных по площади контакта сил.

Граничные условия модели:

1 – нижняя площадка земляного полотна упруго закреплена;

2 – три ограничивающие плоскости пути закреплены как плоскости симметрии.

Нагрузка прикладывалась для случая нахождения колеса между скреплениями как более критичного, имела вертикальную составляющую 149 кН, боковую составляющую 58,4 кН и прикладывалась по поверхности катания с учетом внутреннего бокового контакта. Данный вариант соответствует движению в кривой со скоростью 80 км/ч по наружному рельсу, что представляет собой наиболее жесткий случай нагружения пути.

По боковым граням рельса действует условие симметрии, физически состоящее в запрете перемещений в направлении нормали к поверхности.

Такое же условие приложено по

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перпендикулярной оси к серединам шпал.

На рис.6 представлено распределение напряжений по Мизесу во всей конструкции, на рис.7 – отдельно в подошве рельса, где

наблюдается максимум 203 МПа. На рис.8. представлено распределение перемещений в узле скрепления.

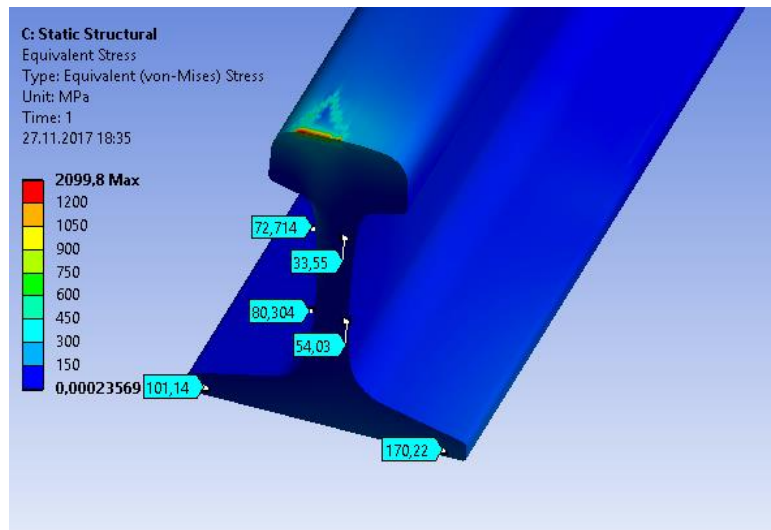
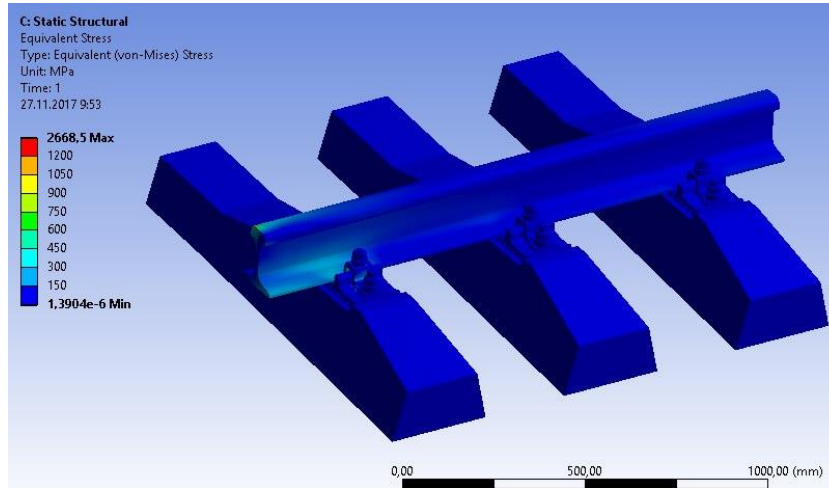


Рисунок 7. Распределение напряжений в участке пути.

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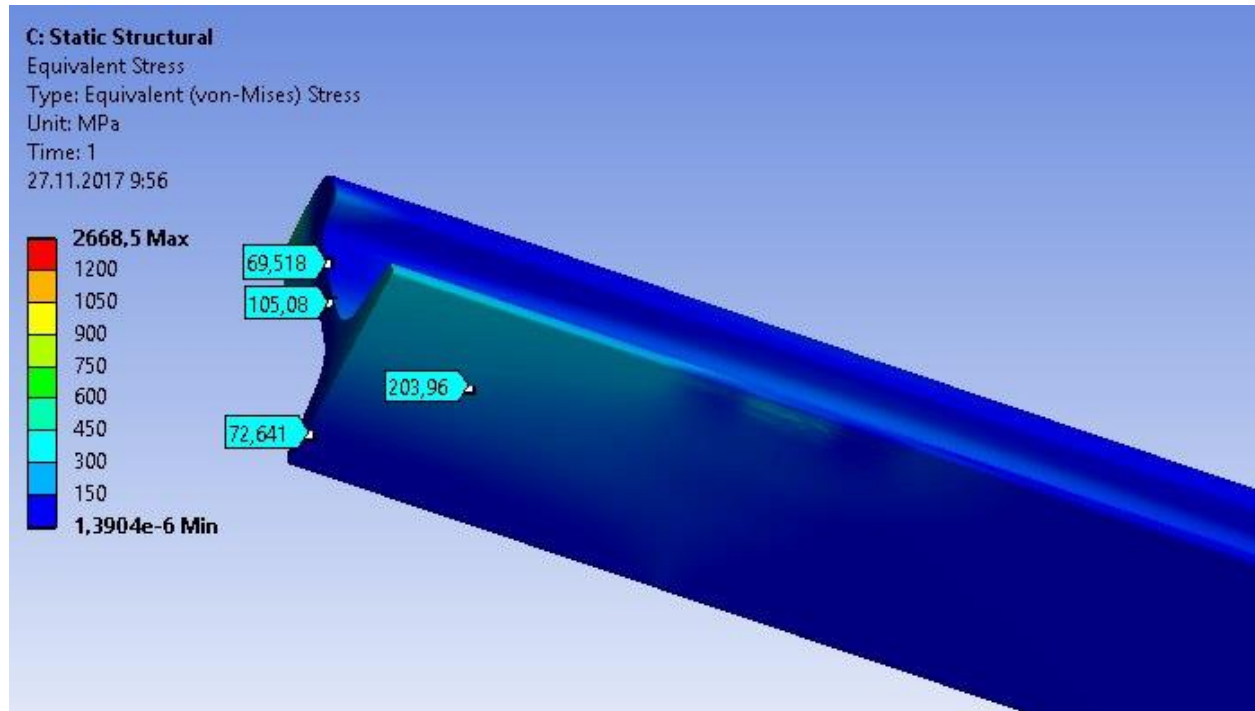


Рисунок 8. Распределение напряжений в подошве рельса.

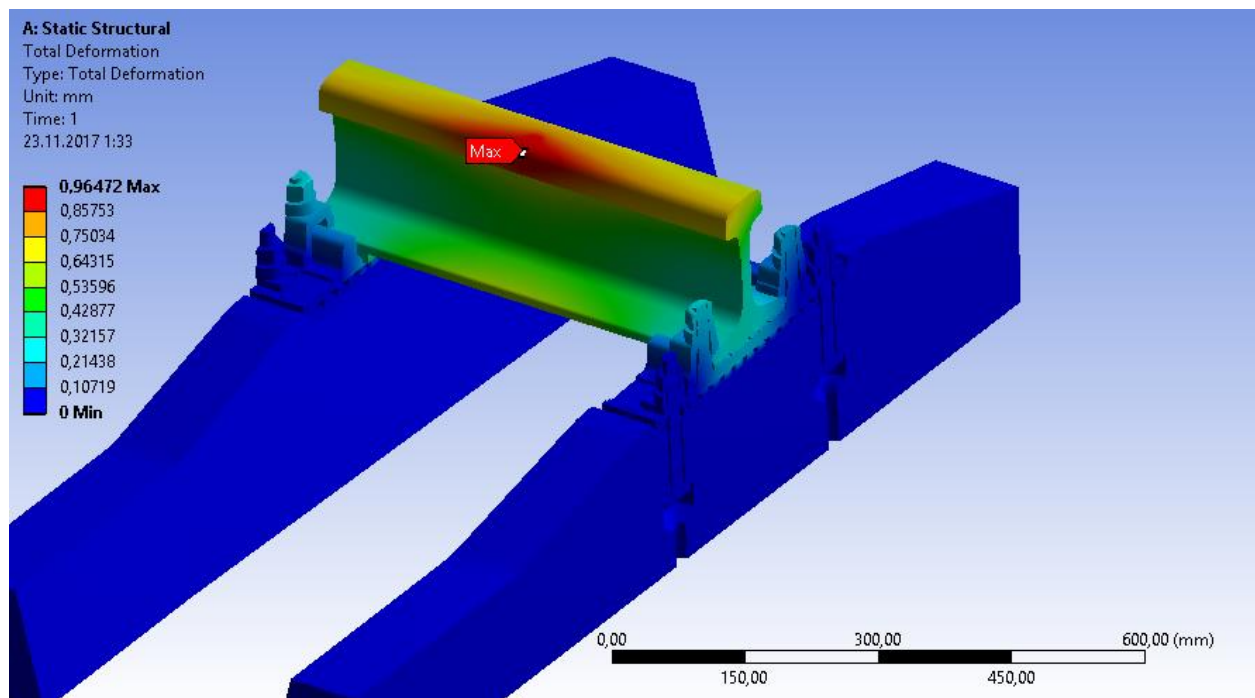


Рисунок 9. Распределение перемещений в модели крепления КБ-65 (показан фрагмент участка пути).

Следует отметить, что данные замеров для данного случая нагружения дают значения напряжений в наружной кромке рельса в наиболее нагруженных сечениях от 87 до 115 МПа, среднее расчетное 101 МПа. Максимальные напряжения в подошве рельса составляют до 203 МПа при нормативе до 240 МПа. Таким образом,

наблюдается хорошая сходимость расчетных данных и опытных замеров.

Данные прочностного расчета передавались в программу анализа усталостной долговечности ANSYS NCode Design Life. Для материалов рельса и креплений использовалась кривая

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Веллера для материала с прочностью 900 МПа, близкого по свойствам к стали Р76.

объему верхнего строения пути. Типовое распределение представлено на рис.10.

По результатам расчета были построены зависимости числа циклов до разрушения по

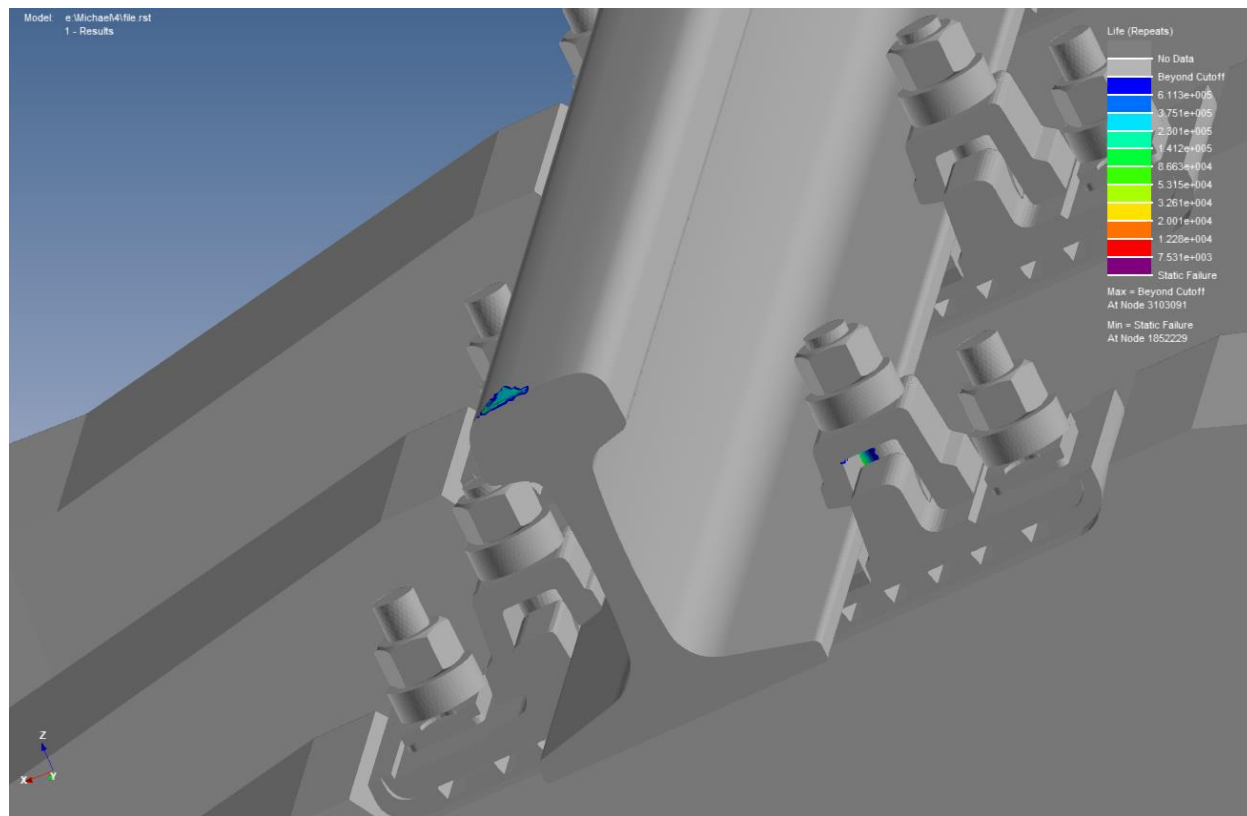


Рис.10. Число циклов до разрушения в программе NCode.

По результатам расчетов большая часть конструкции верхнего строения пути находится в зоне бесконечного количества циклов до разрушения. Исключения составляют зона контакта колесо-рельс, в которой имеет место сингулярность напряжений и оценка долговечности в которой некорректна, и поверхность прижимной шайбы скрепления КБ-

65, показанная на рис.10 справа. Для нее в случае нагружения силой 149,5 кН при боковой силе 58,4 кН число циклов до разрушения составило около 141 000, для подошвы рельса – от 611 000 до бесконечности.

В таблице 2 приведены значения для различных вариантов нагружения верхнего строения прямого пути.

Табл.2 - Различные варианты нагружения верхнего строения прямого пути.

Вертикальная нагрузка, кН	Боковая нагрузка, кН	Напряжения в подошве рельса, диапазон, МПа		Напряжения в шейке рельса, диапазон, МПа	Ресурс для скрепления, циклов
		расчет	замеры		
149,5	58,4	87-115	110	69-105	141000
124,5	19,2	71-87	80	64-82	182 000
130,8	15,3	74-91	84	66-87	167 000

На рис.11.показано характерное напряженное состояние для кривого участка

пути. Сравнение с данными замеров [12] имеет вид, близкий к данным табл.2.

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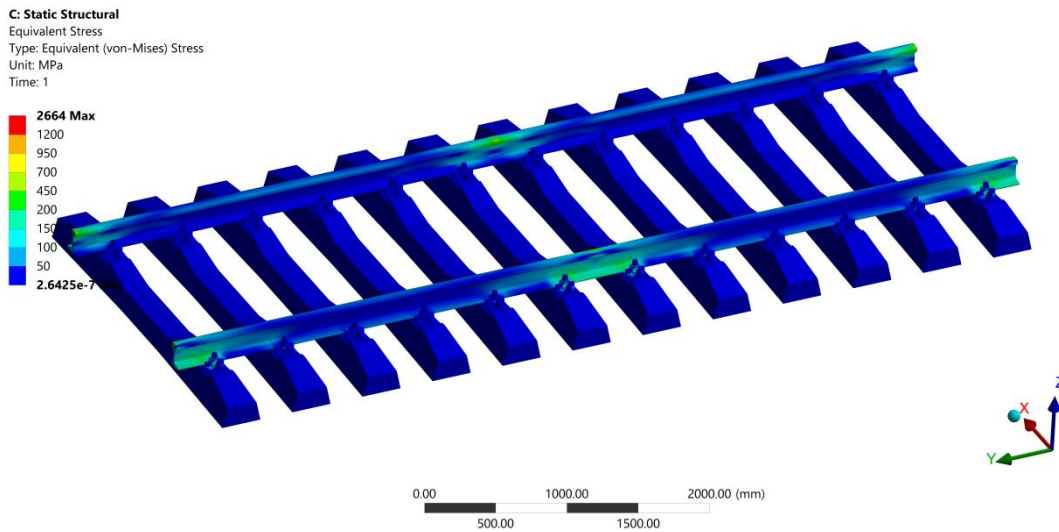


Рисунок 11. Напряженное состояние для кривого участка пути.

Выводы:

1. Разработана и апробирована конечно-элементная модель железнодорожного пути, полностью повторяющая геометрию реальной конструкции пути, а также физико-механические свойства элементов верхнего строения пути и земляного полотна.

2. Проведен анализ напряженно-деформированного состояния железнодорожного пути при воздействии подвижного состава для различных типов промежуточных рельсовых скреплений: подкладочное рельсовое скрепление КБ-65 и бесподкладочное анкерное рельсовое скрепление АРС-4.

3. Получены напряжения и деформации железнодорожного пути, возникающие при воздействии подвижного состава:

4. Проведена верификация конечно-элементной модели и результатов расчета напряженно-деформированного состояния железнодорожного пути с помощью сравнительного анализа полученных выходных данных с результатами тарифовочных и натурных замеров. Сходимость полученных результатов подтверждает адекватность разработанной модели.

5. Расчеты в физически нелинейной постановке могут быть выполнены на следующих стадиях исследований для оценки усталостных эффектов и накопления повреждений в скреплениях и шпалах, для оценки накопления осадок пути.

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SECTION 8. Architecture and construction.

A CHECK LIST OF MEDITERRANEAN PLANTS TO CONTROL EROSION IN TURKEY

Abstract: Soil loss by erosion has been defined as a global problem since the vegetative dispersal diminished in recent years. The erosion is severe in European countries where vulnerability of the agricultural fields has been alarming. Turkey has been experiencing a serious land degradation issue due to erosion with approximately soil loss of $500 \times 10^6 \text{ t y}^{-1}$ and 83.21% of agricultural lands are estimated to be under risk. Also, there is a gap in the literature about how to select the plant species for erosion control and management in Turkey. Therefore, the aim of this study was to create a check list of some erosion control plants which can be planted in Mediterranean region of Turkey. Providing a check list for increasing the density of vegetation against soil erosion can help land owners and managers to maintain the farmlands and forest cover and pioneer decision-making plans. By this way, prospective researches may benefit from the erosion control plant species and easement of their selection process.

Key words: Erosion control in Turkey, erosion prevention, soil degradation, soil loss.

Language: English

Citation: Atasoy, M. (2018). A check list of Mediterranean plants to control erosion in Turkey. *ISJ Theoretical & Applied Science*, 11 (67), 147-152.

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1. Introduction

Vegetation is one of the most important components of the soil. It is essential that the topsoil coverage is a precaution against the erosion. Soil erosion can be defined as “the process by which wind, water, ice, and gravity wear away the land’s surface” [1]. According to [2] the substantive topsoil transformation happens during the flow of water, declining the soil quality, lack of nutrients in the subsoil, and decreases permeability that induces developing run-off and therefore speeding soil erosion.

One of the best ways to decrease erosion is to maintain and improve vegetative cover of the soil. Most of the researchers around the world have been investigating new ways and methods to increase the amount of vegetation by afforestation and land management activities. The fact that the population of the world has been substantially going up fast, many woody lands and green areas have been invaded by human activities. Thus, people have been negatively affecting the nature by deforestation activities, degradation of the soil, and causing to the increase of erosion [3].

