Teoretičeskaâ i prikladnaâ nauka

Theoretical & Applied Science

Philadelphia, USA

Teoretičeskaâ i prikladnaâ nauka

nauka

Theoretical & Applied Science

Science

11 (79)

2019

International Scientific Journal
Theoretical & Applied Science

ISSN 2308-4944

1 1

9 772308 494195

International Scientific Journal

Theoretical & Applied Science

International Scientific Journal

Theoretical & Applied Science

Impact Factor ICV = 6.630

Impact Factor ISI   = 0.829
based on International Citation Report (ICR)

The percentage of rejected articles:

29%
Accepted

71%
Rejected

QR – Issue   QR – Article

Denis Chemezov
Vladimir Industrial College
M.Sc.Eng., Corresponding Member of International Academy of
Theoretical and Applied Sciences, Lecturer, Russian Federation
https://orcid.org/0000-0002-2747-552X
chemezov-da@yandex.ru

Valeriy Shchetnikov
Vladimir Industrial College
Master of Industrial Training, Russian Federation

Vladimir Goremykin
Vladimir Industrial College
Master of Industrial Training, Russian Federation

Leonid Khripkov
Vladimir Industrial College
Student, Russian Federation

Oksana Dubova
Vladimir Industrial College
Student, Russian Federation

Kirill Filatov
Vladimir Industrial College
Student, Russian Federation

Ivan Moiseev
Vladimir Industrial College
Student, Russian Federation

VOLUMETRIC AND GRAPHICAL PRESENTATION OF STRESS-STRAIN STATE OF THE ALUMINIUM BILLET AT REALIZATION OF THE FORGING PROCESS

Abstract: *Modeling of plastic strain of the aluminium billet by forging was performed in the article. Contours of stress and effective plastic strain of the billet material over the entire time range of the forging process were obtained. Dependencies of stress from effective plastic strain and strain velocity from the billet height at realization of the forging process were built.*
Key words: *forging, a billet, effective plastic strain, stress, a forged piece.*
Language: *English*

Clarivate Analytics indexed

Introduction

Forging is the process of plastic strain of metal billets to give them the necessary geometric shapes and properties. Metals are heated to the certain temperature to facilitate the strain process when forging, but in special cases, materials are processed in cold state. Massive forged pieces are manufactured in large quantities on hydraulic presses.

The forging process in the die is similar to the casting process. Metal in solid state is deformed and begins to flow, filling the die cavities [1-10]. In this case, strain velocity will vary over the entire time range of the forging process in the entire volume of metal. These strains lead to the decrease of strength characteristics of the forged piece in the conditions of cold forging.

The calculation and the subsequent analysis of the forged piece state after machine cold forging will allow to draw the conclusion about the influence of emerging stresses in plastic material on strain.

Materials and methods

The process of cold forging of the aluminium billet with the height of 110 mm and the outer diameter of 150 mm was simulated. The following parameters units were selected for this purpose: lbf/in^2, s, lbf, and psi.

Processed material was elastic-plastic with the arbitrary dependence between stress and strain. Mass density of material was 2.5×10^{-4}, the Young's modulus was 10×10^6, and the Poisson's ratio was 0.33. The values of effective plastic strain varied in the range from 0 to 4, the values of yield strength varied in the range from 4.785×10^3 to 3.081×10^4. The punch was accepted as the perfectly rigid body.

The punch progressively moved along the Z-axis. The loading curve described the dependencies of motion from time.

Contact of the punch with the billet was carried out on the end surfaces. The coefficients of static and dynamic friction between the contact surfaces were accepted 0.1; the coefficient of viscous friction was accepted 2.055×10^3.

The strength calculation was performed with the solution step of the mass recalculation of elements of 1.2×10^{-7}. Energy was calculated into the total balance.

Results and discussion

The billet height after plastic strain was 40 mm. The stress contours of the billet material when forging are presented in the Fig. 1.

The billet model was displayed as the segment for more detailed presentation of stress state of material. The surface layer of the outer diameter in contact with the punch is subjected to maximum stress when reducing the billet height by 0.3 times. The inner layers of the billet are subjected to stress in the less degree. Stresses arise from the surface layer to the center of the billet at the angle of 45 degrees in these volumes. The forged piece has stress state in the surface layer and in the center. The percentage of stresses of the forged piece material in the center and in the surface layer was 67%.

The contours of effective plastic strain of the billet material when forging are presented in the Fig. 2.

Intensity of effective plastic strain of the billet material is identical to stress. The difference is that the most deformed volume of the forged piece material has the shape of the ring located slightly below the surface layers in contact with the end surface of the punch. The maximum value of the coefficient of effective plastic strain of the forged piece material was 1.3.

The dependencies of stress from effective plastic strain of the billet material over the entire time range of the forging process are presented in the Fig. 3.

The average values of stress and effective plastic strain calculated along the Z-axis were accepted for building the dependencies. Gradual compression of the billet is characterized by the decrease of stress in the most deformed volumes of material. These volumes are located in the upper part of the billet (from the pressure side of the punch). Small strain and the increase of stress in material are observed in the lower layers of the billet. Maximum effective plastic strain of material was determined in the upper part of the forged piece after processing.

The dependencies of velocity of plastic strain of material from the billet height over the entire time range of the forging process are presented in the Fig. 4.

Strain velocity of the billet material is constantly increasing. Strain velocities of material can be changed up to 4 times on the accepted length of the billet. The billet material is deformed when maximum velocity at the beginning of the forging process. Strain velocity is reduced by 1.5 times when maximum compression of the forged piece material.

Conclusion

The forged piece after processing has the most deformed volumes in the center and in the surface layer from the pressure side of the punch. The decrease of material stress at the increase of effective plastic strain on the some time ranges of the process is characteristic feature of the billet forging. The most deformed material of the forged piece is supposed to be removed by the mechanical methods during formation of the hole.
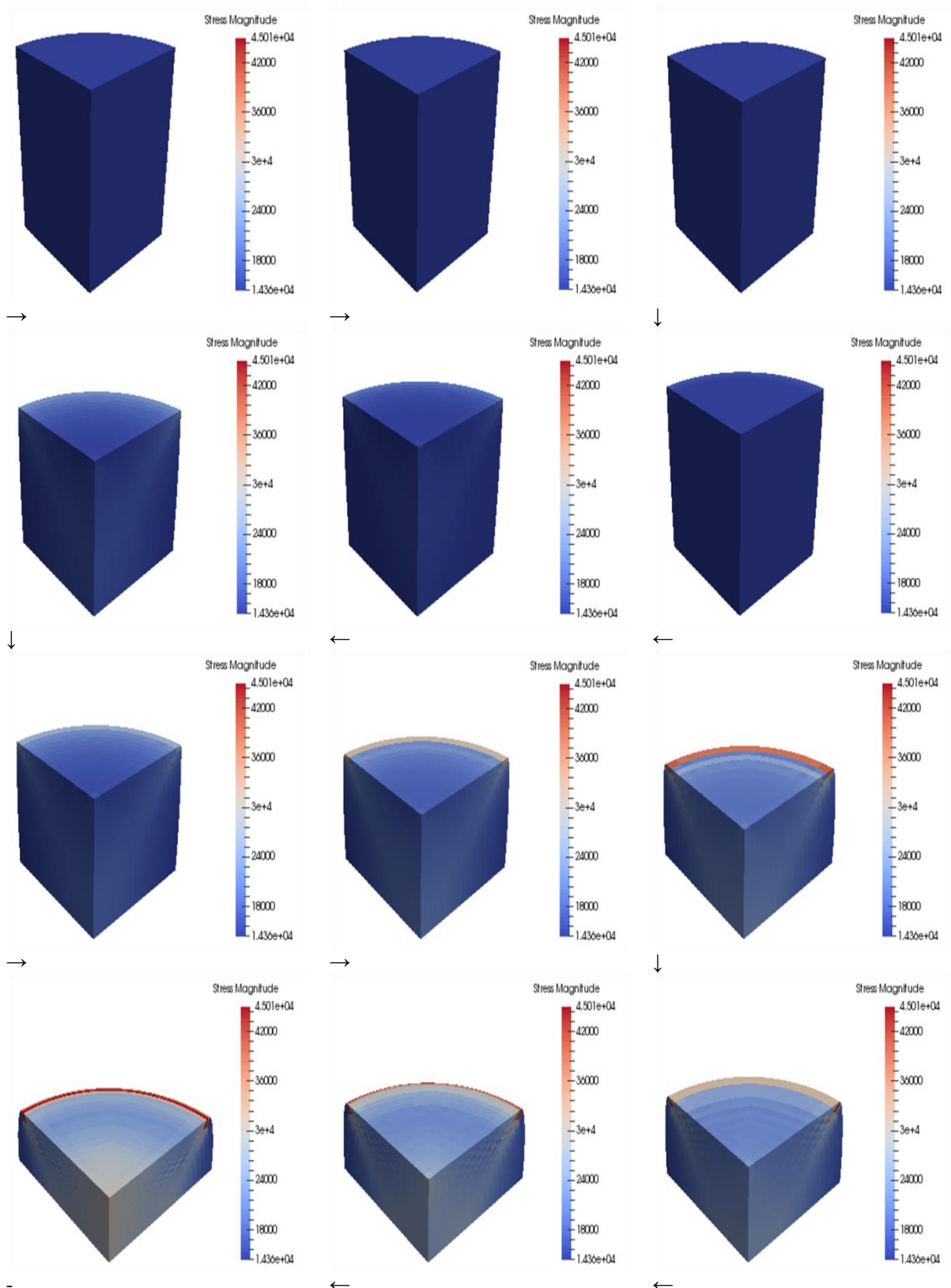
Figure 1 – The stress contours of the billet material.
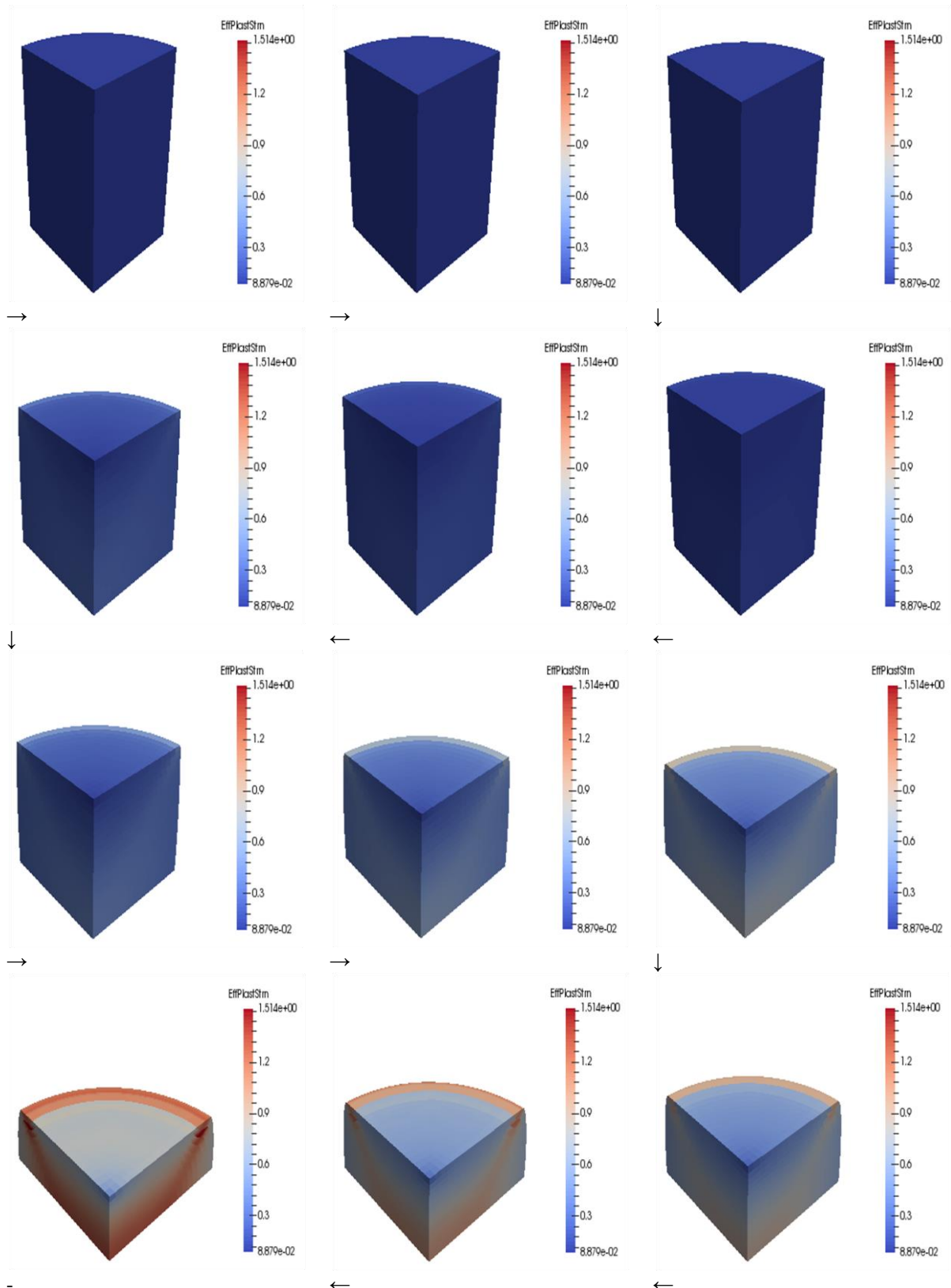
Figure 2 – The contours of effective plastic strain of the billet material.
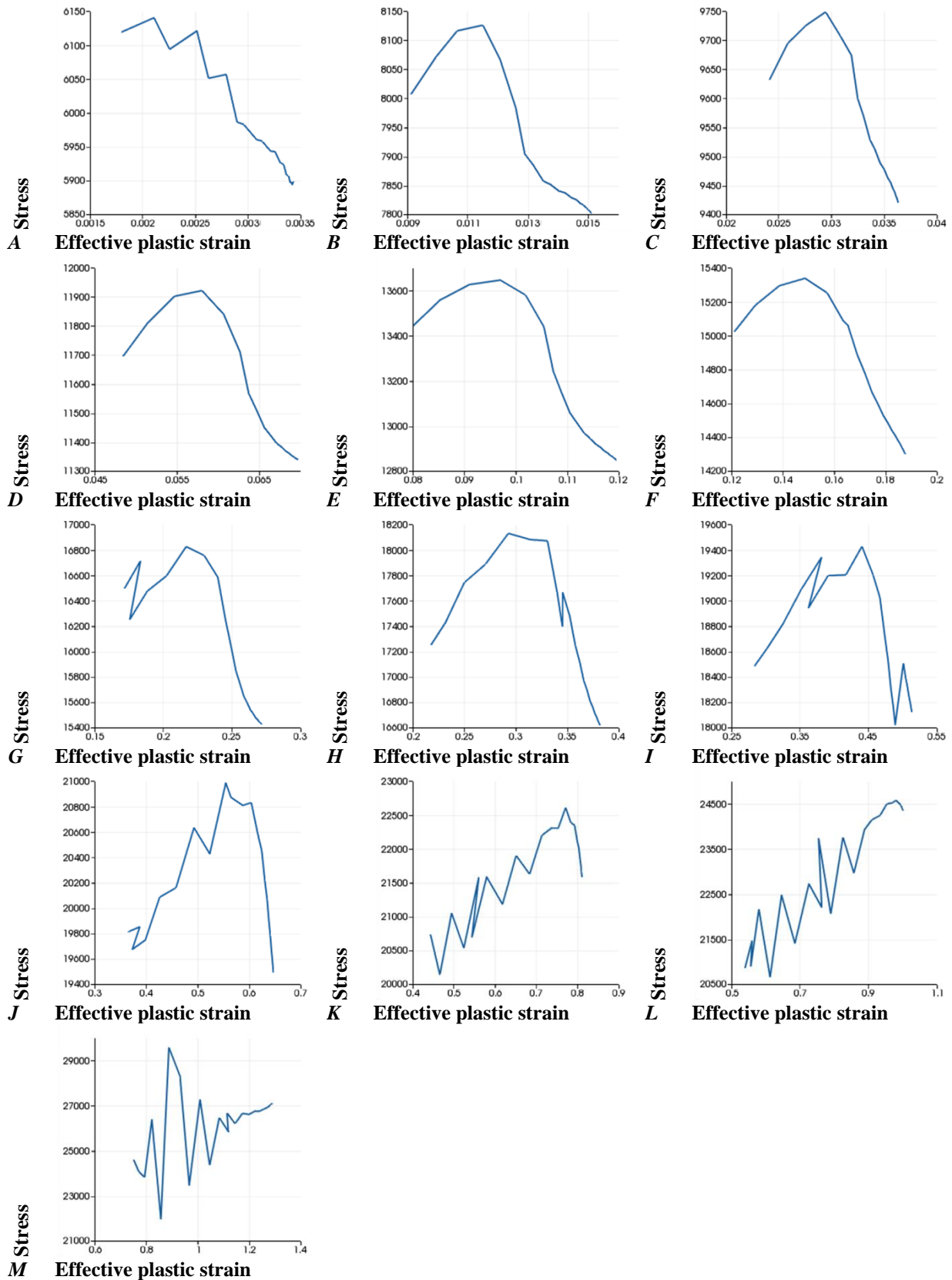
Figure 3 – The dependencies of stress from effective plastic strain of the billet material over the entire time range of the forging process.
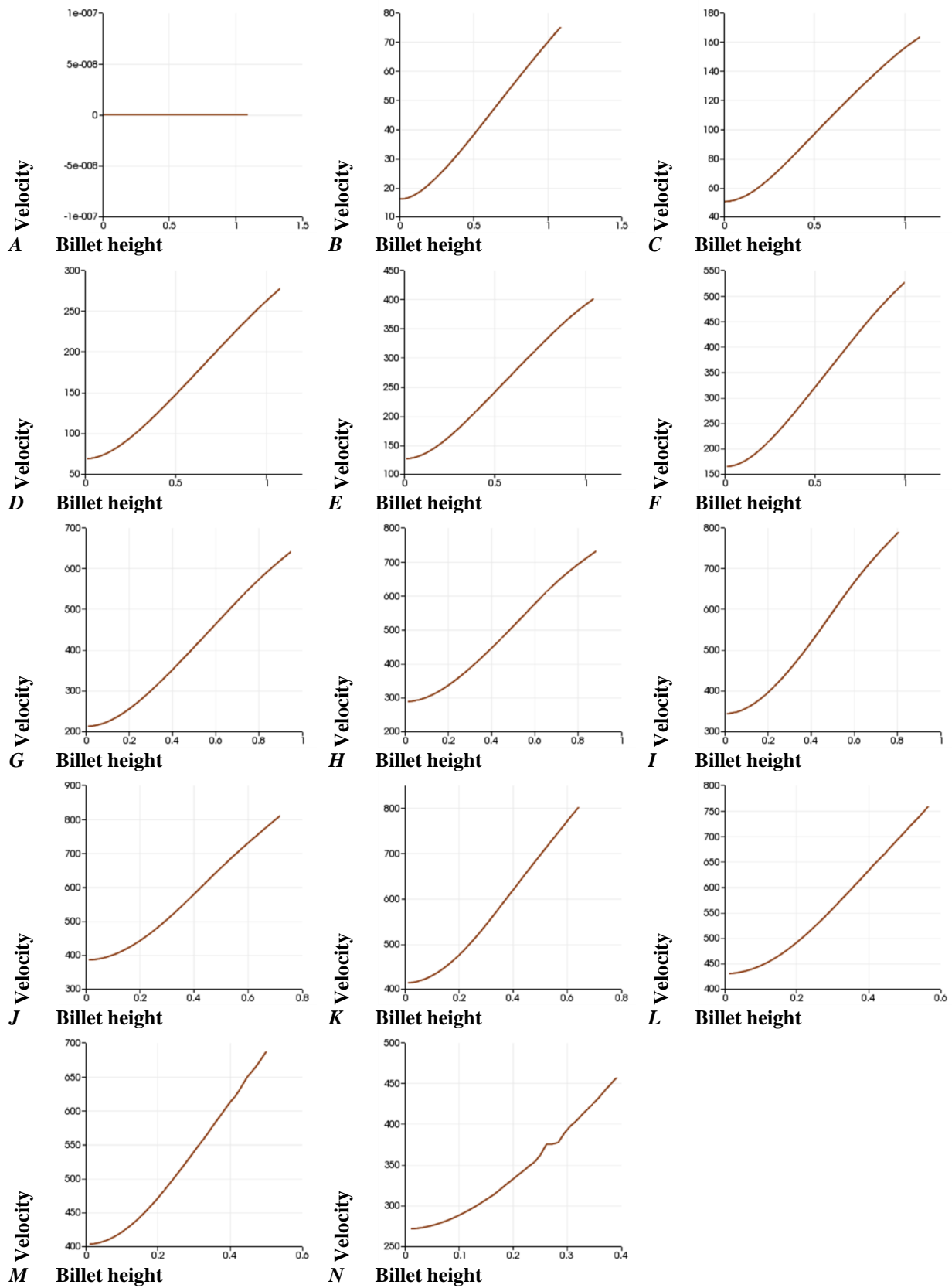
Figure 4 – The dependencies of velocity of plastic strain of material from the billet height over the entire time range of the forging process.

References:

1. Yuganova, N. A. (2013). Method for determining stress within the workpiece during forging. *Fundamental research, № 11 (part 9)*, 1810-1814.
2. Yang, T. S., Hwang, N. C., & Chang, S. Y. (2007). The prediction of maximum forging load and effective stress for different material of bevel gear forging. *Journal of Mechanical Science and Technology, 21*, 1566-1572.
3. Andreyachshenko, V. A., & Isheva, Yu. B. (2018). Features of deformation behavior of structural steel during forging. *PNRPU Mechanics Bulletin, no. 4*, 7-19.
4. Aliev, I. S., Zhbankov, Ia. G., & Perig, A. V. (2013). Factors affecting the parameters of forging large forgings. *Bulletin of Perm National Research Polytechnic University «Mechanical Engineering, Materials Science», vol. 15, no. 1*, 27-44.
5. Markov, O. (2012). New technological processes of free forging. *Novye tekhnologii i dostizheniia v metallurgii i materialovedenii, Chenstokhova: Quick-druk, Pol'sha*, 414-418.
6. Kargin, S. B. (2012). Innovative forging technology of large forgings. *Pressure processing of materials, no. 2 (31)*, 101-106.
7. Sankin, Y. N., & Yuganova, N. A. (2012). Linear model of the blank in forging. *Fundamental research, № 11 (part 4)*, 952-955.
8. Tolkushkin, A. O., Lezhnev, S. N., & Naizabekov, A. B. (2019). Development and research of the billet forging technology in the newly designed step-wedge dies. *Materials Science and Metallurgical Technology*, 750-754.
9. Maslyuk, V. A., Mamonova, A. A., & Grabchak, A. K. (2002). Effect or porous billet forging temperature on parameters of the fine structure of the ferritic phase in powder carbon steel. *Powder Metallurgy and Metal Ceramics, Vol. 41, Issue 7-8*, 355-359.
10. Rathi, M. G., & Jakhade, N. A. (2014). An Overview of Forging Processes with Their Defects. *International Journal of Scientific and Research Publications, Volume 4, Issue 6*, 1-7.

Clarivate Analytics *indexed*

Botir Abdurasulovich Rahmonov
Termiz State University
Master degree, teacher
b-rahmonov@list.ru

ABOUT BAYSUNIAN DIALECTAL-ETHNOGRAPHIES

Abstract: *This article refers to the dialectic ethnographisms preserved in the speech of the populations living in the territory of young Uzbekistan. Examples are also given from local ethnographisms, which indicate the processes of crossbreeding and hybridization of dialects in a given territory.*
Key words: *Ethnography, dialectology, Turkic language, Baysun, token.*
Language: *Russian*
Citation: Rahmonov, B. A. (2019). About Baysunian dialectal-ethnographies. *ISJ Theoretical & Applied Science, 11 (79),* 508-511.
Soi: http://s-o-i.org/1.1/TAS-11-79-103   *Doi*: crossref https://dx.doi.org/10.15863/TAS.2019.11.79.103
Scopus ASCC: 1203.

О БАЙСУНСКИХ ДИАЛЕКТАЛЬНЫХ-ЭТНОГРАФИЗМАХ

Аннотация: *В данной статье говорится о диалектальных этнографизмых, сохранённые в речи на селения, проживающих на территории юнного Узбекистана. Также приводятся примеры из местных этнографизмах, где указываются процессы метисации и гибризации диалектов на данной территории.*
Ключевые слова: *Этнографизм, диалектология, тюрских язык, Байсун, лексема.*

Введение

Узбекский язык по своему диалектальному разнообразию занимает особое место среди тюркских языков. По сложности диалектального состава диалекты узбекского языка в известной степени можно сравнить только с диалектами и говорами азербайджанского языка. Один из учёных, изучивший узбекские диалекты широкомасштабно, Е.Д. Поливанов с удивлением писал о том, что ни один тюркский язык не является богатым и разнообразным на диалекты как узбекский язык и каждый говор может являться основой для отдельного литературного языка [1,3].

Отличие диалектного состава узбекского языка от других языков тюркских народов проявляется на всех уровнях строя языка и это истолковывается двумя явлениями [2]. Первое, взаимоотношения среди родственных тюркских языков *(Метисация-взаимовлияние и взаимослияние).* Например, слово «бий» *(«бой», буквально: богач)*в казахском языке используется и в некоторых «джекающих» диалектах Сурхандарьи: Бийбобомдан хабар келди *(Пришло сообщение от бия-дедушки) (Из дастана «Алпамыш»).* Второе, взаимовлияние неродственных языков *(Гибридизация-взаимовлияние и взаимослияние неродственных языков).* Например, влияние персидско-таджикского языка очень заметно в узбекском и азербайджанском языках, чем в других тюркских языках *(особенно на фонетических и лексических уровнях).* Это обстоятельство можно объяснить тем, что Азербайджанская Республика соседствует с Исламской Республикой Иран и миллионы азербайджанцев проживают на территории Ирана, а обилие персидско-таджикских лексем в узбекском языке и его говорах истолковывается тем, что издревле на территории Узбекистана жили этнические таджикские народы рядом с узбеками.

Анализ предметных вопросов

В частности, и в узбекских диалектах Сурхандарьи занимают весомое место персидско-таджикские лексемы и выражения. Большинство

из них составляют этнографизмы. Например, названия продовольствия и блюд: **ширгуруч** (рисовая молочная каша), **ширкади** (каша из тыквы), **ширчой** (кипячёное молоко с чаем солью, сливочным маслом и чёрным перцем), **чакки** (кислое молоко, из которого отцежена вода), **зардоб** (сыворотка от кислого молока), **чалоб** (прохладительный напиток из кислого молока), **нишалда**, **нўшҳалво** (сладкое блюдо из взбитых яичных белков с сахаром и мыльным корнем), **холвайтар** (кушанье из муки, за жаренной на масле с сахаром); скотоводческие термины: **курра** (ослёнок), **гўсала** (телёнок), **тойхар** (ослёнок по второму году), **ширвоз** (молочный, выкормленный молоком ягнёнок); названия, связанные с земледелием и садоводством: **довучча** (зелёный урюк, абрикос), **зардоли** (абрикос), **пойноб** (место вытекания воды), **Ошхудойи** (угощение по случаю поминок), **дарвешона** (по дервишески, раздача соседям кушанья), **хатим** (религиозный обряд, проводимый в честь духа умерших), **бобочақириш** (совет перед свадьбой), **дангана** (делёжка мясо между собой), **питрўза** (подаяние беднякам в честь после разговенья поста), **қирқчилтон** (сорок неразлучных духов), **хомталаш** (обряд жертвоприношения, раздача мясо животного), **тўл** (окот, овец).

Методология исследования

Изучение истории узбекского языка и его диалектов имеет важное значение не только для языкознания, но и для истории и этнографии.

Когда речь идёт об узбекской диалектологии, нужно уделять особое внимание на этнографизмы. В частности, если Сурхандарьинская область выделяется от других территорий нашей страны своим диалектальным разнообразием, то Байсунский район оазиса отличается богатством на диалектально-этнографизмы. Это говорит о том, что Байсун издревле являлся колыбелью человеческой цивилизации, одним из очагов культуры и ценностей, что на этой территории до сегодняшнего дня сохраняются материальные и нематериальные наследия, обычаи и традиции, образцы устного народного творчества и этнографизмы, на этой территории в 70-годы прошлого века в отношении изучения диалектов осуществлены некоторые работы. В частности, Сурхандарьинский учёный-лингвист С.Рахимов, в подготовке своей кандидатской диссертации «Лексика узбекских диалектов Сурхандарьи» [3] больше уделяет внимание на диалекты именно этой территории. Основную часть слов, собранных в «Словаре узбекских диалектов» [4], составляют диалектные слова данной территории. Кроме этого, учёная оазиса Х.Файзиева опубликовала ряд научных статей о диалектах этой территории. Но данные исследования ограничивались только диалектальным уровнем, не обращено внимание на этнолигвистические и лингвокультурные особенности диалектов (Может быть, система того периода не давала возможности на это).

В результате наблюдений и изучений этнографизмы Байсуна можно подразделять на следующие тематические группы:

• Этнографизмы, означающие названия национальных обычаев, религиозных обрядов, традиций и ценностей: **ошхудайи** (угошение по случаю поминок), **дарвишона** (по дервишески, раздача соседам кушанья), **хатим** (религиозный образ, проводимый в честь духа умерших), **чупран, питрўза**, **дангала, бобочакириш** (совет перед свадьбой), **беточар** (церемония представления невестки после её прибытия в дом жениха), **кирчилтон, айтилган мол, хомталаш, тоқсон кирса, тўрғай кадамича кун узаяр, ўн саккиз яшар қизи бор ўтовдан қон томиб туради**;

• Этнографизмы, связанные с названиями племён и родов: **тортувли, обохли, куса** (безбородый), **райимтуда, араб, мункаовул, жалойир**;

• Этнографизмы, обозначающие продовольствие и домашнюю утварь: **жалама** (жидкая в виде каши еда), **нонбости, ғилминди, чопқи, жуволдиз** и другие.

• Этнографизмы, обозначающие одежду и украшения: **чарчи, лачак** (старинный женский головной убор, головной платок), **курта, масси, мукки** (кустарная сыромятная обувь), **дигдика** и другие;

• Этнографизмы, связанные с скотоводством и земледелием: **тўл, тўла**, чувуз (оғуз), **бўчаламоқ, гелачай, қоғаноқ, кўнарги, томизғи, уютма, оқлик кўртмоқ, ийдирма, энчи, чагана, қўшоқ, кўкан, куви** (куби), **тулуп, пишгак, қўтон, бичмоқ, ахталамоқ, тувча, тўхли, шишак, дагар, чибич, чув, пайкал, ойанда, бойиди** и другие.

Анализ и результаты
Примеры из Байсунских этнографизмов.

Тўққизтабақ (тоққизтебек) – угощения в честь друзей жениха в день бракосочетания. По этому обычаю гостей угощают девятью различными блюдами и после угощения друзья жениха бросают в чашку деньги.

Тўркунлатар (теркунлетер) – после свадьбы родители невесты приглашают к себе дочь в гости. Этот обряд называется тўркунлатар и в настоящее время называется «Қиз чақирди» (буквально: «звать дочь» - приглашение молодой посетить родителей).

Жавкағув (жевекув) – в день бракосочетания молодая невеста в огонь льёт три

Clarivate Analytics indexed

ложки масла. Этот обряд выполняется для того, чтобы молодая семья была обеспечена пропитанием.

Жузкуримчи (жузкерьмчь) – на следующий день после свадьбы молодая открывает своё лицо. Родственники, пришедшие увидеть невесту, дарят ей подарки.

Карижилик (карижьлк) – в день бракосочетания жениха угощают заранее дня него сваренным костным мозгом (костным жиром). Потом угощают костным жиром и друзей жениха, чтобы они тоже скоро стали такими же женихами.

Айнакурсатар (эйнекерсетер) – обряд, проводимый в день бракосочетания. При этом обряде бабушки заставляют молодожён смотреть в зеркало, говоря «кто красивей, жених или невеста?». Йендиги кизлар айна курсатардиям билмайди (из разговора).

Қанжиға (қенжыге) – в день свадьбы, когда жених увозит невесту из её дома, джигиты кишлака преграждают путь. Они требуют от жениха козлёнка, предназначенного для этой цели и после получения подарка открывают путь.

Ис (ьс) – у узбекского народа есть такой обычай. В этот день собираются все родственники и поминают умерших, читают молитву. Этот обряд проводится в определённые месяцы.

Тўғиз (тоғыз) – у узбеков имеются девяноста шесть (в некоторых источниках девяноста два) племён. Тўғиз является названием одного из племени.

Қўнғирот (қоньрет) – название одного из узбекского племени.

Чарчи (черчь) – платок косынкообразный, которого накидывают старушки на голову.

Лачак (лечек) – древний головной убор женщин.

Пошшойи тенга (пошшойь тене) – среди ожерелья женщин бывает одна монета. Её называют "пошшойи танга", которая переходит от поколения к поколению.

Летиба (летьбе) – украшение, которого носили, в основном, невесты. Это украшение прикрепляли к носу.

Курта (курте) – издревле женщины носили её сверх головного убора. Это корошкое женское покрывало наподобие паранджи с рукавами и украшениями.

Айнахалта (эйнехелте) – домашнее украшение, которым оформляли дом, юрту невесты. В этот мешочек клали косметические средства и вешали его на решётчатом каркасе юрты.

Жарғунчок (жаргунчок) – ручная мельница. В древности не было мельницы, поэтому использовали это приспособление. Между тесаными камнями клали зёрна пшеницы и вращали рукой. Таким образом получали муку. Жарғунчогим гумбур-гумбур этади, нортуялар қулоқ солиб ўтади (из устного народного творчества узбеков).

Толтобок (толтобок) – специальная посуда для пищи, изготовляемая из древесины таля (ивы) или орехового дерева. Толтобокда қатлама, сўрамасдан обкетма, журайберма аразлаб, мендан қуруқ қоп кетма (из узбекского устного народного творчества).

Рапида (репьде) – приспособление для печения хлеба. Выбирается жёсткая материя, вырезается из неё кусок в виде кружка (два куска). Соединяют эти два куска, получается кружкообразный мешочек, посередне сделают проём, углубление, заполняют его соломой или ватой. Надевают рапиду на руку, положат на неё готовое тесто и лепят его к стенкам горячего тандыра. Она используется для того, чтобы не получить ожоги руки.

В заключении можно сказать то, что для изучения этнографизмов Байсуна, нужно проводить широкомасштабное научное исследование.

References:

1. Polivanov, E.D. (1933). *Uzbekskaya dialektologiya i uzbekskiy literaturnyy yazyk*. Tashkent.
2. Polivanov, E.D. (1935). *Materialy po grammatike uzbekskogo yazyka*. Tashkent.
3. Rakhimov, S. (1974). *Leksika uzbekskikh dialektov Surkhandar'i*. Tashkent.
4. Rakhimov, S. (1995). *Slovar' uzbekskikh dialektov*. Tashkent.
5. Shoabdurakhmanov, Sh. (1975). *Uzbekskiy literaturnyy yazyk i dialekty uzbekskogo naroda*. Tashkent.
6. Amanturdiev, A.Zh. (2007). *Evfemika poslovits po zhivotnovodcheskoy rechi*. Tashkent.
7. (n.d.). Materialy dialektologicheskoy praktiki studentov fakul'teta Uzbekskoy filologii (2012-2018).

8.   Ashirboev, S. (2008). *Uzbek dialektologiyasi*. Tashkent.

9.   Abdullaev, F. (1957). *Uzbek tilining kipchok shevasi*. Tashkent.

10. Omonturdiev, A., & Rakhmonov, B. (2019). *Surkhondare dialektal-enografizmlarining izoҳli luғati*. Tashkent.

11. Kashgari, M. (2012). *Devan o tyurkskom slovare*. Tashkent.

Odina Djurabaevna Kodirova
Andizhan State University
Basic doctoral student of the chair of "General Psychology"
Republic of Uzbekistan

THE PSYCHOLOGICAL AND HISTORICAL CONDITIONS OF THE DEVELOPMENT OF EMOTIONAL INTELLIGENCE

Abstract: *This article presents the views of foreign scholars on emotional intelligence, the problem of personality and intellectual unity, the models of emotional intelligence, ideas about social intelligence, and theoretically developed concept of emotional intelligence.*

Key words: *Emotional Intelligence, Capability Models, Mixed Models, Emotional Competence, Individual Measurements, Emotional Creativity, Model of Emotional Resonance.*

Language: *English*

Citation: Kodirova, O. D. (2019). The psychological and historical conditions of the development of emotional intelligence. *ISJ Theoretical & Applied Science, 11 (79),* 512-514.

Soi: http://s-o-i.org/1.1/TAS-11-79-104   *Doi*: crossref https://dx.doi.org/10.15863/TAS.2019.11.79.104

Scopus ASCC: 3200.

Introduction

In today's modern psychology, the development of emotional intelligence is one of the most pressing problems. The origin and development of emotional intelligence has been studied by various scholars from different perspectives, theories, models. In Russian psychology, the problem of the interconnection of thoughts and emotions has been explored in various ways, e.g. S. Vygotsky's idea of unity of mind and effect [Vygotsky, 1999], the idea of emotional and intellectual unity by S. L. Rubinstein [Rubinstein, 2000], foresight of this function. Emotions reflected in the works of O. Tikhomirov's school [Tikhomirov, 1984]. Western psychology, which has historically focused more on capabilities, has debated the connection between thinking and emotion through a new construct called Emotional Intelligence.

Research methods.

Emotional intelligence: capability models and mixed models The idea of emotional intelligence naturally comes from E. Thorndayke, the interpersonal and interpersonal relationships. It came from the development of ideas for Gardner's social intelligence. The need to combine both cognitive and personal characteristics of the individual in one conceptual area creates discrepancies in understanding this construct. In discussing this problem, there are usually models of ability and mixed models. In ability models, Emotional Intelligence is often understood as a set of cognitive abilities, meaning that the term content is set at the intersection of cognitive and emotional areas.

Mixed models add attention to personality traits when discussing the content of emotional intelligence [Meyer, et al., 2000]. Theoretically developed concept of emotional intelligence was presented by Dj. Mayer and P. Salovey can be thought of as the authors' concept, which relates to capability models. Within this approach, emotional intelligence is defined as four key factors:

1. The ability to detect emotions,
2. The ability to use emotion lightly,
3. The ability to understand emotions,
4. The ability to regulate emotions.

These four factors are reflected in the process of interpersonal relationships. Emotional intelligence is like a psychometric mind because it can be measured by tests with the right and wrong answers [J. Meyer, et al., 2001; P. Salovey, 2005]. D. Goulman concept also applies to mixed models, and has played an important role in popularizing the notion of emotional intelligence. According to D. Goulman, Emotional Intelligence (or "emotional competence") involves

personal and social competencies, such as personal self-control, empathy, and more. [D.Goulman, 2008]. Thus, emotional intelligence is a prerequisite for the success of human activity, as well as various human characteristics. The construction of emotional intelligence may be seen as practical from the standpoint, not only because it predicts a person's success, but also because human emotional intelligence is based on the development of knowledge and norms (D.Goulman, 2008). , Emotional Intelligence has been shown to predict success in learning activities [Sanchez-Ruiz, 2013] and at work [Fox, Spector, 2000; Goulman, 2008; Joseph, Newman, 2010; Cherniss, 2000] Psychological structures and conception of emotional intelligence. It show that there are many semantically related concepts that can be explained by individual measures of emotional intelligence or a combination of them, such as emotional ability, emotional maturity, emotional competence, emotional culture, etc. [Andreeva, 2008]. The study of the relationship between traits: determines the level of moral self-awareness of a person, the level of self-esteem, and the degree of psychological rationality [Kornilova and Chief cherished, 2010]. At the same time, we find it very interesting to examine the connection between emotional intelligence and creativity as a capability that is directly related to the process of human thought, since such focus is on the problem of unity of mind and new ways of conceptualization. In psychology, it is confirmed that emotions are linked to creativity in a variety of ways: theoretically based assumptions that emotions may or may interfere with the creative process are its complementary products. [Averill 2005]. The correlation between certain measures of creativity with the level of emotional intelligence is known from research (Sanchez-Ruiz et al., 2011). One of the most widely used concepts that reveal the mechanisms of emotional response to creative abilities is (T.Lubart and I.Gettsa) "Emotional Resonance Model" (ERM) [Lyubart, Mishuru, 2005]. According to this model, emotional aspects of a person's experience contribute to the formation of creative associations through easy access to concepts. The authors include the following components in their models: emotional expressions (or this class includes nonsensical emotions experienced by a person related to the concepts in memory), automatic resonance mechanisms that provide information about someone's emotional state. is activated from endocepts and other endocepts and is the limit that resonates with activated endoepsy and the appropriate concept or expression into working memory. Due to emotional resonance, there is a connection between concepts linked through endocepts which allows for the formation of different associations that manifest themselves in the form of metaphors. A number of studies by the authors show that the breadth of human emotional expression plays a major role in the productivity of creative activity, and this effect is particularly characteristic of associative thinking. It promotes the integration of conceptual areas of creativity and emotions.

In a study by J.Averill, he interpreted a specific problem of the problem through the concept of "emotional creativity" as the ability to change the meaning of his emotional reactions [Averill, 2000]. Emphasizing several classes of emotional reactions, the author focuses especially on their highest levels, with the development of a new response technique that is so unique that it is not reflected in language, such as experience of love, anger, sadness, etc. depends on According to data obtained using sensory measurement techniques (Inventory of Emotional Creativity, ECI, see [Valueva, 2009]), this correlates with openness to new experiences and the scale of cooperation in the Big Five questionnaire, self-esteem, and self-efficacy. , 2009]. Emotional intelligence and emotional creativity involve the use of emotionally and mentally to ensure a person's success. However, if emotional intelligence requires analytical skills to choose the only correct reaction to an emotional problem, then emotional creativity, by contrast, is focused on avoiding the usual reaction. A comparison of these two constructs with opposite attitudes tendencies in similar situations. Conducted by Ivkevich and his colleagues. According to the results, emotional creativity and emotional intelligence are relatively variable [Ivcevic et al., 2007]. The impact of emotional intelligence and emotional creativity on a person's creative behavior is also controversial. According to various foreign authors, creative thinking can be facilitated by better understanding and expressing emotional perceptions, understanding different effects of emotions on thoughts, and understanding that different emotions can be exacerbated or weakened by different activities (J. Mayer, P.) .Salovey, 1997). Emotional creativity, on the other hand, contributes to the success of creative activities related to expressing different emotions. However, some studies do not find a direct link between emotional intelligence and creativity (Ivcevic et al., 2007).