Soil loss by erosion has been defined as a global problem since the vegetative dispersal diminished in recent years. For instance, [4] have researched that in Italy, the annual soil loss rate can reach 100-150 t/ha per year. The erosion is severe in European countries where vulnerability of the agricultural fields has been alarming. Forest harvesting, especially, has been implemented before regrowth of young trees causes an increase of sediment yield from a forest catchment. In the later of 20th century, some catchment experiments were done by professional environmentalists to investigate the impact of rising vegetation on decreasing soil erosion [5].

Erosion has been causing a serious land degradation issue in Turkey with approximately soil loss of $500 \times 10^6 \text{ t y}^{-1}$ and 83.21% of agricultural lands are estimated to be under risk of water erosion [6]. Also, there is a gap in the literature about how to select the plant species for erosion control and management in Turkey. Therefore, the aim of this study was to create a check list of some erosion control plants which can be planted in Turkey.

2. Material and Methods

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2.1 Study Area

Turkey is located as a bridge between Europe and Asia continents. The population of Turkey was 74.4 million in 2011 based on Address-Based Population Recording System. The country's surface area, including lakes is estimated 783,562 km² of which 755,688 km² are in Southwest Asia and 23,764 km² in Europe. It is connected and surrounded by three seas; the Aegean Sea on the west, the Black Sea on the north, the Mediterranean Sea on the south. The Sea of Marmara is also compassed within the north-west side of the country. Turkey has a high topography, and there have been 3 levels of vegetation recorded along with the forest belts as broad-leaved deciduous, coniferous, and alpine grass. The country has a forest cover of 22 million ha which is equal to 27% of total land cover. The climate consists of three different types as Black Sea climate, Mediterranean climate, and continental

climate due to country's geographical location and topographic features [7].

3. Results and Discussion

The majority of soil erosion occurs due to the transportation of the topsoil by active gullies, concentrated water flow, rills, and soil pipes [2]. In contrast to these erosion types, the vegetative cover with deep root plants holds the biomass and also has highly beneficial soil particles which aggregate topsoil. More importantly, an intensive root disperse enhances the soil strength and these high dense rooted-plants in topsoil lead to create hedgerows preventing productive topsoil particles from running off (Figure 1) [8]. Dense root network and high vegetative cover on soil surface can be also observed in grassed waterways which provide substantial soil cohesion, limits surface wash, and prevents channel incision (Figure 2) ([9]; [1]).

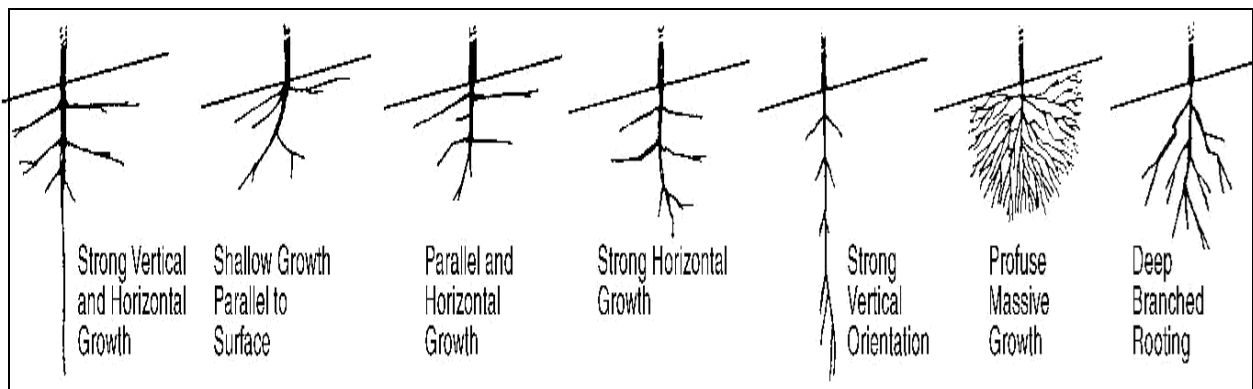


Figure 1. Types of root growth and development [1].

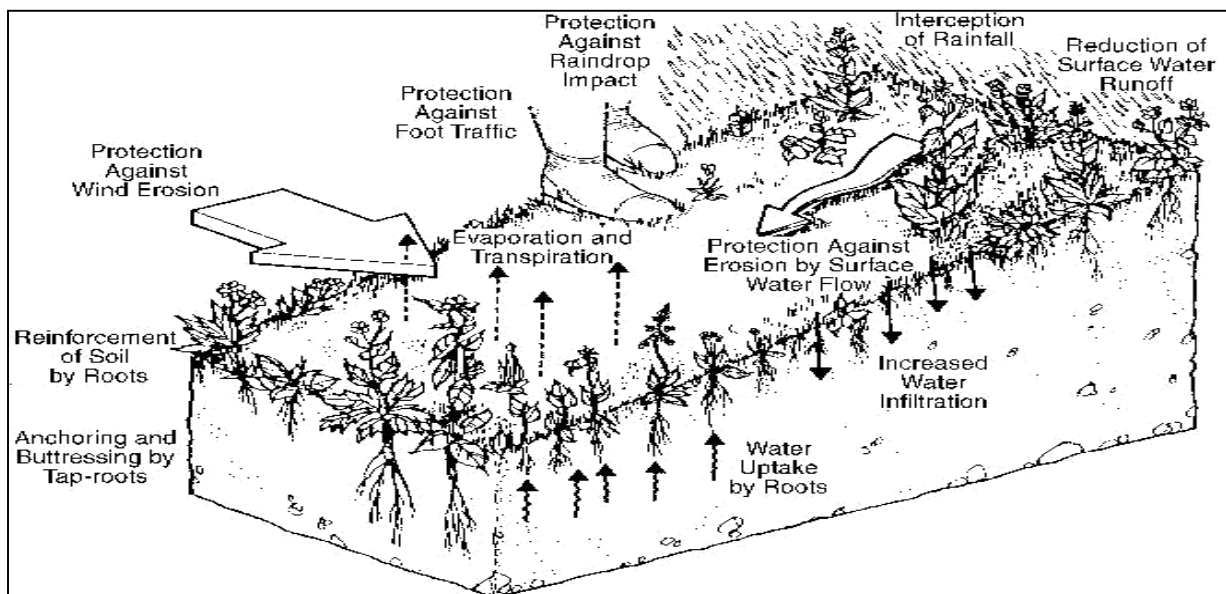


Figure 2. The influence of vegetation on soil erosion [1].

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The probability of erosion is very low if the range of vegetation on a land is >30%. Especially on channels, vegetation type has a significant effect on sediment flows and soil loss. The sediment flow causes to the physical, chemical, and biological hazardous results in North America 16 billion dollars each year and studies have not sufficiently emphasized the economic hazard of the stream channel degradation [10].

Furthermore, one major factor leading soil erosion is human-effects such as deforestation, traditional tillage instead of applying conservational methods, accelerating numbers of construction activities. Unconscious agricultural methods particularly play an important role on accelerating soil erosion amount. Human activities may induce soil erosion zones to reveal and one of the best examples of this can be defined as farming. Once indigenous vegetative cover is altered by non-native species, the type of soil, its productive minerals, and biomass considerably reduce due to replacement.

Therefore, any alteration on vegetative cover might result with soil loss and less sediment flow [11].

2.2 Selection of plant species

The type of species in a vegetative cover is very important to restrain the degradation effect of soil erosion. The aggregate stability, infiltration rate, soil erodibility factors are directly influenced by the plant selection and plant disperse. A group of plant species can respond the erosion more effective than a single type of woody or herbaceous plants existing in the soil. Mixture species are more efficient to fill the gaps in the soil with adapting the environmental alterations and overcoming the difficulties. While placing different types of plant species in vegetation, mixtures should be relevant to plant reactions, their competitive behavior, erosion resistance, and statements of success in the soil ([2]; [1]). Based on the information listed above, some Mediterranean plant species which can be used to control soil erosion in Turkey are listed in Table 1.

Table 1. List of plants and the potential of their root system to increase the erosion resistance of topsoils[12]

Name of the Plants	Vegetation Type	RSD (0-10 cm topsoil)	Erosion Potential	Reducing
<i>Avena bromoides</i>	Grass	0.3.10 ⁻¹²	Very high	
<i>Juncus acutus</i>	Reed	2.72.10 ⁻⁸	Very high	
<i>Lygeum spartum</i>	Grass	2.41.10 ⁻⁷	Very high	
<i>Helictotrichon filifolium</i>	Grass	1.61.10 ⁻⁶	Very high	
<i>Plantago albicans</i>	Herb	1.10 ⁻⁵	Very high	
<i>Brachypodium retusum</i>	Grass	8.10 ⁻⁴	Very high	
<i>Anthyllis cytisoides</i>	Shrub	2.29.10 ⁻³	Very high	
<i>Piptatherum miliaceum</i>	Grass	0.01	Very high	
<i>Tamarix canariensis</i>	Tree	0.01	Very high	
<i>Stipa tenacissima</i>	Grass	0.03	High	
<i>Retama sphaerocarpa</i>	Shrub	0.03	High	
<i>Salsola genistoides</i>	Shrub	0.03	High	
<i>Artemisia barrelieri</i>	Shrub	0.07	High	
<i>Dorycnium pentaphyllum</i>	Shrub	0.11	Medium	
<i>Rosmarinus officinalis</i>	Shrub	0.15	Medium	
<i>Atriplex halimus</i>	Shrub	0.18	Medium	
<i>Nerium oleander</i>	Shrub	0.19	Medium	
<i>Dittrichia viscosa</i>	Shrub	0.19	Medium	
<i>Fumana thymifolia</i>	Shrub	0.25	Low	
<i>Thymus zygis</i>	Shrub	0.32	Low	
<i>Teucrium capitatum</i>	Shrub	0.32	Low	
<i>Limonium supinum</i>	Herb	0.37	Low	
<i>Ononis tridentata</i>	Shrub	0.45	Low	
<i>Thymelaea hirsuta</i>	Shrub	0.50	Very low	
<i>Phragmites australis</i>	Reed	0.60	Very low	
<i>Bromus rubens</i>	Grass	0.71	Very low	

* RSD = relative soil detachment rate for the 0.10 m thick topsoil below the plant crown (0 = very high erosion resistance, 1 = very low erosion resistance), 0 < RSD < 0.01 = very high erosion-reducing potential, 0.01 < RSD < 0.10 = high erosion-reducing potential, 0.10 < RSD < 0.25 = medium erosion-reducing potential, 0.25 < RSD < 0.50 = low erosion-reducing potential, RSD > 0.50 = very low erosion-reducing potential.

While observing the soil loss in a field, it is essential to benefit from the Revised Universal Soil

Loss Equation (RUSLE) program. Also, evaluating a sediment yield and susceptible areas, soil loss

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equation is very significant. In addition, cover crops and the climate are one of the main influencing factors of soil loss and degradation. For example, the Yellow River Basin has been investigated by many scientists to figure out and predict the reason of soil degradation. The selection of a land cover is associated with the prediction of precipitation rates and temperature alterations in a sediment yield. Thus, to decide which plant species to implement in sediment field impacts the amount of soil loss and erosion [13].

2.3 Managing the vegetative cover

Soil erosion and its effectiveness have been increased since local farmers have been applying the conventional methods while cropping. This situation induces to severe soil loss and disturbance with negative economic impacts. As technology has evolved and improved, scientists are providing new contemporary tillage and protection methods to sustain the productive crop lands, forests, and soil nutrients [14].

The developing technology has some substantial negative impacts on maintaining the vegetative cover due to lack of investigations. Poor reforestation methods are declining the number of trees which hold the topsoil and implement high endurance against soil erosion. Also, low ground cover might decrease the friction rate of soil particles, thus, it causes to soil degradation in sparse vegetative dispersal fields. In addition, agricultural fields have the majority of the soil erosion issue the fact that the maintain cover is tilled by conventional methods rather than conservational tillage system [2].

One of the other effects that associate with controlling vegetative cover is human disturbance [7]. The plant coverage preventing soil degradation is explicitly damaged by people. For Instance, Wang et al. (2008) defined human disturbance on forest as 'Ecological Stress', and the Ecological Stress is classified into Mortality and Vitality Stresses. The Mortality factors such as wildfire and contaminating the soil might be reduced in case of early detection of deforestation. However, the Vitality Factors could be diminished by realizing before the vegetative cover completely disappears [15].

Deforestation which is caused by logging is another reason of human destroys. Many young forests are cut down to benefit from the woods and the productive soil is used to settle on. The conventional logging and Reduced Impact Logging (RIL) led to wide field scale downstream and on-site soil loss. The off-site loss can also raise the amount of soil loss by increasing pollutants, sedimentation, and turbidity. In addition to that, the on-site loss causes to intensify the chemical and physical fertility in the soil. The majority of the tropical areas are

inconveniently harvested by local forest managers; therefore, controlling the management systems after the feedback loop during initial planning and applications of forest operations plays an important role to reduce human alterations to the vegetation [16].

Furthermore, agricultural management practices significantly amplify the yield of production during the maintenance of vegetative cover. For many years, farmers have been practicing conventional farming methods to expect good harvest. However, today, sustainable controlling methods of agricultural harvesting came into prominence due to soil degradation and erosion. These agricultural technologies can be also embraced by local farmers to improve the income and productivity of farming sector [17].

The protection of biomass in the soil is the other main reason of controlling the vegetation. In Mediterranean environments, the topsoil biomass might be damaged due to wildfire or overgrazing, ultimately, the cover crops which significantly decrease concentrated flow erosion with dense roots may disappear [14]. For example, Baets et al. (2007) measured the Root density, root length density, and root diameters of 26 Mediterranean indigenous plant species to estimate the erosion reducing rankings by corresponding with soil erosion rates. As a result of their study, they found that by increasing the number of plants with high density roots and also managing their plantation, the hazard of concentrated flow erosion and its risk substantially diminished in Mediterranean local fields.

The topography of the land with vegetative cover is one of the most significant environmental effects that alter the implementation of cover crops and controlling the soil erosion. Indeed, steep slopes which have arid or semi-arid soils and sparse vegetation are at the highest soil erodibility risk. To afforest these fields which are inconvenient for farming, contemporary methods have been applied in order to revitalization. Vegetables are one of the most common green cover to stabilize these high steep slopes. An increasing demand on vegetable production has revealed in Southern Asia, however, mountainous environment restricts the maintenance of vegetation. The farmlands built on slopes bigger than 30° result with serious soil erosion which declines the eutrophication of waterways, soil fertility, and crop fruitfulness. Thus, lack of vegetative cover management practices damage to environment, public health, and the economy ([17]; [18]).

In recent decades, changing the agricultural plants into indigenous vegetative cover have induced to replacement of topsoil, as a result, the top soil mass movements and sedimentation have significantly increased. In fact, this environmental cover conducts the scattering and dispersing the

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erosion power. Ultimately, replacing the plants for various aspects can also result with detrimental circumstances in nature [19].

3. Conclusion

The management activities including conservational tillage, afforestation, and convenient land preference for establishments have a significant impact on controlling the erosion. Since the popularity of conventional management systems have diminished, the new technological methods have been used by local farmers, forest managers, and householders. These techniques are demonstrated by experts from various fields to decline the soil degradation and soil erosion rates. However, there is a lack of knowledge in Turkey regarding conservational tillage and afforestation techniques, and therefore, a check list of erosion control plant species can be used for these management practices.

Agricultural management systems which consist of sustaining the productive soil nutrients may also decrease due to lack of farm fields. This decline leads to a substantial alteration of vegetative cover. Without tillage and management practices, the soil changes into a non-agricultural land with excessive moisture and less nutrients. In contrast, by conservational tillage systems, rotations, contour farming, grassed waterways and many controlling methods, the farmlands might be transformed into more productive and healthy soils. For instance, application of cover crop systems considerably protects the topsoil from scouring, rain intensity, chemical fertilizers, and topsoil erosion risks. Besides it is a healthy and natural method to proceed on farmlands.

Furthermore, the afforestation practices significantly minimize the soil disturbance and soil erosion in steep slopes and lands which are prone to degradation. The vegetative cover and diversification of the plant species increase, the enhancement of soil

heterogeneity developed, thus the organic matter amount in the soil rises [2]. The precautions related to prohibiting the logging activities also help young forest sustain in the future. Old trees which are planted in mountainous lands buffer the surface runoff, sedimentation, and topsoil movement. Simultaneously, it induces to keep the water resources clean and decrease the turbidity in the water. As a result, the vegetative cover protects the productive soil, inhibits the land sliding on steep slopes, controls the rain drop energy, and conserves the fauna on the land.

To increase the benefits of vegetation against soil erosion, people might be educated to preserve and save their environment. In addition, new technological methods can be implemented on critical areas to manage the vegetative cover and sustain the green environment in the future. By this way, soil erosion may be taken under control and soil loss and degradation could be restrained. Instead of building the farmlands on the plains, construction works are established on productive and valuable lands. In order to stabilize the base of a building, the soil is considered to be strong enough to weight the construction. If farmlands are used for construction works, then soil erosion is inevitable because of disturbing the soil and vegetation.

Most of the researchers around the world have been investigating new ways and methods to increase the amount of vegetation by afforestation and land management activities. The fact that the population of the world has been substantially increasing, many woody lands and green areas have been invaded by human activities. Providing a check list for increasing the density of vegetation against soil erosion can help land owners and managers to maintain the farmlands and forest cover and pioneer decision-making plans. By this way, prospective researches may benefit from the erosion control plant species and easement of their selection process.

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SECTION 12. Geology. Anthropology.
Archaeology.

NEW ROCK PAINTINGS OF BEKLARSOY

Abstract: Given article devoted to the research of new monument of rock paintings in the territory of the Nurata mountains. Chronologically these petroglyphs belong to different stages of ancient history (from the silver age to nowadays). Among rock paintings of Beklarsoy not only many personages of people, different wild and domestic animals, but also a lot of different geometrical signs can be seen. The remarkable thing is that some rock paintings also made with ochre were found among Beklarsoy pictures.

Key words: Uzbekistan, rock art, Beklarsoy, Kizkurgan (kurgan of girls), mountain goat, horse, camel, dog, horseman, ochre color, glasses shaped signs, Arabic and cyrillic letters.

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Introduction

The monuments of the rock paintings embodying the example of a cultural heritage in the world historiography are significant as the primary source for studying the spiritual experiences, art, religious beliefs, business practices, daily life styles, social order, and ethno cultural problems of hunters and nomadic herdsman. In this context, the rock paintings allow the ancient hunter and socio-economic life of nomadic cattle-breeders to restore their perceptions of the world and their religious understanding.

The current world history is being widely used by modern scientific research institutes to draw attention to the rock paintings as a historical source, to classify them on a regular basis, to identify the role of local and global civilization. In the system of historical development and culture of the human society, rock paintings are one of the primary sources

of importance in imagining human art, religious beliefs, everyday lifestyles, farming practices, occupations and spiritual experiences.

Materials and Methods

This historic-cultural monument is located 1 km north-west of the Beklarsoy village of Kushrabot district of Samarkand region, southwest of the country, 40°31'01.2 north latitude and 066°22'22,6 east longitude and 840-850 ocean depths meters high [1. p. 5-8]. As a result of our research at Beklarsay, these rock paintings have been divided into two groups: 1. Violet images; 2. Paintings with natural paint (arrow). The paintings on natural paint (ochre) are painted on the right bank of Beklarsoy on the side walls and ceiling of the small stone "Kizkurgan" at the height of about 40 to 50 meters above the riverbed (Figure 1).

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Figure 1. The small stone "Kizkurgan".

These types of rock paintings are rarely seen in our country. Such monuments are the Zarautsoy of our country [2. p. 28; 3.], Siypantosh [4. p. 71], Sangijumonsay [5. p. 153-154; 6. P. 35-37], Oksakalotasay [7. p. 22-24; 8. P. 19-22]. This stone porch in the Beklarsay valley (belt) is called by the local population as "Kizkurgan". The entrance width is 7 m in length and 5 m in length, narrowing inwards and at the end of the tower is 2 m in width, height is 1.5 m - 2 m. The images here are dark, light red, orange and black. The pictures are varied in variety, including the man, the mountain goat (?), The various patterns, the snake-shaped stripes, and the short curved lines. There are also sharp lines drawn from the circle, half circle, and middle, as well as many tedious, indefinite, obscure images. At the bottom of the sash you can see a few inscriptions in Arabic letters.

The pictures are made on the wall of the sidewalk, mostly on the right side. The man's paintings depict the shape of the letter "F" in the

Cyrillic alphabet, in the usual schematic style, whose head is small, whose hands are on both sides, and the legs are wide spread.

The photographs also contain a variety of characters, which can be the product of an ancient hunter and nomadic cattle peoples' religious and celestial concept. In one of the same drawings, the four corners of the four sides are drawn on one side, drawing many geometrical patterns. In another example, four or five geometrical patterns are depicted in a number of compositions. In addition to these images, there are also three long series of long-drawn short streaks.

The other similar images are added by one side of the image. This is a reminder of the way in which a road or sidewall is tied together. There is also another interesting picture here, with two underlined circles (wheeled) and a straight line between them (Figure 2). These images may have reflected the idea of the ancient artist about the world.

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Figure 2. Picture with two underlined circles (wheeled) and a straight line between them.

As mentioned above, there are also black-and-white images in the pictures, which can be drawn not by natural color, but by means of coal or some wooden remains. There are also many unclear and distorted images in these pictures.

The second group of images in the Beklarsay area were painted on gray-colored surfaces of

granodiorite rocks. Their varieties and content are diverse, such as hares, mountain goats, horses, camels, dogs, horses and camels, riders, stamps, signposts, records in Arabic, broken or broken images that are indefinable. Also, there are other compositions, including hunting scenes, on these rocks (Figure 3).

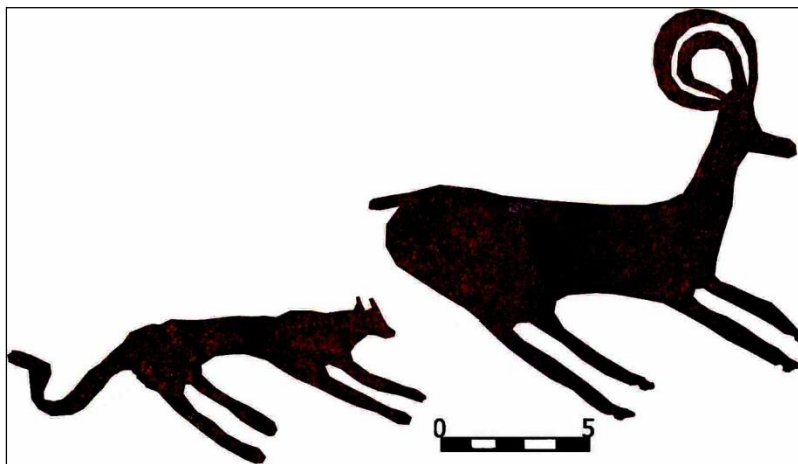


Figure 3. Compositions, including hunting scenes.

Among the images on the Beklarsay rocks are pictures of riding horses, especially horses with saddle and sails, while chaos is a horseshoe tuck, although legs are not depicted. However, there are other images of different content on the rocks. They are handcrafted by ancient artists. The technique of drawing and machining of these images is diverse, they are shaped by shaving, shade, contour and simple schematic methods. The pictures are made in

different sizes, from 15 cm to 60 cm. The degree of their survival varies widely, and some images are damaged as a result of wind, rain, or frostbite.

Among the images of the Beklarsoy rock paintings, there are also some Arabic inscriptions. Most of these inscriptions are written down or rocked by local people today near the rocky places known as the "sacred place." When we try to read some of these

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in the course of our study, we can see the names of the Qur'an or the Koran.

As a result of complex researches conducted in Beklarsoy and its surroundings, other archaeological monuments of different times, apart from rock paintings, were mapped on the map [9. p. 18-28; 10. P. 82].

Conclusion

Above all, it should be noted that Beklarsoy rock paintings on the southern slopes of the Northern Nurota Ridge are the most important historical sources and elegant artifacts from our ancient

ancestors. It is undeniable that these rock paintings are an important source of information about the history of our ancestors, their everyday lifestyle, religious, cultural and spiritual life. One of our main tasks is to ensure that this historical and cultural monument is preserved as it is in its present state, its comprehensive study and bringing it to the next generation. During our research on Beklarsoy photographs, it has been discovered that they belonged to the Bronze Age of the ancient peoples inhabiting the region. Research on the Beklarsoy rock painting continues.

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SECTION 18. Culturology.

SYNCRETIC FEATURES OF PERSON'S MORAL-AESTHETIC IDEAL: DIACHRONIC AND SYNCHRONIC APPROACH

Abstract: This article discusses the ethical and aesthetic ideal of the formation of the diachronic and synchronous interpretation of the ethical-aesthetic ideals of the whole society and the ethics-aesthetic ideology of the person was analyzed in syncretic terms.

Key words: personality, ideal, morality, aesthetics, synchronicity, syncretism, diachronicity, purification, correction.

Language: English

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Introduction

When analyzing social-historical, spiritual-moral development of person and society, history of social practice, we meet ideals, ideas, goals and social models created in short historical period. The past of humankind proves that the struggle in forming general ideas, common aims of peoples created complete ideological area, single historical place. Due to diachronic and synchronic approach in the past, active strive of people to life closely connected with ideals, creation of definite institutional systems and their persuasion, belief and faith were determined. Philosophical researches without syncretic features were differentialized, society and person, person and state's relations were explained by different ideals.

Ideal is the pure philosophical category, we know that there were researches in different philosophical directions and social systems, created theories, classified according to definite regime "commands". The term ideal is known as effective epistemological, ontological, axiological features of research by several philosophical works (for instance, "Critics of pure intelligence"). Scientific-pedagogical aspects of ontological and parsiologic basis of coherence of ideal with person, constructivity of his life, spiritual essence.

Materials and Methods

Global (on ecological culture, moral-spiritual degradation of person) problems due to influence of person and society relations studied in the frame work of philosophical subjects. Scientific researches connected with person's upbringing which carried by either philosophical, or pedagogic, legal aspects have to studied on person's factor, his value. The single person can forget that moral-aesthetic ideal hasn't syncretic features, investigate and its practice can lead to escalation of present ecological problems by one-sidedly developed persons, utilitarian relations to society and nature.

Reforms on social life of person and society carried in our state is assessed as theoretical model of human, patriotic principles- the movement to unite goals and ideals in one system forward to social ideal citizen's state. Nowadays marginal ideal and values formed on the basis of last century's ideology have changed into such human values as priority of law, assent of people formed as demands of citizen's society. Some problems on the human factor, reassessment of moral-aesthetic values, the position of moral-aesthetic ideal of youth, motives of development, new horizons of moral-aesthetic ideals in the period of globality, inner system of developing

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ideal, determinants of development and studying the factors were defined as the actual ones.

Differentiation of moral and aesthetic ideals, their separately analysis as types of social-spiritual ideals of last century is one of the rational subject paradigms. Results of differential studying the moral-aesthetic ideals are “not the opposite of conclusions and justice of their time, but they are complement each other” [1.50]. Person is witness of long evolution of differentialized thoughts as a result of diachroni approach in forming moral-aesthetic ideals. According to conception of emanation, the imperativity and enjoy in moral thinking in the first substance of essence (moral and artistic-aesthetic) of person is considered as syncretic phenomenon. We notice it in “Avesto” which includes first moral-aesthetic feelings, thoughts. “... according to Zoroastrism doctrine, seven elements of nature: fire, water, air, soil, plant, animal and person were created by God and they have divinity and sanctity. Person is the highest among them and that’s why he must care of other beings: soil must be productive, clear up air and water, redouble useful plants and animals, it was person’s duty” [2.12]. Outset of two branches which has syncretic essence was formed. Feelings and moral thinking of person are reflected as a unit in ecological relations. In antic period (in China, India and Central Asia) the world was a single scenery and nature-person-god were interrelated in it. The image of definite person wasn’t clarified. Power of nature has the images of person and they were sacrificed. Persons and sacred forces have a unit syncretic essence. The evolution of forming moral-aesthetic ideal proves the conserving of “Avesto” in East and West philosophical ideas and syncretic essence of person’s moral and aesthetic ideal.

During development of rational thinking of person about ideal, quality of creativity, the ideal of first person, pure genuine image which differentiated from exterior world was formed. As German philosopher E.Cassiser noticed, simple cosmology has mixed with simple anthropology. This historical reality firstly met in thoughts about ideal of Greek philosophers. In particular, Platon tried to explain all reality, distinction, feature, even conclusion from the point of ideal idea, perfect eternity. He considered that imagination, notion in the mind of person have features of eternity, distinction, absoluteness. So, ideal image includes world of ideas as copy of definite things and events in reality [3.98].

German philosopher I.Kant connected “issue of ideal” with moral –aesthetic perfectness of person on developing thoughts about person’s moral-aesthetic ideal: ideal is “interrelated with aims and striving to reach it”[4.465]. Philosopher denoted that both moral ideal and aesthetic ideal should be searched in thinking, intelligence, not from reality. There ideal appears not as ideas of empiric reality, but as logical unity of different image, notion and feelings in

imaginative world. Kant said “when the creator knows how to do, how to conclude and what to do before making the beauty, it isn’t an art itself. Besides, even the knowledge is perfect the art cannot be created in a short time, the skill is enough for it” [5.181]. Creative person makes his work not for definite goal and ideology, the product which doesn’t unite the national and general humane, far from natural unity. The scholar F.Bozorova said: “when person is sure to have only knowledge and skill in the art, he can create only art work without laws of beauty. When person mixes knowledge and skill, national and panhuman, can create the real art. So, event which rise spiritually, moral-aesthetic features have to be felt from whole heart” [6.17].

Moral-aesthetic ideal presents artistic images of art as “absolute”, “ending” and “directed to goal without aims”. Generality (normative qualities) and individuality (character qualities), integrity and partiality, ethics and freedom, essence and reason, necessity and eventuality are denoted as ideal images. So, beauty in art is considered as ideal. We can conclude Kant’s thoughts about person’s moral-aesthetic ideal as the following: firstly, the notions of idea and ideal by Kant are directed to serve for proof the conception “inside” based on the theory a priori; secondly, events which rise person morally-culturally, syncretic ideal’s shaped and essential influence as art works; thirdly, when moral and aesthetic ideas combine the integrity; fourthly, idea and ideal are not defined by person’s life, moral criteria’s and aesthetic imaginations, defined by thinking legitimacy, activity of intelligence; fifthly, when person’s moral-aesthetic ideal is determined, aesthetic pleasure gets rid of shortcomings.

After I.Kant’s critic thoughts, there are several syncretic thoughts there, but when the substantial-economic sphere of development is actual. The relation of person to nature is utilitarian and hedonic. The most suffering of XX century is moving of person’s ideal from syncretic state to differential state. Every state created person’s upbringing, reparing and theoretical genesis as ideal image (majority of them imaginatory) through ideological machine. Moral and aesthetic ideals of person are obeyed to definite models, household demands. According diachronic approach the absence of single model, general spiritual ideal in person’s upbringing, moral-aesthetic ideal with syncretic feature became the object of pedagogical, axiological, philosophical researches far from thinking and culture.

Nowadays evolutionary process is observed in social life, i.e. it is connected with early development period of morality and aesthetics, then disappearance of this connection and its regeneration on a new basis” [7.27]. Moral-aesthetic ideal as synthetic phenomenon on their nature came up to systematic-integrative approach for modern ethics and aesthetics and “it’s time to admit [8.12] the actuality and

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opportunity of philosophical basis of metaphysic and practical unity of moral-aesthetic ideal. Spiritual development and cultural raising “need synthetic conceptions” [9.334].

Anthogonism of thoughts in synchronic studying moral-aesthetic ideal, various researches assort with differently issues in syncretic and synthetic features of person’s life. In syncretic approach the presence of knowledge, their interinfluence is defined and analysed. Analyzing by syncretic approach means analyzing in horizontal line among definite time science spheres which solve the problems of moral-aesthetic ideal. The person’s moral-aesthetic ideal is analysed in ontological, epistological, axiological and pedagogical spheres, ideal was studied in different parameters.

Culture with ethics-aesthetics with both ethics and aesthetics dominant placed in the first place in historical-cultural period [10.6]. Nowadays there are two objective tendencies in social thinking in this postmodernism period. One of them includes the relation between ethics and aesthetics; other consists of aesthetics of ethics. In the present time moral-aesthetic development of person has admitted as personal system. It in its place admitted as building saving bridge of real moral culture of definite person and society.

One of the actual problems in modern pedagogics is complex forming of moral-aesthetic ideal in growing children, didactic devices of moral upbringing and results should be directed to this syncretic moral-aesthetic upbringing: firstly, moral advice, usage of irrelative didactics have lost the influence to growing generation. Today’s pedagogics searches new methods of moral and aesthetic upbringing of children, syncretic imagination about beauty and blessing, through correlation and unity. Pedagogics reled its peculiarities or early aims and lost the complex forming. Pedagogic technology has influenced and moral-aesthetic ideal for simple person’s upbringing has risen. It is known from pedagogic researches that it encourages moral, behavior and aesthetically directness, creativity of children.

As social-cultural phenomenon of globality, actuality of unity of moral-aesthetic ideal of person in sport became the object of philosophical analysis rather than pedagogical problem. Nowadays sport is becoming the most effective devices of moral-aesthetic upbringing in forming moral-aesthetic features, feelings, tastes and spiritual needs of persons. Sport can be the entertaining, upbringing function and at the same time can be the foundation of creating new pedagogical-praciological upbringing theory for person’s upbringing.

Moral-aesthetic ideal with perfectness unites the imagination power about moral and aesthetic culture; it influences and determines person’s spiritual growth. Such aesthetic values as harmony,

integrity, conformity, symmetry, balance, emphasis and others are reflected harmoniously which are defined by micro and macro surroundings influence. Undetached, paired moral-aesthetic ideal in spiritual-ethical world of person can be met in inter exchanging. For instance, beauty demands the unity of moral criteria and symmetry in person’s face. But this pair cannot be met as a unity in every person and his thinking. There morality and aesthetics are united.

Structure of moral-aesthetic ideal includes all values of architectonics and in its place it is the structural components of axiological thinking system. The components of social thinking are aesthetic and moral thinking, they have dominant signs- “ideals” and they help to form the personal outlook. Aesthetic ideal as the highest value is defeminized relations and needs of object. For instance, created art is the same.

Moral ideal is limited in object and subject relations. “When is spoken about structure of moral-aesthetic ideal and spiritual values are defined objectively, it shows truth, blessing and beauty” [11,269]. Undoubtedly, moral-aesthetic ideals include antonymy, i.e. spiritual and substantial, wishful and presence, constructiveness and destructiveness, rationality and emotionality. The constructive integrity of process concludes moral-aesthetic image as an ideal.

A.Erkaev who studied the unity of person’s moral-aesthetic ideal said, “.. aesthetic categories as moral categories are paired and alternative: beauty and hideosity, tragedy and comedy, highness and pettiness. Highness and pettiness in aesthetics first of all, defines person’s high ideals, wishes, targets, heroic or vital strivings, tricks, highness or naivety, cowardice and their assessments. So tragedies belong to higher genres and comedies to ignorable genres” [12.134-135].

Conclusion

Present approach to the problem of moral-aesthetic ideal carries out the synthesis of collected knowledge about two types of ideal and philosophical-constructive approaches. Though the presence of relatively sovereignty and inner contradiction, moral and aesthetic ideals have the similarity on general vectors: firstly, hey reflect the main directions of spiritual-ethical development; secondly, it shows the valuable features, society and definite person’s benefits and needs.

From the analysis of two types, synchronic and diachronic approaches and syncretics of moral-aesthetic ideals, generalizing the thoughts about moral-aesthetic ideal’s nature it can conclude the following:

Firstly, moral-aesthetic ideal reflect objective essence with beauty and harmony, thoughts about

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ideal's nature through notions of blessing and goodness;

Secondly, moral-aesthetic ideal defines person's moral-imperative, aesthetic-sensual relations to whole essence, where the process of creative recognition is carried out. These syncretic ideals serve to form the whole system as architectonics;

Thirdly, moral-aesthetic ideals have a particular place in widening and changing the axiological thinking of person, it includes the components (blessing and misdeed, beauty and ugliness) about person's perfectness as moral-aesthetic ideals and define the choosing model of persons;

Fourthly, moral-aesthetic ideal direct creative energy to creativity, it encourages the universal person's striving –such synergetic character as self-perfectness. Moral-aesthetic ideals are the unity of moral and aesthetic experience of all social groups

and periods. Moral-aesthetic ideals in the principles of humanity are the bases of person's comprehension beauty and blessings, the highest stage of assessment society and person;

Fifthly, moral-aesthetic ideal of person's cultural-spiritual function is the highest, it is the innovational idea in sport, art and new pedagogic upbringing theory;

Sixthly, the actual sphere in present structures of social thinking is ecological thinking and ecological culture. The spiritual bases of reflecting moral-aesthetic ideals of person in reality are ecological thinking and culture. For example, ecological factors influence ideal, modeling point of moral and thinking, eco-ethics, ethicology and aesthetic thinking causes to form eco-aesthetic relations. Development of moral-aesthetic ideal of person, presence of general humanity or real presence is shown in loving the nature.

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ESTIMATION OF THE INFLUENCE OF MUD VOLCANOES TO THE FORMATION AND ECOLOGICAL CONDITIONS OF LANDSCAPES (ON THE PATTERN OF SOUTH-EASTERN PART OF THE MAJOR CAUCASUS)

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Abstract: The article is devoted to the study of the characteristics of landscapes formed in territories of wide spread of mud volcanoes in Azerbaijan. It was found that mud volcanoes are mainly distributed in mountain-semidesert and desert landscapes, complicating their internal differentiation. Various structural and functional properties, relief, geological age, lithological and geochemical composition of mud volcanoes contribute to the formation of new types of landscapes. In addition, some assessments were made to identify the potential hazards and risks to the environment, as well as human health and life related to the geochemical properties of volcanic landscapes located at various hypsometric heights.

Key words: landscape, mud volcano, geochemistry, clarke, breccia, trace elements, concentration.

Language: English

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Introduction

The purposes of the investigation consist of estimation the distribution of the migration and concentration of macro and microelements characterized for landscapes of widespread mud volcanoes in the south-eastern part of the Major Caucasus and surrounding areas, identification of specific geochemical characteristics of landscapes spread across different altitudes, generally investigation impacts of geochemical conditions on environment, on living organisms, and in particular on human health due to volcanic activity.

Description of the study

Some mud volcanoes spread in different landscape types across investigation area and their breccia, rock, plant and water samples have been chemically and spectively analyzed to estimate geochemical conditions of landscapes of the investigation areas from the ecological point of view. Distribution method of chemical elements due to their migration and concentration has identified by the related and comparative analysis method of landscape components in areas with different biological climatic characteristics.