The theoretical validity of the assumption that emotional intelligence is related to the success of an individual's creative activity leads Western researchers to the idea of mediating human emotional abilities in the creative process. In particular, the lack of communication can be partly explained by the emotional impact of certain types of creativity (creative activity related to managing their emotional state). ng express types) In turn, it can be involved in managing the relationship between emotional intelligence, emotions and creativity. A similar effect was shown in a study by J. Mayera and E. Hanson in the article, "The Effects of Judgment Coordination. when it is pleasant". The idea is presented to the

person more attractive and vice versa [Meyera, & Hanson, 1995].

Conclusion.

Similar results have been shown in linking emotional and memory processes [Meyera, et al., 1995]. The relationship between emotional intelligence and creativity is being actively explored in various aspects. The relevance of emotional intelligence research results with other variables is usually explained by the authors not only from a valid point of view but also from theoretical methodologies for measuring emotional intelligence used in each specific case.

References:

1. Andreeva, I.N. (2008). On the formation of the notion of "emotional intelligence". *Issues in Psychology, no. 5*, 83–95.
2. Valueva, E.A. (2009). *Diagnosis of emotional creativity: J. Customizing Everill questionnaire*. In the book: D.V. Lucin, D.V. Ushakov (Ed.), Social and emotional intelligence: From processes to dimensions. Moscow: RAS Institute of Psychology.
3. Vygotsky, L.S. (1999). *Reflection and speech*. Moscow: Labyrinth.
4. Goulman, D. (2008). *Emotional intelligence*. Moscow: AST.
5. Grugin, V.N. (2008). *Psychology of general ability*. St. Petersburg: Peter.
6. Kornilova, T.V., Smirnov, S.D., Chumakova, M.A., & Kornilov, S.A. (2008). Novototskaya-7. Vlasova EV Defined Theories Modify Kwack's questionnaire (in the context of examining student achievement). *Psychological Journal, 2008, 29 (3)*, 106-120.
7. Kornilova, T.V., Chumakova, M.A., Kornilov, S.A., & Novikova, M.A. (2010). *Psychology of uncertainty: the unity of the individual's intellectual and personal potential*. Moscow: Sense.
8. Lubart, T., & Mushiru, K. (2005). The creative process. *Journal of Higher School of Psychology, 2 (4)*, 74–80.
9. Lucin, D.V. (2004). *Modern ideas about emotional intelligence.* In the book: D.V. Lucin, D.V. Ushakov (Ed.), Social intelligence: theory, measurement, research. (pp.29-35). Moscow: RAS Institute of Psychology.
10. Rubinstein, S.L. (2000). *Basics of general psychology*. St. Petersburg: Peter.
11. Sergienko, E.A., et al. (2010). Adaptation of the test by Caruso in the Russian sample of Emotional Intelligence. *Psychological Journal, 1*, 55–73.
12. Tikhomirov, O.K. (1984). *The psychology of thinking*. Moscow: State University.
13. Austin, E.J. (2010). Measurement of ability emotional intelligence: results for two new tests. *British Journal of Psychology, 101(3),* 563–578.
14. Averill, J.R. (2005). *Emotions as mediators and as products of creative activity*. In: J.Kaufman, J.Baer (Eds.), Creativity across domains: Faces of the muse, pp. 225–243.
15. Averill, J.R. (2000). *Intelligence, emotion and creativity: From trichotomy to triunity*. In: R.Bar-On, J.D.A.Parker (Eds.), Handbook of emotional intelligence: Theory, development, assessment, and application at home, school, and in the workplace. (pp.363-376). San Francisco, CA: Jossey-Bass.
16. Sanchez-Ruiz, M.-J., Mavroveli, S., & Poullis, J. (2013). Trait emotional intelligence and its links to university performance: An examination. *Personality and Individual Differences, 2013, 54(5)*, pp. 658–662.
17. Fox, S., & Spector, P.E. (n.d.). Relations of emotional intelligence, practical intelligence, general intelligence and trait affectivity with interview outcomes.

Clarivate Analytics indexed

QR – Issue   QR – Article

Shavkatjon Zairjanovich Jumakhanov
Namangan State University
The Republic of Uzbekistan, Namangan region, Namangan city,
Docent of the Department of Geography
shavkat_72@mail.ru

Abdukodir Maxammadjon ugli Toshpulatov
Namangan State University
The Republic of Uzbekistan, Namangan region, Namangan city,
Student of the 3rd course of the Department of Geography
abduqodir98.98@mail.ru

GEOPOLITICAL VIEW OF THE CENTRAL ASIAN REGION: UZBEKISTAN'S GEOGRAPHICAL LOCATION IN THE REGION AND ITS RELATIONSHIP

Abstract: *This article analyzes the geopolitical situation in Central Asia, as well as the geopolitical situation and strategic relations of Uzbekistan in the heart of the region.*
Key words: *regional, inter-state relations, partnership relations, non-interference in internal affairs, neighborhood relations, equality, strategy.*
Language: *English*
Citation: Jumakhanov, S. Z., & Toshpulatov, A. M. (2019). Geopolitical view of the Central Asian region: Uzbekistan's geographical location in the region and its relationship. *ISJ Theoretical & Applied Science, 11 (79),* 515-519.
Soi: http://s-o-i.org/1.1/TAS-11-79-105   *Doi*: crossref https://dx.doi.org/10.15863/TAS.2019.11.79.105
Scopus ASCC: 3305.

Introduction

Central Asia, which is located in the heart of the Eurasian continent, is of particular importance among the regional, economic, social, historical, cultural and other aspects of the world. In this region, which includes Kazakhstan, Turkmenistan, Uzbekistan, Kyrgyzstan, and Tajikistan, the competing interests of the leading global powers intersect. The region has enormous energy and mineral resources, cultural and civilization and, most importantly, human potential and labor resources. At the same time, there is the threat of international terrorism, extremism and drug business, which is located near a major source of instability. This requires the countries of the region to work together in unity and integrity. Considering these circumstances, Central Asia has been showing positive growth rates recently. Regional cooperation in all areas is strengthening. The most pressing problems in the region – security, state borders, and water use – are systematically addressed. The adoption of the UN General Assembly's resolution on Central Asia is a clear indication of the international community's recognition of the unification of the countries of the region and their joint efforts in addressing common problems, security, and sustainable development [10].

The territories of Central Asia from ancient times have attracted the attention of neighboring countries. History proves that Darius I, the ruler of Iran in the pre-Christian era, Alexander's Macedonian aggression against conquering Central Asia. In recent years, the Kushan invasion of Central Asia, the invasion of the Turkic kaganate in East Turkestan, the conquest of Central Asia by the Arab Caliphate in the VII-VIII centuries, the invasion of a large Mongol empire led by Genghis Khan in the early 13th century, and by the end of the 19th century. The struggle

Clarivate Analytics indexed

between Tsarist Russia and Great Britain shows the enormous geopolitical importance of the country.

So, with what attractive features does Central Asia attract the attention of many forces? First, the geographical location of the region is located in a strategically favorable region, at the crossroads of the historic "Silk Road" and the trade route between India and northern countries – Russia and Europe. Secondly, Central Asia, with its rich natural resources, has attracted the attention of many rulers since ancient times and is well within the geopolitical interests of the major powers of the time. This, in turn, has prompted the major powers to join Central Asia in the geopolitical interests and encouraged them to take active action in the region. The area is in the heart of the mainland because according to Nicolas Spekmen's geopolitical views, anyone who controls Eurasia will decide the fate of the world. Such approaches have, of course, always been of interest to the country.

Currently, all Central Asian countries support systemic dialogue, the interests of all parties and the development of mutually beneficial cooperation on the basis of reasonable compromise [7]. In this regard, especially in the heart of the region is Uzbekistan.

The Republic of Uzbekistan is a dynamically developing independent state. Its microgeographic role is favorable because of its borders with all countries in the region. Consequently, the territorial features of Uzbekistan and its geographical location play an important role in the selection and implementation of domestic and foreign policies. The country today serves as a link between neighboring states. All of this will help integrate the republic into the world economy, attract foreign investment, and make the country a regional center for mutually beneficial cooperation, the transit of goods and capital [3]. It has pursued a foreign policy with its four nuclear powers: Russia, the People's Republic of China, India, and Pakistan, which does not pursue a foreign policy based on compromise or close military cooperation. Due to the fact that the Republic of Uzbekistan as a sovereign state pursues a policy of mutually beneficial neighborly, political, economic and social co-operation with each country in the world, a stable situation has emerged in our country and Uzbekistan is steadily developing along its chosen path. In particular, the President of the country, Mirziyoev, held 18 interstate visits in 2018 and reached an agreement on 1,080 projects worth $ 52 billion [5].

It is worth noting that in today's socio-political situation in the world, this state of stability can at any moment become unstable under the influence of internal and external factors. The long-standing war in the Islamic Republic of Afghanistan in the south of Central Asia, the deployment of NATO forces in this country, and the activation of extremist and international terrorist organizations (al-Qaeda, the Taliban, ISIS) destabilize the military-political

situation in the region. is possible. The war in Afghanistan has devastated the country's underdeveloped economy. This war is currently the main obstacle for Central Asian countries to access new ports in the "warm seas" and thus to integrate into the global economic relations [11].

In this regard, the March 2018 Tashkent Conference on Afghanistan was held. The Tashkent Declaration, adopted at the end of the conference, reflecting the unanimous position of all its participants, was a unique program for peace in Afghanistan. It was only after this conference that international efforts to initiate the negotiation process with the participation of all political forces in Afghanistan, including the Taliban. As a result of peace in Afghanistan, a "painful spot" will be eliminated not only in Uzbekistan and Central Asia but in the world. It is not only a terrorist and extremist "function" but also a source of drug trafficking.

This will create favorable conditions for the construction of roads and railways, pipelines that transport natural resources, and the development of regional and trans-regional trade through a discussion of common security and stability. As a result, Uzbekistan will also have access to the ocean along the Termez-Herat-Karachi route.

On September 10, 2012, the leadership of Uzbekistan adopted the Concept of Foreign Policy Activity of the Republic of Uzbekistan, which reflects the main aspects of the country's foreign policy. Including:

1. Uzbekistan reserves the right to participate in unions and international organizations provided that it does not contradict national interests in the country.

2. Uzbekistan does not participate in various military units and has the right to withdraw from the organization if it is militarized.

3. The Republic of Uzbekistan shall not occupy any military bases or facilities on its territory.

4. The Armed Forces of the Republic of Uzbekistan shall not take part in military operations abroad [2].

Uzbekistan focuses on further improving the economic and social situation by maintaining regional integrity, strengthening neighborly ties and intensifying international relations. In the last three years, high turnover with neighboring countries has been achieved. For the first time, inter-regional and cross-border cooperation has been established, and relations at all levels have intensified. In this regard, it is worth mentioning the words of the President of the country Sh. Mirziyoev: "In 2017, we and our neighbors have solved many sensitive issues such as sharing water resources, establishing borders, opening checkpoints, rebuilding and expanding transport". In particular, the delimitation of the exclave, enclave and other problematic border areas between Uzbekistan and Kyrgyzstan, with Tajikistan, is being positively resolved.

Trade and economic relations have also become more active. The trade turnover of Uzbekistan with Central Asian countries almost doubled. All countries in the region are benefiting from the growing rates of cooperation. Thus, according to 2018, Kazakhstan has the largest share in foreign trade with neighboring countries, with Turkmenistan slightly lower (Figure 1). We can say that foreign trade with Afghanistan increased by 135.2% compared to 2015 [15].

Increasing regional cooperation is an objective, sustainable and irreversible trend. At the same time, Uzbekistan is strengthening its macroeconomic position and geopolitical position. As a member of the Commonwealth of Independent States, it has great potential for the development of trade and economic relations, implementation of joint projects in various fields, implementation of transport and communications and transit potential, strengthening security, and expanding cultural and humanitarian exchanges. In addition, the presidency of the next CIS summit in 2020 will further strengthen the geopolitical situation in Uzbekistan.

Uzbekistan has been a member of the Shanghai Cooperation Organization since 2001. Through this cooperation on peace and neighborly relations, joint fight against terrorism and extremism, economic and security issues, many problems have been solved and the country has become a part of the geopolitical identity of the continent. In particular, the upcoming summit of the SCO in Samarkand in 2022 will also address the issues that need to be addressed, as well as the opportunity to attract a new world view, to showcase a favorable tourist and investment climate, and so on.
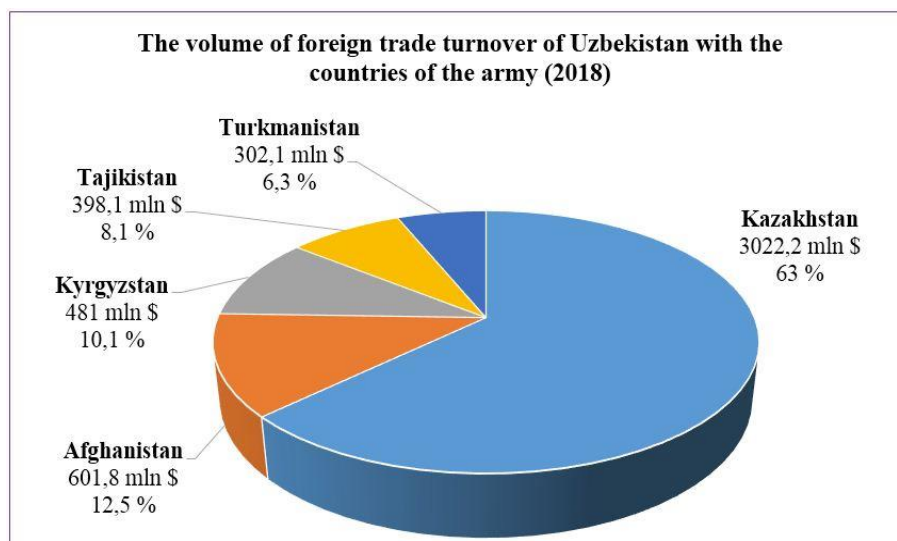
Figure 1. Foreign trade turn over of Uzbekistan with neighboring countries in 2018

It is not a secret that in many regions of the world, the activities of integration associations between countries whose culture and economic structure are closely related. In this regard, it would be appropriate to include NAFTA, EU. One such platform is the Cooperation Council of Turkic Speaking States on the Asian continent. The organization was established on October 3, 2009, in Nakhichevan, Azerbaijan, and was initially joined by Turkey, Azerbaijan, Kazakhstan, and Kyrgyzstan. In recent years, relations with these countries have been strengthened. High and high-level visits were made. The main objective of this organization is to strengthen trust and contacts between the fraternal countries, to develop cooperation in trade, economic, transport, energy, tourism, and cultural and humanitarian spheres, to coordinate efforts to ensure peace and security in the region. The Nakhichevan Agreement on the Establishment of the Cooperation Council of Turkic Speaking States On September 14, 2019, for the first time as a full member at the seventh summit of the corporation council. In this regard, he proposed the establishment of joint technology parks, start-up innovation companies and venture funds, joint investment funds and joint construction of commercial houses in the Turkic countries [14]. Apparently, with the strengthening of interstate relations, the problems in the countries will be considered and jointly resolved.

As the Republic of Uzbekistan is home to over 130 nationalities and more than 16 religious denominations, strengthening a friendly environment among them is a priority of the country's social policy. As a proof of this, the "Strategy of action" of the first President of the country Islam Karimov "High spirituality is an invincible force", the five strategies of development of the Republic of Uzbekistan in 2017-2021, in particular, the fifth paragraph, proposed by President Shavkat Mirziyoev. It is also a great honor and appreciation of the world community for

the efforts of Uzbekistan in the support of the 193 countries in the resolution of the 72nd session of the UN General Assembly in September 2017 on the "Education and religious tolerance" [5].

Being a nuclear-weapons-free country, and leading the way in support of neighborhood policy, Uzbekistan has diversified its exports to address the political and socio-economic problems, primarily to strengthen its geostrategic position in Central Asia and to maximize its domestic capacity, it is advisable to increase the product.

From the foregoing analysis, it is possible that Central Asian states should be able to defend their national interests as equal subjects in international relations, and to set specific foreign policy directions, so as not to lose a balance in the active and powerful states in the region. To do this:

Firstly, the path chosen by the Central Asian states in political, economic, social and legal spheres should be based on the principles of democratic, open market, humanism and respect for human rights. Although the path chosen is of a specific nature, it is important that it corresponds to the principles of an open society and democratic states.

Secondly, Central Asian countries should send young people to study at Russia, South Korea, Japan, the United States, and Europe, through various grants, and establish broad links between scholars and researchers, various universities and universities. In particular, further improvement of the system of training, advanced training and internship in leading universities, research centers and other organizations in Uzbekistan, creating the necessary conditions for meeting the growing needs of highly qualified specialists in the social sector, public administration and economy, The El-yurt Hope Foundation The allocation of at least 20% of the total scholarship allocations for undergraduate and doctoral studies with a minimum of 4,000 seats [1] is the cornerstone of great innovation and reform.

Thirdly, it is important for Central Asian countries to resolve various regional issues through diplomatic means. The positive and warm way of resolving such relations in recent years will continue to shape the region as a more integrated and common geopolitical space.

Fourthly, it is important for the Central Asian states to realize their potential in trade, economic, transport, communications, cultural and humanitarian spheres, security and stability based on the principles of good neighborliness and mutually beneficial cooperation.

In conclusion, it should be noted that Central Asian countries, in particular, the Republic of Uzbekistan, have sufficient resources and strategic capabilities. Effective use of these opportunities will create the basis for the country's social, economic and political development to become one of the world's most important poles.

References:

1. (n.d.). Decree of the President of the Republic of Uzbekistan Shavkat Mirziyoev "On measures to further improve the training of specialists under the programs of the El-Hope Hope Foundation for training specialists abroad and communicating with compatriots under the Cabinet of Ministers of the Republic of Uzbekistan". Retrieved 2019, from http://lex.uz/docs/4136570

2. (2012). The Concept of Foreign Policy Activity of the Republic of Uzbekistan. Bulletin of the Legislative Chamber of the Oliy Majlis of the Republic of Uzbekistan - Tashkent, September.

3. Karimov, I.A. (2011). *Uzbekistan is on the threshold of gaining independence.* (p.440). Tashkent: Uzbekistan.

4. (2017). Speech of the President of the Republic of Uzbekistan Shavkat Mirziyoev at the 72nd session of the UN General Assembly. September 19, 2017 Newspaper "Voice of Uzbekistan", September 21, 2017, No. 117 (32322).

5. (n.d.). Address by the President of the Republic of Uzbekistan Shavkat Mirziyoev to the Oliy Majlis. Retrieved 2019, from https://president.uz/uz/lists/view/2228

6. (n.d.). Speech of the President of the Republic of Uzbekistan Shavkat Mirziyoev at the meeting dedicated to the activities of the Ministry of Foreign Affairs and Embassies of the country in foreign countries. Retrieved 2019, from http://uza.uz/oz/politics/zbekiston-manfaatlarini-khal-aro-mi-yesda-atiy-imoya-ilish-d-12-01-2018

7. (n.d.). Speech of the President of Uzbekistan Shavkat Mirziyoev at the First Consultation Meeting of the Heads of Central Asian Countries in Astana. Retrieved 2019, from https://kun.uz/news/2018/03/16/markazij-osie-mamlakatlari-hamkorligining-ustuvor-junalislari-belgilab-olindi

8. (n.d.). Speech of the President of the Republic of Uzbekistan Shavkat Mirziyoev at the

international conference "Central Asia: Common History and Common Future, Sustainable Development and Development" in Samarkand. Retrieved 2019, from http://uza.uz/oz/politics/zbekiston-respublikasi-prezidenti-shavkat-mirziyeevning-sama-10-11-2017

9. (n.d.). Speech of the President of the Republic of Uzbekistan Shavkat Mirziyoev at the International Conference on Afghanistan "Peace Process, Security Cooperation, and Regional Partnership". Retrieved 2019, from http://president.uz/uz/lists/view/1601

10. (n.d.). Speech of the Minister of Foreign Affairs of the Republic of Uzbekistan A.Kamilov at the International Conference on "Mutual Solidarity in Central Asia: Challenges and New Opportunities". Retrieved 2019, from http://xs.uz/uzkr/post/ozbekiston-tashqi-ishlar-vaziri-markazij-osiyo-hamisha-yagona-va-bolinmas-mintaqa-bolib-kelgan

11. Khojanov, B. (2017). National relations: the balance between geopolitics and geo-ideology. Social Opinion, Human Rights. *Humanitarian Journal of Uzbekistan, 2017. Issue № 1 (77)*.

12. (n.d.). By 2020 Uzbekistan will chair the MDGs. Retrieved 2019, from https://qalampir.uz/uz/news/uzbekiston-2020-yilda-md%D2%b3ga-raislik-k-iladi-9556

13. (n.d.). Participation of the Republic of Uzbekistan in the activity of the Shanghai Cooperation Organization (SCO). Retrieved 2019, from https://mfa.uz/uz/cooperation/international/643/

14. (n.d.). Uzbekistan membership in the Council of Turkic Speaking States. Retrieved 2019, from http://uza.uz/uz/society/o-zbekiston-turkiy-kengashga-a-zo-davlatlar-bilan-an-anaviy--03-10-2019

15. (n.d.). *Statistics of Uzbekistan*. Retrieved 2019, from https://stat.uz

QR – Issue   QR – Article

Mashraboy Vakhidovna Khalimova
Andizhan State University
PhD in Psychology, Assistant-Professor,
Head of the chair of "General Psychology"
Republic of Uzbekistan

THE PROBLEM OF RESPONSIBILITY IN FOREIGN PSYCHOLOGY AND ITS ROLE IN THE MORAL DEVELOPMENT OF THE INDIVIDUAL

Abstract: *This article addresses the problem of accountability in social psychology. Responsive psychology has been interpreted by foreign scholars and their impact on the moral development of the city.*
Key words: *Factors of moral responsibility, social behavior, autonomous subjective responsibility, association, personality management.*
Language: *English*
Citation: Khalimova, M. V. (2019). The problem of responsibility in foreign psychology and its role in the moral development of the individual. *ISJ Theoretical & Applied Science, 11 (79),* 520-522.
Soi: http://s-o-i.org/1.1/TAS-11-79-106   *Doi*: crossref https://dx.doi.org/10.15863/TAS.2019.11.79.106
Scopus ASCC: 3200.

Introduction

Social psychology is achieved by analyzing different approaches and research in understanding the concept of responsibility. The views of foreign scientists are grounded in this regard. Piaje focuses on building an internal framework of responsibility through the development of external social norms, taking into account the stages of child's moral development. The author considers responsibility as part of the overall process of the child's moral development. In the theory of moral responsibility famous J.Piaje identified two main stages of responsibility formation: objective and subjective. The first occurs in the development of social behavior (through games), and the second reflects a high level of personality development [1, p.40].

This problem is highlighted in L. Kolberg's scientific research. The author emphasizes the importance of active creative engagement of the individual with the environment as a key factor in the development of moral consciousness.

Research methods.

The analysis of the hypothesis of the hypothetical moral dilemma by the reversal of two commonly accepted moral norms by the subjects identified five stages of development of moral consciousness:

1. "Objective responsibility".
2. "Subjective liability".
3. "Exchange of devices".
4. "Social system and ethics of conscience".
5. Understanding societal responsibility. In addition to understanding the formation of responsibility as a process of personal interaction with the environment in the Kolberg's concept, it also places emphasis on responsibility as a regulator of social behavior. It identifies a number of stages of responsibility development:

1. Autonomous subjective responsibility
2. Responsibility as a social event
3. Moral responsibility.

Researcher F.Hayder outlined the basic principles of the concept of the kalal attribute. This direction is more common in foreign psychology and reveals the subjective aspect of responsibility. The Caucasian attribute is the phenomenon that occurs when people try to explain the causes of certain events in their daily lives. Therefore, the concept is aimed at analyzing the behavior and characteristics of the manifestation of the responsibility of the "street man".

Clarivate Analytics indexed

The three basic assumptions underlying the concept are F.Hayder. It allowed Hayder to conclude that people tend to link the cause to an actor ("Actor") or to the environment.

For instance, "The first is that the appropriate behavior of a person's social behavior depends in large part on how that person perceives and explains the world around him.

The second is that people want to predict and manage their environment, their environment. This desire can be realized if they are able to correctly identify the causes of other people's behavior and to identify the root causes of social events. Third, there is some similarity between the perception of social and physical objects"[2. p.196].

The events, therefore, are the ratio of the external forces and resources of the individual. F. Hayder said that the responsibility for each of these two factors depends on the individual's assessment. After all, a person can be held responsible only for the events and their consequences. F. Hayder sets out five levels of responsibility:

1. The association is responsible for any outcome related to or related to a person.

2. The reason - Responsibility for "cause" by a person. If a person is a prerequisite for an event, it will be recorded even if it is impossible to predict the outcome.

3. Prophecy - Responsibility applies to any event that may be anticipated, even if it is not related to the objectives.

4. Intent is the responsibility for what a person initiated and what he or she wanted to do.

5. Reasoning - The responsibility for what is happening is shared with the environment and partly explained [2, p.196].

The personal contribution to what is happening from the first to the fifth levels is more burdensome, but at the fifth level of coercion is taken into account, which reduces the level of responsibility. Numerous studies have focused on the factors that influence the occurrence of responsibility. This includes investigating situations in which you need to help, intercede, and help the stranger. Thus, the studies of Bibb Latane and John Darley [3, p.4] are dedicated to determining how much passengers meet their specific requirements (tell us what time it is, what is your name, show your route, and so on). Researchers found that the nature of the request, as well as the form and sequence of the response, influenced the response and the response rate. Additional passenger location in addition to a more flexible survey. One of the areas in this series of studies is the study of responsibility. Allen experimented on subway trains using the "missing passenger" model. With the help of both the experimenter and the assistant, the situation of misinformation has been created. "Passenger - Experimental" near the "real" passenger. The disinfectant of the passenger acted as a related

variable, as evidenced by the witness's testimony and his non-interference in the situation. Allen's second series of experiments was conducted with a series of disinfectant altered behaviors, particularly inaccurate behaviors, so it is inconceivable to assume that this person is the same. As the result of a series of experiments was the formation of two situational factors - the factors determining responsibility:

"In the first case - direct appeal, forming the relationship between the witness and the crazy passenger"

In the second case - the risk of the situation due to superficial actions or direct threats of disinfectants [5, pp.169-171].

According to Sh. Schwartz's concept, positive behavior in aid situations is largely influenced by shared social norms and personal experience, as well as the "personal norms" that result from the interconnectedness of personal responsibility. Personal responsibility is defined here as "... a certain sense of ability to control the performance of an action and its outcome" [6, p.175]. A person's willingness to act in accordance with norms is determined by his / her thoughts about what will happen to other people and how well these effects fit into his or her own standards, as well as his or her level of responsibility. Because personal norms are linked to my image, breaking norms leads to a loss of guilt and self-confidence, and compliance leads to increased pride and self-esteem [7].

Researcher J. Rotter summarized the idea of referring to external factors or internal bases in the concept of personality management. Two types of control: internal and external - are used to explain the behavior of an individual based on the person's property [8] to link the causes of the event to external or internal sources. Internal control is an indication of responsibility for events, their explanation from the point of view of personal contributions, and their impact on development and outcomes [9]. Responsibility for what is happening outside environment, responsibility for the environment and other external factors is evidence of external management [10].

In conclusion, it is important to note that in social psychology, the question of accountability should be pursued in the early stages of human development, both objectively and subjectively by ethics. As we see, social psychology is achieved by analyzing different approaches and research in understanding the concept of responsibility in nowadays. Therefore, the views and ideas of foreign scientists are grounded in this regard. For example, Piaje focuses on building an internal framework of responsibility through the development of external social norms, taking into account the stages of child's moral development. This author considers

responsibility as part of the overall process of the child's ethic development.

References:

1. Piage, J. (2006). *Moral judgment in a child.* (p.480). Moscow: Academic project.
2. Latane, B., & Darley, Zh.M. (1968). Group inxibition of bystander intervention in emergencies. *Zhournal of Personality and Social Psychology, 10*, pp.215-221.
3. Latane, B., & Darley, Zh.M. (1970). Txe Unresponsive Bystander: Wxy Doesn"t Χe Χelp? (p.131). New York.
4. Muzdybaev, K. (1983). *Responsibility of the individual in the production team.* Socio-psychological problems of the production team. (pp.133-145). Moscow.
5. Muzdybaev, K. (2010). *Psychology of responsibility*. Ed. V.E. Semenova. Ed. 2nd, add. (p.248). Moscow: Book House "LIBROCOM".
6. Muzdybaev, K. (1992). The idea of justice Sociology. No. 11, pp. 94-101.
7. Mukonina, M.V. (2002). *Types of professionally responsible attitude of hazardous workers in different organizational - economic conditions.* Dis ... cand. psychol. sciences. (p.185). Moscow.
8. Andreeva, I.N. (2008). On the formation of the notion of "emotional intelligence". *Issues in Psychology, no. 5*, pp.83–95.
9. Valueva, E.A. (2009). *Diagnosis of emotional creativity: J. Customizing Everill questionnaire.* In the book: D.V. Lucin, D.V. Ushakov (Ed.), Social and emotional intelligence: From processes to dimensions. Moscow: RAS Institute of Psychology.
10. Vygotsky, L.S. (1999). *Reflection and speech*. Moscow: Labyrinth.

QR – Issue   QR – Article

Sherali Abduvaliyevich Jalolov
Namangan State University
English teacher

Sharifjon Rustamjonovich Nematjonov
Namangan State University
English teacher

FORMATION OF EFFECTIVE INDEPENDENT WORK OF STUDENTS IN THE EDUCATIONAL PROCESS

Abstract: This article is about formation of effective independent work of students in the educational process. In this article it is spoken about the development of independence, responsibility, organization and creative qualities of the personality of students in solving the problems facing them at various levels. The solution to this problem is possible only in the transition from the traditional model of education to the innovative one, which is currently associated with the reform of educational process.

Key words: concept, development, century, basis, activity, organization, process, educational, formation, provide, modern, creative, communicative

Language: English

Citation: Jalolov, S. A., & Nematjonov, S. R. (2019). Formation of effective independent work of students in the educational process. *ISJ Theoretical & Applied Science, 11 (79)*, 523-526.

Soi: http://s-o-i.org/1.1/TAS-11-79-107   *Doi*: crossref https://dx.doi.org/10.15863/TAS.2019.11.79.107
Scopus ASCC: 3304.

Introduction

In the educational system of Uzbek education, an innovative model is currently being implemented that defines the priorities, goals and stages of the formation of specialists for the period until 2030. This model requires the transition of education to a modular and competent approach to specialist formation, which, in turn, makes it necessary to change the content and methods of the educational process.

The concept of sustainable development of civilization, developed in the90s. The twentieth century and adopted as the basis of activity in Uzbekistan requires such an organization of the educational process in an educational institution that would ensure the formation of personality traits that provide various types and levels of safe life. In a modern dynamically developing society, initiative and independent people are required, easily adaptable to new conditions.

Therefore, one of the main tasks of higher education is the formation of a creative personality of a specialist capable of self-development and creative activity. The solution to this problem is possible only in the transition from the traditional model of education to the innovative one, which is currently associated with the reform of educational process.

It is necessary to transfer the student from a passive consumer of knowledge to an active creator of them, able to think critically, plan their own actions, be able to take the initiative, formulate a problem, analyze ways to solve it, find the optimal result and prove its correctness, as well as successfully find a way out of the prevailing non-standard situations. The new education paradigm attaches great importance to the independent educational activities of students, which allows them to more successfully master the competencies necessary for the implementation of future professional and everyday activities. It promotes the development of independence, responsibility, organization and creative qualities of the personality of students in solving the problems facing them at various levels.

One of the forms of independent educational activity is the independent work of students, which is

Clarivate Analytics indexed

divided into classroom and extracurricular activities. These varieties of independent work have their own characteristics and specifics. The student's independent work is intended not only for mastering each discipline, but also for the formation of independent work skills in general, in educational, scientific, professional activity, the ability to take responsibility, independently solve a problem, find constructive solutions, get out of a crisis situation, etc. In this regard, it can be argued that the preparation of students in an educational institution requires the use of educational technologies that ensure the formation of a professionally competent, socially active, creatively independent person. The most important task of training students is the targeted development of intellectual skills, which are the basis of one of the key competencies that ensure their professional mobility and flexibility.

Thus, one of the conditions for training a competitive specialist is the competency-based approach that ensures the formation of a high level of scientific knowledge in a student, and the main goal is to increase the role of independent work as a form of the educational process in higher education. The traditional training system is based on the transfer of ready-made knowledge from the teacher to the student, where the main activity of the student is to solve theoretical and practical problems, with a clear wording and a ready-made set of actions (algorithm), and does not require deep mental reflection. Independent work involves the development of internal and external self-organization of a future specialist, his ability to build an individual trajectory of self-training, as well as to form the ability to self-development and creative application of acquired knowledge.

According to the new educational paradigm, regardless of specialization and nature of work, any novice specialist should have fundamental knowledge, professional skills and skills in his profile, experience in creative and research activities to solve new problems, and experience in social and evaluation activities. Therefore, the independent work of students is not just an important form of the educational process, but its basis. Many leading experts consider it one of the most effective ways (methods) of activating the cognitive activity of students, developing their independence, responsibility and creative abilities. Moreover, particular attention is required here to the questions of motivational support for independent cognitive activity of students.

The main task of organizing students' independent work is to create conditions in the classroom for the development of their initiative and thinking. Such didactic conditions that increase the effectiveness of the formation of professional competence of students include:

• structuring of educational material, providing optimal implementation of educational and cognitive activities by students;

• development and application of a system of developing educational tasks, allowing revealing and enrich the mental potential of students;

• interdisciplinary communications; implementation of active and interactive methods for their preparation in the educational process;

• monitoring the process and results of training activities.

These conditions allow students to develop the ability to think conceptually, to see not only individual phenomena and events, but also to be able to find common connections and patterns in them. The motivation for the educational activities of future specialists can be enhanced by explaining the importance of learning, the need and importance of self-development, as well as preparing for the upcoming professional activity. It should also be noted that methods of raising positive motivation, such as the desire for a positive result, self-affirmation, self-realization, a sense of success, self-confidence, emotional elation, are of no small importance in enhancing the motivation of students to study independently.

Active independent work of students is possible only if there is a serious and sustained interest in obtaining knowledge.

The greatest motivating force is internal motivation, which comes from the activity itself. We can talk about the interest in learning and the creation of conditions for the successful development of the student's intellectual skills, when the perception of new information evokes positive emotions, and the activity itself encourages you to learn.

The decisive role in organizing independent work belongs to the teacher, who should not work with the student "in general", but with a specific personality, with its strengths and weaknesses, individual abilities and inclinations. The main task of the teacher is to develop the best qualities of the student, his creative abilities, to instill the skills of search work, to teach analyzing and critically evaluate the information received. To do this, he must organize the learning process and the activities of students so that they go towards the achievement of the goal, without his direct guidance. In this case, the students themselves perform tasks, and the teacher acts only as a consultant, directing their activities in the right direction.

Thus, it should be noted that when organizing independent work, it is most appropriate to rely on the principles of personality-oriented education, which allow taking into account the individual interests, abilities and inclinations of students.

Recently, much attention has been paid to the problems of extracurricular independent work of students, but the very concept of such work is

interpreted differently by different scientists. In this study, the following working concept is used:

Extracurricular independent work of students is a variety of individual and collective activities of students, carried out under the guidance, but without the direct involvement of the teacher, in a specially allotted extracurricular time aimed at enhancing their cognitive activity.

In the process of extracurricular independent work, as well as any independent work, lies an independent educational and cognitive activity, including targeted, semantic and performing components. By organizing his cognitive trajectory, the student in the process of reflection comes to the formulation of the specific goal of his cognitive activity. Then he defines its tasks in a specific field, plans it, chooses ways and means to carry out the necessary activities, performs its stages, receives certain results, analyzes them himself (introspection), controls his activities (self-control), discusses the results with the teacher, if necessary corrects the nature of the activity and considers possible prospects. Upon completion of one stage, the student joins in the other stages of his independent work.

Successful extracurricular independent work is possible under the following conditions:

• the student must be prepared for independent activities (mentally prepared for the need for such activities);

• positive motivation for acquiring new knowledge in a specific field of knowledge is needed;

• the availability and accessibility of the necessary scientific, educational, methodological and reference material;

• Providing teacher advice;

• systematic and systematic self-and external control of the level of achievement of the student in the independent cognitive activity he realizes in extracurricular time.

The principle "teach a student to learn", which is necessary for the effective organization of their independent work, comes to the fore in the pedagogical activity of a professional school. Moreover, the functions of a teacher can vary from information-controlling to consulting-coordinating. Therefore, the teacher organizes his activities so that the above conditions are realized. Under his leadership, students develop and develop skills in working with educational, popular science and scientific literature. The teacher helps students to find optimal solutions to complex issues and problems, getting out of various adverse situations, developing skills in conducting educational research work, etc.

Extracurricular independent work may include:
reading text;
drawing up a plan or abstract of the text;
graphic representation of the text structure;
compilation of tables; work with dictionaries and reference books;

study of regulatory documents; analytical processing of the text (annotation, reviewing, reviewing, etc.);

the use of audio, video, computer equipment (including the Internet);

preparing messages for speaking at a seminar, conference, etc. preparation of reports, essays;

development of projects and conducting educational research on their basis;

compiling bibliographic lists, thematic crosswords, tests;

solving situational problems, etc.

In any educational process, independent work of students is a type of educational work, when a student himself studies certain problems, according to various sources (study guides, scientific articles, the Internet, etc.). Independent work, including extracurricular work, is an essential component of the methodological system of forming competencies in accordance with the "concept of sustainable development of civilization."

The topic of extracurricular independent work is very diverse and depends on the characteristics of the college, its location, the interests of students, which is important to consider when developing the content of such work. An interesting direction of extracurricular independent work is the preparation for excursions. Excursions play a large role in the formation of environmental culture and skills in communicating with nature. Such excursions make it possible to improve the skills of ecosystem analysis, the formation of a caring attitude to biological objects, help to foster a sense of responsibility for the natural territories of the residence area, and improve the students' systemic ecological thinking skills. After the excursion, students draw up reports that systematize their ideas about the excursion object and the new that they learned during the excursion.

As mentioned, the forms of independent work of students are very diverse and closely intertwined. Classroom and extracurricular independent work is interconnected and complementary to each other. Their application allows you to activate the educational process, to implement inter subject communications and the principle of meaningful profile. Implemented forms of classroom and extracurricular activities conducted on the basis of independent work can increase the cognitive, creative and energetic students and identify the effectiveness of project activities, subject excursions and multi-subject classes in the formation of environmental awareness of college students.

Thus, in the light of the ongoing education reform, the transformation of the educational process in the educational institution in accordance with the competency-based approach involves the creation of an effective system of independent work, which plays an important role in the learning process and should

become the basis for the preparation of modern specialists for their further professional activities.

References:

1. Anikina, E. I., Bochanova, N. N., & Cherepanov, A. A. (2012). *E-learning in higher educational establishement.* Proceedings of the Southwest State University.
2. Balçıkanlı, C. (2010). Learner Autonomy In Language Learning: Student Teachers' Beliefs.
3. Broad, J. (2006). Interpretations of independent learning in further education.
4. Dickinson, L. (1987). *Self-instruction in language learning*. Cambridge: Cambridge University Press.
5. Dayri, N.G. (1966). *The most important ways of the organization of dynamic independent activity, connection of training with life.* Training of history in senior classes of high school: Informative activity of pupils and learning efficiency.
6. Guseynova, E.L. (2013). Independent work of students in the conditions of distance learning.
7. Henderson, E. S., & Nathenson, M. B. (1984). *Independent learning in higher education. Englewood Cliffs*. New Jersy: Educational Technology Publications.
8. Holec, H. (1981*). Autonomy in Foreign Language Learning*. Oxford: Oxford.
9. Mirolyubov, A.A. (2010). Technique of training in foreign languages: traditions and modernity.
10. Pergamon. Mickelson, R.M. (1940). *About independent work of pupils in the process of training*. Moscow: Uchpedgiz,

Khabibullo Khakimovich Khusanov
Andizhan State University
Senior teacher of the chair of "Theory of civil society", Republic of Uzbekistan

FROM THE HISTORY OF INTERETHNIC RELATIONS IN UZBEKISTAN

Abstract: *In this article the essence and relationship between concepts national interest and the international relations in the conditions of globalization in public life is investigated. It is considered that the foundations of any international relation make national interests , their content and its socio-political role.*

Key words: *globalization, nation, national interest, international relation, national consent, national developments, national conflict, genocide.*

Language: *English*

Citation: Khusanov, K. K. (2019). From the history of interethnic relations in Uzbekistan. *ISJ Theoretical & Applied Science, 11 (79),* 527-529.

Soi: http://s-o-i.org/1.1/TAS-11-79-108   *Doi*: crossref https://dx.doi.org/10.15863/TAS.2019.11.79.108

Scopus ASCC: 1202.

Introduction

As you watch the events taking place in the political arena around the world, you will see the need to reflect on their impact on the socio-political life of Uzbekistan and their socio-political consequences.

The problem that has been the subject of research in this article is that the cause of unprecedented conflicts, destructions, and deaths of millions of innocent people in human history is the relationship between national interests and nations. The urgency of the topic is that the problem is intertwined with political relations within one country and between different countries. That is why national interests and interethnic relations have always been at the forefront of human history. Therefore, in this article we found it necessary to talk about the social phenomenon associated with this topic. The article also describes how the topic of research is directly relevant to the socio-political life of all countries, including Uzbekistan.

Research methods.

In Uzbekistan, even today, under the radical democratic reforms, national interests and interethnic relations are one of the priorities of state policy [1, p.34].

The head of our state noted that "I consider it my priority to keep and strengthen the atmosphere of harmony, mutual respect and kindness in the country and the nations that dominate in our country. More than 130 nations and ethnic groups live in our country [2, p.54].

National interests are "the notion of a nation, a system of social, economic, political and cultural relations a system of aspirations related to national needs, the preservation of national consciousness, thinking and traditions" [3, p.32].

As each nation realizes its own interests, it first of all possesses material and spiritual values. National interests include, first of all, the factors, related to the fate, life and prosperity of each nation. These include, above all, the right of the nation to self-determination, the right to national statehood, the possibilities of economic prosperity, the full expression of national, cultural, national language, religious freedom [4, p.65], and national values. At present, the first and foremost feature of the 193 sovereign nations is the national sovereignty. Mutually beneficial cooperation in international relations is based on the aforementioned factors. Otherwise, the national relations will be different.

Item 5 of the Presidential Decree "On the Strategy of Action for the Further Development of the Republic of Uzbekistan for 2017-2021", dated February 7, 2017: "Ensuring security, interethnic harmony and religious tolerance; Strengthening the

Clarivate
Analytics indexed

independence and sovereignty of our state-directed policy, creating an environment of security, stability and good neighborliness in Uzbekistan; strengthening our international authority" [2] that is exactly what our national interests are.

It is well known that the national composition of most countries is made up of one or more nationalities. In Uzbekistan, more than 130 nations and nationalities live in harmony. Peace and harmony among many nations living in one country is an important factor in the socio-political stability and prosperity of this country. After all, the incompatibility of national interests, in turn. It creates national conflicts, conflicts and conflicts, even bloody wars. As a result, in the face of such events, national wealth will increase, and destruction and misery will increase. We can cite many examples from history [5, p.21].Recently, the ongoing ethnic conflict in Afghanistan (about 40 rounds), bloody events between Azerbaijanis and Armenians in Azerbaijan, Karabakh (90s of the 20th century), bloody clashes between Uzbeks and Kyrgyz in Kyrgyzstan (90s of the 20th century and 2010). The bloody conflict between the Uzbeks and the Meskhetian Turks (1989). This phenomenon has occurred and continues to exist in many parts of the world, such as Africa, Asia, Europe and America [6].

The main issue is to prevent ethnic and ethnic disagreements within a particular region and country, and to avoid making mistakes in national issues [7].

It is unfortunate that the interests and interactions of various nationalities, in the history of mankind and now, unfortunately have been violated by some nations, even with the policy aimed at their destruction - genocide (Greek genus - genus caedere - killing, extermination); with and without disastrous consequences. As an example, in the early twentieth century in Turkey, the genocide committed by the Ottomans to the Armenian people caused the loss of more than one million Armenian ethnicity. During World War II, over 65 million people were killed by German fascism as a result of a genocidal policy against many nations, including Jews, Russians, French, Poles, and even their own people 1975-1979 in Cambodia by Paul Pota and Ieng Sari more than 3 million citizens of Cambodia were killed by the Nazi military. Even during the Soviet era of the former totalitarian regime, the massacre of genocide against various peoples and nations has killed millions of innocent people. In some countries today, there are genocide-specific actions against certain people and nations [8, p.87].

Increasing military conflict in different parts of the world, between nations and nations is a serious threat facing humanity. In the Middle East, Syria, Iraq, Yemen, South Sudan, Sakhal, Afghanistan and other countries have been killed by wars in 2017 (Myanmar (formerly Burma)), and cities and villages are devastated.

The increasing number of refugees around the world can serve as evidence for this. According to the UN, the number of refugees in the world now exceeds 66 million. They are mainly from Afghanistan, Syria, Iraq, South Sudan and Myanmar. More than half a million refugees from Myanmar have fled to Bangladesh [9].

Addressing the 72nd session of the UN General Assembly in New York, United States, September 19-25, 2017, President Shavkat Mirziyoyev spoke of the UN's commitment to peace and security, development, human rights, including the rights of young people and the analysis of pressing issues, such as their role and role in the spiritual development of humankind, and made important suggestions and recommendations for their solution.

President Shavkat Mirziyoev proposed to adopt a special resolution of the UN General Assembly to support efforts of the Central Asian states to strengthen security and regional cooperation.

Many strategic issues related to this strategic issue were held on November 10-11, 2017 in Samarkand under the auspices of the United Nations High Level International Conference "Central Asia: Common History and Common Future, Sustainable Development and Development" problems were discussed.

The political significance of this international conference is that the five independent states of Central Asia and the more than 60 million people living in the region have all their past, destiny, and future, and will take all the necessary steps to ensure their coexistence. On the other hand, the establishment of friendly, friendly and mutually beneficial relations with neighboring countries is an important factor for their further development and prosperity.

The following conclusions can be drawn from the comments and comments cited above.

1. Any form of interethnic relations is based on certain national interests.

2. Interethnic relations based on equality ensure the realization of national interests.

3. Our domestic and foreign policy, based on the "Strategy of Action" currently pursued in our country, will contribute to ensuring security and stability in Central Asia, enhancing the level of political trust with neighboring countries and contributing to the further development of interethnic relations in the region.

Indeed, today we have been targeted at building a civil society by introducing the concept of "from a strong state to stronger society" to the development of the developed countries, whilst fully overseeing human rights and interests, creating a free and prosperous life. In this regard, it is the time of deepening democratic reforms and modernization of the country, primarily aimed at improving the state and society building. Further improvement of the role of executive power in reforming and modernizing the public administration system has become a necessity

to develop a concept of administrative reform to regulate democratic reforms in a society. Based on this need, the Decree of the President of the Republic of Uzbekistan Shavkat Mirziyoev of 8 September 2017 "On Approval of the Concept of Administrative Reforms in the Republic of Uzbekistan" was adopted by the Decree # PF - 5185 [10, p.3].

Consequently, the modernization of state power bodies has been step up in all spheres of life in order to liberalize all spheres of public life. The existing shortcomings in the public administration system do not allow adequate response to growing demands of the community, addressing the problems faced at the local level, accelerating the development of the economy and, as a consequence, the ongoing positive changes in the lives of people. In this regard, it is of particular importance to formulate a conceptual new concept of public administration through the successful implementation of the Concept of Administrative Reforms, which outlines the main directions.

Particular attention was paid to the sharp reduction of the direct intervention of the executive structures of the executive and administrative bodies of the executive branch to the functioning of the business structures in order to change the powers of

regulating and distributing their management. In other words, adaptation of their powers to free market relations and market principles was taken to reduce the interference of the state into economic management. This led to the decentralization transition from centralization to governance, namely, the transition from the national level to the regional, district and city levels, and to the self-governing body, which was a form of governance, into the mahalla's citizens' gatherings [3, p.9].

Conclusion.

It is necessary to say today President Shavkat Mirziyayev's initiatives are being carried out by the Presidential Councils of the Republic of Uzbekistan in all regions of the Republic to hear about the challenges and problems of the 33 million people of Uzbekistan. In addition, the electronic communication service has been established and the Presidential Party is functioning. On the basis of the idea that "public institutions should serve the public, not the public," the focus is on improving the performance of public administration in order to increase the effectiveness of public services in the country, and administrative reform is being carried out.

References:

1. Mirziyoev, S. (2016). "We will build a free and prosperous, democratic Uzbekistan with our courageous and noble people." Speech by Shavkat Mirziyoev at a joint session of the chambers of the Oliy Majlis dedicated to the inauguration of the President of the Republic of Uzbekistan. The People's Word. December 16, 2016.

2. (2017). Decree of the President of the Republic of Uzbekistan "On the Strategy of Action for the Further Development of the Republic of Uzbekistan". The People's Word February 8, 2017 Issue.

3. (2010). Spirituality: An explanatory dictionary of basic concepts. Tashkent: Publishing house named after Gafur Gulom. T.

4. (2018). Appeal to the President of the Republic of Uzbekistan Shavkat Mirziyoev to the Oliy Majlis. Tashkent – Uzbekistan.

5. (n.d.). The Decree of the President of the Republic of Uzbekistan No. UP-5185 // Publication No. 201 (6874)

6. Yunusov (2013). Leader + law + work style + Responsibilities Success in modern governance Andizhan.

7. (2017). Scientific-methodological manual on the study of the State Program on implementation of the Strategy of Action in the five priorities of development of the Republic of Uzbekistan for 2017-2021 at the Year of Communication and Human Interest in Public Relations Tashkent-2017.

8. (2011). Appendix 1 to the Decree of the President of the Republic of Uzbekistan dated February 7, 2017, N UP-4947, dated 28 February, 2011, No. 28 (6722) of the "Khalk Suzi" newspaper.

9. (2017). Halk Suzi newspaper, February 12.

10. (2017). Khalk Suzi newspaper, February 9, 2017

R.U. Baratov
Tashkent Railway Engineering Institute
Researcher,
Tashkent, Republic of Uzbekistan

ETNOGRAPHIC SPECIFICATION IN TRAINING EQUIPMENT SPECIALIST STAFF IN THE CONDITION OF GLOBALIZATION

Abstract: *the impact of globalization on the development of all nations in increasing. Unemployment, social tension, and ethnic conflict are on the rise in the world. The present study analyzes the negative and creative aspects of the elimination of ethno-cultural thinking in the process of preparing qualified staff.*

Key words: *generalization, mentality, ethno-culture, labor resources, mature personnel, migration, open society, enlightenment, culture, innovation.*

Language: *English*

Citation: Baratov, R. U. (2019). Etnographic specification in training equipment specialist staff in the condition of globalization. *ISJ Theoretical & Applied Science, 11 (79),* 530-534.

Soi: http://s-o-i.org/1.1/TAS-11-79-109   *Doi*: cross‍ref https://dx.doi.org/10.15863/TAS.2019.11.79.109

Scopus ASCC: 1211.

Introduction

Today, globalization of social development has a direct impact on all aspects of social development of all ethnic groups. Over the past few decades, the criteria for determining the greatness and progress of countries have changed dramatically. National successes, the advantages of the political system, the demands of nations and their leaders have also changed. Until the mid-twentieth century, these criteria were determined by the size of the territory of the country, the power of the army, its ability to invade and subjugate other lands, impose its ideology by force, and threaten others. Now these criteria are almost in the past. Even an important indicator in the international arena, such as the amount of mineral resources, is losing its significance. Oil, gold, ore and gas are freely purchased from the open market. Consequently, they are no longer the driving force behind the country's progress. Now the well-being and quality of humanity (in our opinion - high spirituality and enlightenment) of citizens are of paramount importance.

Materials and methods

Recently, countries have been described as "soft power," attracting attention to the lifestyle and attractiveness of others. In other words, there is increasing attention to such factors as civil liberties, culture, politics, the level of social development, living conditions, education, ecology.

For example, Japan, whose territory is small and poor in terms of natural resources, has a greater position than Russia in the world with its goods, technology and financial power. Or, as a small Switzerland, everybody knows that the international reputation of this country is so high that it has its own word and place in the world. It can be seen from the fact that the development of countries nowadays, along with its surface and underground resources, is dominated by the mental characteristics of nations.

The level of morality of each society is also determined by its appreciation for the talented people, the provision of adequate conditions for their care and development. In civilized countries, talented people are seen as the face, the pride and the future of the nation. The current Uzbek society has been following the same path since the early days of independence. It is especially noticeable in the last three years that science and innovation have been given a lot of attention, and that the country has begun to move from national revival to national development.

However, during the years of colonial oppression and the Soviet empire, the talent of cultural workers in our country was ignored, the Communist

regime was not interested in it, and the emergence of great talents frightened the cultural and national spirit and pride of the people. In his speech, President of the Republic of Uzbekistan Shavkat Mirziyoyev said: "Our main task is to create the necessary conditions for young people to realize their potential and to prevent the spread of the virus of the idea of violence. We consider it necessary to develop multilateral cooperation for social support of young generation, protection of its rights and interests " [1, P. 252] this idea again proves our point.

Every conscious member of society must be legally guaranteed to represent their possibility. As much as the community has benefited from creating special condition, stimulation and attention to the human factor, in terms of it is socially important to find, educate, and create the conditions for talents. It is also a sign that all members of the community are interested in and show the spiritual level of society.

In today's globalization, accelerating the development of science and technology, ensuring national economy competitiveness, the development of innovative scientific innovations through the training of highly qualified specialists with deep modern knowledge, high demand for science, education and production. Acceleration of innovation processes is especially dependent on government support.

The current stage of world scientific and technical evolution is characterized by the rapid development and widespread introduction of new information technologies. The information revolution, which penetrates all areas of our lives, expands opportunities for enhancing international relations. As a result, a holistic information space is being formed, where information becomes a valuable part of national wealth, its strategic resource. In today's world, brutal competition is becoming more intense. In these difficult conditions, demands for widely introduce the achievements of modern science and innovation.

In recent years, globalization has become a significant topic in the media and in academic circles. After all, this process affects every aspect of our lives. First of all, globalization is manifested in the development of science and technology, in worldwide literature, art and culture of various nations. In addition, he has shown a great deal of interest in everyday life, including food and clothing, building design, and even thinking, hobbies, and the worldview. In our view, when we evaluate this process from the point of view of the dialectical relationship between politics, economics and history, it becomes possible to have more complete understanding of its meaning.

Different views have emerged in the scientific literature on globalization. Some scholars link the process of globalization to the economy, and some connection to culture and spirituality. In particular, the National Encyclopedia of Uzbekistan describes the global term as follows: "Global (French global - general, lotus globe - balloon) - 1) all over the globe; 2) multi-literal, comprehensive, universal, universal" [2, P. 39]. The encyclopedic dictionary of philosophy says that "global (universal) problems (French global - most common) are problems related to universal in scope, and in relation affecting to the whole humanity and world" [3, P. 92]. From these definitions we can see that the process of globalization is fully disclosed. Therefore, globalization is associated with humanity and is recognized as a social phenomenon. Professor S. Otamurodov concludes that "globalization" is a process and at the same time its "abstract" concept becomes a material existence with the rapid popularizing of science, engineering and technology. This view, along with these views, contributes to the decline of national consciousness and national self-awareness [4. –B. 70] states that "globalization, on the one hand, is a positive development with a new stage in the evolution of the intellectual potential of humanity; on the other hand, it is a negative process that leads the developing and underdeveloped nations to the highly developed nations" [4, P. 73] concludes this process. In this way, the scientist points out that one of the important problems is to preserve axiological and gnoseological thinking in the national mentality from various adverse effects.

Foreign scholars have different views of on globalization. Charles Tilly, an American scientist and politician, in particular, believes that abovementioned process has begun a long time ago. In his view, globalization was at the height of the globalization of countries, and globalization was widespread, even when commodity exchanges were expanding [5]. Whether this has gone through a long historical process, it will certainly continue to grow in the future. Researcher David Harvey backs his colleague's view that globalization is the third phase of capitalism. [6] These scholars analyze the economics of globalization more. But today, globalization covers all areas.

According to scientist William Robinson, there is no big difference between the goals of the capitalist of the past and the present-day capitalist. This category always focuses on cheap labor and natural resources in other countries, as well as the state earning its products in new markets. William Robinson promotes the idea that the government has always enacted legislation to support the proprietary class. After all, economic factors play a key role in public administration. In addition, there is a tendency for the management to be the owner or the investors themselves [7].

This view of the scientist seems to be considerable controversial. It is true that the capitalist class has always looked for primary commodities, cheap labor, and new markets. However, it should be noted that over the past period, slavery was abolished, and international human rights and freedoms were adopted. Migrant workers, who are now considered

cheap labor force, work in other countries on a voluntary basis. In other words, not only investors but ordinary workers benefit from migration. In other words, not only investors but ordinary workers benefit from migration. Suffice it to say that the share of remittances sent by labor migrants in the GDP of developing countries is significant. For instance, Uzbekistan receives between $ 3 billion and $ 10 billion from migrant labor annually. It is considering that Uzbekistan's 2.6 million migrants are working based on statistical data and it is not difficult to realize that per capita income is low. India earns about 100 billion dollars annually through migrants. The fact that Indian people have achieved high results in the field of information technologies and the high demand for specialists in this field in the foreign labor market is the reason for this.

Some researchers argue that developed countries are still getting richer by the expense of developing countries, and that the mutual benefit of the world is becoming greater in mutual trade. This issue was analyzed in detail in Adam Smith's 2009 book The Wealth of Nations [8]. Sociologists, political scientists, and historians who agree with Adam Smith believe that the current economic inequality between countries is a result of colonization. For example, David McNolly, a professor at York University (Canada), writes that Africa has lagged behind development because Europe's colonizing European countries have not allowed technical and industrial development [9]. Ethnic characteristics and climatic conditions of the African population should also be considered. That is, industry, science and culture, commerce and religion have developed in the areas of Africa where occupied by Arabs, while in other parts of the world, industry, manufacturing, services, and social work can be cited. It should be noted that along with not merely social factors, but also natural factors.

It is impossible to deny that globalization is expanding trade and economic relations and generating unimaginable material wealth. However, it should not be forgotten that at a time when the whole world is becoming a "unique village", the genes of nations and national identity are endangered. Many scientists believe that globalization is an inevitable process. There are both positive and negative aspects of this reality, influenced by political, economic and social factors. While the spread of democratic values across the globe and the advancement of science are a positive aspect of this process, international economic inequality (according to the data, 90% of the world's fund belongs to only 2% of the world's wealthy people) the disappearance, regional and ethno-cultural adulterations as "values", the consciousness of the people as "modernity" The negative consequences of globalization are the fact that it is taking over, and the neglect of our ancestors' leftovers. Therefore, correct conclusions from past mistakes and shortcomings require today's scientists to work hard to find a 'golden glove' to protect mankind from the inevitable tragedies.

Nowadays when there are various tensions in the social, economic, cultural, spiritual and political landscape of the world, unfortunately, in process of adhering to the principles of openness in foreign affairs are witnessing, customs, traditions and character that are alien to our country are being formed. It is natural that such phenomena occur during globalization. The only way to do this is to fight through the high formation of the culture of Internet and information technology use in our country and the youth [10].

The famous Indian statesman, Mahatma Gandhi, says that I cannot always close the gates and doors of my house, because the fresh air must come to my house. At the same time, I do not want the air coming through my doors and windows to blow up my house and fall me down" [11, P. 81]. In doing so, he proposes that the positive and negative aspects of the globalization process need to be timely understood and respond to them with ideas and enlightenment. Taking into account that more than 60% of the population is young people, it is pivotal for young specialists to deeply embrace the classical ethical rules of ancient and high spiritual qualities of our people in the minds of future professionals.

Within our topic, we interpret globalization as a process that is inextricably linked to the achievement of democracy, cultural and economic prosperity. However, it is necessary to study the notion that democratization depends not only on the factor of socio-economic globalization but also on the prevalence of democratic ideas. One of the most important conditions for democratization is the emergence of the rules of social partnership in society in the context of globalization. This is also evidenced by the stage of global democratization. It is clear that in some countries, globalization, democracy, while not fully addressing crisis problems in the spiritual and cultural and other fields, often relies on the prevention and growth of the economic crisis that can arise in the face of economic downturn, and it is often intolerable, in turn, it is estimated by the capacity of the society to the staffing needs. In fact, the conflict between globalization and the market on the one hand, and stability on the other, remains one of the characteristic features of our times.

Currently, with the increasing globalization processes around the world, international peace and stability, the welfare of the population, its cultural and economic development, education, medicine and the protection of the environment are becoming increasingly important and in their implementation international organizations are playing much more significant role.

International organizations must work diligently to support the unification of states, national societies on the socio-spiritual, political, cultural, and scientific

and technical basis to achieve common goals for all mankind.

The common feature of international organizations in the condition of globalization is that their activities are focused on interstate tasks and problems beyond the boundaries one of the particular national state, further consolidation of the skills of leading specialists, and the development of the most important and effective forms of ethnic relations between states.

Today, it is difficult to maintain balance in all areas of the country without engaging with international organizations. The international community recognizes the promising steps in our country for ensuring that the main content of existing normative documents in the consistent implementation of the country's development strategy is designed and implemented in full compliance with the national legislation created by international organizations.

In today's developing world, ignoring ethno-cultural problems with the intensification of political and cultural processes can create serious problems in the training of mature professionals. Also, the repeated ignorance of ethno-cultural features in the training system, ignorance of ethnic identity, will lead to the decline of ethical culture inherent in the future specialist staff and, consequently, the inability to generalize the integrity of social culture. The culture of all nations embraces and develops all the good that is created by the world culture and strives for a new higher level in the cultural development of mankind. For thousands of years, progressive representatives of different nations have expressed their people's dreams for equality, justice, freedom, and happiness, and have fought to the best of their ability.

Conclusion

Therefore, it is natural that globalization has both positive and negative effects. In recent years, a large-scale work on attraction of foreign investments to our country is underway. The growing position of Uzbekistan in the securities market is also causing investors' interest to this country. When we talk about the interconnection of such social partnership, it is necessary to emphasize the essence and the existing factors.

It is also necessary to determine the impact of globalization on changing the ethno-cultural thinking of the Uzbek people. These are explained in the material and spiritual culture of our people:

- new traditions are formed in national customs, rituals and traditions;
- begins to deviate from nationalism in the system of family, marriage and relationship;
- lowering of responsibility for upbringing children;
- changes in the ethno-cultural relations of people;
- cosmopolitan views are widespread in humans;
- undermines the values of traditional teacher and disciple traditions;
- material interest among the people will outweigh the spiritual interest.

In conclusion, it is worth noting that the issue of changing these processes for the better is an urgent need for scientific research on the quality of an important social problem for all peoples to preserve their spiritual identity.

References:

1. Mirziyoyev, S. (2018). *The consent of our people is the highest value given to our work.* Book 2, Tashkent: Uzbekistan.
2. (2002). *The National Encyclopedia of Uzbekistan.* Tashkent: "National Encyclopedia of Uzbekistan".
3. (2004). Philosophy: The encyclopedic dictionary. Tashkent: "Sharq".
4. Otamuratov, S. (2018). *Globalization: Responsibility for the Protection of the Nation* - Tashkent: Uzbekistan.
5. Coercion, Ch. (2015). Capital, and European states, AD 990-1992. Blackwell.
6. Harvey, D. (2014). *A Brief History of Neoliberalism.* W. Ross MacDonald School Resource Services Library.
7. Robinson, W. (2004). *A Theory of Global Capitalism: Production, Class, and State in a Transnational World.* Johns Hopkins University Press.
8. Smith, A. (2015). *The Wealth of Nations. A Translation into Modern English*, Industrial Systems Research.
9. McNally, D. (2002). *The Color of Money: Race, Gender, and Many Opportunities of Global Capital.* In Another World is Possible. Winnipeg: Arbeiter Ring Publishing.

Clarivate Analytics *indexed*

10. (2019). Important tasks for improving the spirituality of youth, meaningful organization of their free time are defined. March 20, 2019, No. 54.

11. (2005). The Idea of National Independence: Textbook for Bachelor Degree in Higher Education of the Republic of Uzbekistan. Responsible editor I.Ergashev. Tashkent: "Academy".

Khijran Eldarovna Muminova
Andizhan State University
Teacher of the chair of "General psychology"
Republic of Uzbekistan

GAME THERAPY METHOD IN THE CORRECTIONAL WORK OF A PSYCHOLOGIST OF PRESCHOOL INSTITUTION

Abstract: This article talks about the role of game therapy in the correctional work of psychologists in preschool institutions. The game is a leading activity in preschool age. With the help of games, the psychologist can conduct various therapies and remedial exercises. Thanks to games, we can easily communicate even with less mobile and less communicating children. The game is a good weapon to properly use on the child.

Key words: correctional work, method, game therapy, motivation, behavior, situation, psychologist, kindergarten, warm atmosphere, comfortable.

Language: English

Citation: Muminova, K. E. (2019). Game therapy method in the correctional work of a psychologist of preschool institution. *ISJ Theoretical & Applied Science, 11 (79)*, 535-537.

Soi: http://s-o-i.org/1.1/TAS-11-79-110   *Doi*: crossref https://dx.doi.org/10.15863/TAS.2019.11.79.110
Scopus ASCC: 3200.

Introduction

For children, the game is one of the main formation tools in life. With the help of it, they learn to interact with other people, develop intellectually and physically, learn the world, broaden their horizons. And most importantly, they do all this in an interesting way without coercion. Game therapy (is a psychological tool aimed at working with mental disorders in people of all ages through participation in a particular game. Children are more fun, interesting, easier to perceive information in a playful way. A doctor who deals with child psychotherapy through play is a specially trained game therapist.[1.p32]

During the treatment session, the child brings a lot of personal to the playing field, so it is very important for the therapist to be able to see those situations that concern the baby. And it is also equally important to be able to play during the lesson of troubling moments so that the patient goes away his experiences.[2]

Research methods.

Preschool education is the starting point of the continuing education system. It provides the formation of a healthy, developed personality of the child, awakening the craving for learning, preparing for systematic learning.

Leading activity (according to A.N. Leontyev) is an activity that has a decisive influence on the development of the psyche at one or another age. [3] Any activity is characterized by the so-called operational and motivational parties. The operational side is represented by the actions that the child performs in the course of the activity. For example, the nature of the actions of a child rolling a car reflects the operational side. The motivational side of the activity is determined by those motivators that cause the activity of the child. For example, a child can transport land by car because he wants to help an adult engaged in planting flowers.

In infancy, the child's interaction with an adult acts as a leading activity, the motive of which is the adult himself. At an early age, the leading is the objective activity, the motive of which is the objects surrounding the child with their cultural properties. In preschool age, a game activity, the motive of which is the game itself (that is, the child does not play for something, but because he likes the game process itself). In fact, the preschooler perceives the social environment in many ways through the game, which

reveals to him the meanings of the relationship between people in various situations.

In the literature you can find a description of the many functions that the game performs in the development of the child. We point out only three of them. Firstly, the game allows the child to master various forms of behavior, communication, speech, as it unfolds in a safe environment for him. The game is a modeling activity, so the psychologist can recreate various problem situations on the material available to the child. Such situations can, for example, be used to overcome the child's cognitive and personal egocentrism, the formation of arbitrary actions [4, p.54].

Secondly, the game develops the cognitive sphere of the child. An analysis of more than 40 studies on the development of gaming activity and published in leading foreign magazines showed that the level of development of gaming activity is positively associated with the development of divergent thinking, that is, the creativity of the child. For example, the psychologist S. Russ and his colleagues [5] over the course of four years watched the game of children. It turned out that children with a high level of fantasy development could offer and use a greater number of behavioral options in a game in a stressful situation, which means that they could better, in comparison with other peers, master a stressful situation.

Thirdly, the game is a natural form of expression of feelings and thoughts of the child. It is known that the very expression of experiences leads to a positive effect: the game allows the child to master the emotions that disturb him by playing and naming them.[6.p12] So, psychologists K. Golomb and L. Galasso found that when negative emotionality increased greatly in a game, preschoolers changed its course in such a way as to reduce this tension. For example, in order to get rid of fear in a frightening game situation, the child introduced a friendly hero into the plot, etc. If the theme was pleasant to the child, he developed it as much as possible. Thus, the game acts as a space in which the preschooler can regulate his affective states [7].

It is known that children who play stressful situations before a medical operation show less anxiety after it is performed in comparison with children who avoid playing games. In one study, psychologists, in order to study the effect of the game on overcoming stressful conditions, observed 74 children on the first day they attended school. At the same time, half of the children got the opportunity to play, and half did not (classes with children were limited to telling stories to them). The group of children who were allowed to play was, in turn, divided into two subgroups: the first subgroup was involved in the game with peers; and the second - in an imaginary single player game.[8] Children who play (compared to children who listen to stories) have

a lower level of anxiety. However, it turned out that for highly anxious children, solitary rather than social play turned out to be more effective: they were more involved in fantasy when there were no peers around. This example indicates the limited judgment that the imaginary play of the child is not significant, but only replaces reality.

In the work of a psychologist, the game often refers to projective techniques used to study the inner world of a child. Historically, the method of game therapy has appeared as part of psychoanalysis. It is no coincidence that its founder is the daughter of 3. Freud, Anna Freud. She believed that game therapy can be used to develop a positive relationship between a child and an adult. In addition, in the game, an adult must educate a child, showing him the social norms of behavior. Unlike A. Freud, Melanie Klein argued that although children are inept in speech, if they speak their language (the language of the game), they can experience a deep feeling. Therefore, during the course of game therapy, an adult should help the child in understanding, speaking and interpreting their own actions [9, p.28]

If during the game the psychologist creates a warm atmosphere, then the preschooler feels that he is being accepted. He becomes comfortable, and he receives an additional incentive to realize his potential, his initiative in everyday life. Then, not so much its symbolic aspect (to which A. Freud and M. Klein drew attention) come to the fore in the game, as the real interaction of the child and the adult.

Conclusion.

Game therapy can be aimed at changing the settings of the child. For example, a preschooler who is faced with the problem of moving may not tell parents that he is afraid to go to a new place, that he will not be able to find friends there, etc. The child does not always realize this, but such situations affect his behavior. A psychologist, knowing about the upcoming event, can help the preschooler in a hidden form master new settings ("I will have new friends", "The new kindergarten is very beautiful"), which will help the child take a positive look at the upcoming changes. Similarly, if a child is very anxious when breaking up with parents in kindergarten (claims that they will not return), then a psychologist in a playful way can help the child cope with his emotions. For example, playing this situation, an adult can say on behalf of a baby doll: "Nothing that mom left, I can think of something good ..." or "Mother left, and I can imagine how she will come." Whatever task the psychologist decides, the lesson should begin with relaxing the child. If the child's body is tense, it is constrained and internally.[10] In order for the child to freely express his feelings, you can offer him some simple exercises. Psychologist W. Auckland believes that the imagination is a good helper in this case, and offers the following game situations.

References:

1. Abramova, G.S. (2003). *Practical psychology. Textbook. Chapter V Psychological correction*. (p.496). Moscow: Academic Project.
2. Bondarenko, A.F. (1997). *Psychological assistance: theory and practice*. (p.338). Kiev.
3. Burlachuk, L.F. (1997). *Introduction to practical psychology*. (p.466). Kiev.
4. Weiner, M.E. (2005). *Game technologies for preschoolers behavior correction*. Textbook. (p.375). Moscow: Pedagogical Society of Russia.
5. Varga, A.Y. (1989). *Psychological correction of communication disorders of primary schoolchildren in a game group*. Family in psychological consultation. (pp.101-107). Moscow.
6. (1997). *Diagnosis and correction of the mental development of a preschooler*: Textbook. Allowance. In I.L. Kolominsky, E.A. Panko (Eds.). (p.442). Minsk.
7. Karayani, A.G., & Syromyatnikov, I.V. (2006). *Psychotherapy and psychocorrection as methods of psychological assistance*. (p.480). St. Petersburg: Peter.
8. Kolesnikova, G.I. (2005). *Fundamentals of psychoprophylaxis and psychocorrection*. (p.128). Rostov / n / D .: Phoenix.
9. Kochunos, R. (2007). *Fundamentals of psychological counseling*. (p.104). SPB .: Peter.
10. Mamaichuk, I.I. (2003). *Psychocorrectional technologies for children with developmental problems*. (p.400). SPb .: Speech.

Clarivate Analytics **indexed**

QR – Issue   **QR – Article**

Ulugbek Turaevich Kuryazov
National Institute of Arts and Design named after Kamoliddin Behzod
teacher
jasur184@list.ru

SYNTHESIS OF ARCHITECTURE AND SCULPTURE IN FORMING A MODERN CITY ENVIRONMENT

Abstract: *The article considers the problem of the synthesis of the arts of both sculpture and architecture at the present stage. The role of sculpture and its influence on the perception of the architectural appearance of a building or complex on the achievement of unity embodied in the synthesis of arts is indicated. The interest and relevance of creative solutions in the design activities of architects and sculptors, both in real design and in the process of teaching modern requirements, methods and technologies of art synthesis, is indicated.*

Key words: *architecture, sculpture, relief, round sculpture, synthesis, art, trend, material, plastic, composition.*
Language: *English*
Citation: Kuryazov, U. T. (2019). Synthesis of architecture and sculpture in forming a modern city environment. *ISJ Theoretical & Applied Science, 11 (79),* 538-540.
Soi: http://s-o-i.org/1.1/TAS-11-79-111   *Doi*: crossref https://dx.doi.org/10.15863/TAS.2019.11.79.111
Scopus ASCC: 2216.

Introduction

The role of sculpture in the formation of modern urban environment, directly related to the building. This is a traditional view of the interconnectedness of architecture and plastic.

The great influence of sculpture and plastic arts on architecture can be seen in the concept of "sculpture" in the formation of modern architecture. There is an increasing interest in the direct use of sculpture, from the trend of architectural plasticity, from interior decorations to large urban ensembles.

It should be noted that modern architecture, due to its specific features, cannot determine the plastic integrity of the form, which is directly attributable to classical architecture. At the same time, a different understanding of the various structural tectonic systems and the plurality of architectural dimensions makes the sculpture a very different district with an architectural "background" or architectural environment.

The intensive work of architects and sculptors has created a number of interesting areas. Examples of this include the building's sculptural compositional principles. The basis of these connections is primarily the formation of a general concept specific to architecture.

The functionally based spatial construction of the architecture results in the loss of rigidly regulated methods in the use of sculpture. The nature of the modern architectural composition emphasizes the inclusion of several different types of sculpture into the overall idea of the building.

The sculpture, while taking part in the building composition, simultaneously becomes an element of the overall urban ensemble and plays an important plastic role in the formation of space integrity. In this way, the quest for spatial development of the architectural environment reveals various and versatile options for the use of circular sculpture in the composition of the architectural structure. In circular sculpture, its plasticity with its architectural form is often attributed to the spatial relationship. The relief, by contrast, is promoted by its ease of plastic quality.

The role of relief as a sculpture is very important. It has a very long history and has great artistic potential. It also has its own artistic and technical features. The relief (Latin relief) is a circular sculpture with its sculptural possibilities. The classic relief also has the lines of magnitude: a flat background image does not disrupt the flat surface of the wall, but is also parallel to the background. Plastic relief can be included in the magnificent - decorative sculpture

Clarivate Analytics **indexed**

department, which is often associated with architecture. The composition of the figures on the relief spreads across the plane, which at the same time serves as a background for both background and image. This allows you to work on the landscape and multi-figure plots. The organic connection with such a plane is the specificity of the relief.

The relief is associated with the architectural structure in traditional view, its size, weight and plastic. But its interrelationships with the architectural layer are different. On the one hand, it is a general compositional relationship between the place and the role of the relief in the composition of the building; on the other hand, it is the plastic sphere between the sculpture and the language of architectural form. The spatial structure of modern buildings, in their particular urban design, in turn creates a relief system that does not always correspond with the symmetric axis of the main facade, which is not in line with the classical requirements, but is usually functionally self-evident and draws on more important aspects of the structure (the main access point is the main functional volume). It could be a decorative element or a spatial design on the neutral part of a building.

The relief performs its informative function and intertwines with the architectural form to help solve major urban planning tasks.

Compared to circular sculpture, the composition of buildings is used more freely. This type of sculpture is very easy to use both in iterators and in exteriors. The relief relates to the circular sculpture in the traditional view of the architectural structure, its overall size and plastic. But its interrelation with the architectural basis is different. On the one hand, it is a composite character that determines the role and role of the relief in the building's composition; on the other hand, it is a facade of plastic ties with the language of sculpture and architectural forms.

The landscape is particularly sensitive to changes in architecture and its composition. The search for new forms of composite interconnections, enriched both in architecture and in the modern world, goes through many directions. Consider just a few.

The composition of the nature of modern architecture offers many variations in the use of relief. This principle is contained in the dialectical principles of urban demands, which radically change the specific forms and methods of introducing relief to the general politics of expressive means. When it comes to landscaping, it is also meant to be used in buildings' decor. Types and methods of relief use are mainly determined by the functional specification of a particular structure, the specifics of the material that give rise to urbanization, and the plastic nature of the outer size. The design function of the relief is closely related to the purpose of the building, which allows it to formulate the theme with the help of sculpture. The spatial structure of the buildings, their precise urban design, in turn, does not necessarily imply that the

relief is in accordance with the classical requirements, that is, the facade or symmetry of the building, but rather the layout of more important parts of the functionally justified structure. The relief can carry out its informational function by interacting with a large architectural form, helping to solve large-scale urban planning tasks in its small role. All of these are, as a rule, the most active decorative plastic motif in the composition, the content of which can be clearly expressed by associative form, as well as the ornamental character. Its plastic form, depending on the specific task, must have either a graphic tracing of a drawing, or a vividly textured and colorful quality, in sync with the active background.

The nature of the relief form and its plastic expression must be directly related to the spatial composition of the structure and its plastic characteristic. Material plays an important role in determining the compositional links between architecture and sculpture. The root of this phenomenon can be traced in the diversity of new and new building materials, both in terms of their architectural and plastic capabilities, which have been incorporated into modern architecture. The dissemination of these materials has led to differences in their function (constructive and decorative, encompassing). Here are some examples.

Practice shows that tectonic holistic solution of architectural and sculptural forms was also achieved in brick structures as the main material. The use of bricks as the only material for walls and décor has been widely used in the creation of relief in architecture, but of course the plastic qualities of this material make it easy for sculptural compositions. The material is unique for the relief and the wall and gives rise to the organic form, reflecting the plastic nature of the structure. Another logical principle in the interconnection of architecture and sculptural forms is that it is common in modern plastic compositions, based on the contrast and contrast of materials. In most cases, stone is used as an architectural form (concrete, brick, natural stone, etc.) and metal sculpture. For example, an architectural structure of concrete can be embedded in a neutral color wall in complex aluminum-spatial contrast. In this case, the wall is curved like a screen, with sound waves coming out of a relief composition.

When considering the role of relief in space compositions of architectural structures, it is necessary to consider another specific type of form, namely the relief grid. Solving spatial functions and their plastic expression by their nature, such relief is attached to separate architectural plastic forms - walls, piles and so on. It looks very effective because of its large space elasticity. Therefore, the use of relief allows to use a large space-plastic arsenal of a building.

The lattice relief is a particular kind of decorative sculpture that has been widely used in world

architecture for many years. In many cases, the fence is one of the building blocks for enriching the building's plastic capacity, and its new fill-in details help to restore contact with the urban environment and nature.

From the foregoing, it is clear that in modern architecture, the possibilities of relief are wide. The relief is one of the plastic enrichment of architectural forms and further enhances its figurative expression.

Round sculpture has its own expressive power in the architectural ensemble. In the modern city structure, it draws and draws on public buildings. In this regard, along with the high resolution of individual sizes, architectural compositions have begun to be used in the building systems with complex composition of forms, new concepts of the circular sculpture's involvement in the composition of the building with new architectural principles. First of all, one of these principles is the principle of spatial interrelations. At the same time, the sculpture may not be connected to the size of the building in plastic, but together they create spatial integrity. Round sculpture plays an important role in creating an artistic city environment.

In summary, the spatial correlation of the statue with the building is based on a comparison of the size of the architectural and sculptural forms. Since the mid-twentieth century, synthesis in art has been extensive and multidimensional, and has played an important role in the creation of new cities, the creation of public buildings, complexes, and memorial ensembles.

Instead of symmetry in static compositions and sculpture layout, the style of their arrangement in ensembles in contrast, dynamic contrasts, and asymmetrical layout came. Rapid shifting of angles, artistic effects, and greater diversity of perceptions (or perceptions) are important criteria for choosing a place for a circular sculpture. Accordingly, even in the sculpture, plastic expressive tools have developed that give it an idea of the interconnectedness of architecture and space.

References:

1. Arkin, D.E. (1990). *Obrazy arkhitektury i obrazy skul'ptury*. (p.87). Moscow: Iskusstvo.
2. Levin, I. L. (2016). *Sposoby tvorcheskoy interpretatsii izobrazheniy v skul'pture i arkhitekturnom dekore.* (p.123). Nizhniy Novgorod: NNGAS.
3. Ivanov, I.V. (1975). *Skul'ptura i gorod*. (p.63). Moscow: Stroyizdat.
4. Korobova, E.S., & Solodilov, M.V. (n.d.). Sintez arkhitektury i monumental'no-dekorativnogo iskusstva ot modernizma do nashikh dney na primere Tol'yatti. Nauchnoe soobshchestvo studentov: Mezhdistsiplinarnye issledovaniya: sb. st. po mat. XXXIII mezhdunar. stud. nauch.-prakt. konf. № 22(33).
5. Pugachenkova, G.A. (1973). Vklad uchenykh Uzbekistana v izuchenie arkhitekturnogo nasledie respubliki. *Stroitel'stvo i arkhitektura Uzbekistana, № 7*, p. 1.
6. Zakhidov, P.Sh. (1978). Okhrana pamyatnikov – zadacha gradostroitel'naya (po materialam III plenuma Obshchestvo okhrany pamyatnikov istorii i kul'tury Uzbekistana). *Arkhitektura i stroitel'stvo Uzbekistana, №11,* pp.1-3.
7. Azimov, I.M. (1990). *Arkhitekturnoe nasledie Ferganskoy doliny XVIII- nachalo XX v. Problemy izucheniya, okhrany i ispol'zovaniya*. Avtoreferat dissertatsii na soiskanie uchenoy stepeni kandidata arkhitektury. Azerbaydzhanskiy inzhenerno-stroitel'nyy institut. (p.19). Baku.
8. (1976). *"Tarikh va madaniyat edgorliklarini muҳofaza қilish va ulardan foydalanish tÿҙrisida" қonuni loyiҳasi ҳaқida P.N. Demichev dokladi.* Sovet Ўzbekistoni.
9. Zakhidov, P.Sh. (1973). Polveka okhrany i restavratsii pamyatnikov kul'tury Uzbekistana. *Stroitel'stvo i arkhitektura Uzbekistana, № 7*, p.5.
10. Pugachenkova, G.A. (1982). K sozdanie regional'noy initsiativnoy gruppy respublik Sredney Azii Sovetskogo komiteta IKOMOSa. *Arkhitektura i stroitel'stvo Uzbekistana, №4*, pp.31 -33.