The map of «Ecogeochemical landscapes of Shamakhi-Gobustan» has been prepared based on A.I. Perelman's (1972) related and comparative analysis method of landscape components according to the results of chemical and spectral analysis of expeditions materials (Fig. 1). Alluvial (Al), transalluvial (TA), supaqual (SA), trans-accumulative (TAc) and accumulative (AC) geochemical landscapes have determined on the map according to the migration conditions of the chemical elements within the landscape types.

Surplus microelements in numerator and deficit microelements in denominator let follow geochemical condition in map-scheme and its legend (Table 1).

Landscape types have defined in the south-eastern part of the Major Caucasus according to the geochemical classification of landscapes, areas where biogenic migration prevails are classified as biogenic landscapes.

Formation and development of geochemical landscapes in the investigation area have happened due to the different factors. Vertical zonality is observed in the formation of soil and vegetation covers. The landscapes in the south-eastern part of the Major Caucasus are divided into four groups according to the biological circulation: A. Moderately humid mountain-forest, B. Moderately humid medium altitude mountains and low mountains, C. Arid and semi-arid steppes of low mountains, D. Semi-desert landscapes of dry subtropical plains, and these groups are divided into different landscape types (Table 1).

In the south-eastern part of the Major Caucasus, where mud volcanoes are widely spread, the following landscape types have formed due to natural-historical development: 1. Peanut-hornbeam and oak-hornbeam forest landscapes of medium altitude mountains and partly high mountains, 2. Forest-steppe and meadow-steppe landscapes of low and medium altitude mountains, 3. Arid-denudation dry steppe and steppe landscapes of low mountains and depressions, 4. Arid-forest, forest-shrub and shrub landscapes of low mountains, 5. Arid-denudation semi-desert landscapes of low mountains and intermontane plains, 6. Intrazonal landscapes of accumulative-denudation plains, 7. Semi-deserts of accumulative-marine plains (Table 1).

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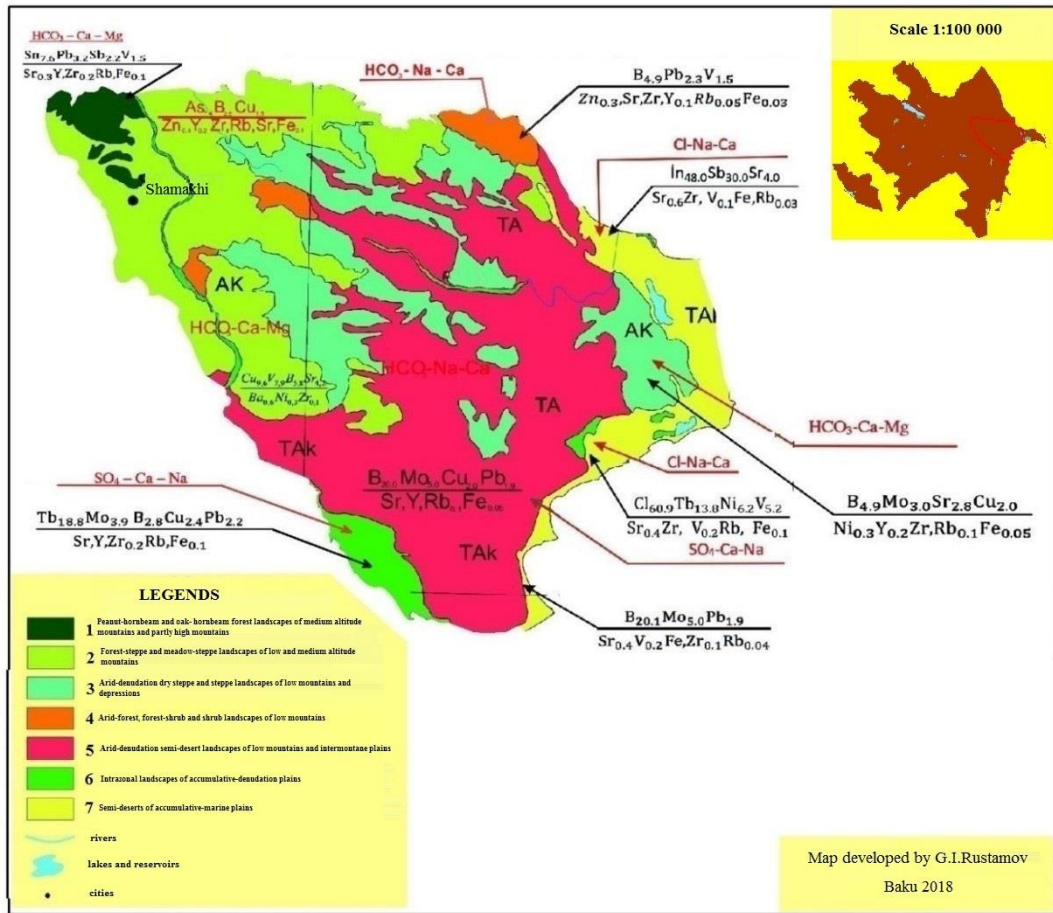


Figure 1 - Ecogeochemical landscapes of Shamakhi-Gobustan (the map legend is given in Table 1)

Table 1. Semi-deserts of accumulative-marine plains.

GEOCHEMICAL LANDSCAPES																
COLUMNS	GROUPS	TYPES	ROCKS					CLASSES						Microelements (surplus-in numerator, deficit-in denominator)		
			According to migration of chemical elements					According to typtomorph microelements								
According to migration types	According to volume of biological mass	Bioproductivity of biomass relation	Alluvial	Transalluvial	Supaqual	Ttrans-accumulative	Accumulative	SO ₂ -Na	SO ₂ -Na-Ca	SO ₂ -Ca-Na	SO ₂ -HCO ₃ -Na	SO ₂ -Na-Mg	HCO ₃ -Na-Ca	SO ₂ -Mg-Na		
BIOGENIC LANDSCAPES	A. Moderately humid mountain-forest	1 Peanut-hornbeam and oak-hornbeam forest landscapes of medium altitude mountains and partly high mountains	AL		SA		AC	+	+	+	+	+	+	+	$\frac{Zn_{18}Sn_{1.5}Ag_{1.1}}{Mn_{0.8}Ba_{0.6}Sr_{3.3}}$	
	B. Moderately humid medium altitude mountains and low mountains	2 Forest-steppe and meadow-steppe landscapes of low and medium altitude mountains		TA		TAc	AC	+	+	+	+	+	+	+	$\frac{Cu_{1.6}V_{0.2}B_{0.8}Sr_{1.2}}{Ba_{0.6}Ni_{0.3}Zr_{0.3}}$	
	C. Arid and semi-arid steppes of low mountains	3 Arid-denudation dry steppe and steppe landscapes of low mountains and depressions	AL		SA				+	+	+	+	+	+	+	$\frac{Mo_{0.2}B_{0.2}Cu_{0.9}}{Zn_{0.3}Ba_{0.6}Zr_{0.3}}$
		4 Arid-forest, forest-shrub and shrub landscapes of low mountains	AL		SA				+	+	+	+	+	+	+	$\frac{Ag_{0.2}B_{0.1}Cu_{0.4}Hg_{0.4}}{Co_{0.8}Ti_{0.2}Zr_{0.3}}$
		5 Arid-denudation semi-desert landscapes of low mountains and intermontane plains		TA		TAc	AC		+	+	+	+	+	+	+	$\frac{B_{2.3}Mo_{0.2}Sr_{1.2}Pb_{2.1}}{Ni_{0.3}Ca_{0.6}Zr_{0.2}}$
		6 Intraazonal landscapes of accumulative-denudation plains				TAc	AC		+	+			+		+	$\frac{B_{0.8}V_{0.2}Pb_{2.3}Co_{1.5}}{Sr_{0.8}Rb_{0.8}Fr_{0.4}}$
	D. Semi-desert landscapes of dry subtropical plains	7 Semi-deserts of accumulative-marine plains				TAc	AC		+	+	+	+	+	+	+	$\frac{Sn_{0.2}B_{0.1}V_{0.2}Cu_{0.2}Pb_{1.2}}{Zn_{1.2}Sr_{0.2}Zr_{0.3}Rb_{0.3}Fe_{0.8}}$

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Table 2. The average amount of some microelements contained in mud volcano breccias (percent-%)

№	Mud volcanoes	Ni	Cu	Zn	As	Sr	Zr	Mo	Cd	Sn	Pb	V
1	Boyuk Harami	0,005 8	0,003 9	0,007 4	0,0011 0	0,0431	0,0071	0,0001 1	0,00002 6	0,00013	0,00124	0,01 2
2	Yandara	0,007 4	0,004 3	0,008 0	0,0010 5	0,0414	0,0083	0,0001 3	0,00002 5	0,00025	0,00145	0,01 3
3	Durovdagh	0,007 5	0,003 8	0,007 5	0,0013 5	0,0407	0,0064	0,0001 4	0,00002 2	0,00014	0,00126	0,01 1
4	Kichik Maraza	0,004 2	0,003 2	0,009 8	0,0014 2	0,0185	0,0125	0,0001 8	0,00002 6	0,00034	0,00206	0,01 8
5	Pilpila-Garadagh	0,005 7	0,004 3	0,008 2	0,0014 6	0,0331	0,0096	0,0002 7	0,00003 1	0,00016	0,00151	0,01 3
6	Davaboynu	0,005 4	0,004 4	0,009 0	0,0014 6	0,0389	0,0100	0,0004 6	0,00003 1	0,00020	0,00169	0,01 3
7	Dashgil	0,005 3	0,004 5	0,007 8	0,0014 3	0,0351	0,0085	0,0003 8	0,00003 7	0,00019	0,00146	0,01 3
8	Bahar	0,005 1	0,004 1	0,007 4	0,0013 2	0,0342	0,0072	0,0001 7	0,00002 5	0,00014	0,00134	0,01 2
9	Ayrantokan	0,006 0	0,004 4	0,007 3	0,0013 8	0,0344	0,0081	0,0003 3	0,00002 8	0,00015	0,00140	0,01 2
10	Duzdagh	0,008 9	0,004 0	0,007 1	0,0013 4	0,0467	0,0071	0,0001 0	0,00002 1	0,00013	0,00122	0,01 2
11	Aghdam group	0,003 9	0,003 4	0,007 2	0,0011 0	0,0186	0,0086	0,0006 7	0,00006 3	0,00016	0,00116	0,01 5
12	Shekikhan group	0,005 6	0,005 3	0,010 5	0,0018 4	0,0242	0,0110	0,0010 1	0,00013 4	0,00024	0,00176	0,02 3
Clarke of microelements in earth crust, percentage - % (A.P.Vinaqradov,1962).												
		0,005 8	0,004 7	0,008 3	0,0001 7	0,034	0,017	0,0001 1	0,00001 3	0,00025	0,0016	0,00 9

Table 3. Clarke concentrations of mud volcano breccias.

№	Mud volcanoes	V	Ni	Cu	Zn	As	Sr	Zr	Mo	Cd	Sn	Pb	V
1	Boyuk Harami	1,3	1	0,8	0,8	6,4	1,2	0,4	1,0	2,0	0,5	0,7	1,3
2	Yandara		1,2	0,9	0,9	6,1	1,2	0,4	1,1	1,9	1,0	0,9	1,4
3	Durovdagh		1,2	0,8	0,9	7,9	1,1	0,3	1,2	1,6	0,5	0,7	1,2
4	Kichik Maraza		0,7	0,6	1,1	8,3	0,5	0,7	1,6	2,0	1,3	1,2	2,0
5	Pilpila-Garadagh		0,9	0,9	0,9	8,5	0,9	0,5	2,4	2,3	0,6	0,9	1,4
6	Davaboynu		0,9	0,9	1,0	8,5	1,1	0,5	4,1	2,3	0,8	1,0	1,4
7	Dashgil		0,9	0,9	0,9	8,4	1,0	0,5	3,4	2,8	0,7	0,9	1,4
8	Bahar		0,8	0,8	0,8	7,7	1,0	0,4	1,5	1,9	0,5	0,8	1,3
9	Ayrantokan		1	0,9	0,8	8,1	1,0	0,4	3,0	2,1	0,6	0,8	1,3
10	Duzdagh		1,5	0,8	0,8	7,8	1,3	0,4	0,9	1,6	0,5	0,7	1,3
11	Aghdam group		0,6	0,7	0,8	6,4	0,5	0,5	6,0	4,8	0,6	0,7	1,6
12	Shekikhan group		0,9	1,1	1,2	10,8	0,7	0,6	9,1	10,3	0,9	1,1	2,5

Geochemical landscape groups were determined according to the biological mass and the types were determined according to the biological productivity ratio to biomass.

We determined that Na, Ca, Cl, S, Cu, Sn, Pb, As, Hg, Mo, B, V, Ag, Sn, Cr, Ni, Mn, Co, Sr, Ti and other chemical elements were more typical for landscapes of the south-eastern part of the Major Caucasus and Shamakhi-Gobustan. Na, Ca, Cl, S, As and B are typomorphic for the area, and more active

from geochemical point of view. The average amounts of these elements in the landscape components are considerably higher than their average amounts in the Earth's crust (Clarke) and they are more intensively migrated in the landscapes.

Average quantities of some microelements contained in mud volcanoes are given in Table 2, concentration clarkes that obtained from comparison of the quantities of identical microelements in the Earth's crust with their quantities which are

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determined by A.P.Vinoogradov (1962) are given Table 3. Microelements spread in mud volcanoes are divided into 3 groups according to the results of Table 3.

Average quantities corresponded to nearly the world clarkes as Ni, Sr, Mo, V, sometimes Pb, are included the first group. If the average quantities of these elements show the typical features of the common volcanic breccias spread in the Earth's crust, other elements included in the other two groups only describe the geochemical characteristics of volcanic breccias in Shamakhi-Gobustan. Microelements, the average quantities are higher than clarkes as Na, Ca, Cl, As, Mo (in the groups of Pilpila-Garadagh, Dashgil, Bahar, Ayrantokan, Aghdam, Shakikhan), Cd (especially in the group of Shakikhan), Ca and Cl are included the second group. Microelements the average quantities in the breccias are less than Clarke ($CC < 1$) as Zr ($CC = 0,3-0,4$), Fe ($CC = 0,1-0,2$ and low), Zn, Rb, V are included the third group. According to the results of spectral analysis (Table 3) As, Mo, Cd and V in the all mud volcanoes of the area are characterized by high amounts of concentration clarkes, and these are dangerous for the health of the living organisms in areas near the mud volcanoes. It would be useful to carry out prophylactic geochemical melioration measures.

As seen from the 1: 100 000 scale map (Medical-ecogeochemical risk map of Shamakhi-Gobustan landscapes – Fig. 1) that we have compiled based on the results of chemical and spectral analysis with the method of A.I. Perelman's «related and comparative analysis of landscape components», in

the western part of the investigation area from north to the south macro compounds with hydrocarbonate-calcium-magnesium ($HCO_3-Ca-Mg$) are replaced by compounds with sulfate-calcium-sodium ($SO_4-Ca-Na$). In the eastern part of the investigation area compounds with hydrocarbonate-sodium-calcium ($HCO_3-Na-Ca$), predominant in the north are replaced by compounds with chlorine-sodium-calcium ($Cl-Na-Ca$) in central part and then by compounds with sulfate-calcium-sodium ($SO_4-Ca-Na$) toward south.

Typomorphic macro compounds with sulphate-sodium (SO_4-Na), sulphate-sodium-calcium ($SO_4-Na-Ca$), sulphate-calcium-sodium ($SO_4-Ca-Na$), sulphate-hydrocarbonate-sodium (SO_4-NCO_3-Na), sulfate-sodium-magnesium ($SO_4-Na-Mg$), hydrocarbonate-sodium-calcium ($NCO_3-Na-Ca$), sulfate-magnesium-sodium ($SO_4-Mg-Na$) are determined in each landscape types of the investigation area. Only intrazonal landscapes of denudation-accumulative plains are expected. There are compounds with sulphate-sodium (SO_4-Na), sulphate-hydrocarbonate-sodium (SO_4-NCO_3-Na) and hydrocarbonate-sodium-calcium ($NCO_3-Na-Ca$) in this landscape type.

Surplus amounts of As, B, Cu, Pb, V, Sb and Sr, deficiencies in Zn, Zr, Rb and Fe are observed in the north. But in the south Tb, Mo, B, Cu, Pb, Ni, V are surplus, Sr, Rb and Fe are deficit.

So interpretation of geochemical landscapes of Shamakhi-Gobustan region let us describe the role of geochemical composition of mud volcano breccias in landscape differentiation.

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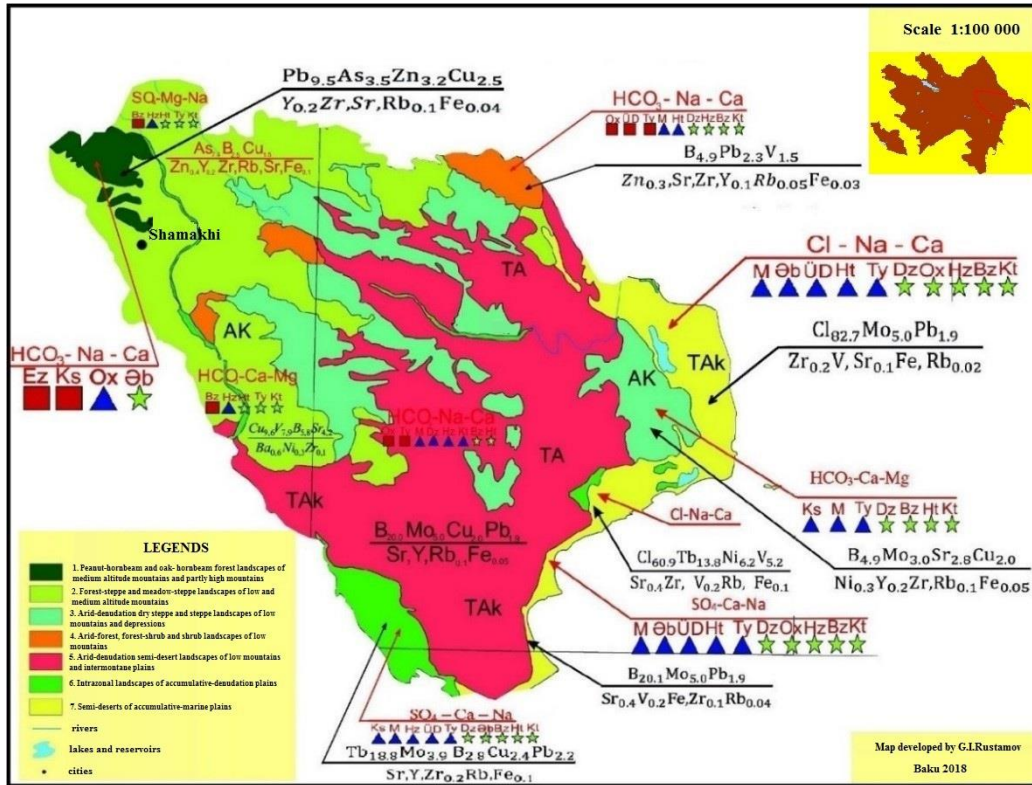


Figure 3 - Medical-ecogeochemical risk map of Shamakhi-Gobustan landscapes (the map legend is given in Table 4).

Table 4. Legend of map.