Clarivate Analytics *indexed*

QR – Issue   QR – Article

Gulrukh Turakulovna Eshonkulova
Bulhara state university
A teacher, Uzbekistan
+998 91 406 44 00
eshonkulovagulrux@mail.ru

SOCIOLINGUISTIC STUDIES IN SYNCHRONOUS AND DIACHRONIC BASES

Abstract: To date, the study of sociolinguistic situations is methodologically important with the specificity of observation objects, the ability to make observations, investigations, clarifications and the possibility of various experiments. Synchronous study of modern linguistic materials can identify objects and units of sociolinguistic analysis, pre-define the research process, develop models of their descriptions, determine the level of clarity of the advanced concepts and theories, and create a clear terminological basis for them.

Key words: synchronous, patterns of language, sociolinguistics, bilingualism, analysis and synthesis, the grammatical connections, metaphysics, society.

Language: English

Citation: Eshonkulova, G. T. (2019). Sociolinguistic studies in synchronous and diachronic bases. *ISJ Theoretical & Applied Science, 11 (79)*, 541-544.

Soi: http://s-o-i.org/1.1/TAS-11-79-112   *Doi*: https://dx.doi.org/10.15863/TAS.2019.11.79.112

Scopus ASCC: 1203.

Introduction

Sociolinguistics is studied in synchronous and diachronic bases. In discussing this French linguist Ferdinand de Saussure argues that all that is involved in the present state of the language is synchronous, its movement, its dynamic evolution, and the whole process of development, all of which is a diachronic phenomenon. From this point of view, the connection between language construction and its means of expression can facilitate the interplay of synchronous and diachronic processes. As changes in the language system continue to exist, their historical language layers and their evolutionary development are preserved and effectively influenced by the internal development of the language. According to Ferdinand de Saussure, social language factors, such as synchronic and diachronic, are studied in such aspects as agronomy, nachronia. Thus, when sociolinguistics is studied in synchronous, diachronic form, it is called the present and historical social linguistics, which is the basis for the study of social language issues. The phenomenon of these two languages evolves in different ways and can be used as a basis for the study

of the construction of a language, including two stages of Uzbek language development

Literature review:

All the problems of sociolinguistics cannot be solved unless the laws of language development and its internal language system are studied in a holistic manner. Whereas, modern social linguistics, along with synchronous phenomena, implements diachronic principles that can serve as a basis for studying the functional patterns of language based on historical developments. Synchronous sociolinguistics is the emergence of a functional principle of a language form based on a particular principle. Many current scholarly works on social linguistics have been extensively explaining the way in which language is lived, and in some cases, the emergence of language in countries. He acknowledges that such issues should not be considered separately when studying synchronicity and diachronic problems. Above F. de Saussure makes a mistake by separating synchrony and diachrony. This is because they have a diachronic in synchrony and a synchrony within a diachronic. The aim is to study the synchronous (modern)

Clarivate Analytics *indexed*

relations and relationships of the entire system of the language and its components, while the whole historical development of the language and its components, as well as the complexity of the joint evolution of movement. Synchronous sociolinguistics studies the language system and its components at different times.

To date, the study of sociolinguistic situations is methodologically important with the specificity of observation objects, the ability to make observations, investigations, clarifications and the possibility of various experiments. Synchronous study of modern linguistic materials can identify objects and units of sociolinguistic analysis, pre-define the research process, develop models of their descriptions, determine the level of clarity of the advanced concepts and theories, and create a clear terminological basis for them. It is through these that it is possible to study other chronological images of language development from a very distant epoch, and to use them for diachronic studies. Another important problem of sociolinguistics is the social aspects of bilingualism. The bilingualism of the two languages is conventionally linked. The more people who speak different languages in society, the more the worldview is different. Direct intercultural relations are also diverse and similar. Social thought is always developed by the majority. Therefore, it is the right approach to a particular situation. Sociological analysis analyzes these situations based on various data collected. As is the case in all disciplines and fields, social analysis has a process of analysis and synthesis. What is Analysis and Synthesis? What does it serve? What is this process? Analysis and Synthesis are translated from Greek as analysis - separation, division and synthesis - addition, integration. Analysis and synthesis are interconnected methods used by people in the process of knowing the world, the environment. Analysis is the division of something and event into ideas or actions; synthesis is the idea of integrating these parts into an idea or practice, to examine the whole thing. Analysis and synthesis are objective in that they examine all phenomena, processes and objects. The objective existence surrounding the human environment is complex and at the same time, specific things and events. All available objects have different characteristics and qualities. It is necessary to analyze and analyze these things and events in order to understand and understand these complex, different things and events, and to deepen our understanding of them. It is not possible to know the whole thing by this method alone; it must also be filled with synthesis. Synthesis relies on the results of the analysis and organizes the whole thing or event. In short, analysis and synthesis are a dialectical entity. It is worth noting that deep synthesis performed without analysis does not yield the expected results. At the same time, the analysis, which is not yet completed by synthesis, is not

enough. Metaphysics, however, divides analysis and synthesis, treating them as mutually exclusive. Some European scholars have criticized this, saying that "the idea is that the elements are so intertwined with one another, that the mind is so fragmented into its elements. From the foregoing, no synthesis can be achieved without analysis. It is also possible to say that analysis and synthesis do not deny the general dialectic method of knowledge, but only when applied, knowledge becomes meaningful and leads to wrong conclusions. Materialist dialectics interprets analysis and synthesis as a private method of scientific knowledge such as deduction and induction. Analysis and synthesis are also studied as two of the most important ways of knowing in formal logic. In turn, linguistic learning is also based on analysis and synthesis. When studying a particular language, we first divide it up based on language norms, for example: the language is subdivided into lexicology, morphology, syntax, and semantics. It is now being analyzed and synthesized by a new cross-language, comparative typology. Cross-cultural studies analyze intercultural relationships. According to him, samples of national culture with a specific language are studied by comparing them with the second sister language or the culture of non-native speakers. In Europe, if a young man or woman collects a certain amount from their parents for a life of their own, and is charged through a court, they are considered to be ineligible children in Uzbek society. This situation causes societal differentiation. People communicate in society about a variety of purposes, coincidences, and business. Differentiation is the separation of the whole into qualitatively different, meaningful parts, and it explores social diversity by dividing differences into points. Sociology linguistics is one of the youngest disciplines that has completely completed the study of vocabulary, morpheme, lexeme, and noted that there are also larger units in the sentence. They were referred to in this subject as syntactic integrity, paragraphs, discursions and terms. Currently, the largest language unit is recognized as text. The study of the text as a whole was initiated by Russian linguists in the 1930s. Russian scholars A.V. Peshkovsky`s "Russian syntax in scientific coverage" (M. 1934), V. V. Vinogradov`s "On artistic prose" (M., L., 1930) and others have put forth much effort to prove that the text has its own peculiarities, its inherent characteristics, its own meaning, its interrelationship with the identity of the author and the personality of the author. These works are important not only in Russian linguistics, but also in the history of general linguistics and contribute to the development of modern linguistics.

Discussion:
One of the problems with sociolinguistics is the fact that the distribution of functional languages or language subsystems of existing languages is

replacing the existing language norms with the new ones. Accordingly, the linguistic and sociolinguistic procedure of sociolinguistics methods induces synthesis. They are subdivided into a more natural method and sociolinguistic analysis. Natural methods are considered as traditional methods, which are based on questionnaires, interviews, and observations. Methods of observation. In psychology, there are both objective (external) and subjective (self) observations of this method. To monitor changes in the human psyche, the following will be done: 1) the purpose and objectives of observation are established; 2) the monitored object is selected; 3) the age, sex and occupation of the examiner are determined; 4) study time is planned; 5) how long the observation will be tightened; 6) it is recommended in which activity (observation, study, work, and sport) that the observation should be carried out; 7) form of observation (individual, group, collective) is assigned. Method of conversation. This method defines the purpose and objectives of the interview in the study of human psychology, selects its object and subject, determines its subject, time, plans for individual, group and team discussions, and develops a question-and-answer procedure. The main purpose of the interview is to explore the changes in the human psyche in the process of solving a particular situation or problem. Through interviews we get information about people's thinking, intelligence, behavior, curiosity, intelligence, knowledge, beliefs, worldview, and will. Method of testing. Testing is an English word, which means to try, to test. Short task, task, example, puzzle, plot image or form used to test the mental development, mentality, ability, willpower, and other psychic characteristics of a person are called tests. The test is especially used in selecting people to determine what kind of career, career or disability they have, talented, talented and mentally retarded. The value of the test method depends on the scientific level of the experiment, the skill and interest of the examiner, the objectivity of the psychological data collected and their ability to analyze. These techniques have been widely used for research in many fields. In particular, the use of testing has become the most common method of evaluating education. In a word, sociology is shaped by sociology as a branch of linguistics, which is inextricably linked to sociology. There is still a lot of research to be done in this regard and further improvement is needed. Therefore, sociolinguistics methods based on other social science methods have been developed and new ones are being developed. When sociolinguistics began to influence the language, the idea of analogue synchronous and diachronic directions began to appear. If we look at the history of the language, we can say that linguistics began with the study of linguistic synchronous facts. The general philosophical principles of language were first studied in aspects of sociolinguistics. Different aspects of the

languages began to be examined, depending on the different language norms. Diachronic linguistics is the youngest branch of linguistics of the past 100 years. In the late 19th and early 20th centuries, diachronic linguistics was studied as part of comparative linguistics. It is believed that language in these times has historically been the basis for the formation of the people. At this time, the language was studied in connection with the history of society and was directly linked to the secular and religious culture. In the 19th century, scientific ideas emerged and social linguistics began to be studied as part of linguistics. In the 60s of the 19th century I.A. Boduen de Curtene has done research on the history of the 14th-century language spoken by humans and has shown a great interest in the field of language and culture at that time. In his view, the language has two features, namely the inner and outer nature of the language. The materiality of the history of the church and the literature on the external existence of language is inextricably linked. In other words, the outer nature of the language is rooted in its geographical and ethnological features. The external language of the language is understood as the etymology of the customs of certain linguists based on the way of life that has been learned and drawn. Grammatical properties of the language are studied as the inner side of the language. In other words, words, phrases, sentences, and other language elements form the inner characteristics of the language. Directly sociolinguistics relies on the intrinsic nature of language. For example, grammar and its rules play a primary role in language learning. Only if the structure and standards of the language are appropriately designed will it be possible to master the language quickly and perfectly. The years, as in all areas, have their impact on the language industry. Humboldt also gives valuable insights on the relation between language and thought and describes language as a necessary body for the realization of thought. In his view, the mental activity of a person is purely spiritual and, from the point of view of the material, is transmitted by sounds. Therefore, thought activity is inextricably linked to language. When the scientist explains the connection of sound with the concept, they are different in their nature and emphasize the need for human participation in their vocabulary. From linguistic scholars to various fields of language I. Sreznevsky, F F Fortunatov, A.I. Sobolevsky, I. A. Boduen de Courtenay, A. A. Bakhmatov, B. M. Lyapunov, M. M. Pokrovsky have learned from a social and diachronic approach. The method of distributive analysis is introduced by American linguists who aim at the structural analysis of language elements. This method was originally founded by L. Blumfield. However, its basic principles are perfectly covered in Z. Harris' work entitled "Methods of Structural Linguistics". This work is published twice in 1951 and 1961. In the 40-60s of the last century, linguistics in America has been

strongly influenced by the descriptive direction, and Harris's work has been republished. However, this does not indicate that this century was the only source of analysis on the distribution method. There are, of course, other works devoted to distributive analysis. However, this work by Z. Harris is valuable because it highlights the basic principles of distributive analysis. The word distribution means "encirclement" in English. Therefore, the main tool of distributive analysis is the study of the surroundings of the actual use of language units, in particular phonemes, morphemes. For example, the phonological enclosure provides an explanation of how phonemes can be united in a horizontal line. There are three main types of distribution: 1. Additional distribution. 2. Contrast distribution. 3. Free Exchange Distribution.

Excessive workload on a textbook can put stress on students who are tasked with taking home too much. This reduces students' interest in science. Therefore, working with textbooks and introducing other textbooks should be used to develop students' independent work skills and abilities at all stages of teaching: explaining new topics, enhancing their knowledge, and checking homework. Undergraduate teachers in the field of vocational education must have the following skills of independent study: to distinguish them from texts, pictures and visual aids, tables and maps; identification of logical connections and dependencies in data acquisition; be able to

compare the events studied, to summarize and draw conclusions on one or more parts of the textbook. Foreign language, in particular, refers to phonetic, lexical, grammatical, and semantic perception of the sound that is learned by listening and understanding in the process of learning English.

Conclusion:

Therefore, students need to have phonetic, lexical, and grammatical skills to properly understand the content of the speech. Learning to understand and comprehend speech is a process that improves the learner's ability to hear, develops memory and attention, and helps to differentiate sound tones, the meaning of lexical units, and the grammatical connections between words. The learner receives the speech hears by listening, seeing, sensing, and using speech analyzers and dressing them with stereotypes (templates) stored in his memory. They have similar phonetic, lexical, grammatical symbols and acquire relevant concepts. In this process, the reader's brain begins to analyze and logically understand the signals transmitted by the analyzers. As a result, the learner's listening and comprehension activities begin to develop, and the ability to listen to and understand ideas on specific topics begins to develop. These skills will be transformed into skills through specialized exercises.

References:

1. Karimov, I.A. (1998). *Uzbekistan is for a great future*. Tashkent: Uzbekistan.
2. Akhmanova, O.S. (1966). *Dictionary of linguistic terms*. Moscow: Science,.
3. Avrorin, V.A. (1975). *Problems of learning the functional side of the language.* Questions define social linguistics. Moscow: Science.
4. Bondaletov, V.D. (1987). *Social linguistics*. Moscow: Enlightenment.
5. (1957). *Baudouin de Courtenay. Selected Works on General Linguistics*. Moscow: Science.
6. Baskakov, A.N. (1975). *Socio-economic and ethno linguistic-Russian bilingualism and Azerbaijan.* "Sociological problems of developing countries." (pp.273-274). Moscow.
7. Vinogradov, V.V. (1978). *Language of literature*. Moscow: Science.
8. Golovin, B.N. (1979). *General linguistics*. Moscow.
9. Desheriev, Yu.D. (1977). *Social Linguistics: Towards the Basics of a General Theory.* Moscow: Science.
10. Bushuy, T., & Safarov, Sh. (2007). *Language Construction: Methods of Analysis and Methodology*. (pp.12-19). SamSFI..
11. Bagdanov, V.V. (1990). *Speech communication: pragmatic and semantic aspects*. (p.89). Leningrad: Publishing House.
12. Barkhudarov, L.S. (1975). *Language and translation*. (p.190). Moscow: International relations.
13. Boboyorov, M., & Boynazarov, F. (2007). *Fundamentals of new pedagogical technology* (interactive lessons). (p.8). Tashkent: Institute of Philosophy and Law.

Clarivate Analytics indexed

QR – Issue   QR – Article

Mohichehra Khayotovna Niyazova
Bukhara State University
A teacher of English Literature department

ILLUSTRATION OF FRUITS AND VEGETABLES IN THE PUZZLES OF ENGLISH AND UZBEK LITERATURE

Abstract: *The puzzles are the smallest of folklore, its fascination has attracted all nations since ancient times. The puzzles, known internationally as genre, are equally important to the Uzbek and British people. In this article, we were familiar with the origins of English and Uzbek riddles, and then we analyzed the peculiarities of the puzzles that are the subject of our work, as well as those of melons.*
Key words: *puzzle, folklore, English.*
Language: *English*
Citation: Niyazova, M. K. (2019). Illustration of fruits and vegetables in the puzzles of English and Uzbek literature. *ISJ Theoretical & Applied Science, 11 (79),* 545-549.
Soi: http://s-o-i.org/1.1/TAS-11-79-113   *Doi*: cross🔗 https://dx.doi.org/10.15863/TAS.2019.11.79.113
Scopus ASCC: 1208.

Introduction

Each nation has its own ancient traditions, level of thinking, environment, way of life and worldview. Interethnic communication, regardless of the influence of interference, is always manifest in every nation's national identity. This separation is also reflected in its spiritual wealth. It is well known that the spiritual and enlightenment of the people, the specific world outlook is more often reflected in his oral work. As the genre of puzzle emerges as a product of people's thinking, it certainly reflects the creativity of its creator.[1]

Determining whether puzzles belong to a particular nation is a more complex matter. However, there are puzzles that are circulated around a particular ethnicity. The subject may not be fully known to other nations and may not even realize what it is. Even if they realize it, they admit that it applies to such a nation. These items are most commonly found in fruits, melons, household appliances, meals, clothes, equipment.

In both nations, special emphasis is placed on the description of fruits and vegetables, and because of their interconnectedness with the social life of the people, the puzzles that they express are often not unique, and have their own peculiarities. In addition to social life, culture, history, geography, and religion are all the reasons for this.

Analysis.

As far as farming, horticulture and human development are concerned, different ideas about whether fruits, melons, or vegetables have been reflected in the human mind have evolved. Although not all English and Uzbek peoples have a more coherent life, their interconnectedness, economic and cultural relations, and their various concepts of farming and horticulture have become fully integrated into the lives of these peoples. This, in turn, caused a great deal of controversy over the products associated with this exercise.

First of all, we would like to draw our attention to the puzzles about fruits and vegetables in English literature.

This is a fruit that
You might be fed
You just need to mix
Yellow and red. (Orange).[2]

The answer to our aforementioned puzzle is that oranges are the fruit of the puzzle, as in the first

---

[1]Razzoqov Z., Mirzayev T., Sobirov O. Imomov K. O'zbek xalq poetik ijodi. –Toshkent: 1980. – B. 67.

[2]http://riddles-for-kids.org/

Clarivate Analytics indexed

example of the puzzle. In the following verses it is said that this fruit is a good food. It is also about the color of the orange fruit. It is said that it is a mixture of yellow and red. It would not be a mistake to say that these definitions of tattooing lead to the answer to the riddle.

> This is a type of fruit
> On which you can dine
> To get another fruit
> Put it after pine. (Apple).[3]

As we focus on our next puzzle, it is about the fruit of the apple, and the mystery of this puzzle is hidden from all the puzzles. This suggests that the earliest examples of the riddle are also fruit. it was also mentioned that this fruit is very tasty. These descriptions help greatly in finding the name of the puzzle.

> I can be red or green
> I get grown on a vine
> I'm dried to make raisins
> Or squeezed to help make wine. (Grapes)[4]

Our next puzzle is about fruit, and this puzzle is very skillful. The earliest corn is said to be one of the fruit types. The following passages are said to be oval and meaning yellow. It is also noted that this fruit is small enough. From the above description it is not difficult to know that the name of the fruit is lemon.

> This is a type of fruit
> Whose shape is an oval
> Its color is yellow
> And it is fairly small. (Lemon).[5]

The next puzzle we want to analyze is about the fruit, and we can also find the answer to the puzzle using our own way of describing this pie. In the earliest examples of the riddle, the meaning described is yellow. In the following passages it is said that this fruit grows on a tree and is a favorite fruit of apes. It is not an exaggeration to say that the description in the last example of the puzzle clearly illustrates the answer to the puzzle.

> My color is yellow
> And I grow on trees
> I'm a popular food
> With apes and monkeys. (Banana).[6]

In our next piece of fruit, peaches are hidden. These descriptions are wonderful and silvery-based, suggesting that this fruit was mentioned in the New Year song.

> I am a fruit whose name sounds
> As though there might be two of me
> In a Christmas song there is
> A partridge in this kind of tree. (Pear).[7]

We would like to continue our feedback on the vegetable puzzles.

> You'll eat this fruit with turkey
> To help fill up your belly
> It is sometimes eaten like a sauce
> And sometimes it's a jelly. (Cranberry).[8]

Our next puzzle is one of the great puzzles to describe the fruit of the cranberry, and the first example of the puzzle says that we can eat this fruit with turkeys. The second example of our riddle is that it is a good food. The third example of our riddle tells us that we can consume sauces.

> This is a type of small fruit
> Which is smaller than your hand
> Fuzzy outside, green inside
> Often comes from New Zealand. (Kiwi).[9]

Our next puzzle is about the fruit of kiwi, and it says that the first fruit of the pie is a small fruit. In the second example of our riddle, the kiwi fruit is very dwarf and small. The third example of our puzzles is painted in vivid colors, even though the appearance of kiwi is a bit darker. The most recent example of our finding is that this fruit is native New Zealand and is often imported from New Zealand.

> If you like to eat small fruit
> Then this one is sure to please
> Because it is a dried grape
> Used in oatmeal cookies. (Raisin).[10]

The answer to our next puzzle is raisins, and the first line of our puzzle is that most people like raisins. In the next corn, the dried grapes of the grapes are mentioned. The last example of our riddle says that raisins are important in salty foods.

> If you enjoy eating fresh food
> In your garden this can grow
> It's red, round and goes in salads
> Which means it's a …. (Tomato).[11]

The first of our puzzles about melons is a great one, and the description of tomatoes is very vivid. It is said that they love our tomatoes, and it is grown in the garden. In the following verses it is mentioned that it is red in color, round in shape and is very important for salad. Such descriptions help greatly to find the answer to the riddle.

> This is a root vegetable
> That can be red, white or green
> It can make you cry a lot
> Even though it is not mean. (Onion).[12]

From the earliest examples, it is said that vegetables are root vegetables. These vegetables are said to be red, white and green. The fact that it will force you to cry when you peel makes it clear that the

---

[3]http://www.mamalisa.com
[4]http://riddles-for-kids.org/
[5]http://riddles-for-kids.org/
[6]http://riddles-for-kids.org
[7]http://riddles-for-kids.org

[8]http://www.mamalisa.com
[9]http://www.mamalisa.com
[10]http://www.mamalisa.com
[11]http://riddles-for-kids.org
[12] http://goodriddlesnow.com/riddles/view/428

vegetables are onions. Such wonderful descriptions show the characteristics of the onion.

> This is grown underground
> But has skin and eyes
> It can be eaten mashed
> Roasted or as fries. (Potato).

The next vegetable crop we are going to analyze is potatoes, and it has a very good description of the potato. The first example of the riddle tells about the potatoes being submerged in the ground. Further examples of riddles include potato skins and pottery. Recent puzzles also suggest that potatoes can be grated, cooked or roasted in a variety of ways. It would not be a mistake to say that such descriptions lead to the answer to the riddle.

> Rabbits like to eat me
> When I grow in a field
> This orange vegetable
> Tastes best when it is peeled. (Carrot).[13]

Our puzzle for further analysis is also decorated with beautiful descriptions and mysteries. The earliest examples of our finding are rabbits' favorite vegetables, and the rabbits are well-liked. In the following passages it is mentioned that the field is cultivated and its color is the same as that of oranges. It is also said that it is necessary to peel its paw to eat it. It is not wrong to say that the above definitions give us the understanding that this is a carrot.

Discussion.

Now we would like to continue our ideas about the fruits and vegetables in Uzbek literature. Before the arsenal of the Uzbek people appeared, wild oak trees came in the steppes and in the water. This tree is very productive and does not require maintenance. Therefore, this tree is associated with the fertility cults. Each year, in the spring, a few handfuls of spiked egg are sown along with the seed, hoping that the crop will be productive. This tree has always been a food for the people. That is why there are many puzzles about Jeddah.

> Strawberry blossoms,
> Whole flour,
> It has a pillar. (Jeddah).[14]

Almost all of the puzzles are red and white metaphorical references. The whiteness of the jasmine is sometimes represented by the word "flour." Because of the color and essence, flour with the fruit inside the jasmine we do not notice any difference between them. There is also a hint in the inscription that is found in the jade, which is expressed in terms of the "pillar" and "stick" metaphors.

To say that pomegranate is very important in the life of the Uzbek people is not an exaggeration. The pomegranate puzzles are very characteristic of the Uzbek folklore. This fruit is the reason for the birth of many mysterious metaphors by its structure and color. The same can be said about written literature. Seven examples of pomegranate puzzles among Uzbek puzzles.

> The red girls in forty cells.
> No door, no door,
> The room is full of guests. (Pomegranate).[15]

When looking at the puzzles created about pomegranates, it is unique

The three features focus on the hidden metaphor as a puzzle. These are meaningful forms: "cell"; color: "red"; grains: "girls", "guests".

They find that the pomegranate form is comparable to the cell, the grains inside the girls and the guests.

In folklore, fire is also considered to be a part of the fire, and there are many puzzles about the fire. For example:

> Small pan,
> Full bag. (nut).
> In another example:　　U is a mountain,
> This is a fat mountain,
> In the middle
> Butter. (nut).[16]

The above-mentioned puzzles about the fire are illustrated with a myriad of mysteries and similarities. The first find is the face of the fire, which is a shell. In the second example of the puzzle, the mystery is a little further away from the mystery, and because of its external features, it is slightly easier to find, that is, the essence of the nut.

The second find has two shells resembling mountains. This will directly engage the mystery reader. In the following passages, the essence of walnuts is similar to that of butter.

There are many specimens of almond fruit in the puzzles of folklore, and these puzzles have been polished from mouth to mouth. We are going to give some examples of almond-made puzzles.

> Between the two mountains
> One bush. (Almond).
> Another option:　　Crushed stone,
> In the soup (Almond).[17]

Of course, in our puzzles about almonds we have mentioned above, it is a good idea to keep readers from using the mystery. The first find is the peel of almonds, as if they were described by fire. But in the next chapter of the riddle, the almond is like a bush.

---

[13] http://riddles-for-kids.org/
[14] O'zbek xalq topishmoqlari. Cho'lpon nomidagi nashriyot-matbaa ijodiy uyi. Toshkent,2014.-B.140.
[15] Abduraximov I. M. O'zbek topishmoqlari. . – Toshkent: 1991. – B. 57.

[16] Husainova Z. Topishmoqlar. –Toshkent: G'afur G'ulom nomidagi adabiyot va san'at nashriyoti.1988.-B.25.
[17] Husainova Z. Topishmoqlar. –Toshkent: G'afur G'ulom nomidagi adabiyot va san'at nashriyoti.1988.-B.25.

This, in turn, takes a little longer to find the answer to the riddle, and the mystery becomes more intense.

The second find, in the first fragment, resembles crushed stone. This description of the almond leaves the reader in awe, and helps to draw the answer to the riddle of almond in the second verse.

Most of the puzzles about melons are melons related to Twelve of the Uzbek versions of the puzzle have been published in the sources. Many of these variants are poetic, some of them prose. The variants of the riddle provide different features of the melon. The first example of the Uzbek version is in fairy tales. In it, one of the fairy-tale characters sets a condition and the condition is meticulously accomplished. In fact, the melon is such that it is consumed by human, egg, poultry, and lentils. This is a feature of the melon metaphor is not emphasized. However, there are three specifications to find out what it has.

Among the puzzles about cereal plants are related to the buggythe samples are remarkable. The culture of farming is emerging, and it is still true.

There is no doubt that there has been a dramatic change in human life since the discovery. Because it is impossible to imagine human life without bread. The following puzzles can be proved:
It is fat,
Everyone is looking for him. (Wheats).[18]
The following finds are completely puzzled:
Lean,
The color yellow
Face is red,
The skull. (Wheats).

Four puzzles are hidden in the four lines below. The word "aryk" in the first miscarriage means a long cut on the body of a bugle, a "yellow" stem, a "red" grain, and a needle on the "cornflower".

In all variants of the puzzles, the main features of the steamboat are clearly expressed in different approaches.
Many women are downstairs,
T-shirts white, purple. (Apricot flower).[19]

It would not be an exaggeration to say that the puzzles we have listed below give us a very good description of the puzzle. This is not a fruit, but rather a flower. The flowers of the fruit are similar to those of many women. In the second example of the puzzle, we can say that the shades are white and look like a blossom.
It is blue,
Her face is red. (Apples).[20]

The puzzle we have mentioned above is also about the fruit that is considered the most beautiful and useful in the fruit. In the first verse, it is said that it is dark and in the next, it is red. Through these lines the features of the fruit are clearly demonstrated.
It is sweet and clean,
It tastes good and tastes great. (Peach).[21]
Another option:
Leaf like almond,
Leftover shoot. (Peach).

We have listed two puzzles with peach fruit above. The first riddle says that the first cornflower was sweet and tasty.

In our second puzzle, the peach leaf resembles the almond leaf. In the next passage, the description of the movement of the branch creates its own harmony.
There is a low
There is a bride feather. (Quince).
Another option:
Mall has a wedding,
Tasty taste. (Quince).[22]

We have listed two puzzles that combine the features of the quince above. The first riddle says that the quince is low in stature, and in the next, it has a yellowish color. The second riddle we have mentioned is that the quince has a very rich and tasty taste.

Conclusion.

In conclusion, we would like to emphasize that the English folklore created great masterpieces of mystery about fruits and melons in the Uzbek folklore. It is not an exaggeration to say that each nation used its own methods of describing these puzzles, revealing the characteristics of fruits and vegetables.

[18]Husainova Z. Topishmoqlar. Toshkent G'afur G'ulom nomidagi adabiyot va san'at nashriyoti. 1981.-B.213.

[19]Husainova Z. Topishmoqlar. Toshkent G'afur G'ulom nomidagi adabiyot va san'at nashriyoti. 1981.-B.213.
[20]O'zbek xalq topishmoqlari. Cho'lpon nomidagi nashriyot-matbaa ijodiy uyi. Toshkent,2014.-B.149.

[21]O'zbek xalq topishmoqlari. Cho'lpon nomidagi nashriyot-matbaa ijodiy uyi. Toshkent,2014.-B.157.
[22]Husainova Z. Topishmoqlar. Toshkent G'afur G'ulom nomidagi adabiyot va san'at nashriyoti. 1981.-B.215.

References:

1. Ҳusainova, Z. (1981). *Topishmoқlar*. Ŭzbek fol'klor ocherklari. Uch tomlik birinchi tom. Tashkent.
2. Khusainova, Z. (1996). *Uzbek topishmoқlari*. Toshkent.
3. Abduraximov, I. M. (1991). O'zbek topishmoqlari. (p.350). Toshkent.
4. (n.d.). Retrieved 2019, from http://goodriddlesnow.com/riddles/view/428
5. (n.d.). Retrieved 2019, from http://riddles and answers.treasure hunt riddles.org/Tags/
6. (n.d.). Retrieved 2019, from http://www.mamalisa.com/?t=es&p=1576
7. (n.d.). Retrieved 2019, from http://riddles-for-kids.org/69

Gulnoz Nematovna Kurbanova
Bukhara State Medical Institute
Associate professor

DEVELOPMENT OF PROFESSIONAL THINKING THROUGH COMMUNICATIVE SKILLS AMONG STUDENTS OF MEDICAL UNIVERSITIES

Abstract: *The development of professional thinking through communicative skills in students of medical universities is analyzed in this article. The development of innovative pedagogical technologies and their introduction into the educational process, as well as the rapid exchange and improvement of information technologies, requires that each teacher develops his or her professional training and pedagogical skills. The most important condition for the development of the country is the achievement of a modern system of advanced training based on the development of economy, science, culture, technology. The educational institution provides the learning environment with the learning process of the growing individual. The professional competence of students in medical institutions of higher education, primarily focused on the formation and development of teachers' knowledge needs, further enhances the responsibility of the teacher.*

Key words: *worldview, creative abilities, upbringing, talent, creative thinking, communication skills, intellectual ability.*

Language: *English*

Citation: Kurbanova, G. N. (2019). Development of professional thinking through communicative skills among students of medical universities. *ISJ Theoretical & Applied Science, 11 (79),* 550-553.

Soi: http://s-o-i.org/1.1/TAS-11-79-114   *Doi*: crossref https://dx.doi.org/10.15863/TAS.2019.11.79.114

Scopus ASCC: 3304.

Introduction

The purpose of the reforms in all spheres of social life of the country is to ensure human and its interests, security and prosperity and to bring up a harmoniously developed generation. It is well-known that education of young people, who are an important part of social, political, economic, cultural and spiritual revival of society, is important in promoting development and influencing processes in life.

Literature review

Problems of formation and development of students' spirituality have been substantiated by scientists of our republic, in particular M.Ochilov, R.Ibragimov, O.Musurmonova, N.Ortikov, S.Nishonova. Especially noteworthy is the academic research of the teacher O.Musurmanova. The main focus of the educator is to cultivate the spirituality of the students, nurturing young people through spiritual values. At the same time, in-class and out-of-class work, methods and tools for the study of spiritual values, sources of the formation of the spiritual culture of the person are indicated. The essence, structure and content of pedagogical activity reflected in pedagogical consciousness were studied by K.Abdurahmonov, MT Gromkova, PT Kasavin, M. Saidov. Formation of professional skills and professional readiness for pedagogical activity were taught by D.N. Arzikulov, R.Sh. Akhlidinov, R. Z. Asamova, S. F. Sherbak, B. H. Rahimov, B. R. Juraeva, K. M. Yuldashev.

The pedagogical and psychological bases of professional thinking of teachers can be seen in the works of L. Golish, S.Shamsitdinov. Creative directions of the teacher's activity and problems of preparation of future teachers for creative work have been developed in such researches as B. R. Adizov, K.B. Yuldashev, S. Nishonova. The authors of the above studies have acknowledged that undergraduate students of the Pedagogical University have a profound knowledge of special subjects taught in the

future, and that they are well acquainted with pedagogical situations and teaching methods.

Discussion

The future of each society is determined by the level of development of the education system, which is an integral part and vital necessity. Reforming and improving the system of continuous education of our country, moving on the path of independent development, to a qualitatively new level, the introduction of advanced pedagogical and information technologies, as well as enhancing the effectiveness of education has reached the level of state policy. Adoption of the Law of the Republic of Uzbekistan "On Education" and "National Program for Personnel Training" laid the foundation for modern training through continuous education. The development of innovative pedagogical technologies and their introduction into the educational process, as well as the rapid exchange and improvement of information technologies, requires that each teacher develops his or her professional training and pedagogical skills. The most important condition for the development of the country is the achievement of a modern system of advanced training based on the development of economy, science, culture, technology. The educational institution provides the learning environment with the learning process of the growing individual. The professional competence of students in medical institutions of higher education, primarily focused on the formation and development of teachers' knowledge needs, further enhances the responsibility of the teacher. A communicative skill tool for students studying at medical universities to improve learning efficiency, personal focus and youth self-knowledge, and a well-versed professional who knows modern teaching technologies and interactive methods in addition to strong knowledge in their field. time. For this purpose it is necessary to improve communication skills of students of all medical higher education institutions, their level of training, their skills in the use of pedagogical and information technologies, interactive methods and application of received knowledge in their activity.

Development of professional thinking of students of medical higher education institutions through the means of communicative skills should be aimed at creating the conditions for education in the process of upbringing, meeting the needs and abilities of the person. Students who have been trained in medical universities must have the ability to develop professional thinking through communicative skill with two facets that are covered by special and pedagogical disciplines, and should always answer the questions "Why do you need to teach?", "How to teach?". These responses should be interpreted in accordance with the basic principles and principles of pedagogical science, and should be based on knowledge, taking into account the nature of

education. One of the most important problems in the field of pedagogy today is the development of a mechanism for managing the pedagogical process, which should be designed and laid the basis for the specialty and activity of the teacher. The development of students' professional thinking in medical higher education institutions, in addition to existing knowledge through communicative skill, must have the necessary knowledge of pedagogical and psychological knowledge, technology and teaching techniques, and communicative culture required in the course of their activities. Therefore, the development of professional communication skills of students studying in medical institutions should focus on the following factors:

- Formation of pedagogical skills that ensure the development of professional thinking;
- to form new professional thinking aimed at understanding socio-economic, political and humanitarian knowledge;
- mastering the system of pedagogical and professional knowledge as a methodological basis for students' activity;
- to master the technology of training as a system of methods closer to professional activity;
- - Upbringing advanced cadres with modern knowledge, who can directly study, analyze and draw conclusions from the advanced educational experience of developed countries.

The development of students' professional thinking in medical higher education institutions should be able to communicate with the human spirit, and use modern technologies to improve their professional knowledge, skills and abilities through communicative skill. Generally, elements of several technologies are used in teaching at once. After all, pedagogical technology is a project that takes the whole learning process, and it is a result-oriented process that takes into account the human and technical capabilities of the learning process.

In today's innovative processes, the solution to the problems of the education system is necessary for those who are able to assimilate the new information and assess their own knowledge, make the necessary decisions, develop independent and free-thinking, professional thinking. That is why modern teaching methods, ie interactive methods, innovative technologies play an important role in the educational process of educational institutions. The knowledge and experience of pedagogical technology and their application in education ensure that students acquire knowledgeable and mature skills. The development of students' professional thinking in medical higher education institutions should be designed through communicative skill so that each lesson can see and visualize each lesson. Practical experience in the modern system of education shows that the development of students' professional thinking should be carefully designed, of course, based on the interests

of the participants of the educational process, as well as the process that enables them to achieve positive results. Only a fully developed, spiritually mature person can create the future of the nation. "As we mobilize our efforts to ensure that our people are not inferior to anyone in the world, our children are stronger, more educated, wiser and, of course, happy, the issue of spiritual education is undoubtedly important. If we lose our vigilance, persistence, and responsibility in this matter, leaving this important work to its own disregard, we may lose our spiritual values and our historical memory, and ultimately, we will not move away from the universal path of progress. " That is why it is more important now than ever before to pay special attention to the spiritual maturity of young people and the formation of mature and spiritually mature personnel. Because of the rapidly increasing flow of information, understanding their essence and choosing what is important to them depends on the high spiritual maturity of young people. The First President of the Republic of Uzbekistan IA Karimov said: "Today, young people receive a wide variety of information and information not only in educational institutions but also through radio, television, press and the Internet. In an ever-expanding world of information space, it is not up to the demands of our time, nor to our purpose, to educate our children not only to read and not to read, but to be surrounded by iron walls. After all, we have set the goal of building an open and free democratic society in our country and we will never go back. "

The main task of educators today is to draw young people into this era of strong, spiritually mature, independent thinkers and creative individuals. Training of such teachers is one of the main requirements for universities. Ways to raise the level of knowledge of the younger generation, educate them in the knowledge, intellect and spirituality are found in the works of our great ancestors, including Abu Raykhan Beruni, Ibn Sina, Abu Nasr Farabi and other great encyclopaedists.

The scientific concept of the article. If:

- emphasis on the development of professional thinking and professional competence in communicative skill among students of medical universities;

- where students are taught self-concept, analysis and evaluation, understanding and understanding and evaluating others;

- improvement of professional motivation and professional motivation for students of medical universities through communicative skill;

- systematic organization of work on development of professional thinking through communicative skill among students of medical universities.;

- study of individual personality traits in the development of professional thinking through communicative skill among students of medical universities;

- learns the most appropriate methods of communication culture for the development of professional thinking through communicative skill among students of medical universities;

- effective results can be achieved by relying on our national and spiritual heritage for the development of professional thinking through communicative skill among students of medical universities.

Scientific novelty of work:

1. Theoretical basis for the development of professional training for students of medical universities through the development of communicative skill through communicative skill is theoretical.

2. There is a scientific analysis of the process of developing professional thinking through communicative skill in medical students.

3. Students of medical HEIs are shown the opportunity to develop professional thinking through communicative skill.

4. The technology of developing professional thinking through communicative skill in the students of medical universities will be developed and the ways to implement them.

5. Recommendations for the development of professional thinking through communicative skill will be developed for students of medical universities.

References:

1. (1997). *The Law of the Republic of Uzbekistan "On Education"*. Tashkent.
2. (1997). *National Program for Personnel Training*. Tashkent.
3. Karimova, V.M., & Sunnatova, R. (2000). *"Guidelines for organizing independent thinking sessions"*. Tashkent.
4. Akhmedova, M., & Baqoyeva, M. (2019). Analysis of "Spirituality" Category and its Structure in the English Language. *International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN: 2278-3075, Volume-8, Issue-9*, p.3, July 2019.

Clarivate Analytics *indexed*

5. Kholikova, N.N., & Saidov, K.S. (2019). Observation and Analysis of the Peculiarities of English and Uzbek Detective Genre (in the Examples of J.H.Chase's Works. *International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN: 2278-3075, Volume-8, Issue-9*, p.3, July 2019.

6. Kadirova, N. S, & Akhmedova, Sh.N. (2019). Style and skill: critic's artistic ability. *International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN: 2278-3075, Volume-8, Issue-9*, p.3, July 2019.

7. Sohibova, Z., & Quvvatova, D. (2019). Symbolic description of the year seasons in Uzbek poetry. *International Journal of Innovative Technology and Exploring Engineering. Volume-8 Issue-9*, p.3, July 2019. pp.363-367. ISSN: 2278-3075 Website: www.ijitee.org

8. Shomaxsudov, Sh., & Shoraxmedov, Sh. W. (1990). Annotated Dictionary of Uzbek proverbs. (p.523). Tashkent.

9. Safarov, O. (2000). *"Uzbek folklore"*. (p.156). Tashkent.

10. Samadov, Q. (1965). "*The essence of our proverbs*". (p.213). Tashkent: "Culture of Uzbekistan".

11. Madayev, O., & Sobitova, T. (2010). *Poetry of folklore*. Tashkent: "East".

12. Mirzaev, T., Musoqulov, A., & Sarimsoqov, B. (2005). *Uzbek folk proverbs*. (p.508). Tashkent: "East".

13. Safarov, O. (2000). *"Uzbek folklore"*. (p.156). Tashkent.

14. Davletshin, G.M. (1990). *"Psychological bases of education"*. Tashkent.

15. Karimova, V.M. (2002). "*Psychology*". Textbook. Tashkent.

Ravshan Indiaminov
Samarkand branch of Tashkent University of Information Technologies
doctor of physical and mathematical sciences, professor
Samarkand, Uzbekistan
r_indiaminov@mail.ru

Sokhibjon Rustamov
Navoi state mining institute
assistant of the department of higher mathematics and computer technology
Samarkand, Uzbekistan
samrux@umail.uz

AXISYMMETRIC MAGNETOELASTIC SHELLS DEFORMATION WITH ACCOUNT FOR ANISOTROPY OF CONDUCTIVE PROPERTIES

Abstract: *The effect of account for external magnetic field when determining the stress-strain state of current-carrying anisotropic shells in a geometrically nonlinear statement is studied in this paper on the example of a flexible current-carrying shell located in a magnetic field. It is shown that with a change in external normal component of magnetic induction, there is a significant change in the stress state of a shell and its electromagnetic field.*
Key words: *shell, magnetic field, magneto elasticity.*
Language: *English*
Citation: Indiaminov, R., & Rustamov, S. (2019). Axisymmetric magnetoelastic shells deformation with account for anisotropy of conductive properties. *ISJ Theoretical & Applied Science, 11 (79)*, 554-559.
Soi: http://s-o-i.org/1.1/TAS-11-79-115   *Doi*: crossref https://dx.doi.org/10.15863/TAS.2019.11.79.115
Scopus ASCC: 2210.