GEOCHEMICAL LANDSCAPES																									
COLUMNS	GROUPS	TYPES	ROCKS					Microelements (surplus-in numerator, deficit-in denominator)	Diseases caused by anomalous concentration of microelements																
			According to migration of chemical elements						Endemic goiter (Eg)	Fluorosis (F)	Caries (C)	Malaria (M)	Dysentery (D)	Oncological diseases (O)	Neurological diseases (N)	Digestive diseases (D)	Brucellosis (B)	Cardiac (C)	Hypertension (H)	Respiratory diseases (R)	Conjunctivitis (C)				
According to migration types	According to volume of biological mass	Bioproductivity of biomass relation	Alluvial	Transalluvial	Supaqual	Trans-accumulative	Accumulative																		
BIOGENIC LANDSCAPES	A. Moderately humid mountain-forest	1 Peanut-hornbeam and oak-hornbeam forest landscapes of medium altitude mountains and partly high mountains	AL		SA		AC	$Zn_{10}, Sn_{1.2}, Ag_{1.3}$ $Mn_{1.3}, Ba_{1.2}, Sr_{1.3}$																	
	B. Moderately humid medium altitude mountains and low mountains	2 Forest-steppe and meadow-steppe landscapes of low and medium altitude mountains	AL		SA			$Cu_{1.1}, V_{1.2}, B_{1.3}, Sr_{1.2}$ $Ba_{0.6}, Ni_{0.3}, Zr_{0.3}$																	
	C. Arid and semi-arid steppes of low mountains	3 Arid-denudation dry steppe and steppe landscapes of low mountains and depressions	AL		SA			$Mo_{0.2}, B_{1.3}, Cu_{1.5}$ $Zn_{1.3}, Ba_{1.2}, Zr_{0.3}$																	
		4 Arid-forest, forest-shrub and shrub landscapes of low mountains	AL		SA			$Ag_{1.2}, B_{1.3}, Cu_{1.5}, Hg_{1.4}$ $Co_{1.6}, Ti_{1.2}, Zr_{0.3}$																	
		5 Arid-denudation semi-desert landscapes of low mountains and intermontane plains		TA		TAc	AC	$B_{1.3}, Mo_{0.2}, Sr_{1.2}, Pb_{2.1}$ $Ni_{0.3}, Ca_{1.2}, Zr_{0.3}$																	
	D. Semi-desert landscapes of dry subtropical plains	6 Intrazonal landscapes of accumulative-denudation plains				TAc	AC	$B_{1.0}, V_{2.2}, Pb_{2.2}, Co_{1.5}$ Sr, Zr, Rb, Fe																	
		7 Semi-deserts of accumulative-marine plains				TAc	AC	$Sn_{1.2}, B_{1.3}, V_{1.2}, Cu_{1.5}, Pb_{2.1}$ $Zn_{1.3}, Sr_{1.2}, Zr, Rb, Fe$																	

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Higher and lower quantities of macro and microelements than the norm are danger for life and health of human and living organisms lived in geochemical anomalies. Higher and lower quantities of chemical elements indicates the importance of the optimization of the landscapes in future, chemical melioration in anomalous areas, necessary special medical and geographical researching to improve sanitary and hygienic conditions in areas that are hazardous to the life of the living organisms.

Defining correlation relationship between number of diseases characterized by different landscape complexes with concentration of various microelements has allowed to create medical-ecogeochemical risk map of Shamakhi-Gobustan landscapes (Fig. 3). We used «Medical-ecogeochemical landscapes map of the Azerbaijan Republic» (B.A. Budaqov, A.H. Ahmadov, Q.I. Rustamov, 2009, 2010) that published in «Ecological Atlas» for the first time, archive materials of local medical organizations and Ministry of Health of Azerbaijan Republic, also expedition materials, to create map of investigation area.

In this map have been defined diseases and macro- and microelements that cause these diseases that are more characteristic of different landscape complexes of the investigation area. In the map «red squares» defines diseases with high risk levels, «blue triangles» defines diseases with medium risk levels, «yellow stars» defines diseases with low risk levels (Fig. 3).

Influences of geochemical condition to human health in different landscape belts were investigated, diseases characterized by different landscape types and their **prevalence rate** were revealed to assessment of geochemical conditions of landscapes of the researching area due to ecological condition.

To determine the prevalence rate we used quantities of diseases per 10,000 people according to the International Classification of Diseases (ICS) and division of different diseases based on localization. If diseases quantities per 10,000 people are less than 100, these are not widespread diseases, if quantities are up to 200, these are widespread diseases, if quantities are more than 200, these are more widespread diseases.

Legend of map (Table 4):

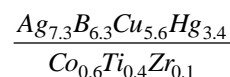
1. The risk levels of dental caries (Dc), endemic goiter (EG) are high, the risk levels of oncological diseases (Od) are medium, the risk levels of neurological diseases are low in peanut-hornbeam and oak-hornbeam forest landscapes of medium and partly high mountains, and these caused by surplus quantities of microelements as Zn, Sn, and deficit quantities of microelements as Mn, Ba, and Sr in the same landscapes.

2. The risk levels of oncological and digestive disease are high, the risk levels of brucellosis and neurological diseases are medium, the risk levels of

hypertension, conjunctivitis and respiratory diseases are low in forest-steppe and meadow-steppe landscapes of low and moderate mountains. These diseases caused by surplus quantities of vanadium (V), lead (Pb), and deficit quantities of titanium (Ti), barium (B), zirconium (Zr).

3. The quantities of molybdenum ($CC_{Mo}=10,2$), boron ($CC_B=8,9$), vanadium ($CC_V=6,3$) and copper ($CC_{Cu}=4,9$) are surplus in arid-denudation dry steppe and steppe landscapes of low mountains and depressions. Deficit microelements of the belt are zinc ($CC_{Zn}=0,5$), barium zinc ($CC_{Ba}=0,3$), and zirconium ($CC_{Zr}=0,1$). The risk levels of caries, malaria, respiratory diseases are medium, the risk levels of dysentery, brucellosis, hypertension, conjunctivitis are low due to surplus or deficit quantities of these microelements associations.

4. The chemical formula of the microelements association of arid-forest, forest-shrub and shrub landscapes of low mountains is as follows.



The risk levels of oncological, cardiac and respiratory diseases are high, the risk levels of malaria and hypertension diseases are medium, the risk levels of dysentery, digestive, brucellosis and conjunctivitis diseases are low in this landscape belt.

5. The risk levels of oncological and respiratory diseases are high, the risk levels of malaria, dysentery, digestive and conjunctivitis diseases are medium, the risk levels of hypertension, brucellosis are low in arid-denudation semi-desert landscapes of low mountains and intermontane plains characterized by surplus quantities of boron (B), molybdenum (Mo), strontium (Sr) and lead (Pb), and deficit quantities of nickel (Ni), cobalt (Co), zirconium (Zr).

There is no low risk diseases in the next two landscapes as intrazonal landscapes of accumulative-denudation plains and semi deserts of accumulative-marine plains.

6. The risk levels of caries, malaria, digestive, cardiac and respiratory diseases are high, the risk levels of dysentery, neurological, brucellosis, hypertension diseases are low in intrazonal landscapes of accumulative-denudation plains. These diseases caused by surplus quantities of boron (B), vanadium (V), lead (Pb), cobalt (Co) and deficit quantities of strontium (Sr), zirconium (Zr), rubidium (Rb), iron (Fe)

7. The risk levels of malaria, neurological, cardiac, hypertension, respiratory diseases are medium, the risk levels of dysentery, oncological, digestive, brucellosis, conjunctivitis diseases are low in semi deserts of accumulative-marine plains. These diseases caused by surplus quantities of tin ($CC_{Sn}=8,0$), boron ($CC_B=3,6$), vanadium ($CC_V=2,7$),

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copper ($CC_v=2,7$), lead ($CC_{Pb}=1,9$), deficit quantities of zinc ($CC_{Zn}=0,4$), strontium ($CC_{Sr}=0,2$), zirconium

($CC_{Zr}=0,1$), rubidium ($CC_{Rb}=0,1$), iron ($CC_{Fe}=0,05$).

Conclusion

It was revealed that, most of mud volcanoes of investigation are have spread in dominant mountain semideserts and dry steppe landscapes, and they bring about formation of mud vulcano landscapes which have different structure-functional characterizes due to relief forms, geological ages, litho-geochemical composition of rocks.

The risks and dangers for human life that geochemical and medical characterizes of mud

vulcano landscapes makes due to hypsometric levels assessed at three risk levels: low, medium and high. It was revealed that, diseases are not widely spread in steppe and semi-desert landscapes of plains. The risk levels of caries, and endemic goiter diseases are high, the risk level of cancer is medium, the risk level of neurological diseases is low in mountain forest landscapes.

Acknowledgments

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SECTION 20. Medicine.

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PATHOLOGY OF THE URINARY SYSTEM OF THE URGENT SYSTEM IN FREQUENTLY SICK CHILDREN (ACCORDING TO RETROSPECTIVE ANALYSIS)

Abstract: In the article studied the incidence of mothers of children with OMC pathology during pregnancy. In particular, the pathology of MHI in mothers who suffer from chronic pyelonephritis, glomerulonephritis and chronic cystitis is revealed. On the basis of a retrospective analysis, the author scientifically proved the need for a longer observation of adolescents who suffer from the pathology of compulsory medical insurance, with the obligatory implementation of preventive and anti-relapse treatment and diagnostic measures.

Key words: FIC, adolescents, children, kidney, organism, nephropathy, pathologies of the urinary system, past diseases.

Language: English

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Introduction

Nephropathy among children's diseases occupy ninth place. Chronic renal failure (CRF), which is the source of many kidney diseases, is the most tragic pathological condition that is formed in childhood. CKD in children as a cause of disability occurs with a frequency of 5: 100,000 children [12]. According to the Italkid study conducted over 10 years (1,200 patients), the risk of developing terminal CRF by 20 years in children with chronic kidney disease (CKD) is 68.0% [15].

At present, the special role of maternal renal diseases as a risk factor for the development of nephropathy in a child (hyperururia, hyperoxaluria, tubulo-interstitial nephritis, pyelonephritis, etc.) has been confirmed, since nephropathy of pregnant women has an adverse effect on time for time and fetus which manifest themselves in the form of: late gestosis - 40.0%, premature births - 30.0%, perinatal hypoxia of the fetus 25-50% of cases.

It was confirmed that in the group of children born to mothers with chronic pyelonephritis, kidney disease occurs in 69.2%, and is observed 4 times more often than in the comparison groups [2, 7, 14].

In the first half of the 80s of the last century, the term "frequently ill children" (FIC) appeared in the domestic medical literature [1]. This is due to the fact that in recent years as a result of the impact on the body of various exogenous and endogenous factors: changes in the environmental situation in the world, urbanization, increased man-made pressure in industry and agriculture, harmful habits of parents, pathological gestation and childbirth, artificial feeding of the child there is a decrease in the immune resistance of the population and, parallel to this, an increase in the number of often and long-term sick children. Allocation FIC takes its origin in the 2-3rd year of life of the child. They have all the pathological processes that have significant features of the course, the main cause of which is considered to be the depletion of the body's defense

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mechanisms, and in 40-50% of cases by the age of 7-8, they also develop chronic pathology during adolescence, such as tonsillitis, bronchitis, gastritis, nephritis, hepatitis, carditis, dermatitis, allergies, etc. [11].

Despite numerous studies on the most diverse issues of nephropathy, the relationship of pathology of the urinary system organs (OMS) in FICs, adolescents and their mothers has not yet been studied. Undoubtedly, the solution of these issues is of great importance not only in the treatment of renal pathology, but also in the early prevention of the development of various complications of compulsory health insurance in children, as well as in strengthening the reproductive health of women of fertile age.

Purpose of the study

The study of the relationship of the pathology of OMS in frequently ill children, adolescents and their mothers, by retrospective analysis, the development of methods for their prevention.

Materials and methods.

A retrospective analysis was conducted of 1323 diseases of children aged 1 to 14 years old who received inpatient treatment in the nephrology department of the 1st clinic of the Tashkent Medical Academy for 2008-2010. The diagnosis of nephropathy and related diseases in all children was established in aggregate clinical, laboratory and instrumental studies, in accordance with the classification of ICD-10, and the diagnosis of FBI was determined on the basis of a careful study of history, clarification of external and internal factors predisposing to FBI formation, results of clinical laboratory, functional methods of research, incidence

rate of intercurrent diseases (acute respiratory infections, acute respiratory viral infections, tonsillitis) within a year. The frequency of episodes of intercurrent diseases in FIC is from 8 to 10 times a year, the duration of the disease is more than 1-2 weeks. The data were processed by the method of variation statistics, with the calculation of the reliability of numerical differences.

Results and its discussion. On the basis of the conducted research, it was found that the frequency of the detected OMC pathology in children from 1 to 14 years old was the same during 2008-2010 (34.0–32.0%), and in FIC from the age of 1 up to 7 years, the frequency of the OMC pathology in 2009 was high (34.8%), compared with 2008 and 2010 (32.4%; 32.8%).

It is known that children with background pathogia (diathesis, allergies, anemia) constitute the main part of FBI. Among them, an infusion of purine metabolism, an isolated urinary syndrome, a high hereditary predisposition to metabolic diseases and the formation of chronic pathologies, such as urolithiasis, urolithiasis, gout, etc., are characteristic of PCF with neuro-arthritis diathesis. [9]. Given the above, we studied the frequency of uraturia in FIC in adolescence. At the same time, the frequency of uraturia in the FIC was the highest in 2009 (38.0%), compared to 2008 and 2010 (29.0%; 33.0%).

The postponed diseases in FSC with uraturia in adolescence were more often characterized by moderate and severe severity, as well as by a complicated and prolonged course ($P < 0.001$). During the period 2008-2010, there was a tendency to increase in the number of patients with tonsillitis (30.4%), otitis media (6.5%), bronchitis (16.2%), gastroduodenitis (9.8%) and recurrent laryngotracheitis (13.8%) (table- 1).

Table- 1. Transferred diseases in FIC with uraturia

Pathology	2008, p~107		2009, p=138		2010, p=123	
	Abs.	%	Abs.	%	Abs.	%
Tonsillitis	30,0	28,0	42,0	30,4	33,0	26,8
Sinusitis	5	4,7	7	5,1	6	4,9
Otitis	6	5,6	9	6,5	8	6,5
Bronchitis	16	14,9	21	15,2	20	16,2
Gastroduodenitis	8	7,4	11	8,0	12	9,8
Dysbacteriosis	20	18,7	22	15,9	20	16,3
Recurrent laryngotracheitis	12	11,2	18	13,0	17	13,8
Adenoids	8	7,4	12	8,7	10	8,2

It is known that in the development of the OMC pathology, an important role is played by a number of exogenous factors such as seasonality of the pathology, effects on the organism of viruses,

bacteria, drugs, ecopathology, climate change, nature of nutrition, etc. [3]. We have also studied the seasonality of hospitalization of patients with OMC pathology. As a result of the analysis, it was revealed

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that the following months of the year were relatively large in terms of hospitalization of patients for the period 2008-2010: February, April, August, December. In the general group (children 1-14 years old), the highest percentage of hospitalizations for patients with MMI pathology were as follows: 2008 - April - 9.9%, December - 9.9%; 2009: August - 9.9%, December - 10.0%; 2010: April - 10.7%, August - 11.6%. In FIC (1-7 years) 2008: February - 10.2%, December - 11.8%; 2009: February - 10.5%, April - 13.0%; 2010: February - 10.0%, April - 11.2%.

This circumstance confirms that in the conditions of the Republic of Uzbekistan, the incidence of children with pathology of compulsory health insurance has its own regional characteristics in terms of the seasonality of hospitalization of patients, and this is more pronounced in FIC. At the same time, the opinion of scientists confirms the fact that the FIC is characterized by the intensity of the processes of immune response and insufficient reserve capabilities, which does not ensure optimal adaptation of the child to the environment [5,10].

When studying the pathology of compulsory health insurance in FIC with uraturia in adolescence, it was found that in 2008-2010, but for the course and spread of diseases they had their own age characteristics. According to the detection of pathology, a large percentage were: 2008 - chronic pyelonephritis (8.4%), enuresis (7.5%); 2009 - chronic pyelonephritis (5.8%), dysmetabolic nephropathy (7.2%), enuresis (4.3%); 2010 - chronic pyelonephritis (4.1%), dysmetabolic nephropathy (4.1%), chronic glomerulonephritis (3.3%). This is explained by the fact that in children in the development and formation of the immune system of the body there are a number of critical periods. Adolescence (in girls 12-14 years old, in boys 13-15 years old) also refers to critical periods in the formation of immunity, since this age is characterized by: neuro-endocrine imbalance and a change in emotional status, the presence of bad habits (tobacco smoking, drug addiction, alcoholism), excessive use of drugs, eating disorders, exposure to ecopathology, xenobiotics, etc., which often differ in age characteristics and are accompanied by metabolic disorders, an increase in the degree of sybilization and a decrease in the body's immune resistance leading to the chronization of various pathological processes, including the pathology of the OMC.

There are numerous observations of pediatric nephrologists about the frequency of the burdened nephrological history of the mother in children with kidney pathology, as well as the prevalence of girls in adolescence, the frequency of urinary tract infection [6,8].

Conclusion

We studied the incidence of mothers of children with OMC pathology during pregnancy. The results of our research have shown that, in identifying the pathology of OMS in mothers, a large percentage was as follows: 2008 - x) ical pyelonephritis (2.6%), chronic glomerulonephritis (0.7%); 2009 i.

- chronic pyelonephritis (2.2%), chronic glomerulonephritis (1.2%), dysmetabolic nephropathy (0.9%); 2010 - chronic pyelonephritis (1.9%), dysmetabolic nephropathy (1.6%), chronic cystitis (0.9%).

Thus, our results of a retrospective analysis indicate the need for longer-term observation of FICs and adolescents with patients with MHD pathology, up to transferring them to CEF - therapies, with mandatory preventive and anti-relapse treatment and diagnostic measures.

Findings

1. In FBI, the development of the pathology of the OMC depends on the nature of the immune response and adaptation of the organism to the environment.

2. Postponed diseases in FBI adolescents with uraturia, characterized by moderate and severe severity, complicated and protracted course. Most common: tonsillitis (30.4%), otitis media (6.5%), bronchitis (16, 2%), gastroduodenitis (9.8%), recurrent larshnotracheitis (13.8%).

3. For the FIC on the pathology of the OMS, the seasonality of hospitalization is characteristic; a large percentage were February, April, August, and December of the year.

4. In FBI adolescents with uraturia, a patolosya, OMS, the course and spread of diseases have their own age characteristics, with a large percentage: chronic pyelonephritis (8.4%), enuresis (7.5%), dysmetabolic nephropathy (7.2%), chronic glomerulonephritis (3.3%).

5. In mothers, nephropathy develops during pregnancy mainly due to chronic pyelonephritis (2.6%), chronic glomerulo-nephritis (1.2%) and dysmetabolic nephropathy (1.6%).

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**SECTION 31. Economic research, finance,
innovation, risk management.**

LAND OWNERSHIP RELATIONS IN THE ECONOMIC POLICY OF AMIR TEMUR AND TIMURIDES

Abstract: In this article, the author focused on the study of land tenure in the fifteenth century in Movarounnahr. In addition, the author analyzes the historical significance of fundamental changes in the socio-economic life of the country as a result of relations with real estate, the conditions created for real estate and their practical application, as well as reforms carried out in the era of Amir Temur and the Timurids.

Key words: Amir Temur, Timurids, "Temur Orders", Movarunnakhr, land ownership, property relations, taxation system.

Language: English

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Introduction

Throughout its many millennial years, mankind has undergone enormous socio-economic development. It is theoretically and practically useful to study and analyze the economic aspects of the development of one or another country and to distinguish them from the historical experiences of universal importance.

During the period of strategic reforms being undertaken for the sake of economic prosperity of the country, we must rely on the experience of the past to achieve a bright future. As the First President of the Republic of Uzbekistan has pointed out, "Today's acute and urgent problems require that we thoroughly analyze the basic principles of contemporary development, and have a profound perception of the rich experience of humanity in recent history and to produce practical conclusions on this subject, is becoming increasingly important. We can say without exaggeration that the centuries-old history of the Uzbek people is a source of such great experiences. When it comes to our great ancestors that make up the brightest and most glorious pages of history, it is natural that we can mention the immortal name of the great statesman and commander-in-chief Amir Temur. For almost seven centuries, the interest in the glory, life and activity of this great beast has grown throughout the world " [1].

Methodology

The methodology of research is the use of primary and secondary historical sources, local and foreign scholars' scientific works, methods used in them, including deductive, analysis, and synthesis.

Literature review

Timur's and Timurid's economic policies have contributed to the contemporaries and scholars, such as Ibn Arabshah, Sharofiddin Ali Yazdi [3], Abdurazzak Samarkandiy [4], Alisher Navoi [5], Nizomiddin Shami [6], Rui Gonzalez de Clavijo [7], personally Amir Temur's "Temur's Ordinances" [8], Ioann de Galonifontibus [9], Iogann Shiltberger [10], Marlo Christopher [11] and others. The world's leading scientists V.V. Bartold [12], A. Yakubovsky and B.D. Graykov [13] The First President of the Republic of Uzbekistan I.A. Karimov [1], and Boribay Ahmedov [14], Muhammad Ali [15], S. Saidqosimov [16], Irpon Tuxtiev [17], L. Keren and A. Saidov [18] and foreign researchers Beatrice Forbes Manz [19; 20], Patrick Wing [21], H. Kurdian [22], Kirpik Gyuray [23], Mansura Haider [24] and others. We have done a great deal of research on the subject we are researching, and we have achieved some results. However, according to their scientific findings, they did not adequately cover the historical significance of the changes in the socio-economic life of the country as a result of the conditions

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created under the ownership of land and the conditions created by Amir Temur and Timurid era.

Analysis and results

As it is known, property relations play an important role in the implementation of reforms in the political, economic and social spheres of the state. For countries that emerged in the Central Asian region and developed as the most advanced political associations of their time, economic relations, including the relatively advanced level of ownership, were inherent.

During the 15th century, Movarounnahr and Khurasan were the four main types of land and property: properties belonging to the state - land, property - private lands, property belonging to madrasas, temples, and community lands. Most of the farmland is owned by the state. These lands were still owned by the ruler of the country - the Sultan or the Emir.

In the times of Amir Temur and Timurids, waterfall [24] was widely used. Suughol was introduced on the eve of the establishment of the Amir Temur, and it was "Iqta" - a part of the land given to the governorship of the district or region, and to the high ranking generals and high ranking patrons. Occasionally, the land of water was inherited from generation to generation by the decree of the highest government. The owner of the landlord has the right to appoint officials within their wetlands, collect taxes and various payments and punish offenders [16]. It is noteworthy that most of the princes, or servicemen and public officials, were appointed governor of the nation. Because Amir Temur governed the country, in particular, through the governorship of the emperor, giving them the wealthy, grandsons and ministerial officers of the conquered provinces and territories. In this regard, we can read the following sentences: "I commanded that my first son, Mohammed Jahangir, was a governor; and let him take twelve thousand men and women of their country, as rulers of the province. My second son, Omar, is to take twelve thousand horsemen and their sons. Let him take a province. My third son, Mironshih, managed to get nine thousand horsemen and lead a province. My fourth son, Shohruh, has managed to gain seven thousand horsemen and get a province" [8]. Academic V.V. In his work, Bartold interpreted Amir Temur as the founder of "Suyurghal", describing the nature of the watercourse and the order of distribution on the basis of historical information and examples [12]. The provincial governors of the provinces of Sughurgh are centralized to the central government and are usually independent.

In order to increase the loyalty of the landowners, central authorities sometimes cut down their land or restrict their rights in the administrative and judicial fields. If the landlord did not disobey the

central government, the governor would be deprived of the right of water and the governor would give his province another person. "I have ordered," writes Amir Temur, "if any of my sons would succeed in promoting the rule of the kingdom, let no one dare to kill him or tie his hands or cut off any of them. But let them keep them in captivity until they have come to their cause; that there be no war in the kingdom of God. If a grandson or a relative of mine comes against me, let them dowry. Amirs who are the fortresses of the kingdom, if they go to a dispute on the matter, remove them from their ranks and seize their husbands. If they do something that would harm the State, then they should be subjected to other commanders" [8]. In this regard V.V. Bartold wrote: "Temur was able to take over everyone with a strong hand. Woe to those who disobeyed the orders of the ruler and opposed his judgment. In 1376, the chief of the Jaloil tribe killed him because he disobeyed him and drowned all the inhabitants of Khujand, destroying all the refugees. According to the story of Ibn Arabshur, in Samarkand, Temur terminated the disobedience of some rulers. Pirmuhammad, the son of Umarshaih, took away the town of Sheroz and Persia from his father's death for not following the command. He was condemned to death by those who were close to him. Nevertheless, Temur deserted and returned to Pirmuhammad in 1403" [12].

In the Timurid era there were relatively small and restricted areas of land in terms of land. These smaller wetlands are usually given to servicemen in a regular guardian, ranging from well-trained small-time military men. According to Abdurazzak Samarkandi [4], Sarakhsakh province - Shahirun Sulaimanshoh in Shahrukh's time; Andhud Land - Amir Sayyid Ahmad Tarkhan; The Land of the Amir - Amir Sayyid Izzuddin Hazora Jaribiy; The country of Uzjand - mimic Amirak Ahmad ibn Mirza Umarshaykh; Shadman Province - Mirza Muhammad Jahongir bin Mirzo Muhammad Sultan; The Hamadon government, the Vuruja and Nehovand castles, and all of Luristan - Mirzo Bukhor; All Kabul, Ghaznin, Kandahar regions, and some areas of Afghanistan, India and Sindh, which are related to Qaraue - Jaloluddin Mirza Suygurtmat; Khorezm - Shahmalik, later his son Ibrahim Sultan, as well as Ferghana - Mirza Ahmad; Khurasan - Boysunongur Mirza, who included Tus, Mashhad, Obivar, Nisai; Kabul, Ghazna, and Kandahar are the desert of Mirza Khaibah Baha'ad [16].

The second largest part of the land was private land. Large landowners of large proprietors and small bands of hard laborers are also private property. Most of the land is owned by the administrative, military, and religious leaders.

Amir Temur paid special attention to property relations in the government. in his commentary, "... The kingdom of the state is three things: property, treasure and army." [8] It is common practice for

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general administrators to distribute large-scale proprietorships on the basis of subcontracts (collections), titles [8] and tablets [8]. At the same time, various types of salary-based salaries, property ownership and efficient use have been controlled. "I have judged," writes Amir Temur, "the complete state of the salaries set by the state, and the ministers let me know beforehand, and then give a witness. ... And let it be written in the ears of the chief of the fathers, and from the treasury of the king's house, Let the chiefs of the kingdom hear of the sowing of the field. Amirs and amirs are to be defined as one of the provinces. ... Whatever ambassador he considers to be, let him stay for three years. Let them examine it after three years. If the country approves, let the ra'yat be left as it is. If the case is contrary to this, let him not be given the land for a period of up to three years." [8]

It should be noted that the great leader demanded that all officials of the government be involved in their work, in particular with regard to property, with accountability and fairness. They were punished if they had misused their power and damaged their possessions. In such a situation, Spanish envoy Rui Gonzalez de Clavijo said in his diary: "... He also invited ambassadors to a wedding party to marry one of the king's grandchildren. ... In order to show that the crowds were able to show kindness to others and show others that they could hang in the crowd, the craftsmen were also able to build many tents. The first sentence was imposed on the religion, that is, the ruler of Samarkand. When Temurbek left Samarkand almost seven years ago, he left the person in a ditch. It has been said that the detention facility has abused its position during this period. The king summoned him and ordered that his possessions be confiscated. The whole kingdom was shaken from this sentence, which had gained a great deal of confidence in the king. ... Moreover, the king commanded that he should go out on a long journey and kill another great man, who trusted in three thousand horses, but not able to keep the kingdom firm. ... The King has ordered the prosecution of criminal offenses and other crimes (including others)[7].

In the 15th century, as in the previous periods, large land areas and irrigation networks, as well as many shops, enterprises, mills, objuves, markets, caravansaries, mosques, madrassahs, tombs, mausoleums and tombs were called property funds. Among the working peoples, they are called witch farmers. It is known that during the rule of Temur and Temurids, many mosques, madrassas, mausoleums and hospitals were built in Movarounnahr and Khurasan, all of which had foundation property. The proceeds from the foundations of the foundation are spent on repairing and maintenance of mosques, madrassas, hospitals and housewares, as well as for professional,

scholarships, physicians and pupils, as well as daily expenses (food, fuel and lamps) of hospitals. The Amir Temur writes that Amir Temur was the most desirable of developing the religion of Islam, appointing the most deserving of the sayyids to be the ruler of Islam, the appointment of a worthy candidate for ruling and controlling the entire property, appointing judges, Mufti, as well as to the religious leaders, and to determine the exact function of each one [8]. He also commanded the saints to provide the foundation to the grave and mausoleums of the saints and provide them with the necessary conditions [8]. Abdurazzak Samarkandiy, who was directly indivisible to Amir Temur and Temurids, provided detailed information about his country of origin, income and income from his country. [4]. Hafiz Abru's comments that Timur did the best to strive and to strengthen the religion. The fact that Timur spent 1500 sql-i kepeki from the treasury for constructing a mosque seems insignificant when one looks at the immense treasure spent on secular architecture. Another deed of religious merit ascribed to Timur was his decision to refrain from the realization of mal-i waqf for treasury. Even a scanty glance at the sources would reveal the fact that Timur was rarely bothered about illegal or legal taxation. Furthermore, this case, he was not only missing a negligible amount but was also winning over the sympathy of the most sensitive section of the population[23].

In this period, a smaller percentage of farming lands were in the general possession of the rural population. These lands are the property of village peas or communities. Anyone who does not care for a part of these lands, if he is blind or raising a garden, has been granted privileges according to tax legislation. Mobodo has been renovated by the shadows, where the ruined lands are not. If he is the owner, but is unable to make a living, he has given him various devices and necessary things to make his home beautiful. According to the Amir Temur's decree, new bridges have been constructed on corpses, aryks and rivers, and damaged bridges have been restored, and rabbits have been built on each side of the road. Trainees and guards were assigned on the roads to observe, maintain and safeguard passengers.

The so-called basic tax arable land (or property) of farmland. Hiroj was mainly produced and harvested at times when the product was paid in cash. Taxes are determined based on productivity and land productivity and water availability. Particularly, a third of the crop was harvested from irrigated land with rivers, springs and corals. If the landlord agrees to pay the money at the expense of the money, one-third of the crop is expropriated at the market price. If the priest does not agree to divide the crop into three parts, then the land allocated to the first, second and third marriages [8]. At the same

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time, the first harvest is commanded to produce three pairs of beaks (one carrying an ass), and the second one - two floors, and the third - In addition, the harvest from autumn, spring and summer farming was itself a cultivator [8]. It should be noted that Alisher Navoi's "Vakfiya" can be widely acquainted with the cultivated lands of the Temurids and the incomes of their descendants [5].

It is noteworthy that Amir Temur was always attentive to the conditions and opinions of the dehkans and the people who used the property and forbidding them to exacerbate difficulties, even appointing separate ministers to control their living conditions, tax and other compulsory payments. He has also occasionally ordered scientists to associate with government officials in distant provinces to study the status of the state and to give clear information about the situation. As a proof of our belief, we can read in the book Zafarnoma by Nizamuddin Shami: "... Amir Sahibqiron chose a group of prominent and pious scholars and nominated each of them one by one to the other side of the country to go to the assigned direction and if they suffer harm to a person who has suffered a harm, or if the oppressor has been exposed to the oppressor, then if the harmful thorns are exposed by the oppressed, a treasury property, and let them back in the situation, and the applicant izzatgohiga, so far away from them, then the rules of the (wrong)

tirsinar. Then he cried out: "To this day there has been a great deal of effort in the affairs of Jahongir, and then the king's intentions will be spent on the rise of worldly manifestations. Whatever we know, let everyone know what to do, to convey to us our best wishes, to make sure that everything that is related to him is related to him and that the harm done by the oppressed is dependent upon him" [6].

Conclusion

In conclusion, it should be noted that, if the historical sources used were the most reliable sources of Timur and Timurid era, and given the aforementioned facts, the great Sahibkara's not only in the field of land, but also in all social and economic reforms, which is a barrier to it, and nowadays it has become a major issue in our country such as violence, bribery, misuse of power, misappropriation of state property, we can be certain that he was justly opposed to his aggression and eventually set up a greatly prosperous empire in his time. Our President Sh.M.Mirziyoyev emphasized: "It is our primary duty to make a broader sense of justice in our lives, which is highly valued and respected by our people. The profound meaning of our great ancestor Amir Temur's grandmother, "The justice of our every work and our companionship!" Must be a lifelong belief for all of us " [2].

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SECTION 20. Medicine.

SOCIO-HYGIENIC STUDY OF THE HEALTH OF CHILDREN BORN WITH HIGH WEIGHT

Abstract: In the article have been examined the issues of social and hygienic aspects of the health of children born with high weights, identifies risk factors for the birth of a baby with high weights. On the basis of conducting sociological studies using a questionnaire among pregnant women registered at a family clinic, the authors identified the main territorial features of anthropometric indicators at birth, studied the degree and nature of the conditionality of individual values of anthropometric indicators at birth by social, biological factors and characteristics of the prenatal developmental period and seasonality.

Key words: Ontogenesis, body weight, newborn health, fetal macrosomia, birth trauma, symptoms, metabolic disorders, antenatal period.

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Relevance

The frequency of birth by a large fetus, according to literary sources, in recent years is 4.5–20%. Delivery by a fetus with a body weight of 4000–4500 g is observed in 7.6%, 4500–5000 g - in 1.2%, 5000 g and more - in 0.2% of cases. High rates of maternal trauma and adverse perinatal outcomes in fetal macrosomia are of great medical and, undoubtedly, social significance [4].

Objective criteria for the health of newborns are their anthropometric indicators. These indicators reflect the course of intrauterine periods of ontogenesis, depending on factors of different nature. Considering the high significance of the prenatal developmental period for the formation of both the body structure and its function, it can be assumed that the results of this developmental period, including weight and body length at birth, may be predictors of the state of the body and peculiarities of the body's response to environmental influences in subsequent periods of ontogenesis [1].

The urgency of studying this problem is dictated by higher rates of perinatal mortality and injuries of fetuses and newborns, a greater number of

complications during pregnancy and childbirth compared with fruits with an average body weight with the current trend towards an annual increase in the number of births by a large fetus. Optimal management of pregnancy and childbirth in fetal macrosomia will reduce maternal and child injuries during childbirth and will contribute to the birth of healthy children and preserve the mother's health. [2].

Objective of research

Analysis of social and hygienic problems at birth of a large fetus. To study the prevalence of risk factors for the birth of a baby with a large weight.

Main tasks

Assess the relevance of the problem of fetal macrosomia at the present stage. Identification of the main territorial features of the formation of anthropometric indicators at birth. Determining the degree and nature of the conditionality of the individual values of anthropometric indices at birth by social, biological factors, the peculiarities of the development of the prenatal period of development and seasonality.

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Materials and methods

For the study, questionnaires were compiled, including 20 questions about the presence of risk factors for the birth of a child with high body mass. A sociological survey was conducted using a questionnaire survey among 30 pregnant women who were registered at a family clinic. The mathematical method was used to process the data. Theoretical analysis and synthesis of scientific literature, periodicals about a large fetus and its effects on the mother's body.

Literature review

Scientists Martinchik A.N., Baturin A.K. were engaged in the study of the issues of healthy growth and body mass of children in Russia. [10]

By scientists as R.G.Sadykova [11], G.I.Gusarova [12], N.V.Nechaeva [13], M.V.Kuligina, O.E.Konovalov, O.N.Puchnina and others deal with the influence of the family on the formation of the health of children of early and preschool age, the role of prevention and treatment of diseases, and also in the rehabilitation of children. They revealed that the family formed a lifestyle, attitude to health, standards of hygiene and medical recommendations. According to their research, single-parent families belong to the group of increased medical and social risk, they should become a priority object of medical observation.

Analysis and results

Almost a third of the women surveyed (30.0%) had an excess of body mass index at the time of the beginning of pregnancy;

In (16, 6%) of the respondents, husbands had an excess of BMI;

In (6, 6%), that is, 2 women were diagnosed with diabetes;

From (13, 3%) of the respondents, previous pregnancies had signs of prolongation; Thus, for 100 respondents, almost 36% had a risk of developing a fetus with an increased weight. Another reason for the birth of a large baby can be obesity of the mother herself, her poor nutrition and following the principle "you need to eat for two" during pregnancy. During pregnancy, women take care of themselves and move even less, consuming even fewer calories, but now they feed more densely and more than usual. Therefore, there are problems with obesity in most mommy and excess weight in the baby.

As a result of our survey, it was established that 18 women held opinions on the need for two - 60%

Almost all respondents were familiar with the rules of rational nutrition during pregnancy, and only 53.3% adhered to the recommendations

Features of the course of pregnancy and childbirth large fruit

Today it is often described that most people consider a large fetus to be the result of heredity, but in fact the structure of the body and its development associated with the genotype begins to manifest itself much later. In the prenatal period, the growth and development of the fetus is directly related to environmental factors, the state of health of the parents, especially the mother. In the works carried out by Mylnikova Yu.V. and Protopopova NV, it is indicated that there are predispositions in the mother to a large fetus, namely, later menarche (over 15 years), the presence of cardiovascular and urinary system diseases, obesity, diseases of the gastrointestinal tract and thyroid gland [3]. In groups that had pregnant women with these pathologies, the birth of a large fetus was observed. Pregnancy with a large fetus is often accompanied by such complications as gestosis, threatened miscarriage, anemia.

Perinatal outcomes of labor large fruit.

The socio-hygienic urgency of the problem of fetal macrosomia is primarily due to the frequent perinatal morbidity and mortality in comparison with average statistical indicators [5]. A.L. Cherepnina found that the highest perinatal mortality is characteristic for fruits weighing 4000–4250 g, which is probably due to the absence of a "bright" clinic of a clinically narrow pelvis in the parturient women of this group. Perinatal morbidity in the group of newborns weighing 4,000–4,250 g is 2 times more than in the 4,251–4,500 g group, and is 50 times higher than this figure in the 4,401–4,750 g group. Therefore, many researchers recommend including women with an estimated fetal weight of 4,000–4,250. g to the category of increased risk [6].

A birth injury of the central nervous system can manifest as cerebral symptoms as well as symptoms of damage to the brain stem [3, 6]. Brain damage in fetal macrosomia is mainly caused by the management of vaginal delivery with a relative clinical inconsistency. The frequency of cefalohematoma and subaponeurotic hemorrhages during childbirth by a large fetus is 2-3 times higher than that of fruits with an average weight.

The frequency of birth injuries of the spine and spinal cord during fetal macrosomia also exceeds the number during fetal normosomy. According to S.L. Parilov birth injury in difficult passage of the fetal head through the birth canal is always combined, at least cervical-occipital. In this situation, the injury is constructive in the destruction of the spinal column and is caused by axial loading of the vertebrae in combination with excessive flexion and rotation. Because of the cartilaginous structure of the vertebral bodies, the vertebrae themselves are almost not damaged, destructive factors most often lead to tears and torn ligaments, dislocations of the vertebrae, ruptures of the radial branches of the vertebral

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arteries, spinal canal hematomas and spinal cord injuries [7].