Introduction

In the mechanics of conjugate fields, an important place is occupied by the study of a continuous medium motion taking into account electromagnetic effects. Studies in the mechanics of coupled fields in deformable bodies have fundamental and applied nature, which makes them especially relevant. These issues were studied in [1,2,3,5,7,8,11,17,18,21,22,23, 24,25]. In modern technology, structural materials are used that are anisotropic in the undeformed state, and the anisotropy of the properties of such materials arises as a result of application of various technological processes. The nature of the shell material anisotropy is not determined entirely by its behavior as an elastic body and the anisotropy of the material can manifest itself in relation to its other physical properties, for example magnetic and dielectric permeability and electrical conductivity. Some of the most important anisotropic materials have a crystalline structure. The

most characteristic feature of crystals physical properties is their anisotropy and symmetry. Due to the periodicity, regularity, and symmetry of internal structure, a number of properties are discovered in crystals that are impossible to find in isotropic bodies. The anisotropic physical properties of crystals are extremely sensitive to external influences. Therefore, selecting and combining these effects, we may create the materials with unique, unusual properties that are used in modern technology.

Problems interaction between electro-magnetic field and deformed bodies are frequent in advanced technology.

I. MATERIAL RELATIONS. BASIC EQUATIONS. By an electromagnetic field we mean a combination of four vectors: $\vec{E}$ - electric field strength; $\vec{H}$ - magnetic field strength; $\vec{D}$ - electric induction; $\vec{B}$ - magnetic induction. These vectors are assumed to be continuous ones together with their first

derivatives, functions of coordinates and time at all non-singular points. Discontinuities in field vectors or their derivatives can occur on surfaces at a sharp change in physical properties of the medium (density, conductivity, and others). Sources of electromagnetic field are electric charges, characterized by charge density ρ_e, and the currents, which are given by the current density vector $\vec{J}$. In differential form, the laws of electromagnetism are written as

$$\mathrm{div}\vec{D} = \rho_e, \ \ \mathrm{div}\vec{B} = 0, \ \ \mathrm{rot}\vec{E} = -\frac{\partial \vec{B}}{\partial t},$$

$$\mathrm{rot}\vec{H} = \vec{J} + \frac{\partial \vec{D}}{\partial t}. \qquad (1)$$

In material media, under external electromagnetic field, polarization and magnetization processes occur. The nature of the functional relationships between the vectors $\vec{E}$ and $\vec{D}$, as well as the vectors $\vec{H}$ and $\vec{B}$, should be determined only by physical properties of the medium itself in the immediate vicinity of this point [1,4,6,11,19,20,24]. If an elastic body is in vacuum, then for vacuum the determining relations should be fulfilled

$$\vec{D} = \varepsilon_0 \vec{E}, \ \ \vec{B} = \mu_0 \vec{H}. \qquad (2)$$

Here ε_0, μ_0 are the electric and magnetic constants. In vacuum, equations (1) are satisfied under the assumption that $\vec{J} = 0$. In system SI, the numerical values of ε_0 and μ_0 are equal to:

$\varepsilon_0 = 8{,}854 \cdot 10^{-12} \approx \frac{1}{\pi} \cdot 10^{-9} F/m$, ,
$\mu_0 = 4\pi \cdot 10^{-7} = 1{,}257 \cdot 10^{-6} H/m$.

Here $c_2 = 1/\varepsilon_0 \mu_0$, c is the speed of light in vacuum.

For an isotropic medium $\vec{D}$ is parallel to $\vec{E}$ and not to $\vec{H} - \vec{B}$.

Usually for isotropic elastic bodies, the relationship between these vectors is linear:

$$\vec{D} = \varepsilon \vec{E}; \ \ \vec{B} = \mu \ \vec{H}, \qquad (3)$$

where $\varepsilon = \varepsilon_0 \varepsilon_r$ and $\mu = \mu_0 \mu_r$; ε_r, μ_r - are the dimensionless coefficients of relative dielectric and magnetic permeability of the medium. In anisotropic media, the properties in different directions are different, and $\vec{D}$ may depend not only on $\vec{E}$. For example, in piezoelectricity, the vector of electric induction is a function of the vector of electric field strength $\vec{E}$ and the tensor of mechanical deformation.

Media with magnetic properties are called magnets. When introduced into an external magnetic field, all bodies are magnetized to one degree or another, that is, they create their own magnetic field, which is superimposed on the external field. By their magnetic properties, the magnets are divided into three main groups: ferromagnets, diamagnets and paramagnets.

The paramagnetism of metals is due to the magnetic moments of conduction electrons and crystal lattice ions. In alkali and alkaline earth metals, the magnetic moments of ions are zero, and paramagnetism is associated only with conduction electrons. In diamagnetic and paramagnetic media, the relationship between $\vec{H}$ and $\vec{B}$ is represented by formula (3), with a high degree of accuracy $\mu = \mu_0$. Strictly speaking, in stating the relation between $\vec{D} = \vec{D}(\vec{E})$ and $\vec{B} = \vec{B}(\vec{H})$ it is necessary to use the analysis of atomic structure of matter, since only microscopic theory can make it possible to calculate the average field inside the body, and the local values of this field in the vicinity of individual atoms. Microscopic theory makes it possible to answer the question of how an atom will be deformed under the influence of a local field, and the total effect of atomic deformation is described using parameters ε and μ (their tensor or vector analogues). In order to make the system of Maxwell equations (1) closed, it is necessary to add to two equations (3) the third one - the ratio between the density of electric current and electric field. From experimental data it is known that both for solids and for weakly ionized solutions

$$\vec{J} = \sigma \vec{E}, \qquad (4)$$

where σ is the specific electrical conductivity of the medium. Equation (4) is usually called Ohm's Law in differential form.

The proportionality coefficient between vectors $\vec{J}$ and $\vec{E}$ in equation (4) - specific conductivity σ - is an important characteristic of the medium. In isotropic media in the absence of an external constant magnetic field, σ is the scalar quantity. Its value depends on temperature: with increasing temperature, specific conductivity decreases. Media can vary greatly in terms of conductivity, so their behavior in electromagnetic fields can also be completely different.

In many anisotropic media, the parameter σ is a tensor of the second rank [4,11,20,24]:

$$\sigma_{ij} = \begin{pmatrix} \sigma_{11} & \sigma_{12} & \sigma_{13} \\ \sigma_{21} & \sigma_{22} & \sigma_{23} \\ \sigma_{31} & \sigma_{32} & \sigma_{33} \end{pmatrix}$$

In this case, the conduction current density and electric field strength in the general case do not coincide in direction. The greater the value of σ, the greater the conduction current density in the medium at the same electric field strength.

At low temperatures, many materials become ideal conductors in which $\sigma \to \infty$.

In this case, the current in the closed ring can retain its value indefinitely. To change the current, an electric field must be applied. Consider a body that moves in an external magnetic field at velocity $\vec{V}$.

In accordance with Newton's first Law, a material point maintains a state of rest or uniform

rectilinear motion until action from other bodies takes it out of this state.

The reference frame, with respect to which a material point free from external influences is at rest or moves uniformly and rectilinearly, is called the inertial reference frame.

It is known that the Maxwell equations are invariant under the Lorentz transforms. The formulas of the Lorentz transforms for vectors $\vec{E}, \vec{B}, \vec{D}$ and $\vec{H}$ of electromagnetic field during the transition from a stationary inertial reference system K to another inertial reference system K' moving relative to K uniformly and rectilinearly, along, for example, the positive direction of the OX axis with velocity V, have the following form in SI:

$$E'_{x'} = E_x, \quad E'_{y'} = \frac{E_y - VB_z}{\sqrt{1 - V^2/c^2}},$$

$$E'_{z'} = \frac{E_z + VB_y}{\sqrt{1 - V^2/c^2}},$$

$$B'_{x'} = B_x, \quad B'_{y'} = \frac{B_y + \frac{V}{c^2} E_z}{\sqrt{1 - V^2/c^2}},$$

$$B'_{z'} = \frac{B_z - \frac{V}{c^2} E_y}{\sqrt{1 - V^2/c^2}}, \quad (5)$$

$$D'_{x'} = D_x, \quad D'_{y'} = \frac{D_y - \frac{V}{c^2} H_z}{\sqrt{1 - V^2/c^2}},$$

$$D'_{z'} = \frac{D_z + \frac{V}{c^2} H_y}{\sqrt{1 - V^2/c^2}}, \quad H'_{x'} = H_x,$$

$$H'_{y'} = \frac{H_y + VD_z}{\sqrt{1 - V^2/c^2}}, \quad H'_{z'} = \frac{H_z - VD_y}{\sqrt{1 - V^2/c^2}}.$$

Here c is the velocity of excitation propagation in matter. The inverse transform from K' to K is obtained from given above replacement of all non-shaded quantities by shaded ones and all shaded quantities by non-shaded ones, and replacing everywhere the values of V by $-V$. As seen from the Lorentz transforms for the electromagnetic field, similar electromagnetic fields behave differently in inertial reference frames moving relative to each other.

In particular, if in the frame of reference K there is only an electric field $\vec{E} = E_y \vec{K}$, and $\vec{B} = 0$, then in the frame of reference K' both electric and magnetic fields will be observed, the vectors $\vec{E}'$ and $\vec{B}'$ of which are mutually perpendicular:

$$E'_{x'} = 0, \quad E'_{y'} = \frac{E_y}{\sqrt{1 - V^2/c^2}}, \quad E'_{z'} = 0, \quad (6)$$

$$B'_{x'} = 0, \quad B'_{y'} = 0, \quad B'_{z'} = -\frac{VE_y}{\sqrt{1 - V^2/c^2}}.$$

On the contrary, if there is no electric field in the frame of reference K, but only a magnetic field $\vec{B} = B_z \vec{K}$, then in K' again magnetic and electric fields will be observed, the vectors $\vec{B}'$ and $\vec{E}'$ of which are mutually perpendicular:

$$B'_{x'} = 0, \quad B'_{y'} = 0, \quad B'_{z'} = -\frac{B_z}{\sqrt{1 - V^2/c^2}},$$

$$E'_{x'} = 0, \quad E'_{y'} = -\frac{VB_z}{\sqrt{1 - V^2/c^2}}, \quad E'_{z'} = 0.$$

It follows from the Lorentz transforms that the scalar products of vectors $\vec{E}'$ and $\vec{B}'$, and $\vec{H}'$ and $\vec{D}'$ are invariant with respect to the selection of inertial frame of reference K': $\vec{E}'\vec{B}' = \vec{E}\vec{B}$ and $\vec{H}'\vec{D}' = \vec{H}\vec{D}$.

Equations are also invariant:

$$E'^2 - c^2 B'^2 = E^2 - c^2 B^2$$

and $$D'^2 - \frac{H'^2}{c^2} = D^2 - \frac{H^2}{c^2}.$$

Introduce a moving inertial reference frame in which the body is stationary. Then, in the moving reference frame, the Maxwell equations (1) with respect to the shaded quantities are executed

$$\operatorname{div}\vec{D}' = \rho'_e, \quad \operatorname{div}\vec{B}' = 0,$$

$$\operatorname{rot}\vec{E}' = -\frac{\partial \vec{B}'}{\partial t}, \quad \operatorname{rot}\vec{H}' = \vec{J}' + \frac{\partial \vec{D}'}{\partial t} \quad (7)$$

and material relations

$$\vec{D}' = \varepsilon \vec{E}', \quad \vec{B}' = \mu \vec{H}', \quad \vec{J} = \sigma \vec{E}'. \quad (8)$$

In equations (7), the strokes can be omitted owing to the invariance of the Lorentz transforms, but it must be borne in mind that the material relations (8) in the moving coordinate system are transformed in accordance with (5). Next, consider the medium motion at low velocities $V \ll c$. In this case, the relations are executed

$$\vec{E}' = \vec{E} + \vec{V} \times \vec{B}, \quad \vec{D}' = \vec{D} + \frac{1}{c^2} \vec{V} \times \vec{H}$$

$$\vec{H}' = \vec{H} - \vec{V} \times \vec{D}, \quad \vec{B}' = \vec{B} - \frac{1}{c^2} \vec{V} \times \vec{E}, \quad (9)$$

$$\vec{J}' = \vec{J} - \rho_e \vec{V}, \quad \rho_e = \rho'_e.$$

If to substitute (9) in (8) and neglect the quantities of V^2/c^2 order, the relations are obtained in the form

$$\vec{D} = \varepsilon\vec{E} + \left(\varepsilon\mu - \varepsilon_0\mu_0\right)\vec{V} \times \vec{H},$$

$$\vec{B} = \mu\vec{H} - \left(\varepsilon\mu - \varepsilon_0\mu_0\right)\vec{V} \times \vec{E}, \quad (10)$$

$$\vec{J} = \sigma\left(\vec{E} + \vec{V} \times \vec{B}\right) + \rho_e\vec{V},$$

representing material relations between field vectors in a moving coordinate system through field values in a fixed system.

For many problems of magnetoelasticity, it can be assumed that in the medium $\rho_e = 0$, $\varepsilon = \varepsilon_0$. If the medium is a dia- or paramagnet, then $\mu = \mu_0$.

This suggests that for the considered materials the relative magnetic and dielectric permittivity coefficients μ_r and ε_r can be considered equal to unity in a wide range of changes in magnetic induction. In this case, relations (10) have the form

$$\vec{D} = \varepsilon\vec{E}; \ \vec{B} = \mu\vec{H}; \ \vec{J} = \sigma\left(\vec{E} + \vec{V} \times \vec{B}\right). \quad (11)$$

The material relationships of the electrodynamics of anisotropic conductive media can be written as

$$D_i = \varepsilon_{ij}E_j, B_i = \mu_{ij}H_j,$$
$$J_i = \sigma_{ij}E_j, \quad (i, j = 1,2,3) \quad (12)$$

Expressions (7) and (11) present a system of equations of electromagnetism for a moving homogeneous isotropic medium, and expressions (7) and (12) present a system of equations of electromagnetism for a moving anisotropic medium [1,4,7,11,20,24]. These equations hold for points in the vicinity of which physical properties of the medium change continuously.

II. PROBLEM FORMULATION.

Consider the nonlinear behavior of an orthotropic current-carrying conical shell of variable thickness $h = 5 \cdot 10^{-4}(1 - 0.5\frac{s}{s_N})\ m$. It is believed that the beryllium shell is influenced by mechanical force $P_\zeta = 5 \cdot 10^3 \sin \omega\ t\ ^N/_{m^2}$, of an external electric current $J_{\theta CT} = 5 \cdot 10^5 \sin \omega t\ ^A/_{m^2}$, and an external magnetic field $B_{S0} = 0.1Tl$.

The electromagnetic properties of the material are characterized by tensors of electrical conductivity σ_{ij}, magnetic permeability μ_{ij}, and dielectric constant ε_{ij}

An external electric current in an unperturbed state is uniformly distributed over the shell, i.e. the density of external current does not depend on the coordinates.

In this case, combined load consisting of the ponderomotive Lorentz force and mechanical force acts on the shell.

Suppose that the geometric and mechanical characteristics of the body are such that a version of geometrically nonlinear theory of thin shells in the

quadratic approximation is applicable to describe the deformation process.

Assume that the electromagnetic hypotheses are fulfilled with respect to the electric field $\vec{E}$ and magnetic field $\vec{H}$ [1,3].

These assumptions are some electrodynamic analogues of the hypothesis of undeformable normals and, together with the latter, make the hypotheses of magnetoelasticity of thin bodies.

Acceptance of these hypotheses allows reducing the problem of a three-dimensional body deformation to the problem of a coordinate surface deformation chosen arbitrarily.

The complete system of nonlinear differential equations of magnetoelasticity in the Cauchy form is taken as in [8,10,11,13,15,16,17].

III. METHODOLOGY OF THE SOLUTION

The technique for solving the magnetoelasticity problem of a truncated orthotropic spherical shell of variable thickness in an axisymmetric statement is based on the consistent use of the quasilinarization method and the discrete orthogonalization method [2,3,4, 8,10,11,13,19].

To separate the variables by the time coordinate, the implicit Newmark scheme of integration of the magnetoelasticity equations is used [19].

The next step in solving the nonlinear boundary value problem of magnetoelasticity is based on the application of the quasilinearization method, with the help of which the nonlinear boundary value problem is reduced to solving a sequence of linear boundary value problems at each time step.

Next, each of the linear boundary value problems of the sequence on the corresponding time interval is numerically solved using the stable method of discrete orthogonalization.

IV. ANALYSIS OF THE RESULTS

An orthotropic shell behavior is studied depending on the change in the external normal component of magnetic induction $B_{\zeta 0}$. The problem for an orthotropic cone made of beryllium of variable thickness $h = 5 \cdot 10^{-4}(1 - 0.5s/s_N)\ m$ is calculated under normal component of magnetic induction $B_{\zeta 0}$, which changes as follows (8 options):

$$B_{\zeta 0} =$$
$$(-0.3, -1.0, -2.0, -3.0, -4.0, -5.0, -6.0, -7.0\ )$$

Boundary conditions:
$$u = 0, \quad w = 0, \quad M_S = 0,$$
$$B_\zeta = B_{\zeta 0} \sin \omega\ t \ \text{(hinged)} \quad \text{at} \quad s = s_0 = 0,$$
$$w = 0, \quad \theta_S = 0, \quad N_S = 0,$$
$$B_\zeta = 0 \quad \text{(sliding)} \quad \text{at} \quad s = s_N = 0.5\text{м}.$$

The parameters of the shell and the material are:
$$s_0 = 0, s_N = 0{,}5m, h = 5 \cdot 10^{-4}(1 - 0.5s/s_N)$$
$$m, \quad r = r_0 + s\cos\varphi; \ r_0 = 0.5m, \rho = 2300\ kg/m^3,$$
$$\omega = 314.16\ \text{sec}^{-1}, B_s^+ = B_s^- = 0.1T, \phi = ^\pi/_{30}, \mu =$$

$1.256 \cdot 10^{-6} H/m, B_{S0} = 0.1 T, \nu_S = 0.03 \, \nu_\theta = 0.09,$
$J_{\theta cm} = -5 \cdot 10^5 \sin \; \omega t \; A/m^2,$
$\sigma_1 = 0.279 \cdot 10^8 (\Omega \times m)^{-1}, \sigma_2 = 0.321 \cdot 10^8 (\Omega \times m)^{-1},$
$\sigma_3 = 1.136 \cdot 10^8 (\Omega \times m)^{-1}, \quad e_S = 28.8 \cdot 10^{10} N/m^2, \quad e_\theta = 33.53 \cdot 10^{10} N/m^2, P_\zeta = 5 \cdot 10^3 \sin \; \omega t \; N/m^2.$

The solution is found in the time interval $\tau = 0 \div 10^{-2} sec$ for the integration time step is chosen to be $\Delta t = 1 \cdot 10^{-3} sec$. Maximum values obtained at time step $t = 5 \cdot 10^{-3} sec$. Note that in the case under consideration, the anisotropy of electrical resistivity of beryllium is $\eta_3/\eta_1 = 4.07$.

Figure 1 shows the change in internal magnetic induction of a shell depending on the change in external magnetic induction at $t = 5 \cdot 10^{-3} s$ and $s = 0.45 \; m$ for all variations of $B_{\zeta O}$. As follows from the figure, the internal magnetic induction of a shell substantially depends on the external magnetic induction. In the considered range of changes in external magnetic induction, the internal magnetic induction reaches its maximum value at $B_{\zeta O} = -4.0$.
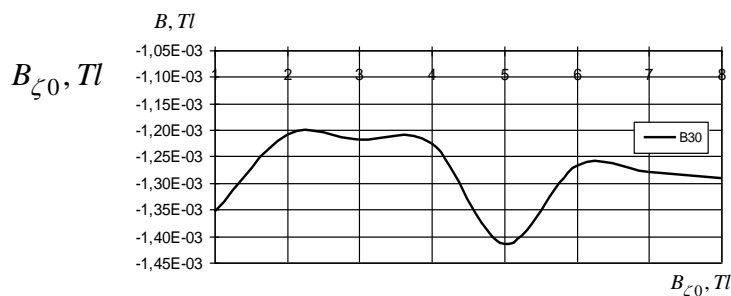

Fig. 1. Change in internal magnetic induction of a shell depending on the change in external magnetic induction at $t = 5 \cdot 10^{-3} s$ and $s = 0.45 \; m$ for all variations of $B_{\zeta 0}$.

It was revealed that with an increase in external magnetic induction, the stresses on the outer surface of a shell vary depending on the change in the ponderomotive Lorentz force direction and the interaction with mechanical load. In the considered case, the stress on the outer surface of a shell reaches its maximum value at $B_{\zeta O} = -4.0$. As the value of external magnetic induction increases, the stress along the inner surface of a shell increases too.

V. CONCLUSION

The coupled problem of magnetoelasticity for a flexible anisotropic shell is discussed in the paper taking into account the anisotropy of conductive properties. The results of numerical example are presented.

The analysis of the stress state of a flexible shell under time-varying mechanical force and time-varying external electric current is fulfilled taking into account mechanical and electromagnetic orthotropy. The effect of external magnetic induction on the stress state of an orthotropic shell in a geometrically nonlinear statement is analyzed. It was found that with an increase in external magnetic field induction, the induction of internal magnetic field increases too.

References:

1. Ambartsumyan, A., Bagdasaryan, G.E., & Belubekyan, M.V. (1977). *Magnetoelasticity of Thin Shells and Plates* [in Russian], Nauka, Moscow.
2. Grigorenko, Ya.M., & Mol'chenko, L.V. (1993). *Fundamentals of the Theory of Plates and Shells* [in Ukrainian], Lybid', Kyiv.
3. Grigorenko, Ya.M., & Mol'chenko. L.V. (2010). *Fundamentals of the Theory of Plates and Shells with Elements of Magnetoelasticity (Textbook)* [in Russian], IPTs Kievskii Universitet, Kyiv.
4. Sirotin, Yu. I., & Shaskol'skaya, M. P. (1979). *Fundamentals of Crystal Physics* [in Russian], Nauka, Moscow.
5. Ulitko, A. F., Mol'chenko, L. V., & Koval'chuk, V. F. (1994). *Magnetoelasticity under Dynamic Loading* [in Ukrainian], Lybid', Kyiv.

6. Lippmann, H. G. (1976). "Principle de la conservation de l'electricite," *Ann. Chim.,* No. 2, 17–35.

7. Maugin, G. A. (1985). *Nonlinear Electromechanical Effects and Applications,* World Scientific, Singapore.

8. Mol'chenko, L. V., & Loos, I. I. (2010). "Influence of conicity on the stress–strain state of a flexible orthotropic conical shell in a nonstationary magnetic field," *Int. Appl. Mech.,* 46, No. 11, 1261–1267. MathSciNetCrossRefMATH

9. Mol'chenko, L. V., Loos, I. I., & Fedorchenko, L. M. (2013). "Axisymmetric magnetoelastic deformation of a flexible orthotropic ring with orthotropic conductivity," *Int. Appl. Mech.,* 49, No. 3, 322–327. ADSMathSciNetCrossRefMATH

10. Mol'chenko, L. V., Loos, I. I., & Indiaminov, R. Sh. (1997). "Nonlinear deformation of conical shells in magnetic fields," *Int. Appl. Mech.,* 33, No. 3, 221–226.

11. Mol'chenko, L. V., Loos, I. I., & Indiaminov, R. Sh. (2008). "Determining the stress state of flexible orthotropic shells of revolution in magnetic field," *Int. Appl. Mech., 44,* No. 8, 882–891. ADSMathSciNetCrossRefMATH

12. Mol'chenko, L. V., Loos, I. I., & Indiaminov, R. Sh. (2009). "Stress–strain state of flexible ring plates of variable stiffness in a magnetic field," *Int. Appl. Mech.,* 45, No. 11, 1236–1242. ADSMathSciNetCrossRefMATH

13. Indiaminov, R.S. (2015). Magnetoelastic deformation of a current-carrying orthotropic conical shell with an ortotropiya of the carrying-out properties. *Bulletin of the University of Kiev. Series: Physics & Mathematics*. No.5, 81 – 86.

14. Indiaminov, R. Sh., Akbaev, U., & Dustmuradov, A. (2016). Nonlinear deformation of flexible orthotropic shells of variable thickness in the non stationary magnetic field // *International Journal of Engineering Innovation & Research.,* - Volume 5, Issue 3, 234-238.

15. Indiaminov, R., Hotamov, A., & Akhmedov, F. (2017). Magnetoelastic deformation of the current carrying shells with the orthotropy of conductive properties. *International Journal of Engineering Innovation & Research.,* - Volume 5, Issue 6, 344-350.

16. Indiaminov, R., Butaev, R., & Mavlanov, S. (2018). Research of deformation of the current carrying orthotropic shells in nonlinear statement. *International scientific journal «Theoretical & Applied Science»* - Volume 09, Issue 65, Philadelphia.

17. Moon, F. C. (1984). *Magneto-Solid Mechanics,* John Wiley & Sons, New York.

18. Moon, F. C., & Chattopadhyay, S. (1974). "Magnetically induced stress waves in a conducting solid: Theory and experiment," *Trans. ASME, J. Appl. Mech.,* 41, No. 3, 641–646.

19. Newmark, N. M. (1959). "A method of computation for structural dynamics," *ASCE, J. Eng. Mech. Div.,* 85, No. 7, 67–97.

20. Nye, J. F. (1964). *Physical Properties of Crystals,* Clarendon Press, Oxford. MATH

21. Pao, Y.-H., & Hutter, K. (1975). "Electrodynamis for moving elastic solids and viscous fluids," *Proc. IEEE,* 63, No. 7, 1011–1021. MathSciNetCrossRef

22. Pao, Y.-H., & Hutter, K. (1975). "Electrodynamis for moving elastic solids and viscous fluids," *Proc. IEEE,* 63, No. 7, 1011–1021. MathSciNetCrossRef

23. Pao, Y.-H., & Hutter, K. (1975). "Electrodynamis for moving elastic solids and viscous fluids," *Proc. IEEE,* 63, No. 7, 1011–1021. MathSciNetCrossRef

24. Smith, R. T. (1963). "Stress-induced anisotropy in solids-the acousto-elastic effect," *Ultrasonics,* 1, No. 3, 135–147.

25. Truesdell, C., & Noll, W. (1960). *"The nonlinear field theories of mechanics,"* in: S. Flügges (ed.), *Handbuch der Physic,* Vol. III/3, Springer-Verlag, Berlin pp. 1–602.

QR – Issue   QR – Article

Asliddin Tursunovich Kuldoshev
Samarkand State Architectural and Construction Institute
Head of the Department of Social Sciences
Doctor of Philosophy (PhD), associate professor
asli-0708@mail.ru

SYNERGISTIC APPROACH TO MANAGING GLOBAL ECOLOGICAL POLITICAL RELATIONS

Abstract: *In the article presents a synergistic approach to global environmental policy management in the complex systematic functioning of global environmental policy management institutions.*
Key words: *global environmental policy, management, control, security, institutional system, political relations.*
Language: *English*
Citation: Kuldoshev, A. T. (2019). Synergistic approach to managing global ecological political relations. *ISJ Theoretical & Applied Science, 11 (79),* 560-564.
Soi: http://s-o-i.org/1.1/TAS-11-79-116   *Doi*: cross https://dx.doi.org/10.15863/TAS.2019.11.79.116
Scopus ASCC: 3320.

Introduction

Nowadays, integration of synergetics with other philosophical teachings in the structural and functional analysis of the system of international political institutions, coordinating the **negative fluctuations** of the globalization and aggravating environmental situation and the **bifurcation** of scientific relations is manifested as a more universal theoretical and methodological basis for a comprehensive systematic study of the functions of the institutions of global ecological policy management. "It is the complex systematic scientific analysis of the main motives, driving mechanisms, principles, the development of its theoretical methodological foundations, the effectiveness of the organization, management and control of global ecological policy. After all, such an approach ensures scientific activity in the area of environmental protection, resource conservation and ecologically sustainable safety"[1].

The synergetic approach (as one of the alternative philosophical methodological bases) in factorial and functional analysis of the elements constituting its structure, the effectiveness of historic, logical, comprehensive, systematic study of the globalization process of international ecological political relations, has a significant scientific and practical significance.

According to synergistic researches of the structure of the global system for managing international ecological political relations, the view as a unit of "need - purpose - tool - result – benefit" represents its integrative and universal nature. In this global system, the environmental policy of individual countries is its main subject, and the above system demonstrates the relative independence and individuality of each entity in managing international ecological political relations. As each of the relatively independent political activities of the Countries in any area has a concrete method and means of achieving a specific goal, the environmental policy also applies ways and means that are adequate to meet human needs in a decent natural environment. Particularly, global aggravation of the ecological situation requires the integration of each state's environmental policies into political relations aimed at meeting the needs of humanity, that is, to unify their common goals and means.

The institutional system of global ecological policy management is a common and integrated form of universal human needs. That is, the institutional system of managing geoecological relations adequately to meet these needs is being improved in both horizontal and vertical directions[2]. In the process of development of the institutional system of management of international ecological political

relations in the horizontal and vertical directions: on the one hand, there are new elements in the system and their functional differentiation is enhanced. On the other hand, the emergence of new areas of ecological political activity (for example, ecological intervention, expansions), and the globalization of international ecological political relations will rise to a new level. That is, in the process of differentiation and functionalization of activities of individual countries: 1) the growing need of the humanity for global ecological management institutions is an objective necessity and is relevant to the present historical period; 2) aggravation and escalation of local, regional geoecological political situation creates new structural elements of the institutional system of management of international ecological relations; 3) as the interactions of the elements of the system "nature-society-man" become more complex, the "sectors" of their management will be expanded; 4) ecologicization of socio-economic relations, forms of social consciousness, education system will become a priority of state policy; 5) the national ecological movement is becoming popular, its links with international related organizations are strengthened, functionally entering a new phase of development and becoming more active[3]. Apart from these, the most important difference between them in managing other areas of communication – it corresponds to the needs and interests of a person in a pure ecological environment, regardless of social stratification, ethnodemographic composition, economic status, political status, confessional affiliation, and ideological position. That is, the institutional structure and functions of the system for managing environmental political relations are based on universal universal democratic and humanistic principles.

The synergistic functional analysis of the structure of the international ecological political management system is based on futurological scientific hypotheses about the dynamics of its dynamic development, namely the prospects for the identification of chaos and order relations. Because the global ecological policy system is not a static phenomenon, but its structural elements and functions are dynamically changing, modernizing, and changing from chaos to order[4]. If we look at ecological policy in the context of the phenomenon of culture, we can see in the literature about the stages of its development that formative, civilized and complex systematic approaches have been formed. But the common disadvantage of all of these approaches is their inability to show the normalization and interconnectedness of a deterministic relation to certain factors or their components.

Formal environmental policy and its international relations coincide with the establishment of national countries and determination period of their geographical boundaries. This is primarily due to the protection of pastures, forests and other natural resources from the ownerless use of other countries in the context of utilitarian, pure economic interests of a particular state.

The institutional system of global ecological policy specifies the goals of national and regional governments in this area and the ways and means of their implementation. That is why, different approaches to global environmental policy management, their national and regional institutional structure determine both the outcome and the practical significance of scientific research[5].

Each of the subjects of international ecological political relations (at national and regional levels) has a specific function in the process of integration into global politics. The importance and effectiveness of this function is determined first by national, regional and then **global ecological feasibility**. Therefore, countries with relatively independent structural elements of the global ecological policy system are the relatively independent structural elements of international ecological political relations: on the one hand, constitutive - **substantional**, and on the other hand, realizable – **functional**, their integration will contribute to global ecological sustainability.

The effectiveness of the international ecological policy management system depends on its subject's performance of the following tasks: 1) collection, generalization and systematization of objective information on local, regional, global ecological situation; 2) elaboration of specific projects, plans and plans for addressing ecological issues at all levels (the features of the geoecological space are taken into account here); 3) selection of regional methods and constructive means for the implementation of ecological activities; 4) democratization of ecological political activity and ensuring its popularity and continuity; 5) coordinating the activities of governmental and non-governmental organizations responsible for the organization, management and control of ecological activities.

The institutional system of global ecological policy management is complex in many developed countries, combining national, social, economic and political relations with the common human needs and interests of nature. Because, integrated function of the institutional system of international ecological policy management ensures sustainable development of social and political relations in society.

Generally speaking, **firstly,** the synergetic teachings of environmentalism theory about the system of factors that determine the globalization of international ecological political relations correspond to the level of objective development of the geo-ecological landscape of the world and its priority is the legal status; **secondly,** the development of an institutional system of global ecological management of global political relations on the bases of modern environmentalism theories is a historical necessity

that reflects the combination of humanity's needs and interests; **thirdly,** the dynamic development of the institutional system of global ecological policy requires integration of the processes of fluctuation and bifurcation in the integration and functional differentiation of ecological activities of its subjects; **fourthly,** the effectiveness of each entity in managing the processes of integration and globalization of international ecological political relations depends on the scientific-theoretical and methodological foundations of factual and functional analysis of its constituent elements; **fifthly**, the improvement of the institutional system for managing global ecological political relations in both horizontal and vertical directions depends on the effectiveness of other methods, means of management.

In the system of international ecological political relations, the relatively independent national ecological policies of the countries and their institutional systems are not only the subject, but also the object of global ecological policy. Especially now, on the one hand, as a result of the democratization of international political relations, there is an increasing role of countries in the management of international political processes, regardless of their geographical location, level of economic development, political status, confessional composition and other indicators. On the other hand, each state's national ecological policy and its management system are becoming a direct target of integrated global ecological policy. Because the main function of global ecological policy management is to coordinate the ecological activities and international relations of the national countries. In the conditions of globalization of ecological problems, the independence and freedom of any state is conditional and relative, irrespective of its social, economic and political development. However, positive results of environmental policy in various countries also form the object of the concept of "ecologic society", "ecologic region", "ecological country". For example, in several developed European countries, ecological indicators have become an important criterion (standard) for socio-economic development of society[6].

At present, aggravation and globalization of ecological problems is on the agenda of modeling the international ecological policy management system and its model should be based on the following principles. That is: 1) in order to clarify the general structure of the model, the freedom and independence of international ecological policy entities in local, national, regional ecological space should be limited to the laws of biosphere equilibrium, and human need for man-made and natural change of nature and its compliance with global interests; 2) the objective conditions and effectiveness of subjective factors in the management of international ecological policy correspond to the level of development of the intellectual potential of the society, that is, the index of the potential and moral-cultural indexes of the individual ecological logistical, technological, financial, and financial capabilities of each entity, that is, above all, the basis of the model; 3) The quality of the organizational foundations of global ecological policy management (refers to the "technological" process and results of management) inevitably depends on the logistics and intellectual support of its institutional system, so that the model should have a unit of quality and quantity; 4) possibilities of creation, collection, systematization, analysis, generalization and transformation of ecological information bank, in the conditions of the priority of public information, which are essential for the viability of any socio-political model, in particular, global environmental policy model should be taken into account; 5) the model of global ecological policy management should be considered as an opportunity to ensure the universality and viability of local, national, regional models of synthesis according to the dialectic principles, without mechanistic systematization or simple adaptation to the situation; 6) the model of management of international ecological political relations in the global geo-ecological space is important for ensuring the harmonization of processes for the organization, management and control of ecological activities of each country and the identification of strategic objectives.

Although in the modern world there are alternative models of global environmental management, not one of them can claim to be universal. Despite the fact that the existence of such a model is theoretically justified, in practice, the approach of each country (even on its territory), social group, society, layer, class to state environmental policy (including international relations) based on its interests makes it difficult to find solutions to the problem. Nonetheless, it is worth noting the importance of attempts to create a universal model based on generalization and harmonization of alternative models of managing international political relations. If we look at global governance of international environmental political relations in the context of human interests, the model of the objective conditions, the system of subjective factors, and the evaluation criteria will be more specific. That is, the structural and functional integral nature of the model should be integrated into the management system (whether directly or indirectly) of international environmental political relations, covering all types of social, economic and political activities and opportunities for their ecology, and this is a difficult task.

The model of the institutional system of global geoecological policy is formed in the process of development of internal and external ecological political relations of states. In particular, their change and assimilation of nature under the laws of biosphere

equilibrium does not occur outside of international political relations. In other words, in the global geoecological space, the environmental needs of national nations, their capacity and means for their satisfaction are specified. As a result, national models and alternative concepts of international environmental political relations emerge. The international experience of the national modeling, that is, the experience of the socialization process, shows that they are lagging behind modern requirements. In particular, the inertia and passivity of some states in international environmental political relations are on the agenda of their socialization: strengthening both horizontally and vertically. After all, its level is determined by the participation of states in international environmental political relations.

The emerging model of global environmental policy is "editing" the spheres, types and activities of interstate social, economic, political, spiritual relations. This is especially true now: on the one hand, globalization and aggravation of environmental social problems exacerbates the tendency of their ecologicalization. On the other hand, the integration of the model of international environmental policy management into a systematic historical need for functional integration within the needs and interests of the natural environment provides historical context. In this context, the global model of environmental policy management is relatively stable and universal: it also demonstrates the importance of environmentalizing international social, economic, political, spiritual and moral activities. Because the essence of global environmental policy management is the construction of other social relationships on an ecological basis. At the same time, national environmental policies are not limited to the adaptation or integration of global geoecological policies, but rather the practical transformation of the environment in accordance with the laws of the biosphere balance in a particular micro-region. Consequently, the purpose of national environmental policy management is to meet global needs and to protect the environment, which is its common goal. In other words, each direction of the process of naturalization, change, assimilation and protection of natural resources requires special political means and methods.

At any level of the institutional system of managing political relations (horizontal and vertical), is a specific form of humanity, although it is individual, with the combination of "nature-society-human" relations in a particular geo-ecological space. However, as a result of the individuality of this policy, the environmental pressure of the local, national nature, which has increased the pressure of man's anthropogenic impact on the environment, has now become a global catastrophe. Because in some historical periods, the global geo-geological landscape is formed as a result of some countries' national environmental needs based on utilitarianist-pragmatic

or mercantile interests. However, the demand for global sustainable environmental development and its historical development tend to change the criteria and principles of environmental policy management within the international social relations management system. In particular, the activeness and moral responsibility of national states play a key role in the management of global environmental policy. After all, the level of perfection of the international environmental policy management system and its results depend on the active participation of national states in the management of global environmental policy.

The achievement of national independence by Uzbekistan and the choice of building a democratic legal state and civil society based on a market economy have led to the liberalization of international environmental political relations and the formation of a new institutional system. That is, as an equal subject of global environmental policy, it has become a priority policy of combining universal and national interests. Today, the need for global environmental sustainability is on the agenda of integrating socio-political, moral and ethical approaches to resolving conflicts of various interests. The policy of global environmental management of international relations excludes ethnocentric tendencies of states.

To rationalize the policy of Uzbekistan to strengthen the role of the state of Uzbekistan in the world community, especially in managing international environmental political relations, it is necessary to develop a conceptual strategy of domestic and foreign environmental protection policies. In the end, "... in a world where globalization and competition are growing, we must objectively and critically evaluate our role in the radical changes taking place in the world in order to keep up with the ever-growing demands of life"[7]. This is due to the fact that the state institute is the main mechanism for the creation and transformation of environmental values. Secondly, we need to identify and evaluate objective conditions and subjective factors (in particular, the material, technical and intellectual basis and the socio-psychological environment for the integration of nation-states into global (transnational) socio-economic systems). As the President of Uzbekistan Sh. Mirziyoyev stated: "Our task is to rigorously introduce our own model of development and renewal based on accumulated experience and the best international experience. In this regard, we must work hard to achieve medium and long term goals"[8.]. Ultimately, this assessment provides the basis for identifying new areas of conservation and their scope. Thirdly, it is advisable to clarify the principles and mechanisms of emerging global environmental policy paradigms in the policy of managing international environmental relations in each state. As noted in the report of the President of the Republic of Uzbekistan Shavkat Mirziyoyev at the

72nd session of the UN General Assembly: "Speaking about the problems of security and stability in Central Asia, we cannot ignore the issue of rational use of the region's shared water resources. We fully support the position of the UN Secretary General, according to which "water, peace and security are inextricably linked." I am convinced that there is no rational way to solve the water problem, except to take into account the interests of the countries and peoples of the region[9, 10].

During the years of independence Uzbekistan has integrated into the regional and global system of management of international ecological political relations with the main task, including its modernization, liberalization of ecological policy, and its legal and regulatory bases. Creation of real opportunities and assignment of specific tasks for international cooperation in the field of ensuring sustainable ecological development and security of the society to the center for national ecological policy: **firstly,** it is the independence of national ecological policies of each country, equal rights, freedoms and harmonization of activities within the subjects of international relations; **secondly,** is represented in the "socialization" of national and regional ecological policies in democratic principles, their integration and globalization; **thirdly,** will enhance the geoecological policy of national countries and enhance their ability to integrate them into the management system of international ecological political relations; **fourthly,** the possibilities of national countries to integrate international ecological political relations into the institutional system of global management institution will depend on the level of development in other areas.