In the early neonatal period, a symptom-complex of respiratory failure is observed, for example, rapid breathing, artimia of respiratory movements, increasing cyanosis, local and widespread bulging of the chest, resulting from damage to the phrenic nerve or roots of the spinal nerves CIII-SV. Also in newborns with macrosomia, the phenomenon of “imaginary well-being” arises, which manifests itself as a step-by-step and slow increase in neurological symptoms [8].

According to the authors [9], the forced position of a fetus with macrosomia in the uterus causes deformations of the limbs, hip dysplasia, clubfoot, etc.

Metabolic disorders in the antenatal period in fetal macrosomia are expressed not only in metabolic acidosis, but also in the hypoglycemic state of the newborn. In 16–20% of large newborns, low blood glucose is observed on the first day. Hypoglycemia in newborns weighing 4,000 g or more is clinically expressed as anxiety, cyanosis of the skin, tremor of the limbs, and muscular dystonia. The development of hypoglycemic conditions can be mediated not only by a lack of glucose in the general bloodstream, but

also by a large glucose consumption in large newborns against relative hyperinsulinemia [5].

Conclusion

The above-described data indicate the need for an individual approach in the delivery of pregnant women to large fetuses, suggesting further improvement of modern methods for diagnosing fetal macrosomia, as well as predicting the outcome of labor. Newborns with macrosomia, regardless of the general state at birth, should be considered a high risk group, as there is a high risk of the effects of birth trauma, various disorders in the early neonatal period, a decrease in the body's reactivity in the first months of life. Thus, the optimization of the tactics of administering pregnant women with macrosomia is associated with the timely detection and correction of extragenital pathologies, the use of contraception in the intergastal period, the rational intake of medications during pregnancy, and the prevention of pregnancy complications, such as preeclampsia and HCPF. One of the most important questions determining obstetrical tactics is the prediction of the fetal mass. The solution of all these tasks determines the relevance of this study.

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SECTION 29. Literature. Folklore. Translation Studies.

HUMANISTIC COMPONENT OF SOCIETY'S EVOLUTION AND AXIOLOGICAL POTENTIAL OF CREATIVITY OF D. S. MEREZHKOVSKY

Abstract: The features of contemporary globalizing mega-community, which actively breaks spiritual stereotypes and traditional humanistic norms, have been defined in the article. The aim of the article is to analyze the role of axiogenic components in the works D. S. Merezhkovsky, one of leading writers of the Silver Age literature, in changing of people's worldview towards achievement of evolutionary mature state. It is argued in the article, that humanistic constructions, new meaningfulness and senses, aims and ideals, participating in the creation of semantic context of the writer's artistic works, become a source and driving force of development of a personality on condition of interiorization of cultural and historical experience, successful transformation of inborn, natural level of its psyche into construction of the higher, the cultural level.

Key words: Society, worldview of personality, axiological reference-points, artistic work, divine-human hero, aesthetic traditions.

Language: Russian

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ГУМАНИСТИЧЕСКИЙ КОМПОНЕНТ ЭВОЛЮЦИИ ОБЩЕСТВА И ЦЕННОСТНЫЙ ПОТЕНЦИАЛ ТВОРЧЕСТВА Д.С.МЕРЕЖКОВСКОГО

Аннотация: В статье определены черты современного глобализирующегося мегаобщества, которое активно ломает духовные стереотипы и традиционные гуманистические нормы. Целью работы является анализ роли аксиогенных составляющих, заключенных в творчестве Д.С. Мережковского, одного из ведущих писателей литературы Серебряного века, в регулировании мировоззрения людей в направлении достижения ими эволюционно зрелого состояния. В статье утверждается, что гуманистические конструкции, новые положительные значимости и смыслы, цели и идеалы, участвующие в создании смыслового контекста художественных произведений писателя, становятся источником и движущей силой развития личности при условии интериоризации ею культурно-исторического опыта, успешного преобразования природного, натурального уровня ее психики и построения высшего, культурного.

Ключевые слова: Общество, мировоззрение личности, ценностные ориентиры, художественное творчество, богочеловеческий герой, эстетические традиции.

Introduction

Современное общество вступило в очень сложную эпоху своего существования, когда глобализирующийся мир порождает всеобщие проблемы в социальной, экономической, политической и духовной сферах, включая

массовые убийства, самоубийства, акты терроризма, техногенные катастрофы, безудержную миграцию населения из отсталых регионов планеты. Эта эпоха характеризуется возможностью закрепить в массовом сознании неограниченное количество самых

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разнообразных представлений и идейно-ценностных ориентаций исторического, духовного и материального опыта наций, поколений, государств. Однако вопрос о возможности утверждения тех жизненных ориентиров, которые регулировали бы социальные действия индивидов адекватно современному вызову истории, играли бы конструктивную роль в предвидении кризисных ситуаций, способствовали бы выработке наименее рискованных направлений развития и на этой основе – стратегии самосохранения и утверждения гуманистической, а также культуротворческой составляющих мировоззрения личности, - остается открытым. Установление глобальной формы сообщества - мегаобщества – оказывается процессом очень сложным и крайне противоречивым, активно ломающим духовные стереотипы и традиционные гуманистические нормы.

В последние годы особенно ярко обозначаются тенденции увеличения в мире дезадаптивных форм поведения, которые включают алкоголизацию, употребление наркотических и сильнодействующих психотропных средств, правонарушения и преступления. В мироощущении молодежи растет чувство одиночества, незащищенности. Кроме того, происходит превращение потребительства из признака благополучной жизни в некую ценность высшего порядка, обслуживаются и удовлетворяются самые капризные запросы капитала, допускаются самые бесцеремонные формы его поведения. А ценности более высокого, духовного уровня уходят на периферию массовых интересов. Средства массовой информации активно демонстрируют гедонистическое отношение к жизни, закрепляют бездумное потребительское отношение к предметам искусства, вещам, миру в целом. Современное общество обнаруживает явный дефицит прежде всего гуманистических принципов и нравственного сознания на фоне мировой дегуманизации общественных отношений и агрессивного стереотипа поведения личности.

В современных условиях литература выступает не только как художественное творчество, но и способна проявить себя как явление культурологическое. Произведения искусства несут информацию о ценностях человеческого бытия, приглашают к активному диалогу, в котором делается сознательная попытка привнести элемент эмоциональной выразительности. Художественное произведение не только вызывает переживание, но и обеспечивает возможность понимания, задавая направление последующей мыслительной деятельности. Раскрытие смыслового контекста

художественного произведения и интериоризация культурно-исторического опыта, заключенного в нем, становится источником и движущей силой развития личности, происходит преобразование природного, натурального уровня психики и построение высшего, культурного.

Подобным потенциалом осмысления ценностных ориентиров, общественных идеалов, социокультурных норм и жизненных принципов, способных выполнить функцию аксиогенного аттрактора, регулирующего мировоззрение людей в направлении достижения ими эволюционно зрелого состояния, обладает творчество одного из ведущих писателей литературы Серебряного века Д.С. Мережковского. В художественном мире произведений писателя, и, прежде всего, в трилогии «Христос и Антихрист» реализуется модель преобразования личности, соединившая в себе осмысление эстетических традиций прошлого, проявление в судьбе отдельного человека законов исторического развития и движение к будущему гармоничному существованию человека и общества. Важное место в системе ценностных ориентиров писателя занимает проблема постижения смысла истории, заключающегося в движении между прошлым (крушение язычества) и будущим (переход в «царство Духа»), соотнесении исторического процесса с цикличностью развития общества.

Необходимо отметить, что именно в русской культуре эпохи рубежа XIX – XX веков современность осознается как время выбора пути к возрождению личности, к изменению представлений о свободе и реализации этой свободы. Это приводит к усилению в литературе философского начала, стремлению переосмыслить социальное окружение, поведение индивида, пересмотру понятий времени, прогресса, истории, религии.

Возникает вопрос, что двигает ценности и идеалы в эпицентр выбора человеком, в том числе и художником, писателем, путей преодоления проблем и противоречий, что делает ценности участниками программ дальнейшего позитивного развития, позволяющими восстанавливать аксиологическую целостность человеческого бытия, гармонизировать отношения между человеком и природой, человеком и человеком, человеком и техникой?

Во-первых, среди наиболее существенных основ связи ценностей с культурой, историей выделяют активное, действенное участие ценностей в освоении человеком окружающего мира, в объединении индивидуальных действий людей для совместных системно-организованных движений. Это происходит посредством использования, в том числе и в критические моменты развития человека и общества,

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осознанных значимых понятий, суждений и образов, выражающих всеобщие смыслы культуры, культурные универсалии, концентрирующие это сознание, волю людей на реализацию высших норм и принципов, направляющих и стимулирующих культурную деятельность системой запретов, норм и идеалов, определяющих систему координат социальной общности, ограждающих от выхода за пределы культуры. Особое место занимает точка зрения относительно того, что ценности кристаллизуются в религиозных верованиях, этнокультурных идеалах (М. Вебер, Н.А. Бердяев). Так, по существу православие - это не только совокупность догматических формулировок, канонов и обрядов в культуре славян, но и определенный строй духовной жизни (ориентация на образ Христа-праведника, готового пожертвовать собой за веру, признающего равноправие всех людей, проповедующего любовь и прощение), духовный такт и вкус, отношение к социальному устройству, труду, семье, природе, вещам.

Во-вторых, ценности имеют свои особенные культурно-исторические начала. Речь идет об определенном культурно-историческом смысле, «духовной ситуации времени» (К. Ясперс), в которых рождается особое отношение к явлениям и качествам окружающего мира. Так, каждая эпоха выбирает себе в прошлом, иногда осознанно, иногда стихийно, близкие ей по духу традиции, служащие коррелятом ее опыта. Действительно, именно мастера слова часто обращались к прошлым, настоящим или будущим этапам истории в поисках оснований устойчивости и стабильности мира и воплощали их в ценностях простоты начальных (первобытных) идеалов, достигнутого (западного) материального комфорта или будущего (утопического) царства справедливости и равенства.

Д.С. Мережковский обращается к романной форме повествования и тем самым предельно расширяет свойственные искусству рубежа XIX – XX веков формы, приемы и средства художественной выразительности. Автор существенно расширяет эстетический потенциал современной ему культуры, включив в систему конкретно-исторических образов универсальные символы (дух-плоть, Христос-Антихрист, сверхчеловек-Богочеловек), способные раскрыть смысл важнейших проблем современной ему эпохи (язычество и христианство, разум и вера, действие и созерцание).

В данном смысле особо актуальными становятся размышления Д.С. Мережковского о сущности, идейном содержании мировоззрения индивида, соотношении в нем умозрительного и морально-этического начал. Писатель приходит к

мысли о переоценке ценностных ориентиров личности и ее свободе, способных позитивно повлиять на эволюцию общества. Выработка обновленного типа индивида приводит писателя к мысли о всемирности духовных основ человека, движущегося в поиске спасения к Богочеловечеству. Именно это объединение Мережковский считает высшим проявлением любви и свободы человека, одухотворяющим его существование и спасающим от одиночества. Обновленное христианство в виде религии Третьего Завета и возрождение истины Христа в человеческой душе, по мнению писателя, выступают в качестве способа достижения богочеловеческого состояния.

Materials and Methods

Основу писательской концепции преобразования личности составляют религия, история и искусство. Религия, по мнению Мережковского, принимает и освящает плоть человека, его творчество, свободу, исторический процесс выступает в качестве пути к «грядущему божьему миру», а искусство – способа перехода в будущее царство «Третьего Завета». Одним из основных качеств Богочеловека, считает Мережковский, является стремление к Прекрасному, воплощенному в Красоте исторического прошлого. Уже в одном из ранних произведений он называет Элладу счастливым моментом приобщения к Прекрасному: «Мне казалось, что это мгновение было вечным и будет вечно» [1, с. 322]. Позже писатель приходит к выводу, что именно постижение смысла Прекрасного позволяет понять, почему историческое прошлое прекраснее современности: «Через несколько веков для человека, чуждого теперешней борьбе людских эгоизмов, пейзаж... нашего современного города с его фабриками, магазинами... покажется таким же поэтическим, как для нас панорама Венеции...» [2, с. 351]. Понимание красоты исторического прошлого дает то ощущение счастья и свободы, которых нет у личности рубежа XIX – XX веков, утверждает Мережковский. В качестве эстетического аргумента для обоснования своего понимания счастья и свободы он обращается к творчеству Гете (основным мотивом которого является умиротворенность), а в качестве библейского – к III книге Царств (где Господь является в полной тишине).

Неотъемлемой частью бытия, формирующего сознание человека, Мережковский считает культуру, универсальная первооснова которой скрыта в древности. Задача личности в процессе преобразования состоит в изучении опыта духовных исканий предков, интерпретации свидетельств их жизни и попытке

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вернуть утраченные смыслы «текстов древней культуры». Такую попытку предпринимает в первой части «Христа и Антихриста» будущий Отступник Юлиан, он молится перед эллинской богиней Красоты Афродиты-Андиомены, ставшей воплощением синтеза «небесного» и «земного». Во второй части, в эпоху «воскрешения богов» богиня снова появляется из мрака земли, из тысячелетней могилы, и от ее голого невинного тела, от прекрасного лица не в силах оторвать своего взора верный сын церкви Джiovанни. Спустя два века, то чувство, которое два века назад испытал Джiovанни, переживает царевич Алексей.

В поиске идеалов Богочеловечества Мережковский идет от метафизической антиномической схемы: Христос и Антихрист, Дух и Плоть, христианство и язычество, «власть неба» и «власть земли». Для обоснования своей позиции в «Христе и Антихристе» он показывает, как эта метафизическая несовместимость проявляется в творчестве героев. Так, Арсиноя вылепила «двусмысленный и соблазнительный образ с прекрасным олимпийским телом и неземною грустью в лице» [3, с.110], а Леонардо да Винчи создал Иоанна Предтечу, напоминающим Ваха.

Мережковский проецирует проблему поиска Богочеловечества на систему возникающих в разных культурах в разные эпохи возвратов и повторений аналогичных ситуаций, обусловленных противоречивыми началами человеческого мышления – «двумя безднами». Писатель выбирает особенные, смутные времена. Таковы, например, эпохи Юлиана Отступника (христианство уже победило, но язычество еще существует), или Леонардо да Винчи (возрождается эллинизм, а христианство вырождается), или Петра I.

В центре «Христа и Антихриста» не история, а миф – миф о Юлиане, Леонардо да Винчи, Петре I и Алексее. Именно они отразили общие тенденции развития всемирной истории в период исторического христианства. Писатель воспринимает миф как традицию, проявляющуюся в постоянной идентификации вымысла с существующей реальностью и ощущением «священной повторяемости». Автор «Христа и Антихриста» создаёт повторяющиеся на историческом пространстве и отражающие противоположно-подобные грани рассматриваемой личности универсальные стремящиеся к преобразованиям типы мышления. Их ценностные искания позволяют, заглянув в прошлое, выявить и сохранить преемственность традиций и укрепить свою идентичность. Петр I в представлении Мережковского одновременно и богатырь, работающий так, как будто в нем было «что-то нечеловеческое, над людьми и стихиями

властное, сильное, как рок» [4, с. 474], и царь-Антихрист. Петр I стремится к преобразованиям, направленным на процветание России, но он пытается привить свободу принуждением. Строительство «на костях народа» «погибельного города на болоте» он оправдывает словами: «Стонет наковальня под молотом».

Традиционная проблема, которую предстоит решить героям Мережковского, – проблема соотношения в их сознании ортодоксальной веры и личной свободы. «Традиционное теологическое понимание отрицает существование христианской трагедии и боится самой мысли о ней. Странно, что отрицают трагедию в религии креста. Античная трагедия есть трагедия рока, христианская же трагедия есть трагедия свободы, и в ней открывается первофеномен трагического», [5, с.47] – писал Н.А. Бердяев.

По отношению к свободе у Мережковского отчетливо выявляются два типа героев: герой эсхатологический и герой богочеловеческий. Первый исповедует «свободу греха» – все эти люди грешны от рождения и по примеру посланца Бога Иисуса должны земным страданием заслужить искупление. Он совершенно отрицает свободу человеческую и утверждает исключительное действие Бога и Божьей благодати. Познание есть удел Божественный, единственное же, что нисходит непосредственно к человеку – его вера; все прочее – изощрение дьявольской гордыни. Но пафос отрицания эсхатологического героя – пафос регрессивный – пассивным страданием плоти не построить новый рай, а лишь вновь обрести утерянный.

Герой же богочеловеческий ставит проблему добра и зла – божественного и демонического – не как объективную во времени, но как противоречие двойственного человеческого начала. И если эсхатологический герой видит искупление в страдании, то богочеловеческий – динамический – отождествляет ожидание Судного Дня с творчеством. «Внутри христианского мира противоборствуют две моральные направленности: смирение и творчество, мораль личного спасения и страха гибели и творческая мораль ценностей, мораль отдания себя преобразению и преобразению мира» [5, 125], – отмечает Н.А. Бердяев. Этим рай начала – богочеловеческий отличается отрая конца – эсхатологического. Полет есть этика творчества, попытка диалога с Богом, не прикованность к земле, а стремление к Солнцу – Истине.

Оба типа героев претерпевают свою метаморфозу. По определению Мережковского, «Бог – бесконечное, конец и начало сущего», а черт – «нуменальная середина сущего, вечная плоскость, вечная пошлость под видом вечности»

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[6, с. 213]. Эсхатологический герой в своем ортодоксальном неприятии свободы также придерживается «нуменальной середины», он статичен во времени: «На мужичьем соборе в ветлужских лесах спорили почти так же, как четырнадцать веков назад, во времена Юлиана Отступника» [4, с. 666]. Таким образом эсхатологический герой вольно либо невольно отождествляет Христа с Антихристом.

Внутренняя проблема богочеловеческого героя намного сложнее. Начиная с Юлиана Флавия, богочеловеческий герой во Христе все, кроме свободы. Та самая метаморфоза, которая ввела в заблуждение все богоискательство – пошла к сложному, не разобравшись в простом. Метаморфоза самого Мережковского, считавшего позже, что задача человечества уже не в примирении двух «бездн», а в более полном осмыслении миссии Христа.

В единстве противоположностей скрыт смысл существования богочеловеческого героя. Вспомним Юлиана Флавия, пытавшегося синтезировать два непримиримых начала в новую, неведомую миру гармонию. Трагедия этого римского императора привлекала многих писателей. Но литература переняла у церкви сложившийся стереотип безжалостного гонителя христиан, язычника-безумца, реакционера-фаталиста. Попытки осмысления личностной трагедии императора мы можем отметить у Мережковского и у Ибсена в его драме «Кесарь и Галилеянин». Идею двух «бездн» у Мережковского правомерно сопоставить с концепцией Земного Царства Плоты – Кесарева и Небесного Царства Духа – царства Бога у Ибсена. Оба автора склоняются к идее Третьего Завета. Однако, если Ибсен лишь по-новому интерпретирует сложившиеся стереотипы, то Мережковский выходит за их рамки. Их основное отличие в том, что у Ибсена кесарь Юлиан – антитеза Христу, у Мережковского же – христианству. Ибсен рассматривает Юлиана Флавия в контексте мировой истории, Мережковский – в контексте богоискательства, гениально угадав не противоречие личности Юлиана и эпохи, а чувство духовной раздвоенности его мировоззрения. Таким образом, возрождение прошлого и единение его с настоящим – безумство о будущем, «лебединая песнь всей языческой древности». У Мережковского Юлиан восстает не против христианства как религиозной идеи, а против той идеи, которую культивировала историческая церковь. Образ живого Христа стал вытесняться монументальностью новоявленного божества. Историческое христианство подчинило личность Сына Бога вновь созданному полису (церкви), сделав его только икупителем. Церковные ортодоксы считают Сына Бога лишь смиренным

мучеником на кресте, но не Освободителем. Свобода же относится к злому двойнику Христа – Антихристу. «Я – вестник жизни, я – освободитель, я – Антихрист!» [3, с. 193], – ликует Юлиан. Трагедия Юлиана в том, что он также объединил в своем сознании Христа и христианство, отождествив живого Богочеловека с насилием, а Антихриста – со свободой. Насилие над личностью казалось ему самым злым из зол. «Величайший из императоров отбросил последние притязания на христианство и сменил Ария на Аполлона. Он был кесарь из кесарей – воин, ученый, истинный философ на троне. Ему казалось, что по его знаку вставало солнце» [7, с. 214]. Далее Мережковский, ссылаясь на Августина, утверждает: «То, что мы называем христианством, было от начала мира, пока не пришел Христос во плоти и бывшая от начала истинная религия не получила названия Христианство». И далее: Это значит: тени к телу ведут; боги всех погибших миров ведут к незаткнутому Солнцу – Христу» [8, с. 156]. Поклонение язычников Богу Солнца Мережковский называет «покрывалом христианской мистерии». В этих словах раскрывается трагедия и парадокс вероучения Юлиана: понял истину, приподнял над ней завесу фарисейства, но ошибся в имени, не разглядев в своем Антихристе – Гелиосе дохристианского Христа. Внешний Антихрист – церковь ввела его в соблазн своим перевоплощением Богочеловека. Гениально поняв главное, Юлиан не сумел рассмотреть чудовищную метаморфозу несвободного Бога и перепутал его тело с тенью, но из благородного Антихриста он становится в большей степени христианином, чем все соборы и праведники, предающие его анафеме. «Если так, делает вывод Мережковский, то свой Своего не познал, когда последний эллин в последнем бою, умирая, воскликнул: «Ты победил, Галилеянин» [8, с. 246].

На примере Юлиана Флавия отчетливо прослеживается метаморфоза богочеловеческого героя. Но неверно полагать, что такой герой из Антихриста сразу же становится непризнанным Мессией. Сам Мережковский в «Наполеоне», завершающем галерею богочеловеческих героев, пишет: «Думать, что Наполеон есть предтеча Христа Грядущего, так же нелепо, как и думать, что он предтеча Антихриста. В том то и великая его трагедия, и не только его, но и наша, что он сам не знает, чей он предтеча. В этом, в главном он – только вопрос без ответа» [9, с. 16]. По мнению Мережковского, это герой демонический в древнем языческом смысле. Не случайно в «Леонардо да Винчи», одно из центральных мест занимает легенда об ангелах, не поддержавших в небесной брани ни Бога, ни дьявола: «Свободные и печальные духи – не злые и не добрые, не

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темные, не светлые, причастные к добру и злу, тени и свету – изгнаны были верховным правосудием в долину земную, среднюю между небом и адом, в долину сумерек, подобных им самим, где стали человеками» [3, с. 480].

Высшее предназначение богоискательства – движение к свободе личности, но не отдельного человека, а всего общества; только тогда будет положен конец извечному противоборству духа и плоти, небесного и земного, христианского и языческого, и будет возможность в полной мере разгадать имя Иисуса Неизвестного – Освободитель, тем самым уподобиться Сыну Бога, став Богочеловечеством. «Может быть, страшной ценой мы вот-вот поймем, что неизвестное имя Христа – Освободитель и что, не приняв свободы, мы никогда не узнаем Неизвестного» [10, с.11], – утверждает Мережковский в своей итоговой работе «Иисус Неизвестный».

Мережковскому древние культуры представляются универсальной первоосновой культурно-исторического целого и предметом художественного изображения. Писатель обращается к реминисцентно-аллюзивному введению в текст тем и образов, которые относятся к разным пластам культуры, служат созданию коммуникативных кодов авторской модели человека и становятся универсальной знаковой системой. Восприятие Петербурга как окна в Европу является своеобразной аллюзией «Медного всадника» А.С. Пушкина:

Природой здесь нам суждено
В Европу прорубить окно [11, с. 587].

Было и другое восприятие Петербурга: как иллюзорного города, который «казалось, ... подымется и разлетится как сон». Налицо прием интертекстуальности – реминисценция из «Подростка» Ф.М. Достоевского: «А что как разлетится этот туман, не уйдет ли с ним и этот... город, подымется с туманом и исчезнет» [12, с.113].

В трилогии много аллюзий, связанных с каноническим текстом Иоанна Богослова, духовными стихами о недолгом царстве на земле Антихриста. Это и сон царевича Алексея, когда ему снится, как народ, падая ниц, поклоняется «зверю», и его страшное пророчество: «И падет сия кровь от главы на главу, до последних царей, и погибнет весь род наш в крови» [4, с.713]. Это и

многочисленные сравнения Петра 1 с Антихристом.

Как известно, в народном сознании, особенно в среде старообрядцев, Петр 1 воспринимался как претендент на место Христа. «И почему он первый, – рассуждает автор бегунского сочинения, – потому, что он на ся взял первенство самого истинного Бога и Спасителя нашего Иисуса Христа, то есть и противник Богу, и святым его» [13].

Conclusion

Таким образом, в своем творчестве, и, прежде всего, в трилогии «Христос и Антихрист» Мережковский обосновывает концепцию возрождения личности через синтез времен, эпох и культур. Этим писатель настаивает на следовании высшим ценностям. Такая ориентация возвышает человека, обогащая его духовно, увеличивая индивидуальный потенциал действия, побуждает к творческому преобразованию среды в соответствии с гуманистически выверенными идеями, что особенно важно в нашем беспокойном мире. Мережковский сближает чрезвычайно отдаленные друг от друга исторические эпохи, создает иллюзию универсальности временных пространств, мифологизирует исторические факты, вводит в текст произведения реминисцентно-аллюзивные темы и образы, относящиеся к разным пластам культуры; обогащает конкретно-исторические образы универсальными символами (дух-плоть, Христос-Антихрист, сверхчеловек-богочеловек), способными стать истинными ценностными ориентирами (язычество и христианство, разум и вера, действие и созерцание). Обращение к творчеству Д.С. Мережковского убеждает в возможности личности осмысливать эстетические традиции тех или иных эпох, осуществлять культурную идентификацию, диалог в освоении культурных норм и образцов общения и поведения разных эпох и народов, использовать их символы, идеалы и ценности для противостояния деструктивному влиянию быстротечности и фрагментарности жизненного мира субъектов новых цивилизационных отношений (личности, семьи, социальных групп, этносов).

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**SECTION 29. Literature. Folklore. Translation
Studies.**

INITIAL ENLIGHTENED CHARACTERS IN UZBEK LITERATURE

Abstract: *This article is devoted initial enlightened characters in Uzbek literature and also analyzed jadids activity as well.*

Key words: *Jadids, Uzbek language, literature, knowledge, colonization, education.*

Language: *English*

Citation: *Muminov, B. Y. (2018). Initial enlightened characters in Uzbek literature. ISJ Theoretical & Applied Science, 11 (67), 189-192.*

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Introduction.

First of all, it is better to look at the lexical definition of the word and term “educated” (ziyoli), “enlightened” (jadid). In “Descriptive dictionary of Uzbek language” the word “ziyo” is said to have been derived from Arabic word meaning “ray, to shine” that it can also be defined as “radiance, light, and ray”. The figurative meaning of the term can be defined as “knowledge, enlightened, science, similarly anything that can lighten up the mind”. That is to say, the word “ziyokor” (enlightener) may mean the one who shares education, knowledge, enlightener, knowledge promoter, “ziyoli” (educated) – the one who is busy with intellectual labor, educated, erudite, and enlightened. The word “jadid” also means “new, up-to-date, and last” in Arabic. In other words, it is used to refer to the supporters of novelty, the participant of enlightenment movement.

The initial usage of the term “enlightened” (ziyoli) in Uzbek literature is related to the career of enlighteners (jadidlar) that this case is characterized with its members whose mind concerning historical-social aspects in the society is awake, peculiarity to enlightened people. Indeed, there had been attempts to express certain ideologies through the icons that are knowledgeable, enlightened and mature. However, the enlightened characters created in changing literature of early XX century are said to be the result of social goal of enlightenment representatives who lived their life in harmony with the misery of nation and fatherland.

It is clear that the emergence and formation of the enlightenment movement in Turkistan is

connected with the name of Crimea-Tatar scholar Ismail Gaspirinskiy. His views, new innovative ideas directly influenced on the lives of people living in a dependent society in terms of emergence of significant social-political and spiritual-cultural changes. In the book of the researcher Saidakbar A’zamkhujaev “The autonomy of Turkistan”[1] we can read the following lines: “Enlightenment, as it is clear, emerged at the turning point stage of social development of Central Asian region. The comprehension of regression in colonized Turkistan, leaping back from processes of the Globe of the land, intense fights against movements of local inhabitants towards freedom, stability of spirituality by local patriots stimulated the idea of modifications of society in wide scale”.

Munavvarkori the son of Abdurashidkhon, Mahmudkhuja Behbudiy, Abdulla Avloniy, Zaki Validiy, Hamza Hakimzoda, Abdurauf Fitrat, Chulpon and other enlightenment representatives considered the colonization of the land under the chain of tyranny, the regression of country were mainly due to spiritual obsolete ideology of people. That was the reason why the enlighteners looked at the education as the main issue to be reformed in the initial stage. Apart from what has just been mentioned, they strived to spread enlightenment ideologies in communities. In other words, the enlighteners understood that they could not succeed in the development of Turkistan unless they educate the people, unless the people are attracted to Russian and global achievements of culture. However, such works had already been banned in the beginning

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years of the century under administrative prohibitions and tyrant tsar censorship [2].

The changes took place in the social-economical life of Turkistan in the beginning of previous century required people to modernize their outlooks accordingly. However, the emergence of new social-economical approaches in the case of Turkistan was not natural aftermath of social-historical progress; it was more of a result of external impact. This resulted in division of the country into two groups – people who realized the quiddity and essence of novelty and people who did not. Those who comprehended the quiddity of novelty considered the enlighteners, in the first place, should wake up the minds' of people help them to realize importance of modernization in accordance with time and help to understand the quiddity of novelties for the development of nation. That is why; the enlightenment literature appeared in the stage as a literature which was socially trended in true meaning.

In socially trended literature, as it is certain, the issue of main hero is the most important since social-esthetic; spiritual-moral ideals of the writer are embodied in the main hero. It is clear that our literature had been renewed in early XX century under the influence of enlightenment ideology, and truly new (enlightenment) literature was formed. In our opinion, such reformation of the literature, surely, leads to renewal of main hero [3]. So, in which aspects can we see these renewals? Who is the main hero of enlightenment literature?

Considering division of the educated performed in Turkistan in terms of social appearance and tasks, leading characters may also be divided into several types in the literature of this period. For instance, the heroes – the educated people that the enlighteners came up with were devoted individuals who staked their lives for Homeland, the destiny of the whole nation, concerned with freedom of human being, gained religious and worldly knowledge proficiently. Such as, the Enlightened character in “Padarkush” drama of Behbudiy can be seen as the icon which embodied the social status and ambitions of the enlighteners of Turkistan at the threshold of the century [4]. Since Behbudiy was one of the mature politician and active sociologist of his time, he attempted to absorb his opinions about miserable fate of the nation and his own worthy purposes into this character. This, in turn, was one of the forms of attempt to wake up social consciousness of people oppressed from cruelty of colonization so as to change the existing daily lifestyle. Apparently, the writers like Behbudiy who lived with such great ambitions and could feel the grief of nation in deep in their heart expressed their own ideals in the form of characters of various qualities or through their tongues.

From the point of view of enlightened character in the works of Behbudiy, the only means of rescuing

nation from cruelty is knowledge and education. And the aftermath of ignorance had resulted in the colonization of local nations under the reign of others, made them face the pain of vagrant in their own Motherlands. That is the reason for choice of enlightened individuals as heroes for certain social purposes in the literature of this period. Since, it is impossible to change people's performance in society and daily life before changing their spirituality and social comprehension.

In the story of “Kurboni jaholat” by Chulpon, we can see two diverse types of the enlightened characters with various outlook and ambitions. The main hero of the story Eshmurod is a person who is striving for education thinking the solutions for the problems in the life lies in education and tries under this ideology. Muminjon, on contrary, although he was educated at madrasah, is a person left in the quagmire of cruelty, his mind is racked in old measures, and does not to change the way he leads his life [5]. The protagonist Eshmurod has not matured as an individual yet, however, we can see social-spiritual maturing process unique to the enlightened person. The antagonist Muminjon, on the other, is a dogmatic conservative person who does not care about society, retreated in his own shell, and sees his small “puddle” as a great “sea”. The actions of both characters mainly depend on personal views, fictitious purpose of the creator. The work reflects social issues of found at that time that the attitude of the writer mainly dominates the expression of fictitious idea. As we read the story we realize that either hero is truly enlightened. However, this serves to support the moral message the writer wants to deliver which is the cruelty is the main factor for regression of nation, and the way to get rid of this regression is only through knowledge and education. The personality of Eshmurod is not fully opened up in the work. However, if his conversation with Muminjon, spiritual agonies, and actions are observed, it is possible to say that the writer wanted to describe renewed enlightened character through him in his imagination [6]. For instance, “Eshmurod got a bit better after one month. However, he would think all day and night to study in the city escaping from his home which is the shelter of cruelty and stupidity...Then Eshmurod sits on the bench and begins to read newspaper. In any part of the newspaper, poor Turkistani people are regretfully written to have partied ignorantly and unskilled. Again exasperation... Again disappointment.

Is our Turkistan going to wake up from ignorance? Or not? If we go on this way, we are going to come to an end... face degeneration...” Such opinions were disturbing the enlightened of time like Chulpon as a social power and was stimulating to some extent. Chulpon draws the appearance of a human being who has been struggling to realize his own position, but whose

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social viewpoints have not fully formed in the means of Eshmurod.

The story of “Doctor Muhammad Dior” of Chulpon, on the other hand, is devoted to completely different issues. Muhammad Dior, in the interpretation of the writer, is a man striving for education, grieving over the fate of the land. He tries to overcome all stumbles of life with patience and endurance, he sees displeasures in the society, issues in the life as the result of society’s being “swallowed” in a quagmire. He realizes that any human can achieve either spiritual or materialistic heavens through only gaining knowledge, and earnestly fights for his ambition. One more enlightened character is also mentioned in the story that he is Muhammad Dior’s teacher – a coach who has graduated from Ufa Marasia Institution that he was fully portrayed as the real enlightened man who was living in dreams of nationalists like Chulpon [7]. The influence of the coach on Muhammad Dior to mature as a real enlightened man who is devoted to his Fatherland and people is expressed through passionate description. Chulpon deeply understood the miserable fate of people as an active participant of social reality and tries to absorb his own social points into characters in his works: “If the people realize their own benefits, open national schools and madrasahs, send their children to the universities of Europe, prepare doctor, lawyer, editor and craftsmen, tradesmen and engineer, and if these people take their own positions and perform their tasks properly and work for benefits of our people, it would be so supreme and beautiful!” As the scholar of literature Dilmurod Kuronov stated [10], Chulpon created ideal hero in the real atmosphere background he knew himself – he created an active person who can be lesson for everybody. The author knows that the society, first of all, needs enlightened people who are spiritually mature, aware of current affairs of the world, devoted to the Fatherland and nation’s destiny. Chulpon tried to influence on the outlook of his readers through actions, ambitions, and thoughts of his ideal character, and to deliver the painful messages suffering his heart to the people. The character Muhammad Dior in this work, as opposed to Eshmurod, appears to be truly enlightened person [8]. He saves himself from being “the victim of cruelty” – finds solution to all his problems from education.

The character Olimjon in “Yangi saodat” of Hamza also supports our argument one more time. Olimjon is influenced by his mother Mariam who is a bit aware of literacy to study sciences. Analyzing his father Abduqahhor’s life full of cruelty, grieving for the situation of his mother and sister, he realizes that the only way to overcome these challenges is through knowledge and education, he turns to spiritual and financial wealthy person through education only. Similarly, as a person who has come to find his own

position in the society, Olimjon gradually influences positively on his family members and people around himself. In this work Olimjon appears as a person who shares the same conviction with Muhammad Dior, the main hero of the story “Doctor Muhammad Dior”. Events and occurrences, actions of heroes of both works, surely, is a result of ambition to change society by new enlightened people of this period. The author does not satisfy with just delivering his moral message through the characters, he states with his own words at the end of the work: “It is clear that one who seeds wheat reaps wheat whereas one who seeps barely reaps barley. Verily, as it has been clarified, the person who studies will surely find happiness being a scholar, the illiterate cannot, surely, create anything more than vileness”. The main reason of choice of the enlightened characters as Muhammad Dior by enlightenment authors who see education as primary weapon for development of nation is for these points.

The work of Fitrat “Munozara” written in 1909 includes debates of the enlightened people with all kinds of outlooks. The writer fully understood that in order to develop the nation, first of all, modifying of existing social discipline regulations, educating common people – changing their spiritual comprehension, studying development ways of advanced countries and employing these methods in Fatherland were requirement. Consequently, Fitrat attempted to deliver these issues to common people through his works of various genres. Several of his works depict that separation from Motherland is considered to be death while dying for homeland is considered to be survival for the patriot enlightened character. Fitrat, in his work “Munozara”, had sharply written about the positions in the society, aims and tasks of two types of enlightened characters. Although mudarris (teacher at madrasah) is one of the “conservatizes”, Frenchman is truly enlightened – really educated person as it is described. The exact choice of Frenchman by the writer is just a device that Fitrat reflected himself as a gist hidden as a man struggling in that social situation. It is the education assisted the Englishmen owners of a small island to conquer and rule India, Egypt, Belgium and a part of Arabia, appointed uneducated Russians as rulers over Muslims of Tatar, Kyrgyz, Turkistan and Caucasus”. The author is concerned about future of peoples of Turkistan who have sunk deep into quagmire of cruelty, surrounded by superstitions and heresy, tries to state that they should get rid of such situation via education and knowledge, intellect and comprehension. Both characters of work are educated people [9].

The work “Sayyohi Hindi” (Indian traveller) of Fitrat can also be counted as one of the most mature form of enlightenment literature, it had significantly impacted on the spirituality of the period, and caused discussion and debates. The work analyzes social-

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political life, current system of government and reality of lifestyle in Bukhara from the point of view of a man of advanced comprehension and broad horizon. You are illiterate, yet I speak proudly that there are all kinds of facilities for you to gain knowledge". The opinions of the traveler on the local inhabitants of Bukhara are of great social inspirational value in the work. The hero speaks out through the tongue of the author on Motherland – Bukhara's future destiny as a truly enlightened man and real patriotic devotee of the period the following philosophical opinions: "You should also be aware of the fact that if you the locals of Bukhara do not efficiently use the richness – blessing of Allah, the stranger outsiders will soon gain them, and install

their machinery and factories on every of them to your astonishment.

Conclusion.

All of the analyzed works have one aspect in common that all of them employed the enlightened person as the main hero. It should also be stated that the enlightened characters chosen by the writers were those who were aware of current affairs of the world, could understand the policy ruling the country, concerned with her future and striving for the development of the nation. More importantly, they redefine the word enlightened in a modernistic style through their heroes.

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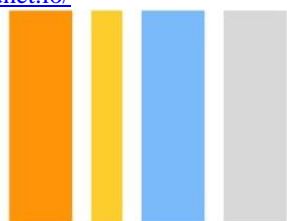
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