References:

1. Mamashokirov, S. (2012). *Fear or reality.* (p.65). Tashkent: "Economics-Finance".
2. Botobayeva, G. (2004). Ekonomicheskiye instrumenti ekologicheskoy politiki v praktike Yevropeyskogo Soyuza. *Obshestvo i ekonomika, № 7*, p.341.
3. Mamashokirov, S., & Usmonov, E. (2009). *Problemi razvitiye perspektivno-ekologicheskogo bezopasnosti.* (p.132). Tashkent: Nauka.
4. Mohammad, S.A. (2011). Mejdunarodnoye ekologicheskoye pravo v istoricheskoy retrospektive. *YevrAzYu, №8* (39).
5. Mamashokirov, S. (2013). Dinamika vsemirnogo problem. *T. Falsafa va huquq, № 3*, p. 35.
6. Sartayeva, R.S. (2012). *Ekologiya cheloveka, novaya ontologiya i ustoychivoye razvitiye Kazaxstana.* (p.207). Almata: IFPR KN MON RK.
7. Kuldashev, A. (2014). *Democratic and humanistic principles of environmental relations management in Central Asian countries.* Monograph. (p.143). Tashkent: Science.
8. Karimov, I. (2010). *The Concept of Intensification of Democratic Reforms and Formation of Civil Society in the Country.* (p.6). Tashkent: Uzbekistan.
9. Mirziyoev, Sh. (2018). *Together we will build a free and prosperous democratic Uzbekistan.* Tashkent: Uzbekistan.
10. (n.d.). *Speech of the President of the Republic of Uzbekistan Shavkat Mirziyoev at the 72nd session of the UN General Assembly.* p. 20.

Clarivate Analytics *indexed*

S. U. Zhanatauov
Noncommercial   joint-stock company "Kazakh national agrarian university"
Corresponding Member of International Academy of Theoretical and Applied Sciences (USA),
Professor, Candidate of physics and mathematical sciences,
Department «Information technologies and automatization», Kazakhstan
sapagtu@mail.ru

MATHEMATICAL MODEL «LOWER CLASSES DO NOT WANT, UPPER CIRCLES CANNOT»

Abstract: A new problem is solved in the article: for a given diagonal matrix $\Lambda_{pp}=diag(\lambda_1,…,\lambda_p)$, $\lambda_1>…>\lambda_p>0$, $\lambda_1+…+\lambda_p =p$, it is required to find the values of the elements of 2 model submatrices Z_{mq}, Z_{mp} of the matrix $Z_{mn}=[Z_{mq}/Z_{mp},]$, consisting of m values of n z-variables, $m = q + p$, $q≥p$,. The set of z-variables is divided into 2 groups: the z-variables $z_1,…,z_6$, are combined in the 1st group, $z_7,…,z_{12}$ - in the 2nd. The resulting 2 model submatrices Z_{mq}, Z_{mp} must be calculated after separate orthonormal transformations - model matrices A_{qp} and B_{pp},, 2 matrices U_{mp}, V_{mp} values of bi-orthogonal redundancy-canonical variables (u- and v-variables):$(1/m)U^T U=I_{pp},(1/m)V^T V=I_{pp},(1/m)U^T V=\Lambda_{pp}=diag(\lambda_1,…,\lambda_p)$, $\lambda_1>…>\lambda_p>0$. The model matrices A_{qp} and B_{pp} must have the algebraic properties of orthonormal matrices: $AA^T =I_{qq}$, $BB^T=I_{pp}$,$A^T A =I_{pp}$,$B^T B=I_{pp}$. The model submatrix Z_{mq} must be computed using the transformation using the A_{qp} matrix, and the model submatrix Z_{mp} must be calculated using the B_{pp} matrix. Orthonormal matrices Aqp, Bpp from PM AIKP [2-3] provide bi-orthogonality of the matrices U_{mp}, V_{mp}: $(1/m)U^T V=\Lambda_{pp}=diag(\lambda_1,…,\lambda_p)$. The model matrices of the Inverse Problem to be solved are calculated by modeling the historical principle "lower classes do not want, upper circles cannot". As a result of mathematical modeling of the subject area, 2 factors (crisis generators) with negative dynamics of their curves are identified (Figures 2 and 3): for the lower classes - "the number of peasants who rented or bought land" ("weight" is b41 = 0.3580), and for upper circles - "degree distribution (implementation) of the idea of liberalism (" weight "is a41 = -0.50000).

Key words: redundancy-canonical variable, serfdom.
Language: Russian
Citation: Zhanatauov, S. U. (2019). Mathematical model «Lower classes do not want, upper circles cannot». ISJ Theoretical & Applied Science, 11 (79), 565-583.
Soi: http://s-o-i.org/1.1/TAS-11-79-117   Doi: cross https://dx.doi.org/10.15863/TAS.2019.11.79.117
Scopus ASCC: 2604.

МАТЕМАТИЧЕСКАЯ МОДЕЛЬ «НИЗЫ-НЕ ХОТЯТ, ВЕРХИ-НЕ МОГУТ»

Аннотация: В статье решена новая задача: для заданной диагональной матрицы $\Lambda_{pp}=diag(\lambda_1,…,\lambda_p)$, $\lambda_1>…>\lambda_p>0$, $\lambda_1+…+\lambda_p =p$, требуется найти значения элементов 2-х модельных подматриц Z_{mq}, Z_{mp} матрицы $Z_{mn}=[Z_{mq}/Z_{mp},]$, состоящих из m значений n z-переменных, $m=q+p$,$q≥p$,. Множество z-переменных разделенны на 2 группы: в 1-ую группу объединены z-переменные $z_1,…,z_6$, во 2-ую - $z_7,…,z_{12}$. Полученные 2 модельные подматрицы Z_{mq}, Z_{mp} должны быть вычислены после отдельных ортонормированных преобразоаний – модельных матриц A_{qp} и B_{pp}, 2-х матриц U_{mp},V_{mp} значений би-ортогональных избыточно-канонических переменных (u- и v- переменных): $(1/m)U^T U=I_{pp}$, $(1/m)V^T V=I_{pp}$, $(1/m)U^T V=\Lambda_{pp}=diag(\lambda_1,…,\lambda_p)$, $\lambda_1>…>\lambda_p>0$. Модельные матрицы A_{qp} и B_{pp} должны иметь алгебраические свойства ортонормированных матриц:$AA^T=I_{qq}$,$BB^T=I_{pp}$,$A^T A=I_{pp}$,$B^T B=I_{pp}$. Модельная подматрица Z_{mq} должна быть вычислена преобразованием с применением матрицы A_{qp}, а модельная подматрица Z_{mp}– с применением матрицы B_{pp}. Ортонормированные матрицы A_{qp}, B_{pp} из ПМ АИКП [2-3] обеспечивают биортогональность матриц U_{mp},

Clarivate
Analytics indexed

V_{mp}: $(1/m)U^TV=Λ_{pp}=diag(λ_1,...,λ_p)$. *Модельные матрицы решаемой Обратной Задачи вычислены при моделировании исторического принципа «верхи – не могут, низы – не хотят». В результате математического моделирования предметной области выделены 2 фактора (генераторы кризиса) с негативными динамиками их кривых (Рисунки 2 и3): низы-«число крестьян, взявших в аренду или купивших участки земли » («вес» равен b_{41}=0,3580), верхи - «степень распространения (внедрения) идеи либерализма (z12)» («вес» равен a_{41}=-0,50000).*

Ключевые слова: *избыточно-канонических переменные, крепостное право.*

Введение

«В.И.Ленин впервые осветил принцип «верхи не могут, низы не хотят» в своей работе «Маевка революционного пролетариата», которая вышла в 1913 году. Там содержалась мысль: Для революции недостаточно того, чтобы низы не хотели жить, как прежде. Для нее требуется еще, чтобы верхи не могли хозяйничать и управлять, как прежде. В работе «Крах II Интернационала», вышедшей в 1915 году,также встречается упоминание принци па. В работе 1920 года упоминание следующее: Лишь тогда, когда низы не хотят старого и когда верхи не могут по-старому, лишь тогда револю ция может победить.

В.И.Ленин условно назвал верхами господ ствующий класс (в более узком понимании - правительство), а низами - угнетенные классы (общество, население, простой народ)[1] Верхи не могут, низы не хотят. «Фраза может использоваться для обозначения некой нестабильности в госу дарстве и обществе, указывает на необходимость перемен, изменения общественной жизни. В ироническом смысле может применяться также, когда хотят указать на объективную невозможность инициировать какие-либо реформы в стране.

Современный российский философ и публицист Сергей Кара-Мурза в сентябре 2008 года дал интервью, озаглавленное «Верхи не хотят, низы не могут», в названии которого переиначен известный принцип применительно к современной обстановке в России[2].

Разработаем математическую модель «низы-не хотят, верхи-не могут». Верхи в нашем понимании - помещики, а низы - угнетенные крепостные крестьяне.

Существуют разные обоснования принципа «низы-не хотят,верхи-не могут», «студенты – не хотят, преподаватели-не могут», «экологи-не хотят, промышленность – не может». Рассмотрим систему «низы-не хотят, верхи-не могут». Как одну из всесторонне изученных проблем 19-го века. Низы – крепостные крестьяне, их жизни в царской Росси свои показатели, Верхи – помещики, их положение характеризуется другим множеством измеряемых прказателей. Индивиды из низов сильно зависят от своих хозяев - индивидов из верхов. Рассмотрим многомерные информационные потоки, характеризующие низы и верхи. Известно: экономическое положение и морально-психологическое самочувствие низов ухудшалось, что привело сознание крепостных через много лет к состоянию «не хочу так жить». Благополучие не сильно улучшалось и восприятие своего «ненормального» положения в обществе у нндивидов из верхов достигло критического состояния «не могу». Число анти-событий увеличивалось и в 1861 году царь издал указ, отменяющий крепостное право для помещиков и крепостных крестьян.

Одним из наиболее изученных исторических периодов является период (1814г.-1861г.) длиной 50 лет. Существует мнение, что начало развития принципа было заложено в 1814 году русскими офицерами, временно оккупировавшие Париж. Предохранить собственных солдат от заражения революционных духом свободы, который, несомненно, был свойствен жителям французской столицы и чрезвычайно опасен» офицерам не удалось. «Наверняка пребывание во Франции не прошло незаметно для солдат и офицеров корпуса Воронцова, но говорить, что именно это стало причиной проникновения либеральных настроений в офицерскую среду, вряд ли будет точным. Скорее всего, сказались наполеоновские войны в целом, близкий контакт с французами, уже глубоко проникнувшие идеи Просвещения, а также повысившаяся самооценка каждого офицера, внесшего свой вклад в победу в великой войне. Разве не стыдно было мириться с тираническим правлением у себя дома после того, как они избавили от тирании чужеземную державу?»[3].

Рассматриваемые нами годы были разбиты на 21 промежутков времени. В течение каждого из промежутков времени динамики значений рассматриваемых ниже показателей изменялись приближенно линейно, без скачков внутри каждого из 21 интервалов. Длины интервалов времени разные, одни - 3 месяца (1 квартал), другие - несколько месяцев. Внутри интервала времени 17 показателей имеют линейные тренды:

---

[1] www.cyclowiki.org/wiki/

[2] www.politjournal.ru/index.php?action=Articles& dirid=156&tek =8238&issue=221

[3] www.gazeta.ru/science/2014/05/11_a_6019205 .shtml

одни аппроксимируются хорошо, другие умеренно.

Ниже будут выделены 3 споказателя , способствовавших своими «ухудшающими» динамиками значений за 21 интервалов времени в 1814 -1861 годах, к ситуации когда царь Александр II, как утверждают историки, вынужден был издать юридический документ, отменяющий крепостное право в России.

В результате нашего математического моделирования выделены 3 фактора с наибольшими «весами». Их имена-смыслы:

- процент дворовых крестьян, полностью лишенных пашни (экономический показатель);

- число крестьян, взявших в аренду или купивших участки земли (экономический показатель);

- степень распространения (внедрения) идеи либерализма (политический показателяь).

В составе модельно выделенных факторов ухудшения состояний крепостных крестьян и кардинального изменения сознания помещиков (к 1861г.) в нашей модели цифровизации их показателей выделены и другие факторы с заметными «весами». Их имена –смыслы приведены ниже, соответствуют именам-смыслам z-переменных $z_1, z_2, z_3, z_5, z_7, z_8, z_{10}, z_{11}$. Показатель 6. «коэффициент бедности и низкой покупательной способности крепостных» (экономический показатель), первоначально включенный в нашу модель оказался в результате нашего моделирования с меньшим «весом» -0.1624 среди 12 выделенных факторов ухудшения состояний крепостных крестьян и помещиков.

Исходные данные

Перечень 17 существенных показателей был выявлен из критического анализа советских, зарубежных научных (исторических, политических, экономических) исследований, посвященных периоду существования крепостного права в России[1]. Изучение проводилось и прерывалось несколько раз. Полных данных и требуегу набора показателей (исторических, политических, экономических, моральных, индивидуальных помещичьих, крепостных крестьян) не найдено. В итоге нами сформированы 2 множества из 11 показателей реакций, поведения крепостных крестьян, 6 показателей политических, экономических, моральных показателей помещиков.

11 имен –смыслов показателей из 1-го множества показателей:

1.1 Производительность труда;

1.2 Незаинтересованность крепостного работника в результатах производства;

1.3 уровень благополучия крестьян;

1.4 Число крестьян, взявших в аренду и купивших участки земли;

1.5 чрезмерное увеличение работы на барщине;

1.6 Процент дворовых крестьян (полностью лишенных пашни);

1.7 доля от суммы заработка крепостного крестьянина-отходника, которой он обязан был отдавать помещику;

1.8 Коэффициент бедности и низкой покупательной способности крепостных;

1.9 число покушений недовольных крестьян на жизнь помещиков;

1.10 Число крестьянских волнений;

1.11 Число крестьян, переместившихся в города.

Шесть имен –смыслов показателей из 2-го множества:

2.1 Число крепостных, необходимых для использования в качестве свободной и квалифицированной рабочей силы;

2.2 помещичья задолженность государству;

2.3 уровень благополучияпомещиков;

2.4. Уровень эффективности государственной системы управления;

2.5. Уровень актививности общественно-поли тической жизни;

2.6. Степень распространения (внедрения) идеи либерализма.

В одном рассматриваемом промежутке времени мы рассматривали парные коэффициенты корреляции $corr(z_i, z_j) = r_{ij}$ между i–ой переменной и j–ой переменной. Мы поставили в соответствие i–ому показателю i–ую стандартизованную z-переменную с номером i, а j–ому показателю - z-переменную с номером j . Этим мы предполагаем существование m случайных значений у двух z-переменных $z_{ki}, z_{kj}, k=1,\ldots,m$, образующих заданное значение выборочного коэффициента корреляции r_{ij} : $z_{ki} = r_{ij} z_{kj}, k=1,\ldots,m$, где значение $corr(z_i, z_j) = r_{ij}$ должно быть извесным. Возможность корректного нахождения значения r_{ij} следует из линейности трендов 2-х z-переменных с номерами i и j.

Значение r_{ij} определим эмпирически как косинус угла между прямыми линиями линейных трендов 2-х z-переменных с номерами i и j. Сформированы значения r_{ij} верхней внедиагональной части квадратной симметрической корреляционной матрицы $R_{17,17}$. Сперва эмпирически и приблизительно определялись значения $r_{12}, r_{13}, \ldots, r_{17}$. между z-переменной номер 1 и z-переменными с номерами 2,3,…,17. Использовались прежние смыслы 11 показателей реакций, поведения крепостных крестьян, прежние смыслы 6 показателей политических, экономических, моральных показателей помещиков, найденные неполные данные по этим 17 показателям. Затем приблизительно определялись значения $r_{23}, \ldots, r_{27}$. между z-переменной номер 2 и z-переменными с

номерами 3,4,…,17. При этом вновь найденное значение, например, r_{28} сравнивалось по знаку и по абсолютной величине с некоторыми прежними значениями (из выше расположенной строки матрицы $R_{17,17}$) и вводилась поправка в значение r_{28}. По такой методике формировались все строки верхней внедиагональной части квадратной симметрической корреляционной матрицы $R_{17,17}$. Так как матрицы $R_{17,17}$ является симметрической, то ее нижняя внедиагональная часть полагалась равной верхней внедиагональной части.

Многократно проверенная матрица $R_{17,17}$ подвергалась вводу во входной файл программы вычисления ее спектра $\Lambda_{17,17} = \mathrm{diag}(\lambda_1,…,\lambda_{17})$ и матрицы $C_{17,17}$ собственных векторов. Элементы $\lambda_1,…,\lambda_{11}$ положительны, а элементы – $\lambda_{12},…,\lambda_{17}$

имели отрицательные значения. Для реальных данных – матрицы $Z_{21,17}$, если бы она существовала, такое свойство спектра $\Lambda_{17,17} = \mathrm{diag}(\lambda_1,…,\lambda_{17})$ корреляционной матрицы $R_{17,17}$ не приемлемо. Дополнительные проверки значений элементов матрицы $R_{17,17}$ и вычисление для нее пар матриц $(\Lambda_{17,17},C_{17,17})$ не привели к наличию положительных значений у элементов $\lambda_{12},…,\lambda_{17}$.

Вывод: Обоснованное назначение значений парных коэффициентов корреляций только между z-переменными r_{ij} (без использования числовых значений z-переменных $z_1,…,z_{17}$) может позволить иметь отрицательные значения элементам спектра $\Lambda_{17,17}=\mathrm{diag}(\lambda_1,…,\lambda_{17})$ полной корреляционной матрицы $R_{17,17}$.

Таблица 1. Эмпирическая корреляционная матрица $R_{17,17}$

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	1,0000	-0,3906	0,7078	-0,2877	0,9119	0,6127	0,9077	0,9036	-0,5895	-0,7900	-0,7896	0,4108	-0,2904	0,5062	0,2130	0,2104	-0,2906
2	-0,3906	1,0000	0,8107	0,8106	0,9125	0,7127	0,5021	-0,5880	0,6139	0,8140	0,7128	0,5100	0,7099	-0,1904	0,3087	0,7091	0,7082
3	0,7078	0,8107	1,0000	-0,4930	-0,4937	-0,4886	0,9076	-0,8948	0,7875	0,7879	0,6867	0,8162	0,6887	0,8863	0,3096	-0,2881	0,9153
4	-0,2877	0,8106	-0,4930	1,0000	0,0070	-0,9859	0,0079	0,4954	0,0092	0,0027	0,0084	0,0081	0,7064	-0,6919	-0,4914	-0,3920	0,8088
5	0,9119	0,9125	-0,4937	0,0070	1,0000	0,9994	0,9102	0,9641	0,9604	0,9585	0,9592	0,7126	0,3094	0,5078	-0,3923	0,9028	0,8120
6	0,6127	0,7127	0,5114	-0,9859	0,9994	1,0000	1,0010	0,9966	0,8093	1,0051	0,0072	-0,6938	-0,7874	0,9143	0,8080	-0,7922	-0,7901
7	0,9077	0,5021	0,9076	0,0079	0,9102	1,0010	1,0000	1,0004	0,7040	0,9032	0,0136	0,6088	0,3018	-0,1876	0,8047	0,8071	0,8067
8	0,9036	0,5880	-0,8948	0,4954	0,9641	0,9966	1,0004	1,0000	1,0049	1,0075	0,0118	0,8035	0,8129	0,8164	-0,4935	-0,7880	0,8152
9	-0,5895	0,6139	0,7875	0,0092	0,9604	0,8093	0,7040	1,0049	1,0000	1,0019	0,0125	0,7077	0,9110	0,7916	0,8978	0,9187	0,9045
10	-0,7900	0,8140	-0,7879	0,0027	0,9585	1,0051	0,9032	1,0075	1,0019	1,0000	0,0098	0,7102	0,9172	0,8955	0,8913	0,9603	0,9625
11	-0,7896	0,7128	0,6867	0,0084	0,9592	0,0072	0,0136	0,0118	0,0125	0,0098	1,0000	0,8013	0,9133	0,7867	0,6885	0,9136	0,9594
12	-0,3892	0,5100	0,8162	0,7081	0,7126	0,6938	0,6088	0,8035	0,7077	0,7102	0,8013	1,0000	0,8140	-0,6850	-0,6892	0,8137	0,6098

13	-0,2904	0,7099	0,6887	0,6936	0,3094	-0,7874	0,3018	0,8129	0,9110	0,9172	0,9133	0,8140	1,0000	0,7047	0,3860	0,7125	0,7100
14	-0,5062	-0,1904	-0,8863	0,4919	0,5078	-0,9143	0,1876	-0,8164	0,7916	0,8955	0,7867	0,6850	0,6953	1,0000	0,5914	-0,6903	-0,6928
15	0,2130	0,3087	0,3096	-0,3914	-0,3923	-0,8080	-0,8047	-0,4935	-0,8978	-0,8913	-0,6885	-0,6892	0,3860	0,5914	1,0000	0,7934	0,8883
16	-0,2104	0,7091	-0,2881	0,8080	0,9028	0,7922	0,8071	0,7880	0,9187	0,9603	0,9136	0,8137	0,7125	-0,6903	0,7934	1,0000	0,9793
17	-0,2906	0,7082	0,9153	0,9088	0,8120	0,7901	0,8067	0,8152	0,9045	0,9625	0,9594	0,6098	0,7100	-0,6928	0,8883	0,9793	1,0000

Положительность элементов $\lambda_1,\ldots,\lambda_{11}$ означает наличие 11 y-переменных, имеющих положительные дисперсии $\lambda_1,\ldots,\lambda_{11}$. 11 y-переменные могут быть смысловыми переменными, если для них существовала бы матрица значений z-переменных. Но мы не имеем матрицу $Z_{21,17}$ z-переменных. Наша задача: моделировать матрицу $Z_{21,17}$ z-переменных, имея эмпирическую оценку $R_{17,17}$. Но мы сможем это сделать по нижеперечисленной причине. Выход из этой ситуации будет предложен далее, путем переноса индикаторов присутствия знаний в другую систему валидных показателей.

Были сформированы 4 матрицы $R^{(1)}_{17,17}$, $R^{(2)}_{17,17}$,$R^{(3)}_{17,17}$,$R^{(4)}_{17,17}$, содержащие более точно определенные элементы, в отношении к которым были сомнения из-за недостатка обосновывающей информации из информационных источников. Найденные значения содержали 1 или 2 цифры после запятой, например: 0.85, -0.6. Такая «точность» недостаточна для чисел, меньших по абсолютной величине. Вычислена корреляционная матрица (Таблица 1) $R_{17,17}=(1/4)[R^{(1)}_{17,17} +R^{(2)}_{17,17} +R^{(3)}_{17,17} +R^{(4)}_{17,17}]$. Усредненные значения r_{ij} по нашему мнению более соответствуют паре модельных многоразрядных чисел z_{ki},z_{kj}, $k=1,\ldots,m$, удовлетворяющих равенству $\mathrm{corr}(z_i,z_j)=r_{ij}$. Усредненная эмпирическая корреляционная матрица $R_{17,17}$ имеет спектр $\Lambda_{17,17} = \mathrm{diag}(\lambda_1,\ldots,\lambda_{17})=$ diag(8.7955,5.5960,3.9982,2.4185, 2.0753,1.5386,1.1857,0.6826,0.3794,0.3025, 0.0117, -0.3477, -0.8253, -1.4903, -1.8900,-2.3413,-3.0893) и мтрицу $C_{17,17}$ собственных векторов (Таблица 2). Равенство $R_{17,17}=(1/4)[R^{(1)}_{17,17} +R^{(2)}_{17,17} +R^{(3)}_{17,17} +R^{(4)}_{17,17}]$ для 4-х эмпирических матриц $R^{(1)}_{17,17}$, $R^{(2)}_{17,17}$, $R^{(3)}_{17,17}$, $R^{(4)}_{17,17}$ доказано в Теореме о –выборках [7]. Оно является вторым из 3 свойств Λ-выборки ОМ ГК $Z^{(\ell)}_{mn}$, $\ell=1,2,3,4$, имеющих выборочные корреляционные матрицы $R^{(1)}_{17,17}$, $R^{(2)}_{17,17}$,$R^{(3)}_{17,17}$,$R^{(4)}_{17,17}$. Это 2-ое свойство в оригинале [7] сформулировано так: при номере t-фиксированном, номере $\ell=1,\ldots,k_\ell,N=k_t\times m$, если выборки объема m $\quad Y_{mn} \in N_s(0,\Lambda),Z^{(\ell)}_{mn} \in N_s\left(0,R^{(\ell)}\right)$, то объединенные выборки объема $N=k_t\times m$ имеют свойства:

$$Y_{Nn} = [Y^T_{mn} \vdots \cdots \vdots Y^T_{mn}]^T \in N_s(0,\Lambda),$$
$$Z_{Nn} = \left[Z^{(1)T}_{mn} \vdots \cdots \vdots Z^{(\ell)T}_{mn}\right]^T \in N_s(0,\overline{R}),$$

где $\overline{R}_{nn}=\{\overline{r}_{ij}\}\in \Re_\Lambda, \overline{r}_{ij}=\left(1/\kappa_\ell\right)\cdot\sum_{i=1}^{\kappa_\ell} r^{(\ell)}_{ij}$,
$R^{(\ell)}=\{r^{(\ell)}_{ij}\}\in R_\Lambda$ Здесь $m=21,n=17$, $k_\ell=4,N=21*4 =84$. Объединенная Λ-выборка $Z_{84,6}$ соответствует наличию 84 интервалов времени. Для каждой из 4-х матриц $R^{(1)}_{17,17}$,$R^{(2)}_{17,17}$, $R^{(3)}_{17,17}$,$R^{(4)}_{17,17}$ моделируется своя Λ-выборка $Z^{(1)}_{21,6}$, $Z^{(2)}_{21,6}$, $Z^{(3)}_{21,6}$, $Z^{(4)}_{21,6}$, мтрицу $C_{17,17}$ собственных векторов (Таблица 2)., имеющая свою эмпирическую матрицу $R^{(1)}_{17,17}$, $R^{(2)}_{17,17}$, $R^{(3)}_{17,17}$,$R^{(4)}_{17,17}$. Мы будем пользоваться эмпирической матрицей вида $R_{17,17}=(1/4)[R^{(1)}_{17,17}+R^{(2)}_{17,17} +R^{(3)}_{17,17}+R^{(4)}_{17,17}]$, значения ее элементов приведены в Таблице 1. Ее мтрицу $C_{17,17}$ собственных векторов (Таблица 2) и ее спектр содержат больше информации [2-6], чем она сама.

Как видим спектр имеет отрицательные собственные числа. Им нельзя сопоставить собственные векторы с интерпретируемыми компонентами. Недостатки использования матрицы парных коэффициенты корреляции изложены в статьях [2,17]. Вместо матрицы $R_{17,17}=$ рекомендовано [2-5] использовать пару матриц(C_{nn},Λ_{nn}). Пары матриц (C_{nn},Λ_{nn}) согласованы между собой посредством третьей матрицы R_{nn} через равенство $R_{nn}C_{nn}=C_{nn}\Lambda_{nn}$ [6-9]. Наша пара $(\Lambda_{17,17}, C_{17,17})$ непригодна. Будем использовать другую собственную структуру, где не должно быть отрицательных собственных чисел. Ниже будет использовано соотношение $(\Psi_{12}\Psi_{21}-\Lambda^2)A_{qp}=0_{pp}$, решение которого является только положительные собственные числа [1]. Новая собственная структура включает 2 матрицы собственных векторов A_{qp}, B_{pp}, одну матрицу Λ_{pp}

собственных чисел. Число собственных векторов в каждой из них равно числу z-переменных q и p, q≥p=6. переходим от одного множества z-переменных к двум множествам z-переменных [1].

Будем использовать матрицу $C_{17,17}$, а не матрицу $R_{17,17}$. Предпочтительность матрицы собственных векторов C_{nn} доказана в статьях [2-9]. Выделим 2 доминирующие собственные числа: λ_1=8.7955, λ_2=5.5960. Выделим в матрице $C_{17,17}$ 2 собственные векторы, соответствующие 2 доминирующим собственным числам λ_1=8.7955, λ_2=5.5960. Выделенные 2 собственные векторы имеют вид:

c_1=(0.06723,0.12273,0.04616,-0.12091,-0.29622, -0.00366,-0.20499,-0.19443,-0.32556,-0.39992, -0.26265,-0.35804,-0.29797,0.18108, 0.19243, -0,22775, 0,35000)^T,

c_2=(-0,42238, -0,00628, -0,00056, 0,30777, -0,30348, -0,50000, -0,47057, -0,16240, -0,11876, -0,12895, 0,16573, 0,11171, 0,06301, -0,07268, -0,12349, 0,17749, 0,10122)^T

Таблица 2. Матрица $C_{17,17}$ собственных векторов

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0,0672	**-0,4224**	-0,1889	**-0,4977**	0,0624	0,1773	0,1392	0,1370	0,0420	0,0697	0,0743	0,4453	0,2794	0,0758	0,0857	-0,3915	0,0731	1,0000
2	0,1227	-0,0063	**0,5952**	0,1294	**-0,1630**	0,0432	0,1226	0,0300	-0,1751	0,5042	-0,0721	0,1388	0,1480	0,0309	0,4674	0,0382	-0,1322	1,0000
3	0,0462	-0,0006	**-0,3096**	0,0942	-0,2356	0,0044	0,4477	0,5598	-0,0498	0,0033	-0,0177	0,0056	0,0109	0,0038	0,1871	0,2888	0,4499	1,0000
4	-0,1209	**0,3078**	-0,1136	0,3242	**0,2567**	0,5657	0,0966	0,2850	0,0282	-0,0547	-0,0541	0,1506	0,2716	0,1178	0,3724	0,1114	0,1680	1,0000
5	-0,2962	**-0,3035**	0,0094	0,1811	**0,3103**	0,2353	-0,0186	-0,0158	-0,0300	0,1367	-0,0772	0,2530	0,6249	-0,3099	-0,1091	-0,2168	0,0066	1,0000
6	-0,0037	**0,5000**	0,1133	**-0,3321**	0,2270	0,0591	0,1935	0,0927	0,0198	0,2118	-0,0204	0,4100	0,2910	0,1995	0,4748	-0,0013	0,3586	1,0000
7	-0,2050	**0,4706**	**0,0000**	0,0526	-0,1177	-0,0468	0,2614	-0,1530	0,0885	0,0413	0,1577	0,5368	-0,1569	0,4965	0,1371	-0,0273	-0,1132	1,0000
8	-0,1944	**-0,1624**	0,2940	0,1952	**-0,4909**	0,0858	0,1247	0,2918	0,1031	-0,0409	-0,0143	0,0825	0,1453	0,2900	0,2582	0,5149	0,0771	1,0000
9	**-0,3256**	0,1188	0,1442	0,1957	0,0325	0,2874	0,1033	-0,1985	0,0857	0,0684	0,7240	-0,1251	0,0161	-0,0109	0,0499	0,1908	0,3098	1,0000
10	**-0,3999**	-0,1290	0,1035	-0,2862	0,0042	-0,2482	0,0481	0,1406	0,0159	0,0224	0,6274	0,2400	-0,0497	0,0180	0,0412	0,2326	0,3694	1,0000

11	**-0,2626**	0,1657	0,0886	0,0924	0,1594	0,5667	0,2259	0,1804	0,2748	0,3834	0,0000	0,0670	0,3306	0,0003	0,0576	0,1239	0,3196	1,0000
12	**-0,3580**	0,1117	-0,1135	0,1879	-0,2503	0,0089	0,2869	0,1260	0,6377	0,2613	0,0523	0,0575	0,1110	0,1761	0,0289	0,2945	-0,1956	1,0000
13	**-0,2980**	0,0630	0,1901	0,2161	**-0,3697**	0,2877	0,1724	0,0261	0,1385	0,5258	0,0025	0,0540	0,1109	0,1438	0,4896	0,0583	0,0003	1,0000
14	0,1811	-0,0727	0,2918	0,2576	**0,4088**	0,0653	0,2694	0,0014	-0,1463	0,3479	0,1129	0,4854	0,0714	0,1259	0,1250	0,2086	0,3148	1,0000
15	0,1924	-0,1235	**-0,4494**	**-0,2891**	0,0189	0,1075	0,5036	0,2403	0,0747	0,0441	0,0658	0,0486	0,3244	0,3792	0,0575	-0,1183	0,2416	1,0000
16	-0,2278	0,1775	-0,0910	0,1569	0,2046	0,0820	0,2880	0,5492	0,1247	0,0785	0,1197	0,2700	0,0362	0,4902	-0,0300	0,3110	0,0430	1,0000
17	**0,3500**	0,1012	-0,1351	-0,2287	-0,1165	0,0868	0,2211	0,0247	0,6269	0,2124	0,0513	0,0663	0,2389	0,2470	0,0993	-0,2933	-0,2588	1,0000
	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000		

Модели и задачи

Мы будем использовать соотношения из ПМ АИКП [1,10-11]. Они – соотношения [1], получены после двух последовательных преобразований 2-х подматриц [Z_{mq}, Z_{mp} матрицы $Z_{mn}=[Z_{mq}|Z_{mp},]$ значений n z-переменных, разделенных на 2 группы: в 1-ой группу объединены z-переменные $z_1,…,z_6$, во 2-ую - z-переменные $z_7,…,z_{12}$. Полученные 2 матрицы значений избыточно-канонических переменных (bi-orthogonal canonical-redundancy variables) U_{mp}, V_{mp} биортогональны [1]:$(1/m)U^TU= I_{pp},(1/m)V^TV=I_{pp},(1/m)U^TV=\Lambda_{pp}=diag(\lambda_1,…,\lambda_p)$, $\lambda_1>… >\lambda_p>0$. Все 3 матрицы диагональные. Матрица A_{qp},(или B_{pp}) состоит из произведения 2-х матриц преобразований: 1-ая вычисляется в ПМ АИП [1], 2-ая – в модели канонических переменных [12,13]. Подматрица Z_{mq} преобразется с применением ортогональной матрицы A_{qp}, а подматрица Z_{mp} – матрицы B_{pp} [1]. Ортогональные матрицы A_{qp}, B_{pp} в ПМ АИКП [1] обеспечивают биортогональность матрицам U_{mp},V_{mp} значений: $(1/m)U^TV=\Lambda_{pp}= diag(\lambda_1,…,\lambda_p)$, $\lambda_1>…>\lambda_p>0$. Две матрицы U^*_{mp}, V^*_{mp} в КП-модели [10,11] не биортогональны: $(1/m)U^{*T}V^*=\Psi_{12}\neq\Psi_{21}$,где $(1/m)V^{*T}U^*= B^{*T}R_{21}A^*$

$=\Psi_{21}$. В ПМ АИКП [1] две матрицы U_{mp}, V_{mp} значений избыточно-канонических переменных биортогональны: $(1/m)U^TV=\Lambda_{pp}$. Подробно метод избыточных переменных (МИП, redundancy values analysis, RVA [10]) изложен в работах [1,10-13]. Соотношения из прямой задачи, решенной в [1], образкют Прямую модель RVA (прямую RVA-модель) схематично обозначим так: $Z_{mn}=[Z_{mq}|Z_{mp}] =>(\Lambda^*_{pp}, A^*_{qp}, B^*_{pp},U^*_{mp},V^*_{mp})$, m=q+p,q≥p. Она исследована в терминах RV-коэффициентов []14 в статье [1]. Во всех 3-х рассматриваемых многомерных моделях с двумя множествами z-переменных входными объектами являются 2 подматрицы $Z_{mq}|Z_{mp}$, объединенные в одну матрицу $Z_{mn}= [Z_{mq}|Z_{mp},]$. Эти подматрицы Z_{mq},Z_{mp} будут моделироваться нами ниже при решении Обратной Задачи. При решении Обратной Задачи мы не будем применять преобразования, присущие методу избыточных переменных [10], методу канонических корреляций [12]. В Обратной Задаче моделируются 2 множества избыточноканонических (redundancy canonical variables [1] переменных, исходя из значений параметров из другой модели – Обратной Модели Главных Компонент [15,16]. Решаемые задачи и применяемые в ОМ ГК модели изложены в

статьях [2-9]. Формулы ПМ АМКП приведены в статье [1]. В статье [1] доказаны теоремы об индексах измерения сил связей между двумя множествами z-переменных, избыточных переменных, канонических переменных, избыточно-канонических переменных. Теоретическое обоснование существования индикаторов присутствия знаний в матрицах собственных векторов A_{qp}, B_{pp} в Прямой модели избыточно- канонических переменных доказано в Теоремах 1 и 2 [1].

Математическая постановка задачи

Задача. Для заданной диагональной матрицы $\Lambda_{pp}=diag(\lambda_1,…,\lambda_p)$, $\lambda_1>…>\lambda_p>0$, $\lambda_1+…+\lambda_p=p$, требуется найти значения элементов 2-х модельных подматриц Z_{mq}, Z_{mp} матрицы $Z_{mn}=[Z_{mq}|Z_{mp}]$, состоящих из m значений n z-переменных, m=q+p,q≥p. Множество z-переменных разделенны на 2 группы: в 1-ую группу объединены z-переменные $z_1,…,z_6$, во 2-ую - $z_7,…,z_{12}$. Полученные 2 модельные подматрицы Z_{mq}, Z_{mp} должны быть вычислены после отдельных ортонормированных преобразоаний – модельных матриц A_{qp} и B_{pp}, 2-х матриц U_{mp},V_{mp} значений би-ортогональных избыточно-каноничес ких переменных (biorthogonal canonical-redundancy u- and v-variables): $(1/m)U^TU=I_{pp}$, $(1/m)V^TV=I_{pp}$, $(1/m)U^TV=\Lambda_{pp}=diag(\lambda_1,…,\lambda_p)$, $\lambda_1>…>\lambda_p>0$. Модельные матрицы A_{qp} и B_{pp} должны иметь алгебраические свойства ортонормированных матриц: $AA^T=I_{qq}$, $BB^T=I_{pp}$, $A^TA=I_{pp},B^TB=I_{pp}$. Модельная подматрица Z_{mq} должна быть вычислена преобразованием с применением матрицы A_{qp}, а модельная подматрица Z_{mp} – с применением матрицы B_{pp}. Ортонормированные матрицы A_{qp}, B_{pp} из ПМ АИКП [1] обеспечивают биортогональность матриц U_{mp}, V_{mp} : $(1/m)U^TV=\Lambda_{pp}=diag(\lambda_1,…,\lambda_p)$.

Используемые соотношения из Прямой Модели Анализа Избыточно-Канонических Переменных (ПМ АИКП) приведены в работе [1]. Метод избыточных переменных (МИП, redundancy values analysis, RVA [10]) исследован в [1] в терминах RV-коэффициентов (индексов избыточностей для пар переменных из разных множетв) из статьи [14]. Решение нашей задачи -2 подматрицы $Z_{mq}|Z_{mp}$ будут моделироваться нами ниже при решении Обратной Задачи АИКП.

Ниже будут изложены алгоритмы реализации ОМ АИКП $\Lambda_{pp} =>(A_{qp}, B_{pp},U_{mp},V_{mp},Z_{mn}= [Z_{mq}|Z_{mp}])$. Им соответствуют схематически изображаемые задачи: $(\Lambda_{pp},C_{pp})=>(\Lambda^+_{pp},B^+_{pp}),\Lambda^+_{pp}=>A_{qp},\Lambda^+_{pp}=>(U_{mp},V_{mp})$, $(U_{mp},A_{qp},)=>Z_1$, $(V_{mp},B_{pp}) =>Z_2$, $Z^+_{mn}=[Z^+_{mq}|Z^+_{mp}]$.

Назначенные системы валидных u-,v-переменных и коррелированных z-переменных

Первое собственное число из спектра $\Lambda_{17,17}=diag(\lambda_1,…,\lambda_{17})$ $\lambda_1=8.7955$ содержит 51,74% 32,92% информации (изменчивости от суммы всех валидных y-переменных), 2-ое собственное число $\lambda_2=5.5960$ содержит 5.5960/17 =32,92% информации (изменчивости от суммы всех валидных y-переменных). Объем суммарной информации равен 84,66%=51,74%+32,92% и достаточен для образования структуры из 2-х собственные векторов, соответствующих своим собственным числам с весами, равными 51,74% и 32,92%.

Вектор c_1=(-0.32556,-0.39992,-0.26265,-0.35804, -0.29797,0.35000)^T для новой структуры формируем так, чтобы его компоненты служили «весами» при q≥p коррелированных z-переменных $z_1,…,z_q$, q=6. «Веса» -0.35804,-0.29797,0.35000 не являются «весами» при z-переменных $z_1,…,z_{11}$ (характеризующих низы, а являются «весами» при z-переменных, соответствующих показателям, характеризующих верхи. Из 6 z-переменных $z_1,…,z_6$ 3 соответствует показателям низов, 3 – верхов.

Определим число p≤q=6 коррелированных z-переменных $z_7,…,z_n$ n=12, q+1=7, p≤q=6. Число p не не должно превышать 6, p≤ q=6 и должно быть равно числу заметных по величине компонентов из 2-го собственного вектора c_2. Кроме этих формальных ограничений компоненты вектора c_2=(-0.42238,0,3077,-0,30348,-0,50000,-0,47057, -0,16240) содержит 6 компонент. Переменная, соответствующая показателю «коэффициент бедности и низкой покупательной способности крепостных» (-0,16240) был включен нами дополнительно как важнейший фактор ухудшения жизни низов. Это множество из p≤q=6 коррелированных z-переменных $z_7,…,z_{12}$ таково, что 3 z-переменных из них соответствуют показателям верхов: «число крепостных, необходимых для использования в качестве свободной и квалифицированной рабочей силы», «помещичья задолженность государству», «степень распространения (внедрения) идеи либерализма полит». Остальные 3 коррелированных z-переменные из их множества соответствуют показателям низов. В итоге в 2-х множествах z-переменных 9 из них соответствуют показателям низов, 3 - показателям верхов. Компоненты первых 2-х собственных векторов являются индикаторами присутствия знаний [2-9] и формально разделили 12 коррелированных z-переменных на 2 подмножества по 6 z-переменных и в описанном выше составе: q+p=6+6=12.

Введем в нашу модель 1-ое множество z-переменных $z_1,…,z_6$ (q=6), образующих 6 новых

линейных комбинаций некоррелированных u-переменных $u_1,\ldots,u_6$, каждая их которых равна линейной комбинации из 6 коррелированных z-переменных $z_1,\ldots,z_6$. Они соответствуют 6 именам-смыслам:

1. Производительность труда (z_1);

2. Число крестьян, взявших в аренду или купивших участки земли (z_2);

3. Чрезмерное увеличение работы на барщине (z_3);

4. Процент дворовых крестьян, полностью лишенных пашни (z_4);

5. Доля от суммы заработка крепостного крестьянина-отходника, которую он обязан был отдавать помещику (z_5);

6. Коэффициент бедности и низкой покупательной способности крепостных (z_6).

Порядок этих имен соответствует порядку компонент вектора c_1=(-0.32556, -0.39992,-0.26265,-0.35804,-0.29797,0.35000)^T . Значение c_{11}=corr(u_1,z_1)= -0.32556 равно значению коэффициента корреляции между u- переменной u_1 (u_{i1}=$z_{i1}a_{11}$+$z_{i2}a_{21}$+…+$z_{i6}a_{61}$) и z-переменных z_1. Аналогично интерпретируются другие компоненты $c_{21},c_{31},c_{41},c_{51},c_{61}$ собственного вектора c_1=(-0.32556, -0.39992,-0.26265,-0.35804,-0.29797,0.35000)^T – 1-го столбца формируемой новой матрицы собственных векторов A_{66} . Остальные значения элементов матрицы собственных векторов A_{66} моделируются.

Второе множество вводимых в нашу модель 6 коррелированных z-переменных $z_7,\ldots,z_{12}$ (p=6), образуют 6 новых некоррелированных линейных комбинаций v-переменных $v_1,\ldots,v_6$, каждая их которых равна линейной комбинации из 6 коррелированных z-переменных $z_7,\ldots,z_{12}$. Состав имен –смыслов показателей, соответствующих z-переменным $z_7,\ldots,z_{12}$ следующий:

7. Число крепостных, необходимых для использования в качестве свободной и квалифицированной рабочей силы (z_7) экон

8. Помещичья задолженность государству (z_8);

9. Уровень благополучияпомещиков (z_9);

10. Уровень эффективности государственной системы управления (z_{10});

11 . Уровень актививности общественно-политической жизни (z_{11});

12. Степень распространения (внедрения) идеи либерализма (z_{12}).

Порядок этих имен соответствуют порядку компонент вектора c_2=(-0.42238,0.3077,-0.30348, -0.50000,-0.47057,-0.16240). Значение b_{11}=corr(v_1,z_1) = -0.42238 равно значению коэффициента корреляции между v-переменной v_1 и z-переменной z_7. Здесь z-переменная z_7 из списка меняет номер 7 на номер 1 (b_{11}=corr(v_1,z_1), ибо она входит в линейную комбинацию v-переменной v_1 (v_{i1}=$z_{i7}b_{11}$+z_{i8} b_{21}+…+$z_{i12}b_{61}$)

Аналогично интерпретируются другие компоненты $b_{21},b_{31},b_{41},b_{51},b_{61}$ собственного вектора c_1=(-0.32556,-0.39992,-0.26265,-0.35804, -0.29797,0.35000)^T – 1-го столбца формируемой новой матрицы собственных векторов B_{66}. Остальные значения элементов матрицы собственных векторов B_{66} моделируются.

Новые собственные структуры для двух множеств валидных переменных

Теперь исходное разбиение 17=11+6 трансформировалось в разбиение 12=6+6. Новое разбиение сформировано обоснованно, учитывались веса компонентов 2-х первых собственных векторов $C_{17,17}$. Выделенные 12=6+6 компонент мз 34=17+17 компонентов 2-х первых собственных векторов $C_{17,17}$ являются индикаторами не введенных извне знаний (смотрите [5,17]), а появились из-за наличия корреляционной матрицы (Таблица 1), полученной усреднением 4-х эмпирически сформированных матриц $R^{(1)}_{17,17}$ +$R^{(2)}_{17,17}$ +$R^{(3)}_{17,17}$ +$R^{(4)}_{17,17}$. «Средняя» корреляционная матрица $R_{17,17}$=(1/4)[$R^{(1)}_{17,17}$ +$R^{(2)}_{17,17}$ +$R^{(3)}_{17,17}$ +$R^{(4)}_{17,17}$] имеет матрицу собственных векторов $C_{17,17}$, из которой мы извлекли нужных 12 элементов.

Это разбиение получено из первоначального разбиения 11+6=17 z-переменных, являющихся существенными причинами ситуации «низы-не хотят, верхи - не могут». В процессе формализации информационных потоков в нашем исследовании появились формальные ограничения, которые по-другому разбили 17 коррелированных z-переменных как по составу, так и по количеству z-переменных в каждом из 2-х множеств: из 11+6=17 z-переменных, выделились q+p=6+6=12 z-перемен ных, имеющих весомые «веса».

Формально отобранные 12 элементов из матрицы $C_{17,17}$ из-за их расположения в 2-х первых столбцах, соответствуют двум наибольшим собственным числам. Эта структура матриц собственных векторов и собственных чисел ($\Lambda_{17,17},C_{17,17}$) вынудили нас, опираясь на содержательные смылы их элементов, сформировать другую собственную структуру. Новая собственная структура (B^+_{pp}, A^+_{qp}) соответствует 2 множествам коррелированных z-переменных {$z_1,\ldots,z_6$}, {$z_7,\ldots,z_{12}$}. Каждая из 12 z-переменных стандартизована – имеет значение средней (=0), дисперсии (=1). Имена-смыслы z-переменных не влияют на их разбиение. Поэтому во 2-ом множестве из 6 z-переменных на месте остались 2 z-переменных, характеризующих «верхи», а 10 z-переменные, характеризующие «низы», разделились: 6 из них входят в 1-ое , 4 – во 2-ое множество.

Clarivate
Analytics indexed

Таблица 3. Матрицы B^+_{pp}, A^+_{qp} собственных векторов

1	0,3256	-0,5267	-0,3806	-0,2128	0,4593	-0,4641	1,0000
2	**0,3999**	0,4009	-0,6971	0,1999	0,2191	0,3247	1,0000
3	0,2626	0,2505	0,2244	0,1009	-0,1839	0,8797	1,0000
4	**0,3580**	-0,4526	0,5021	0,5979	0,0752	0,2275	1,0000
5	0,2980	-0,5201	0,2062	0,7388	-0,1276	0,1902	1,0000
6	-0,3500	0,1542	-0,1558	0,0362	0,8278	-0,3780	1,0000
	0,6744	1,00000	1,00000	1,00000	1,00000	1,3256	
Λ	3,10429	1,9751	0,3098	0,3098	0,151	0,1505	6

1(7)	**-0,42238**	-0,5841	0,3616	-0,2128	0,3878	-0,3923	1,0000
2(8)	0,30777	0,4314	-0,7436	0,2102	0,1965	0,2889	1,0000
3(9)	0,30348	0,3072	0,2617	0,1237	-0,1829	0,8344	1,0000
4(10)	**-0,50000**	-0,4213	0,4196	0,5961	0,0641	0,1923	1,0000
5(11)	-0,47057	-0,4057	0,1959	0,7334	-0,1087	0,1607	1,0000
6(12)	-0,16240	0,1902	-0,1827	0,0446	0,8727	-0,3748	1,0000
	0,8630	1,00000	1,00000	1,00000	1,00000	1,1370	
Λ	3,104	1,975	0,30982	0,3098	0,151	0,151	6

Линейная комбинация 6 z-переменных из 1-го множества имеет свой содержательный смысл, зависящий от смыслов 3-х показателей низов и 3-х показателей верхов. Линейная комбинация 6 z-переменных из 2-го множества также имеет свой содержательный смысл. Мы не будем заниматься когнитивным моделированием смыслов, примеры его методик изложены в статьях [18-20], где рассматриваются другие предметные области, отличающиеся наличием одного множества, а не 2-х множеств z-переменных. Мы введем 2 множества линейных комбинаций. Обе комбинации содержат 6 z-переменных, но разного состава: 1-ая состоит из z-переменных $z_1,…,z_6$, 2-ая–из z-переменных $z_7,…,z_{12}$. Линейная комбинация из 6 z-переменных $z_1,…,z_6$ образует u-переменную, а линейная комбинация из z-переменных $z_7,…,z_{12}$ образует v-переменную. Их m значений объединены в матрицы $U_{mp}=Z_1 A_{qp}$, $V_{mp}=Z_2 B_{pp}$. «Веса» из матриц «весов» A_{qp}, B_{pp} содержат как заметные так и незаметные «веса». Введем качестве «весов» значения компонент 2-х векторов c_1=(-0.32556, -0.39992,-0.26265,-0.35804,-0.29797,0.35000)^T и c_2=(-0.42238,0,3077,-0,30348, -0,50000, -0,47057 -0,16240) в 2 матрицы A_{qp}, B_{pp} : назначим первыми собственными векторами в матрице A_{qp}, в матрице B_{pp}: a_1=c_1,b_2=c_2 .

Рассмотрим равенство $(1/m)U^T V=\Lambda_{pp}=diag(\lambda_1,…,\lambda_p)$, назначим (для собственного вектора b_1=c_1) собственное число λ_1=3,104294118 (его доля равна доле λ_1=8.7955 из $\Lambda_{17,17}$) содержит 51,74%. Собственное число λ_2=1,975058824 (вводится в модель вместо λ_2=5.5960). Его доля равна 32,92% и равна доле λ_2=5.5960 из $\Lambda_{17,17}$). Доля 2-х наибольших собственных чисел λ_1=3,10429, λ_2=1,975058 равна 84,66%. Этой доли информации достаточно ( ) для моделирования неизвестных значений $\lambda_3,…,\lambda_6$) моделируемого спектра $\Lambda_{66}=diag(\lambda_1,…,\lambda_6)$, необходимого для моделирования значений 2-х множеств валидных переменных, таких,что их матрицы U_{mp},V_{mp} удовлетворяют равенству $(1/m)U^T V=\Lambda_{pp}= diag(\lambda_1,…,\lambda_p)$.

Алгоритм реализации ОМ АИКП Λ_{pp} =>(A_{qp}, B_{pp},U_{mp},V_{mp},Z_{mn}=[Z_{mq}│Z_{mp}]) состоит из 6 этапов: (Λ_{pp},C_{pp})=>$(\Lambda^+_{pp},B^+_{pp})$, Λ^+_{pp}=>A_{qp}, Λ^+_{pp}=>(U_{mp},V_{mp}), $(U_{mp},A_{qp},)$=>Z_1, (V_{mp},B_{pp})=>Z_2, Z^+_{mn}=[Z^+_{mq}│Z^+_{mp}].

1-ый этап (Λ_{pp},C_{pp})=>$(\Lambda^+_{pp},B^+_{pp})$ не аналогичен этапу Λ_{pp} =>(A_{qp}). Сперва назначаются начальные значения (Λ_{nn},C_{nn}). Затем 1-ый столбец матрицы C_{nn}=[C_1│C_2] заменяется нашим вектором c_1=(-0.32556,-0.39992,-0.26265, -0.35804,-0.29797, 0.35000)^T . Имеем пару матриц $(\Lambda_{nn},C_{nn}$=[B_1│C_2]). Решаем Оптимизационную

Задачу ОСЗ 3 [6] и получим $B^+_{nn} = [B_1 | B^+_2]$. Этим мы реализовали этап 1: $(\Lambda_{pp}, C_{pp}) => (\Lambda^+_{pp}, B^+_{pp})$.

Для реализации этапа $\Lambda^+_{pp} => A_{qp}$, решаем ОСЗ 5 [6].

Моделирование 2-х матриц B^+_{pp}, A^+_{qp} собственных векторов

Выбранными экспертом индикатоарами присутствия знаний низах и верхах содержатся в 2-х векторах $c_1 = (-0.32556, -0.39992, -0.26265, -0.35804, -0.29797, 0.35000)^T$, $c_2 = (-0.42238, 0.3077, -0.30348, -0.50000, -0.47057 -0.1624 0)^T$. Назначим их первыми собственными векторами в матрицах B_{pp} и A_{qp}.

Формируем 1-ый столбец будущей матрицы B_{pp} собственных векторов: назначим для 1-го собственного вектора $b_1 = c_1 = (-0.32556, -0.39992, -0.26265, -0.35804, -0.29797, 0.35000)^T$. Остальные 5 столбцов любой ортонормированной системой собственных векторов. Эти 6*5=30 чисел являются начальными значениями для решаемой ниже ОЗ. назначенные начальные значения (Λ_{nn}, C_{nn}): 1-ый столбец матрицы $C_{nn} = [C_1 | C_2]$ заменен нашим вектором $c_1 = (-0.32556, -0.39992, -0.26265, -0.35804, -0.29797, 0.35000)^T$. Процедура «Поиск решения» позволяет для начальной пары матриц $(\Lambda_{nn}, C_{nn} = [B_1 | C_2])$ найти (смоделировать при назначенных параметрах (Рисунок 1)) решить Оптимизационную Задачу ОСЗ 3 [8] и получить первую нужную нам ортонормированную матрицу $B^+_{nn} = [B_1 | B^+_2]$. Этим мы реализовали этап 1: $(\Lambda_{pp}, C_{pp}) => (\Lambda^+_{pp}, B^+_{pp})$. ОСЗ 3 требует, чтобы изменяемыми значениями процедуры Solver (неизвестными переменными Оптимизационной Задачи) была назначена подматрица B_2 матрицы $B_{66} = [B_1 | B_2]$ и вектор $(\lambda_3, \lambda_4, \lambda_5, \lambda_6)$. Значения $\lambda_1 = 3,10429$, $\lambda_2 = 1,975058$ расположены в ячейках перед ячейками неизвестных значений $\lambda_3, \lambda_4, \lambda_5, \lambda_6$ ячейка, содержащая формулу суммы: $3.10429 + 1.975058 + \lambda_3 + \lambda_4 + \lambda_5 + \lambda_6$, является ячейкой для целевой функции процедуры «Поиск решения». Ячейки ограничений ции процедуры «Поиск решения» соответствуют формулам $B^T B = I_{pp}$, $BB^T = I_{pp}$. Настройка параметров процедуры «Поиск решения» показана на Рисунке 1. Нажав кнопку «» имеем решение – пару матриц (Λ_{66}, B_{66}). В Таблице 3 приведено решение ОЗ – пара (Λ_{66}, B_{66}). Значения элементов матриц Λ_{66}, B_{66} удовлетворяют всем матричным ограничениям. Процесс итераций прошел нормально. Мы не решали задачу нахождения искомого результата по известным исходным данным. А решали в ЭТ Excel обратную задачу: подобрать исходные данные для получения желаемого результата. Средство поиска решения Microsoft Excel использует алгоритм нелинейной оптимизации Generalized Reduced Gradient (GRG2), разработанный Леоном Ласдоном (Leon Lasdon, University of Texas at Austin) и Аланом Уореном (Allan Waren, Cleveland State University).

Реализации этапа $\Lambda^+_{pp} => A_{qp}$, решаем ОСЗ 5 [8]. Далее формируем 1-ый столбец будущей матрицы A_{qp} собственных векторов: назначим для 1-го собственного вектора $a_1 = c_2 = (-0.42238, 0, 3077, -0, 30348, -0,50000, -0,47057 -0,16240)$. Остальные 5 столбцов любой ортонормированной системой собственных векторов. Эти 6*5=30 чисел являются начальными значениями для решаемой ниже ОЗ.

Далее проводим в ЭТ Excel аналогичные предыдущему случаю действия по конструированию программы-таблицы для ОЗ моделирования значений элементов подматрицы A_2 матрицы $A_{66} = [A_1 | A_2]$ при известной подматрице и известном векторе $(\lambda_1, \lambda_2, \lambda_3, \lambda_4, \lambda_5, \lambda_6)$: он был вычислен ранее при реализации программы-таблицы для ОЗ ОСЗ 3 по моделированию матрицы A^+_{66}. Значения элементов матрицы A^+_{66} удовлетворяют всем матричным ограничениям. Процесс итераций прошел нормально. Значения элементов матриц A^+_{66}, B^+_{66} приведены в Таблице 3.

В матрице $C_{17,17}$ имелись индикаторы присутствия знаний, это - $corr(y_i, z_j) = b_{ij}$ должно быть известным и удовлетворять критерию умеренной связи: $corr(y_i, z_j) = \geq 0.3$. Число компонент у первых 2-х собственных векторов, располагаемых в первых 2-х столбцах матрицы $C_{17,17}$, равно 12 (Таблица 2).

Номера этих компонент следующие: 1,4,5,6,7,8,9, 10,11,12, 13,17. Разделим это новое множество z-переменных $z_1, \ldots, z_{12}$ из 12 z-переменных на 2 подмножества, руководствуясь правилом «1-ое множество содержит весомые значения компонент (индикаторы присутствия знаний) из 1-го собственного вектора, 2-ое множество - весомые значения компонент 2-го собственного вектора».

Мы реализовали один вариант Обратной модели к Прямой модели $Z_{mn} = [Z_{mq} | Z_{mp},] => (\Lambda_{pp}, A_{qp}, B_{pp}, U_{mp}, V_{mp})$, $m = q+p, q \geq p, m > n$.

Прямая ИКП-модель, direct canonical-redundancy variables (direct CRVA-model)) содержит следующие формулы, отражающие преимущества избыточно-канонических переменных:

$(\Psi_{12}\Psi_{21} - \Lambda^2)A_{qp} = 0_{pp}$, $A.\Psi_{12}B = \Lambda_{pp}$, $A^T A = I_{pp}$, $B^T B = I_{pp}$, $B_{pp} = \Lambda^{-1}\Psi_{21}A_{qp}$, $U_{mp} = Z_1 A_{qp}$, $V_{mp} = Z_2 B_{pp}$. Здесь матрица Ψ_{21} не является диагональной, она равна корреляционной матрице из коэффициентов корреляций пар (u^*, v^*) избыточных переменных. Множества избыточных переменных не являются би-ортогональными. Матрицу избыточных переменных мы не применяем, а используем матрицу Λ_{pp} нулевых ковариаций и не нулевых

дисперсий би-ортогональных избыточно-канонических переменных. Би-ортогональность множества избыточно-канонических переменных и ортономированность собственных a-векторов (b- векторов) используется нами ниже. Соответствующие им матрицы $U_{mp}=Z_1A_{qp}$ u–

переменных ($V_{mp}=Z_2B_{pp}$ v –переменных) моделируем также отдельно. В работе присутствуют 3 разные буквы для 3-х пар канонических (u,v), избыточных ((u^*,v^*), избыточно-канонических переменных ($\overline{u},\overline{v}$).
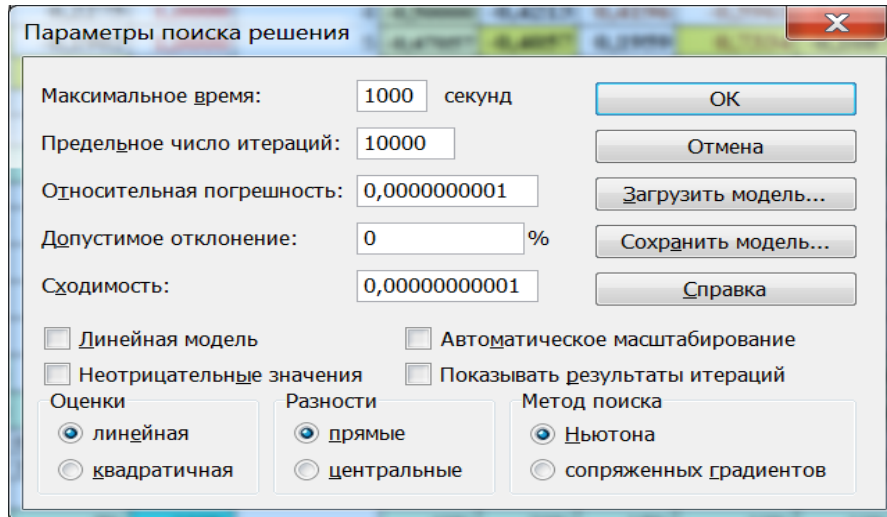

Рисунок 1. Окно параметров надстройки «Поиск решения» для программы-таблицы решения ОСЗ 3.

Мы произвели моделирование 2 матриц B_{pp},A_{qp}, причем диагональная матрица Λ_{pp} моделировалась совместно с матрицей B_{pp}. В Прямой ИКП-модели:$A\Psi_{12}\mathbf{B} =\Lambda_{pp}$, $A^TA =I_{pp},B^TB=I_{pp},U_{mp}=Z_1A_{qp},V_{mp}=Z_2B_{pp}$. Заметим,что в Прямой ИКП-модели не требуется выполнение равенств A $A^T =I_{pp}$, $BB^T=I_{pp}$. Но в Обратную ИКП-модель эти ограничения мы ввели. Так как ортонормированная система собственных векторов является также и ортогональной системой собственных векторов (псевдособственных векторов). Длины векторов в ортонормированной системе равны 1, а в a ортогональной системе допустимы вектора неединичной длины. Матрица псевдособственных векторов $C^{+\text{ можно}}$ моделировать, решая другие варианты ОСЗ 3 [6].

В прямой модели по известной корреляционной матрице $\Psi_{12} =\Psi^T_{21}$ решается ПСЗ: $(\Psi_{12}\Psi_{21}-\Lambda^2)\mathbf{A_{qp}}=0_{pp}$. В Обратной модели эта задача не решается, используем только факт: матрица $A_{\mathbf{qp}}$ будет являться матрицей псевдособственных векторов в соотношениях нашей Обратной модели. После преобразования матриц z-переменных Z_1,Z_2 в матрицы канонических переменных (с применением модели АКК) в ПМ Анализа ИКП решается спектральная задача вида $(\Psi_{12}\Psi_{21}-\Lambda^2)\mathbf{A_{qp}}=0_{pp}$ как обобщенная спектральная задача вида$(\Psi_{12}\Psi^{-1}_{22}\Psi_{21}-\Lambda^2\Psi_{11})A_{\mathbf{qp}}=0_{pp}$ и

вычисляется другая матрица собственных векторов $\mathbf{B}_{pp}=\Lambda^{-1}\Psi_{21}A_{qp}$. В прямой модели АКК (она применяется после применения модели избыточных переменных), если имеется 2 множества z-переменных, то для преобразовани я ее матрицы значений Z_{mq} вычисляяется только одна матрица собственных векторов A_{qp}, а другая матрица собственных векторов $\mathbf{B}_{pp}$ используется (для преобразования матрицы значений Z_{mp}) по формуле $\mathbf{B}_{pp}=\Lambda^{-1}\Psi_{21}A_{qp}$. При этом матрица линейного преобразования $\Lambda^{-1}\Psi_{21}$ должна вычисляться по известным матрицам Λ^{-1} и Ψ_{21} . Здесь в нашей обратной матрица Ψ_{21} не известна. Она нас не инересует. Способа декомпозиции матрицы Q_{pq} и нахождения 2-х матриц Λ^{-1} и Ψ_{21} из уравнения $Q_{pq}=\Lambda^{-1}\Psi_{21}$ нам не известно: Λ^{-1} – диагональная , Ψ_{21} – прямоугольная матрица. Неуправляемая линейная связь между матрицами A_{qp} и B_{pp}Для нас в Обратной модели важными элементами являются матрицы A_{qp}, B_{pp}. Они в Обратной модели моделируются независимо друг от друга и в дополнение к равенствам $A^T A =I_{pp}$, $B^TB=I_{pp}$ удовлетворяют равенствам A $A^T =I_{pp}$, $BB^T=I_{pp}$. В Прямой модели матрицы A_{qp}, B_{pp} ортогональны, в Обратной модели – ортонормированны.

Так как $\Psi_{22} =I_{pp}$. $\Psi_{11}=I_{qq}$, то в используемой нами Прямой Модели Избыточно-Канонических Переменных мы не используем ее подматрицы

(Ψ_{12},Ψ_{21}). Хотя они фигурируют в решаемой ПСЗ вида $(\Psi_{12}\Psi_{21}-\Lambda^2)A_{qp}=0$ $_{pp}$. Из этого соотношения мы для нашей Обратной модели в качестве входных объектов назначим диагональную матрицу $\Lambda_{pp}=diag(\lambda_1,\ldots,\lambda_p)$. Схема ОМ Анализа ИКП: $\Lambda_{pp}=>(B_{pp},A_{qp},U_{mp},V_{mp})$ отражает последовательность этапов независимого моделирования ортонормированных квадратных ($q=p$) матриц собственных векторов A_{qp}, B_{pp}, $q=p$, содержащих заданные (смотрите выше) заметные значения компонент. Неизвестная матрица Q_{pp} линейной связи нас не интересует.

Моделирование матриц U_{mp}, V_{mp} значений валиных переменных

Матрицы U_{mp},V_{mp} являются матрицами из m значений би-ортогональных избыточно-канонических переменных (biorthogonal canonical-redundancy variables). Моделируем 2 матрицы U_{mp},V_{mp} избыточно-канонических переменных. Они нужны для моделирования матриц m значений, объединенных в матрицы Z_1,Z_2. Матрицы U_{mp},V_{mp} легко моделируется, так матрицы, обладающие такимиже свойствами моделировались в рамках других обратных моделей. Соотношения вида $U_{mp}=Z_1 A_{qp},V_{mp}=Z_2B_{pp}$ и свойства матриц A_{qp}, B_{pp}. Веса» из матриц «весов» A_{qp}, B_{pp} содержат как заметные так и незаметные «веса» при любых матрицах U_{mp}, V_{mp} существенно определяют значения элементов Z_1,Z_2. Матрицы U_{mp},V_{mp} пока должны удовлетворять равенству $(1/m)U^TV=\Lambda_{pp}=diag(\lambda_1,\ldots,\lambda_p)$. Иной способ матрицах матрицзначений валиных переменных U_{mp}, V_{mp} пока не будем рассматривать. Вводимые нами модель u-переменные являются валидными для измеряемых z-переменных, $z_1,\ldots,z_6$, v – переменные являются валидными для измеряемых z-переменных $z_7,\ldots,z_{12}$. Смыслы валидных переменных считаем заданными, они перечислены выше. Множества u– и v-переменных, представленные через свои матрицы значений U_{mp} V_{mp}, некоррелируют:

$(1/m)U^TV=\Lambda_{pp}=diag(\lambda_1,\ldots,\lambda_p)$, а каждый столбец матриц U_{mp} и V_{mp} стандартизован: $(1/m)U^TU=I_{pp},(1/m)V^TV=I_{pp}$, Пары столбцов (u_j,v_j) из матриц U_{mp}, V_{mp} имеют длины $\lambda_1,\ldots,\lambda_p$, упорядоченные по убыванию: $\lambda_1>\ldots>\lambda_p>0$, $(1/m)U^TV=\Lambda_{pp}=diag(\lambda_1,\ldots,\lambda_p)$.

Соотношения из метода ПМСА – метода избыточных переменных (МИП, redundancy values analysis, RVA [ ]) изложены в работах [ ]. Соотношения из прямой задачи, решенной в [ ], образкют Прямую модель RVA (прямая RVA-модель) и схематично обозначим так:Прямая RVA-модель $Z_{mn}=[Z_{mq}|Z_{mp},]=>(\Lambda_{pp}, A_{qp},B_{pp},U_{mp},V_{mp})$, $m=q+p,q\geq p$, используемая в этой статье, изложена в статье [1]. Входными объектами в ней являются 2 матрицы $Z_{mq}|Z_{mp}$,, объединенные в одну матрицу $Z_{mn}=[Z_{mq}|Z_{mp},]$. Эти матрицы $Z_{mq}|Z_{mp}$ подвергаются преобразованиям методом избыточных переменных [11] .Полученные 2 множества избыточных (redundancy variables [11]) переменных рассматриваются как входные матрицы для ПМ АКК [1]. После преобразования 2-х матриц значений избыточных переменных получаем 2 матрицы значений избыточно-канонических переменных (biorthogonal canonical-redundancy variables) имеем биортогональные матрицы $(1/m)U^TU=I_{pp},(1/m)V^TV=I_{pp}$, $(1/m)U^TV=\Lambda_{pp}=diag(\lambda_1,\ldots,\lambda_p)$, $\lambda_1>\ldots>\lambda_p>0$. Формулы из модели избыточных переменных мы не приводим. Ее формулы приведены в статьях [1,11]. В статье [1] доказаны теоремы об индексах измерения сил связей между двумя множествами z-переменных , избыточных переменных, канонических переменных, избыточно-канонических переменных. Теоретическое обоснование существования индикаторов присутствия знаний в матрицах собственных векторов A_{qp}, B_{pp} в Прямой модели избыточно- канонических переменных доказано в Теоремах 1 и 2 [1].

Таблица 4. Матрица значений валиных переменных U_{mp}

	1	2	3	4	5	6
1	0,1795	0,2324	0,3662	-0,1322	-0,0020	0,2589
2	-0,3689	0,1168	0,1520	0,3542	-0,0526	-0,2611
3	-0,1552	0,2795	0,4676	0,2590	-0,0274	-0,0977
4	0,5000	-0,0585	0,0571	0,0865	-0,2113	0,0185
5	0,4543	0,2183	-0,3425	-0,2286	-0,4538	-0,0867
6	0,0141	0,2398	0,2203	-0,0303	-0,2920	0,2117
7	0,0775	-0,1515	-0,1174	0,0717	0,0578	0,0677
8	-0,1294	0,1882	-0,3173	-0,2365	0,3198	0,1332

9	0,1047	-0,4601	-0,0191	0,1717	-0,1082	-0,2495
10	-0,1614	-0,0298	0,0507	0,2186	0,0003	-0,4367
11	0,1096	-0,0703	-0,1917	-0,1549	-0,2546	0,3706
12	0,1634	-0,1158	0,1708	-0,2291	0,3968	0,1436
13	0,0024	-0,2984	-0,1993	0,2481	0,0743	-0,3553
14	-0,1581	-0,2793	-0,0941	-0,1043	-0,1643	0,1826
15	0,1708	0,0413	0,2701	-0,3233	0,1846	-0,0331
16	-0,2994	0,3252	-0,1616	0,3322	-0,2659	0,0431
17	0,0214	-0,2377	-0,0222	0,1935	0,3418	-0,2894
18	-0,1718	-0,0582	-0,0550	-0,3685	0,1442	-0,0260
19	-0,0435	0,1071	-0,2554	0,0990	0,0940	0,2231
20	-0,0353	0,2405	0,1762	-0,0176	0,1910	0,2585
21	-0,2749	-0,2294	-0,1556	-0,2092	0,0276	-0,0761
	0,00001	0,00000	0,00002	0,00000	0,00000	-0,00001
	1,00000	**1,00000**	**1,00000**	**1,00000**	**1,00000**	**1,00000**

Таблица 5. Матрица значений валиных переменных V_{mp}

	1	2	3	4	5	6
1	-0,103387	0,231114	-0,22035	-0,55432	-0,13338	-0,01807
2	0,0316108	0,275109	-0,31296	0,191314	-0,32438	0,479869
3	-0,000334	0,032132	-0,07629	-0,04876	-0,16754	-0,26277
4	0,2123823	0,280054	0,05188	-0,14246	-0,28471	-0,0821
5	-0,270968	0,083886	-0,01446	-0,10345	0,018949	-0,1331
6	0,0684028	-0,359569	0,014247	0,064659	-0,13144	0,316285
7	0,0292324	0,133191	0,162235	0,127677	0,289734	0,028629
8	-0,066472	-0,221209	0,278837	0,32349	0,131306	0,089823
9	0,2236834	0,022531	-0,25728	0,108651	-0,16188	0,131792
10	-0,200632	0,13165	0,150519	-0,07212	-0,09298	-0,34402
11	-0,460813	-0,432963	0,442993	0,065436	-0,11661	-0,14119
12	0,4029234	-0,259181	-0,39224	0,160233	0,097468	-0,07137
13	0,0126144	-0,158155	-0,11173	0,02411	-0,11752	0,142787
14	-0,035205	0,111855	-0,34601	-0,16509	0,363622	0,13152
15	0,0189368	-0,129913	0,008421	-0,26414	0,120367	-0,39018
16	0,07074	0,142149	-0,13118	-0,03169	-0,17763	-0,15929
17	0,2902339	-0,346107	0,163331	0,12874	-0,01152	0,098059
18	0,343027	0,044734	0,215085	-0,26724	0,127981	-0,25614
19	-0,375766	0,133968	0,242941	-0,03442	0,371171	-0,01949
20	-0,211063	-0,032408	-0,0095	0,512208	0,434857	0,300154
21	0,020857	0,317129	0,141528	-0,02284	-0,23587	0,158815
	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000

Преимуществом применямой в данной статье Обратной модели является биортогональность 2-х множеств избыточно-канонических переменных, возможность моделировать отдельно и независимо друг о друга матриц A_{qp}, B_{pp}. Конструирование новой собственной структуры (Λ_{pp},A_{qp},B_{pp}) взамен старой ($\Lambda_{17,17}$, $C_{17,17}$) и перенос значений (индикаторов присутствия знаний) в другую систему валидных показателей являются новым приемом для формулирования новой методики конструирования системы валидных u и v-переменных и коррелированных z-переменных $(z_1,\dots,z_6)$,$(z_7,\dots,z_{12})$. При преобразованиях матриц U_{mp}, V_{mp} в матрицы коррелированных z-переменных $(z_1,\dots,z_6)$,$(z_7,\dots,z_{12})$ применчем ортонормированные матрицы B^+_{pp} и A^+_{qp}.

Конструирование проводится следующим образом. Из матрицы $C_{17,17}$ выделяем ее элементы-индикаторы присутствия знаний, это - $corr(y_i,z_j)=c_{ij}$, удовлетворяющие критерию умеренной связи: $corr(y_i,z_j)=\geq 0.3$. Число таких компонент у первых 2-х собственных векторов, располагаемых в первых 2-х столбцах матрицы $C_{17,17}$, равно 12 (Таблица 2). Номера этих компонент следующие: 1,4,5,6,7, 8,9,10,11,12,13,17. Разделим соответствующее этим номерам новое множество z-переменных $z_1,\dots,z_{12}$ из 12 z-переменных на 2 подмножества, руководствуясь правилом «1-ое множество содержит весомые значения компонент (индикаторы присутствия знаний) из 1-го собственного вектора), 2-ое множество - весомые значения компонент 2-го собственного вектора». Тогда 1-ое множество состоит из 6 показателей, соответствующих 6 z-переменных $z_1,\dots,z_6$ и имеющих смыслы-имена:

1. Производительность труда крепостных крестьян (экономический показатель);

2. Число крестьян, взявших в аренду или купивших участки земли (экономический показатель);

3. Чрезмерное увеличение работы на барщине (экономический показатель);

4. Процент дворовых крестьян, полностью лишенных пашни (экономический показатель);

5. Доля от суммы заработка крепостного крестьянина-отходника, которую он обязан был отдавать помещику (экономический показатель);

6. Коэффициент бедности и низкой покупательной способности крепостных (экономический показатель);

2-ое множество состоит из 6 показателей, соответствующих 6 z-переменным $z_7,\dots,z_{12}$ и имеющих следующие смыслы-имена:

7. Число покушений недовольных крестьян на жизнь помещиков (криминальный показатель);

8. Число крестьянских волнений (политический показатель);

9. Число крестьян, переместившихся в города. (миграционный показатель);

10. Число крепостных, необходимых для использования в качестве свободной и квалифицированной рабочей силы (экономический показатель);

11. Помещичья задолженность государству (экономический показатель);

12.Степень распространения (внедрения) идеи либерализма (политический показатель).

Рассмотрим новое множество валидных некоррелированных переменных $u_1,\dots,u_6$ для коррелированных z-переменных $z_1,\dots,z_6$, таких что $a_{ij}=corr(u_i,z_j)=corr(y_i,z_j)=c_{ij},j=1,\dots,6$. Заменим ими старое подмножество валидных некоррелированных 6 y-переменных из их общего числа $y_1,\dots, y_{17}$. Каждая i–ая переменная (их 6 штук) из старого подмножества валидных некоррелированных y-переменных удовлетворяет условию равенства $corr(y_i,z_j)=c_{ij}$.

Перенесем эти 6 компонент из матрицы $C_{17,17}$ в 1-ый столбец новой матрицы собственных векторов $A_{6,6}$. Перенесем 6 выделенных (по критерию заметности) компонент 2-го столбца старой матрицы собственных векторов из матрицы $C_{17,17}$ во 2-ой столбец новой матрицы собственных векторов $B_{6,6}$.

Моделирование начнем с 2-ой матрицы $B_{6,6}$.Рассмотрим 2-ое новое множество валидных некоррелированных переменных $v_1,\dots,v_6$ для коррелированных z-переменных $z_7,\dots,z_{12}$, таких что $b_{ij}=corr(u_i,z_j)=corr(y_i,z_j)=c_{ij}$,где номер $j=7,\dots,12$, является перенумерованным из номера компоненты 12-мерного собственного вектора из матрицы $C_{17,17}$. Произошла замена одной матрицы $C_{17,17}$ на другую матрицу $B_{6,6}$.Аналогично формируем матрицу $A_{6,6}$. Далее решаем отдельно 2 оптимизационные задачи и имеем матрицы $B^+_{6,6},A^+_{6,6}$.

Вводимые в нашу модель матрицы являются ортонормированными матрицами. Если матрица $A_{6,6}$ (или $B_{6,6}$) после решения оптимизационной задачи () получилась ортонормированной, то матрица $A_{6,6}$ (или $B_{6,6}$) является матрицей собственных векторов корреляционной матрицы для множества z-переменных, $z_1,\dots,z_6$, (для множества z-переменных $z_7,\dots,z_{12}$). Если одна (или обе матрицы) из матриц $A_{6,6}$.или $B_{6,6}$ получилась ортогональной, то она является матрицей псевдособственных векторов ().Ортогональный вектор **c** состоит из взаимноперпендикулярных векторов, среди которых имеются векторы с длиной, не равной 1: $cc^T=1$, $c^Tc\neq1$. Матрица C_{66} , объединяющая значения компонентов таких векторов, называется матрицей псевдособственных векторов. Множество матриц собственных векторов является частью множества матриц псевдособственных векторов.

Ортогональную матрицу $A_{6,6}$ ($B_{6,6}$) в дальнейшем преобразуем (после решения одной ОСЗ из 6 ОСЗ [3-6]) в ортонормированную матрицу $A^+_{6,6}$ ($B^+_{6,6}$) собственных векторов. Это позволяет нам иметь 2 матрицы $A^+_{6,6}$ и $B^+_{6,6}$ ортонормированных собственных векторов, удовлетворяющих условию $A^+_{6,6}$ $A^{+T}_{6,6}=I_{pp}$ ($B^+_{6,6}B^{+T}_{6,6}=I_{pp}$, отсутствовавшего в ПМ АИКП [1] При решении ОСЗ 3 получаем пару матриц () собственой структуры для корреляционной матрицы не используемой далее. Используются только некоторые весомые элементы $A^{+T}_{6,6}$, $B^+_{6,6}$.

Моделирование матриц Z_{mq}, Z_{mp} значений n=q+p z-переменных

Ранее мы сиоделировали матрицы «весов» A^+_{qp}, B^+_{pp}, матрицы значений валидных U_{mp}, V_{mp} моделируются одновременно и в зависимости от спектра$\Lambda_{pp}=diag(\lambda_1,\ldots,\lambda_p):(1/m)U^TV=\Lambda_{pp}$. Ортонормированность матриц A^+_{qp}, B^+_{pp} позволяет нам вычисить значения элементов матриц $Z_1,Z_2:Z_1=U_{mp}$ A^{+T}_{qp}, $Z_2=V_{mp}$ B^{+T}_{pp}.

Так как пар матриц A^+_{qp}, B^+_{pp} существует бесконечное множество, то пар матриц ($Z_1=U_{mp}$ A^{+T}_{qp}, $Z_2=V_{mp}$ B^{+T}_{pp}) - бесконечное множество. Одна пара матриц Z_1,Z_2 прит=21,q=6,p=6 визуализиро вана на Рисунках 2 3. Введенные в модель u-переменные являются валидными для модельных (не всегда измеряемых) z-переменных $z_1,\ldots,z_6$, v-переменные являются валидными для модельных (не всегда измеряемых) z-переменных $z_7,\ldots,z_{12}$.

Визуализация динамик изменения значений n=q+p z-переменных

Показатель 4. «Процент дворовых крестьян, полностью лишенных пашни (экономический показатель) был выделен нами выше. Он имеет «вес», равный -**0.5000** (смотрите компоненты вектора $\mathbf{a}_1$ =(-0.4224,0.3078, -0.3035,-**0.5000,** -0.4706, -0.1624)^T **).**

Выделим матрицу $X^{0(1)}_{21,6}$ и, пользуясь функцией «Сортировка», упорядочим по возрастанию значения элементов столбца №4, элементы строки остальных столбцов поменяются в соответствии с перестанокой значений столбца №4. Номера строк после перестаноки строк $X^{0(1)}_{21,6}$: 5,4,16,13, 19,10,17,2,7,9,3, 6,8,11,20,1,15, 12,14,21,18 z1,…,z6. Вид 6 кривых показан на Рисунке 2. Динамика показателя №4 (красная кривая) негативная: значения процентов дворовых крестьян, полностью лишенных пашни увеливаются, этот тренд показывает ухудшающуюся степень качества жизни крепостных крестьян.

Аналогично рассматриваем вектор $\mathbf{b}_1$ =(0.3256,0.3999, 0.2626, 0.3580, 0.2980, -0.**3500**)^T .

Вид 6 кривых показан н Рисунке 3. Номера строк таблицы $X^{0(2)}_{2106}$ переставились в следующем порядке: 4,10,13,18,15,7,8,1,16,5,3,6,2,12,9,19,20,17,11, 21,14.

Вид 6 кривых, соответствующих визуализируемым z-переменным $z_7,\ldots,z_{12}$, показан на Рисунке 3. Динамика показателя №12 (синяя кривая) показывает положительную динамику: значения показателя «степень распространения (внедрения) идеи ли-берализма» возрастает. Тренд этого показателя №12 показывает нарастающие изменения в сознании верхов. Анализ изменений сознания низов от влияния показателя №12 должен проводиться не здесь: вероятнее всего «ухудшающаяся степень качества жизни крепостных крестьян» намного сильнее влияла на сознания низов.

Перестановк строк матриц $X^{0(1)}_{21,6}$ $X^{0(2)}_{2106}$ не меняют значений матриц (Λ_{pp}, A_{qp}, B_{pp},U_{mp},V_{mp}). Соответствующие матрицам $X^{0(1)}_{21,6}$ $X^{0(2)}_{2106}$ матрицы Z_2. моделировались отдельно. Поэтому мы можем переставлять по-разному строки матрицы Z_1, и строки матрицы Z_2. Такие перестановки не изменяют значений матриц (Λ_{pp}, A^+_{qp},B^+_{pp},U_{mp},V_{mp}). Матрицы A^+_{qp},B^+_{pp} моделировались отдельно.

Мы провели визуализацию показателей №4, №12. Визуализации по другим заметным «весам» показывают их тренды. Они не противоречат нашим выводам.

Дальнейшее исследование появившихся вопросов необходимо и актуально.

Графики динамик 6 кривых, приведенных на рисунках, построены визуализационным значениям параметров $x^{ср}$, s для z-переменных. Визуализационные значения подбираются по формуле $x°=x^{ср}+zs$. Формула $x°=x^{ср}+zs$ показывает структуру разложения измеренного значения $x°$ на слагаемые. Первое слагаемое ($x^{ср}$) называется ожидаемым значением, его значение является главной частью значения $x°$ реального показателя и имеет единицу измерения. Второе слагаемое (zs) показывает число $z=(x^0-x^{ср})/s$ отклонений (стандартных) в отклонении исходного значения $x°_{ij}$ от значения выборочного среднего: $x_{ij}=(x°_{ij}-x_j^{ср})$, $z_{ij}=x_{ij}/s_j$, где $x_{ij}=(x°-x_j^{ср})=z_{ij}s_j$. Если $x°_{ij}=12\%$, $x_j^{ср}=8\%$, $s_j=4\%$, то $x°_{ij}$ отделен от своего ожидаемого значения $x_j^{ср}$. Параметр генеральной совокупности - *стандартное отклонение* σ, а $s=+\sqrt{s^2}$-выборочное стандартное отклонение (оценка σ) характеризует степень изменчивости (волатильности) x-переменной ($x=x°-x^{ср}$), а значение z-переменной равно $z=(x°-x_{ср})/s$. Но на рисунках 2 и 3 применяются визуализационные значения $x^{ср}_1$, $x^{ср}_2$, $x^{ср}_3$, $x^{ср}_4$, $x^{ср}_5$, $x^{ср}_6$, $x^{ср}_7$, $x^{ср}_8$, $x^{ср}_9$, $x^{ср}_{10}$, $x^{ср}_{11}$, $x^{ср}_{12}$.

Они визуализируют наглядно динамики показателей №4, №12. Степень «колеблемости»

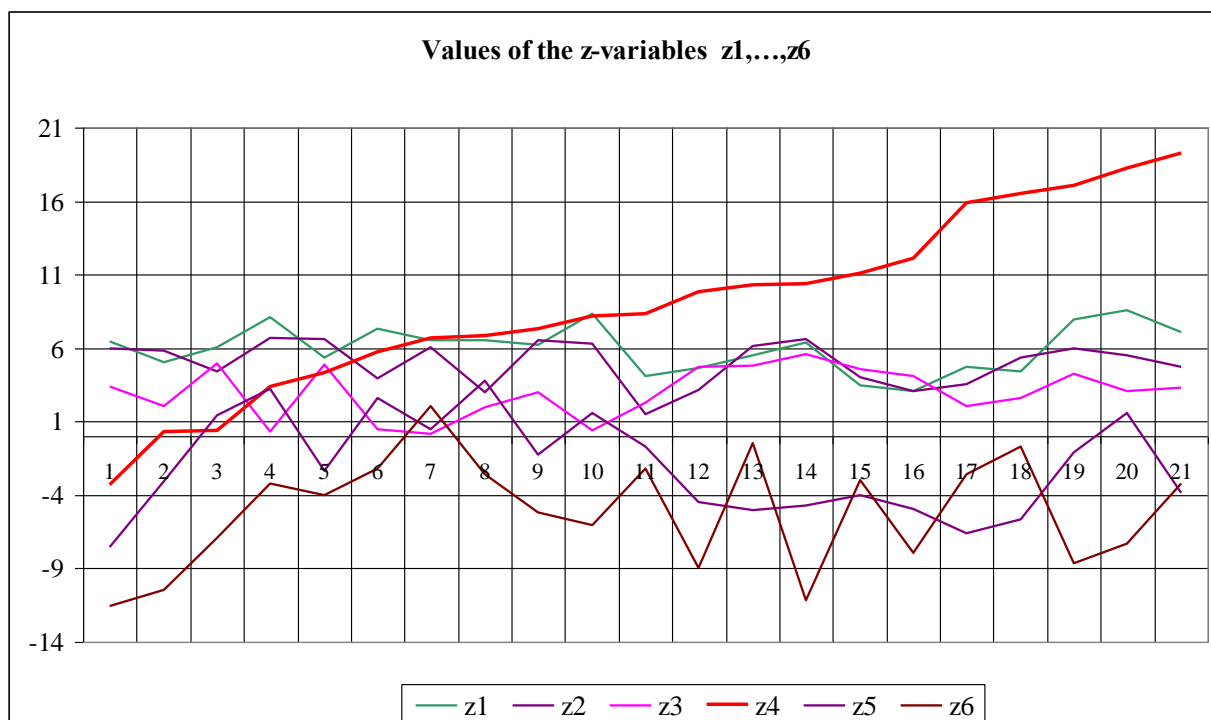показателя зависит от величины стандартного отклонения s.

Рисунок 2. Динамика модельных значений показателя «процент дворовых крестьян, полностью лишенных пашни», негативно воздействовавших в 1814-1861 гг на жизнь крепостных крестьян
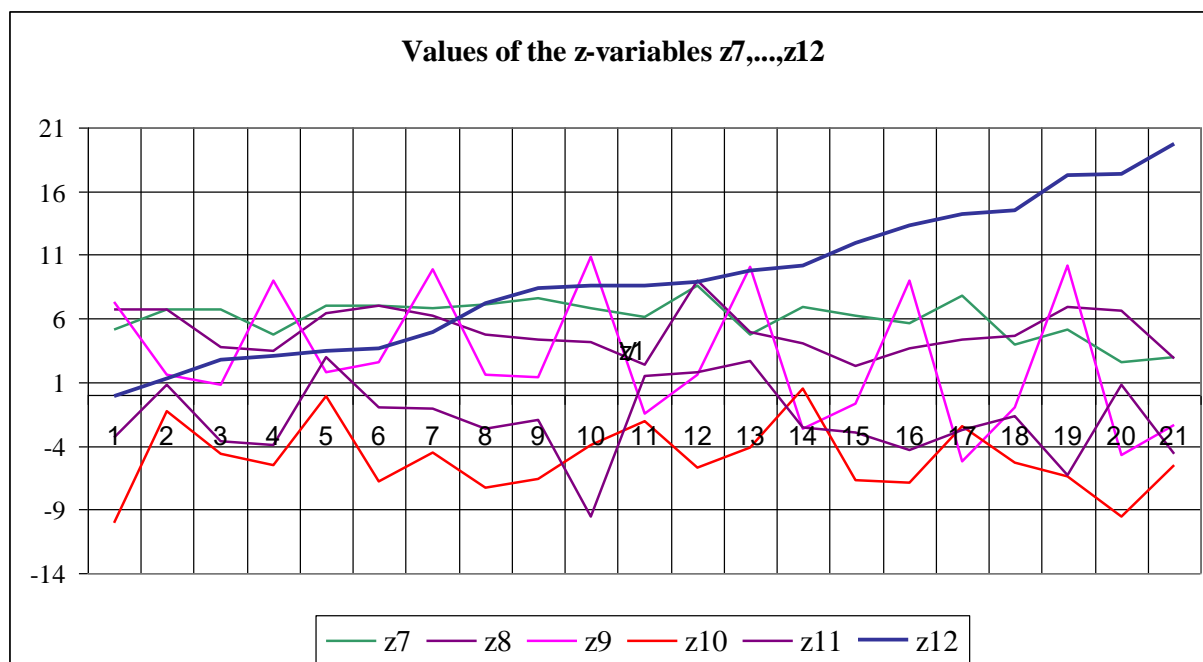

Рисунок 5. Динамика модельных значений показателя «степень распространения (внедрения) идеи либерализма» - фактора кардинального изменения сознания помещиков к1861 г.

Заключение

Мы разработали ОМ АИКП: решена новая задача: для заданной диагональной матрицы $\Lambda_{pp}=diag(\lambda_1,\ldots,\lambda_p)$, $\lambda_1>\ldots>\lambda_p>0$, $\lambda_1+\ldots+\lambda_p=p$, требуется найти значения элементов 2-х модельных подматриц Z_{mq}, Z_{mp} матрицы $Z_{mn}=[Z_{mq}|Z_{mp}]$, состоящих из m значений n z-переменных, m=q+p,q≥p,. Множество z-переменных разделенны на 2 группы: в 1-ую группу объединены z-переменные $z_1,\ldots,z_6$, во 2-ую - $z_7,\ldots,z_{12}$. Полученные 2 модельные подматрицы Z_{mq}, Z_{mp} должны быть вычислены после отдельных ортонормированных преобразоаний – модельных матриц A_{qp} и B_{pp}, 2-х матриц U_{mp},V_{mp} значений би-ортогональных избыточно-канонических переменных (u- и v-переменных): $(1/m)U^TU=I_{pp}$, $(1/m)V^TV=I_{pp}$, $(1/m)U^TV=\Lambda_{pp}=diag(\lambda_1,\ldots,\lambda_p)$, $\lambda_1>\ldots>\lambda_p>0$. Модельные матрицы A_{qp} и B_{pp} должны иметь алгебраические свойства ортонормированных матриц: $AA^T=I_{qq}$, $BB^T=I_{pp}$, $A^TA=I_{pp}$, $B^TB=I_{pp}$. Модельная подматрица Z_{mq} должна быть вычислена преобразованием с применением матрицы A_{qp}, а модельная подматрица Z_{mp} – с применением матрицы B_{pp}. Ортонормированные матрицы A_{qp}, B_{pp} из ПМ АИКП [2-3] обеспечивают биортогональность матриц U_{mp}, V_{mp}: $(1/m)U^TV=\Lambda_{pp}=diag(\lambda_1,\ldots,\lambda_p)$. Модельные матрицы решаемой Обратной Задачи вычислены при моделировании исторического принципа «верхи – не могут, низы – не хотят». В результате математического моделирования предметной области выделены 2 фактора (генераторы кризиса) с негативными динамиками их кривых (Рисунки 2 и 3): низы-«число крестьян, взявших в аренду или купивших участки земли » («вес» равен **b**$_{41}$=0,3580), верхи - «степень распространения (внедрения) идеи либерализма (z12)» («вес» равен **a**$_{41}$=-0,50000).

Использовали модерификации и приложения моделей ОСЗ и новые задачи моделирования зависимостей модельной матрицы псевдособственных и обственных векторов A^+_{qp}, B^+_{pp}, зависимых от спектра неизвестной и не используемой симметрической корреляционной матрицы. В результате математического моделирования предметной области выделили 2

фактора (генераторы кризиса) с негативными динамиками их кривых (Рисунки 2 и3): низы-«число крестьян, взявших в аренду или купивших участки земли» («вес» равен **b**$_{41}$=0,3580), верхи - «степень распространения (внедрения) идеи либерализма (z12)» («вес» равен **a**$_{41}$=-0,50000).

Необходимо моделировать другие принципы, в чем-то аналогичные принципу «низы-не хотят,верхи-не могут»,. Такими «принципами» могут служить: «студенты – не хотят, преподаватели-не могут»,«экологи-не хотят, промышленность – не может». Индивиды из низов сильно зависят от своих хозяев - индивидов из верхов. Рассмотрим многомерные информационные потоки, характеризующие низы и верхи.

Ситуации, когда экономическое положение и морально-психологическое самочувствие удшалось у одних, а положение других улучшалось мы частовидим из средств массовой информации. Восприятие своего «ненормального» положения в обществе у разных нндивидов встречается часто. Не надо ждать наступления критического состояния «не могу».

Мы модельно выявили и другие заметные по «весу» z-переменные они образуют разные линейные комбинации биортогональных избыточно-канонических переменных (u- и v-переменных. Необходимо моделирование их когнитивных смыслов в терминах своей предметной области. Примеры моделирования валидных переменных в разных предметных областях (работа предприятий, индивидуальное сознание, сознание цивилизованного предпринимателя) имеются в работах [21-25].

Наша модель показала полезность использования матрицы «коэффициентов комбинационных пропорциональностей» [2] и интерпретации значения «коэффициента комбинационных пропорциональностей» [7-9,17-20]. В ииспользованных моделях ОСВ3,ОС35 сформулировали и решили Оптимизационные Задачи с соответствующими допущениями на их параметры и переменные. Первые апобации ОМ МКП показали хорошие свойства в возможных приложениях.

References:

1. Zhanatauov, S.U. (2018). The theorems of values of relationships between groups of variables. *ISJ "Theoretical &Applied Science", №3(59)*: 249-256. www.t-science.org

2. Zhanatauov, S.U. (2019). A matrix of values the coefficients of combinational proportionality. *Int. Scientific Journal Theoretical &Applied Science, №3 (68)*, 401-419. www.t-science.org

Clarivate Analytics *indexed*

3. Zhanatauov, S.U. (2018). Modeling eigenvectors with given the values of their indicated components. *Int.Scien.Jour. "Theoretical &Applied Science", № 11(67)*: pp. 107-119. www.t-science.org

4. Zhanatauov, S.U. (2018). Inverse spectral problem. *ISJ Theoretical &Applied Science, №12(68)*, pp.101-112. www.t-science.org

5. Zhanatauov, S.U. (2018). Inverse spectral problem with indicated values of components of the eigenvectors. *ISJ Theoretical &Applied Science, №11(67)*, pp.358-370. www.t-science.org

6. Zhanatauov, S.U. (2018). Inverse spectral problem. *ISJ Theoretical &Applied Science, №12(68)*, pp.101-112. www.t-science.org

7. Zhanatauov, S.U. (2019). Cognitive model of the structure of the municipal body on monitoring the moral environment for subsides of human resources. *ISJ "Theoretical &Applied Science", №7(75)*: pp. 401-418. www.t-science.org

8. Zhanatauov, S.U. (2019). Cognitive model for digitalizing indicators individual consciousness of a civilized entrepreneur. *Int.Scien.Jour. "Theoretical &Applied Science", № 8(76)*: pp. 172-191. www.t-science.org

9. Zhanatauov, S.U. (2019). Risk calculation model of interest rate change " yield to maturity date " for the state securities of the republic of kazakhstan nominated in tenge. *Int.Scien.Jour. "Theoretical &Applied Science". 2019, № 9 (77)*: pp. 401-419. www.t-science.org

10. Van den Vollenberg, A.L. (1977). Redundancy analysis – an alternative for canonical correlation analysis. *Psychometrika, vol.42, № 26*, pp. 207-219.

11. Thissen, M., &Van den Wollenberg, A.L. (1975). REDA NAL. A fortran IV G/H program for redundancy analysis (Research Bulletin 26). Nijmegen, the Neterlan-ds: University of Nijmegen, Department of Mathematical Psychology.

12. Hotelling, H. (1936). Relations between two sets of variates. *Biometrika, №28(3-4)*: pp.321-377.

13. Krayako, M. (1982). Canonical analysis. *Biometr. J., vol. 24, № 3*, pp. 211-228.

14. Stewart, D., & Love, W. A. (1968). general canonical correlation index. *Psychological Bulletin, vol.70*, pp. 160-163.

15. Zhanatauov, S.U. (2013). *Obratnaya model' glavnykh komponent*. (p.201). Almaty: Kazstatin-form.

16. Zhanatauov, S.U. (2014). The inverse problem, inverse model, invertible model. «Internat C onference " Science: lntegrating Theory and Practice" (February 24-25. 2014), Bozeman, Montana, USA/ ICET (lnternational enterf or Education&Technology USA) Iternational Academic Research Conference on Business, Education, Nature and Technology». pp.447-449.

17. Zhanatauov, S.U. (2019). Coefficients of regression, containing mathematically introduced and cognitivelly extractabled knowledge. *ISJ Theoretical & Applied Science, № 6 (74)*: 613-622. www.t-science.org

18. Zhanatauov, S.U. (2019). Cognitive model of the structure of the municipal body on monitoring the moral environment for subsides of humanresources. *Int.Scien. Jour. "Theoretical &Applied Science", № 7(75)*: pp. 401-418. www.t-science.org

19. Zhanatauov, S.U. (2019). Cognitive model for digitalizing indicators individual consciousness of a civilized entrepreneur. *Int.Scien.Jour. "Theoretical &Applied Science", № 8(76)*: pp. 172-191. www.t-science.org

20. Zhanatauov, S.U. (2019). Risk calculation model of interest rate change " yield to maturity date " for the state securities of the republic of kazakhstannominated in tenge. *Int.Scien.Jour. Theoretical &Applied Science", № 9 (77)*: pp. 401-419. www.t-science.org

21. Zhanatauov, S.U. (2018). Model of digitalization of the validity indicators and of the measurable indicators of the enterprise. *Int.Scien.Jour. "Theoretical &Applied Science". 2018, № 9(65)*: pp. 315-334. www.T-Science.org

22. Zhanatauov, S.U. (2018). Model of digitalization of indicators of individual consciousness. *ISJ"Theoretical &Applied Science", №6(62)*: pp. 101-110. www.t-science.org

23. Zhanatauov, S.U. (2019). Cognitive model of the structure of the municipal body on monitoring the moral environ ment for subsides of human resources. *Int.Scien. Jour."Theoretical &Applied Science", № 7(75)*: pp. 401-418. www.t-science.org

24. (2019). Cognitive model for digitalizing indicators indivi dual consciousness of a civilized entrepreneur. *Int.Scien.Jour. "Theoretical &Applied Science", № 8(76)*: pp. 172-191. www.t-science.org

25. Zhanatauov, S.U. (2018). Digitalization of the behavioral model with errors of non-returnable costs. *Int.Scien.Jour."Theoretical &Applied Science", №8(64)*: pp.101-110. www.t-science.org

Evgeniya Trifonova Bratoeva-Vasileva
„Angel Kanchev" University of Ruse
Assistant, Faculty "Public health and health care"
Chair of Public Health and Social Services
Professional Area „Social Activities"
jeni_bratoeva1999@abv.bg

RESEARCH OF THE PHYSICAL CONDITION AND ANALYSIS OF ITS IMPACT ON THE QUALITY OF LIFE OF CANCER PATIENTS

Abstract: *The oncological diseases are among the three most common causes of death in the world following cardiovascular diseases, traffic accidents and incidents. The social work with cancer patients in the Republic of Bulgaria is underdeveloped and almost non-existent. Throughout the course of the oncological disease, the focus is on its treatment, during that time the feelings and experiences of the patients are not taken into consideration and not worked on. According to the World Health Organization the physical condition of people with cancer is one of the main areas defining their quality of life. The purpose of this publication is to present the results of a conducted study focused on identifying the deficiencies in the indicators that determine the physical well-being of people diagnosed with oncological disease and to highlight the need for social work with a specific target group in order to be improved their quality of life. The study was conducted among 304 cancer patients aged between 35-60, residents of Rousse, Razgrad and Silistra regions in the Republic of Bulgaria.*

Key words: *cancer, oncological disease, quality of life, physical well-being.*
Language: *English*
Citation: Bratoeva-Vasileva, E. T. (2019). Research of the physical condition and analysis of its impact on the quality of life of cancer patients. *ISJ Theoretical & Applied Science, 11 (79),* 584-590.
Soi: http://s-o-i.org/1.1/TAS-11-79-118   *Doi*: crossref https://dx.doi.org/10.15863/TAS.2019.11.79.118
Scopus ASCC: 3301.

Introduction

The rapid development of the oncological diseases in recent decades has placed them at the forefront as diseases with global distribution. Studies reveal a worrying trend that not only is increasing the number of people suffering from malignant neoplasms, but it is also reducing the age of unlocking the disease in both sexes. Twenty million people worldwide are diagnosed with cancer, and it accounts for 12% of all deaths. In Bulgaria, the number of newly registered cancer patients in 2018 is 35.378, showing an increase of 9% over the previous five-year period from 2013. An increase in cancer-related deaths was also reported in 2018 in Bulgaria. 19.139 deaths were recorded, which is 6.3% more compared to 2013 (Data by the National Center for Health Information). There is a decrease in the age of newly registered cases, an increase in the survival rate of people with concomitant cancer, and an increase in cases of complete recovery. During the course of the disease, the focus is on the treatment. The social work with people with cancer in Bulgaria is poorly developed, even non-existent in some regions of the country. There is no help provided to the patients and their families in regards to their feelings, experiences and on-going needs. To date, no research has been conducted on the impact of the disease to the quality of life among cancer patients. This is the main reason for the study to be conducted with active participants, people within working age and with concomitant cancer. One of the areas for defining the quality of life set by the World Health Organization is the physical well-being. The article presents the results of a study on the oncological suffering impact on the components of the physical well-being of patients.

II. MAIN TEXT

Clarivate Analytics indexed

The study on the impact of the disease to the quality of life among cancer patients was conducted among 304 people with active oncological disease, residents of the regions Rousse, Razgrad and Silistra in the Republic of Bulgaria. In order to more accurately distinguish the deficiencies in the quality of life components and the period of their occurrence, the subjects were divided into two groups: group 1 - persons diagnosed with cancer two weeks ago and group 2 formed by persons diagnosed with the same disease a year ago. The type of cancer is not taken into account throughout the study. The inclusion requirements of the study were that the participants are diagnosed with cancer, which is within the limitation of the above mentioned period for the two groups, to be within the age of 35 – 60 years old and to be Bulgarian citizens. The respondents voluntarily participated in the study, while maintaining their anonymity.

The empirical study was conducted through modified and adapted for the purposes of the study variant of the World Health Organization Quality of Live Questionnaire.

The study was conducted through voluntary participation and preserved anonymity among 148 patients with cancer of group 1 and 156 patients with cancer of group 2, patients of the Complex Oncology Center - Ruse Ltd. and University Multiprofile Hospital for Active Treatment "Medica Ruse" Ltd. The research tool used is "Questionnaire for assessing the quality of life of people with oncological diseases within the working age". The individuals from group 1 who completed the questionnaire could not be definitely said to be residents of the above mentioned three areas, because the diagnosis of the disease and the initial stage of treatment (in the majority of cases - operatively) is carried out in a medical institution at the request of the patient (i.e. they may be residents of all regions of the country). Only Bulgarian citizens participate in the study.

1. Discussion of the results obtained with regard to the distribution of the participants by gender.

1.1. Discussion of the results obtained from Group 1 with regard to the distribution of the participants by gender (people diagnosed with oncological disease two weeks ago).

The number of all respondents is 148. 82 are female and represent 56.16% of the group. The average age of these 82 women is 47.4 years. 64 of the surveyed people are male and represent 43.84% of all subjects surveyed. The average age of these 64 men is 52 years. From the data presented, it can be concluded that the number of women suffering from oncological disease is higher than the number of men. The participants who indicated that they were in the age group of 35-39 years represent 8.2% of all participants in the study. Those who were between 40 and 44 years of age represent 17.7% of all participants in the study. Participants aged 45 to 49 represent 20.4% of all

participants in this study. The participants who indicated that they were in the age group of 50-54 years represent 23.1% of all participants and those aged 55-60 years - 30.6% of all participants in this study. According to the presented data it is clear that increasing the age does increase the relative share of people with on-going oncological disease. The obtained results in terms of the age of the people involved in our study directly correlate with the data on the age distribution of all registered cancer patients which are residents of the three territorial areas covered. By regression analysis, it was found that the transition with a unit of higher age group increased the incidence of oncological disease by 4.815%.

1.2. Discussion of the results obtained from Group 2 with regard to the distribution of the participants by gender (people diagnosed with oncological disease one year ago).

The number of all respondents is 156. From them, 78 are female and represent 52.3% of the respondents in this group. The average age of these 78 women is 48.02 years. 71 of the surveyed people are male and represent 47.7% of all subjects surveyed. The average age of these 64 men is 52.70 years. The participants in the study who indicated that they were in the age group of 35-39 years represent 9% of all participants in this study. Those who were between 40 and 44 years of age represent 12.8% of all participants. Respondents, who are 45 to 49 years old, form 17.9% of all participants in this study. The participants who indicated that they were in the age group of 50 to 54 years and 55 to 60 years had an equal share - 30.1% each. From the data presented, it can be concluded that the number of women suffering from oncological disease is higher than the number of men. This can be explained by the gender-specific oncological diseases - in women, it is the hormone-dependent breast cancer. From the presented data, it is clear that with the increasing age, the percentage of people with on-going oncological diseases increases, which correlates with the overall morbidity. The obtained results in terms of the age of the people involved in our study directly correlate with the data on the age distribution of all registered cancer patients

2. Discussion of the results obtained with regard to the distribution of the participants by marital status.

I believe that the support from the close family is essential with regard to the quality of life of people with cancer. For this reason, the family status of the participants in the study was examined. The results obtained in both groups are as follows:

2.1. Discussion of the results obtained from Group 1 with regard to the distribution of the participants by marital status.

The analysis of the answers received with regard to the indicator "marital status" shows the following: of the 147 participants 49.7% are married; 12.2% of these 147 people are unmarried; 17% are divorced;

7.5% are widowed and 13.6% live together with a partner. It is evident from the presented indicators that the largest share is held by the married participants (49.7 %). Due to the fact that the purpose of the family status survey is to identify the support received by the family, when deficiencies in quality of life are present, we could add to the relative share of married people the share of people living together with a family partner (13.6%). This group of participants differ from the previous one only in the legal status of their marital status. In terms of having a partner and their expected support, they are no different from the first category. Hence, the group of cancer patients who have a permanent partner with them has the highest relative share of all surveyed people - 63.3%. It can be assumed that the remaining 36.7% - those whose marital status is unmarried, divorced or widowed and do not have a permanent partner living with them at the time of the study would have a greater need for social and psychological support when passing through the stages of the disease.

2.2. Discussion of the results obtained from Group 2 with regard to the distribution of the participants by marital status.

The analysis of the answers received with regard to the indicator "marital status" show the following: of the 156 completed questionnaires 53.2% were married; 1.9% are unmarried; 12.2% are divorced; 10.9% are widowed and 21.8% live with a family partner. It is evident from the presented indicators that the largest share is held by married participants (53.2%). To this group we could add people living together with a partner (21.8%), due to the fact that this group of participants differ from the previous one only in the legal status of their marital status. In terms of having a partner and their expected support, they are no different from the first category. In this way, the group of cancer patients who have a permanent partner living with them has the highest relative share of all people who participated in the study -76.0%. Similarly (with group 1), we could assume that the

remaining 24.0% would have a greater need for social and psychological support during the stages of the disease - those who are unmarried, divorced or widowed, i.e. do not have a permanent partner at the time of the study.

3. Discussion of the results obtained regarding the answers to the questions in Section 1 (physical well-being) from Segment II of the "Questionnaire for the quality of life of people diagnosed with oncological disease".

Section 1 (physical well-being) of Segment II of the used research tool contains five questions aimed at defining the deficiencies in the quality of life aimed more specifically the physical well-being of people diagnosed with oncological disease. The questions are aimed at assessing the major components of the quality of life related to the physical condition of the patients – level of the experienced pain and discomfort, lack of sufficient energy in order to perform basic daily activities, satisfaction with the quality of sleep and sexual activity, quality of perceived information through touch, sense of smell, feeling and other sensory perceptions. For this group of questions, the Cronbach's alpha coefficient is 0.836, which is considered to be good consistency. The correlation coefficient varies between 0.502 and 0.652. For scales with less than 10 questions, it is normal for alpha α to be around 0.50 as a tolerable value.

3.1. Quantitative analysis of the results obtained from the answers to the questions concerning the physical well-being of the individuals diagnosed with oncological disease.

When assessing their physical condition, shortly after the diagnosis of cancer (Group 1) and after one year of treatment (Group 2), we received the following responses from the subjects, presented in table 1 as a percentage against the total number. The numerical values of the received answers from Section 1 are presented in the diagram of Fig. 1 (for Group 1) and Fig. 2 (for Group 2).

Table 1: Quantitative results of the questions in Section "Physical Status".

Questions from Section 1:	Group	Answers				
		No	Rather not	I have no opinion	Rather yes	Yes
1. Do you experience pain and discomfort?	1	9,5	12,9	1,4	27,2	49,0
	2	9,1	29,9	1,9	36,4	22,7
2. Do you have enough energy to do your normal daily activities?	1	52,7	21,9	1,4	11,6	12,3
	2	47,7	29,0	1,9	18,1	3,2

		No	Rather not	I have no opinion	Rather yes	Yes
3. Are you satisfied with your sexual activity?	1	41,9	20,0	30,3	4,1	4,1
	2	56,9	23,5	18,3	1,3	0
4. Are you satisfied with your sleep?	1	52,4	33,1	0	7,6	6,9
	2	49,0	35,9	0,7	13,1	1,3
5. Do you feel a change in the perception of information by touch, vision, hearing, smell or taste?	1	15,6	29,9	7,5	41,5	5,4
	2	2,6	21,1	8,6	46,1	21,7

The quantitative analysis of the data from the empirical study of the questions in Section 1 "Physical Status" in group 1 allows us to outline the following deficiencies in the quality of life:

➢ high level of experienced pain and discomfort - 49.0% of those surveyed reported firmly experiencing some degree of pain and discomfort and 27.2% responded positively with hesitation;

➢ lack of sufficient energy for the basic daily activities - 52.7% strongly state that they do not have the energy needed to perform their normal daily activities, and 21.9% respond in the same way with hesitation;

➢ dissatisfaction with the sexual activity - a total of 61.9% of the respondents report to be true,

with 41.9% answering strongly and 20.0% responding with hesitation;

➢ dissatisfaction with the quality of sleep in 85.5% of the subjects surveyed in this group - in 52.4% the answer was definite and in 33.1% - with hesitation;

➢ a total of 46.9% of the participants reported a change in the perception of information by touch, vision, hearing, smell or taste - 41.5% - indicate the answer yes and 5.4% - rather yes. There are also a high proportion of negative answers to this question - a total of 45.5%, with 15.6% saying definite no and 29.9% answer with hesitation.
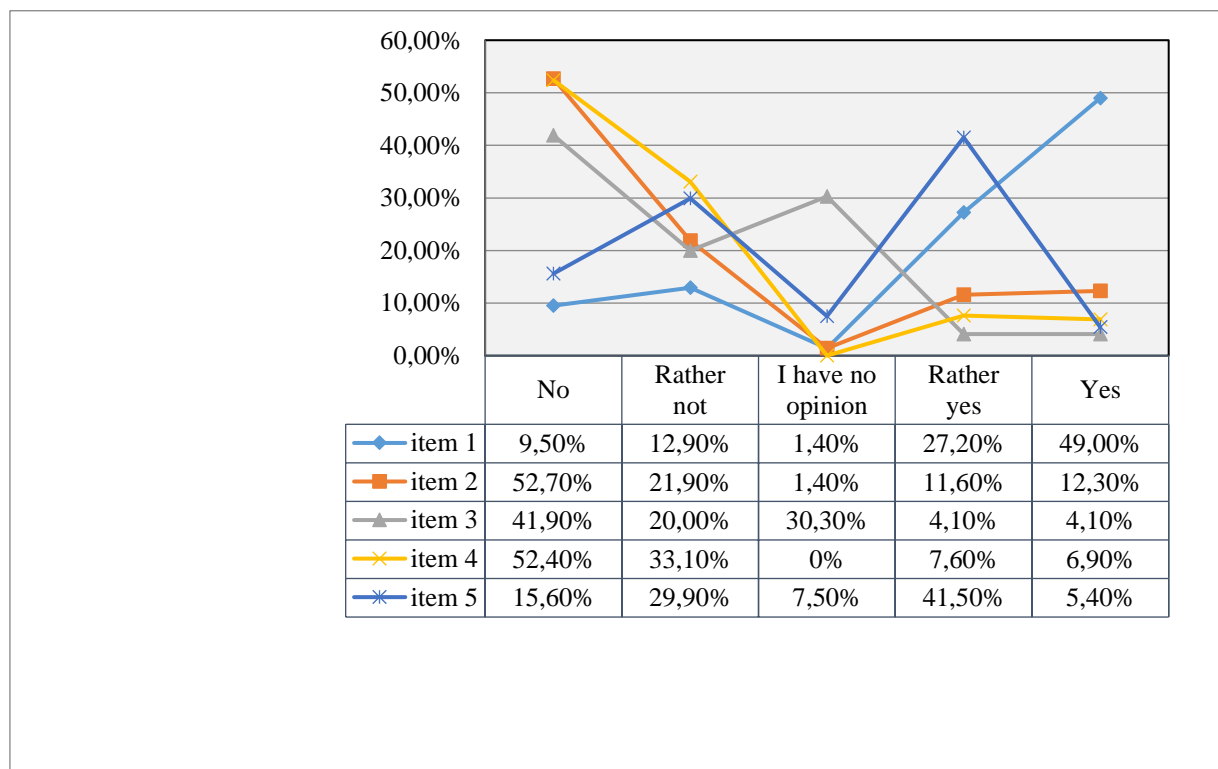
	No	Rather not	I have no opinion	Rather yes	Yes
item 1	9,50%	12,90%	1,40%	27,20%	49,00%
item 2	52,70%	21,90%	1,40%	11,60%	12,30%
item 3	41,90%	20,00%	30,30%	4,10%	4,10%
item 4	52,40%	33,10%	0%	7,60%	6,90%
item 5	15,60%	29,90%	7,50%	41,50%	5,40%

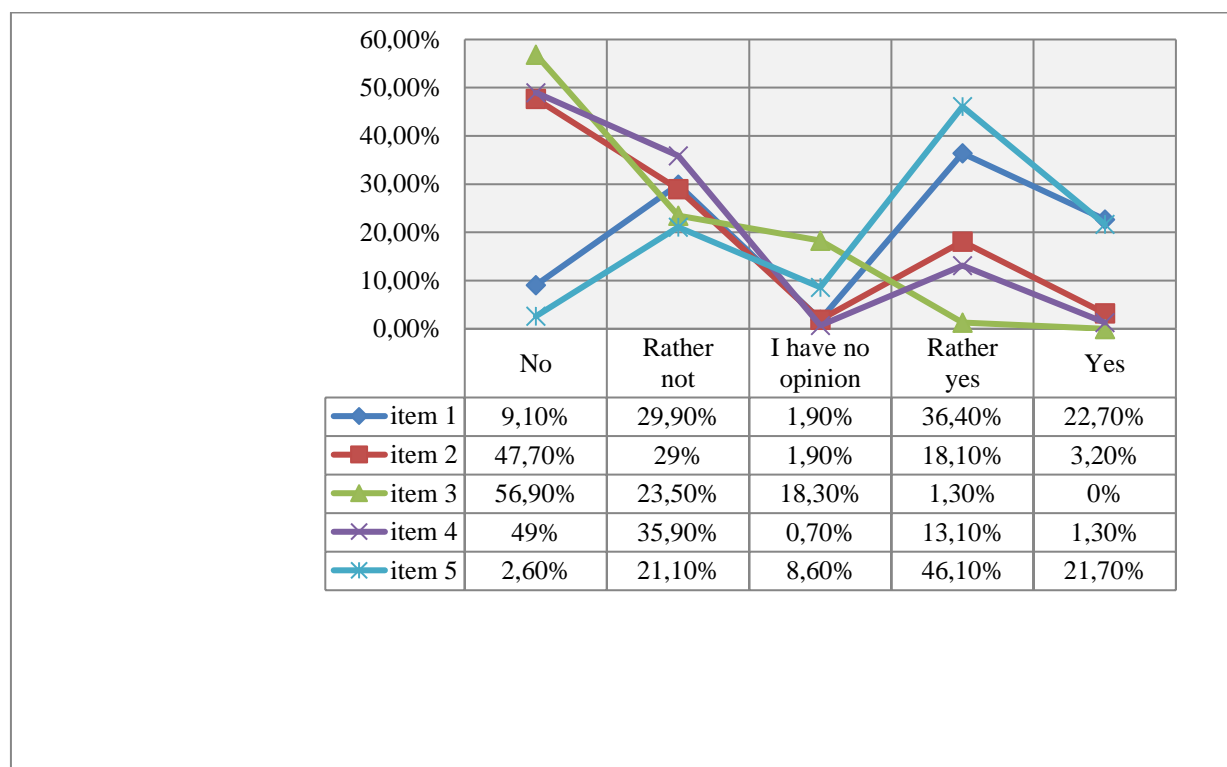**Fig.1: Numerical distribution of the answers in Section 1 of Segment II by group 1**

The quantitative analysis of the data from the empirical study of the questions in Section 1 "Physical Status" in group 2 allows us to outline the following deficiencies in the quality of life:

➢ a total of 69.1% of those surveyed report experiencing pain and discomfort to a certain extent - 22.7% indicate yes and 36.4% answer yes, but with hesitation;

➢ lack of sufficient energy for the basic daily activities - 47.7% strongly state that they do not have the energy needed to carry out their normal daily activities, and 41.9% respond in the same way with hesitation;

➢ a total of 80.4% of the subjects surveyed were not satisfied with their sexual activity - 56.9% indicated a definitive negative answer and 23.5% - a negative answer too, but with hesitation;

➢ dissatisfaction with the quality of sleep was recorded by 84.9% of the subjects included in this group - in 49.0% the answer was definite and in 35.9% - with hesitation;

➢ 67.8% report a change in the perception of information by touch, vision, hearing, smell or taste - in 46.1% of them the answer is definite, and in 21.7% - with hesitation.

	No	Rather not	I have no opinion	Rather yes	Yes
item 1	9,10%	29,90%	1,90%	36,40%	22,70%
item 2	47,70%	29%	1,90%	18,10%	3,20%
item 3	56,90%	23,50%	18,30%	1,30%	0%
item 4	49%	35,90%	0,70%	13,10%	1,30%
item 5	2,60%	21,10%	8,60%	46,10%	21,70%

Fig.2: Numerical distribution of the answers in Section 1 of Segment II by group 2

3.2. Qualitative analysis of the results obtained from the questions concerning the physical well-being of people with oncological diseases.

From the presented in Table 1 results it is obvious that a total of 76.2% of the respondents in Group 1 and 69.1% of Group 2 have a certain degree of pain and discomfort. 74.6% of the participants of Group 1 and 76.7% of Group 2 responded that they did not have the energy they needed to perform their normal daily activities. 61.9% of Group 1 and 80.4% of Group 2 - are not satisfied with their sexual activity, and 85.5% of Group 1 and 84.9% of Group 2 - of their quality of sleep. From the answers to these three questions, we find that the intensity of pain and discomfort, the poor quality of sleep and sexual activity, and the lack of energy for the daily activities remain unchanged from the onset of oncologic diagnosis until one year has passed from its treatment.

These negative answers to the questions may be explained by the fact that our subjects are in a period of intensive treatment of the oncological disease, when the therapeutic procedures are frequent and usually associated with negative feelings. When asked whether they report a change in the perception of information by touch, vision, hearing, smell or taste, the responses received from the two groups differ - 45.5% of Group 1 and 23.7 of Group 2 respond negatively and 46.9% of Group 1 and 67.8% of Group 2 positive. In my view, this is because a change in these perceptions would result from treatment being applied to the relevant anatomical organ or associated to it organ. Throughout the study it is not mention the anatomically affected by the disease organ.

Qualitative analysis of the answers given to questions in Section 1 by Group 1: The presented results give us grounds to state that, with respect to the

physical condition of the cancer patients diagnosed with the disease two weeks ago, significant deficiencies in the quality of life emerge. The qualitative analysis that can be presented for this is the fact that the subjects are at the very beginning of the treatment of the oncological disease, when the therapeutic procedures are most intense and are usually associated with negative sensations such as pain and discomfort. They are the main reason for the lack of sufficient energy, the poor quality of sleep, and the dissatisfaction with the sexual activity. When asked whether they report a change in the perception of information by touch, vision, hearing, smell or taste, the affirmative and negative responses received are relatively equal - 45.5% respond negatively and 46.9% positively. In my view, this is because a change in these perceptions would result from treatment being applied to the relevant anatomical organ or associated organ. In the study we do not mention the anatomically affected by the disease organ. The summary analysis of the results gives us grounds to claim that, with regard to the indicators examined in Section 1, there is existence of major deficiencies in the quality of life of the subjects - high level of pain and discomfort, lack of energy for the basic daily activities, poor quality of sleep, dissatisfaction with the sexual activity and some degree of change in the perceptions received through the sensory organs.

Qualitative analysis of the answers given to questions in Section 1 by Group 2: the presented results give us grounds to state that, with respect to the physical condition of cancer patients diagnosed a year ago; significant deficiencies in their quality of life are found. The qualitative analysis that can be presented for this matter is the fact that those people have already underwent most of the therapeutic procedures, which are related to negative sensations and affect the overall functioning of all organs and systems. This proves to be the main reason for the lack of sufficient energy for all day-to-day activities, poor quality of sleep, and dissatisfaction with the sexual activity. In this group of surveyed individuals, we report a higher proportion of negative responses than the answers to the same questions received from Group 1.

Findings:

1. The presented results of the conducted study, carried out among individuals with existing oncological disease who were diagnosed with the disease two weeks ago and those who were diagnosed with the same disease one year ago, allow us to state that significant gaps in the quality of life are detected in the studied target group, more specifically in their physical well-being.

2. The results presented in relation to the existing deficiencies in the quality of life of cancer patients, imposes the development and implementation of a model of social work with psychosocial orientation.

III. CONCLUSION

The summarized analysis of the results obtained from the two study groups gives us grounds to state that, with respect to the indicators examined, in the Section "Physical state", there are major deficiencies in the quality of life components of people with cancer.

In Group 1, the following deficiencies in the quality of life are outlined:
- pain and discomfort experienced;
- lack of energy;
- sexual dissatisfaction;
- poor quality of sleep.

In Group 2, the following deficiencies in the quality of life are outlined:
- pain and discomfort experienced;
- lack of sufficient energy for all daily activities;
- poor quality of sleep;
- sexual dissatisfaction;
- changed sensory perceptions.

It was found that the deficiencies in the quality of life of cancer patients in the two study groups were very similar. In Group 2 was found a higher degree of change in perceived information through the sensory organs.

The summary analysis of the results gives us grounds to claim that, with respect to the indicators examined, in the Section "Physical state", there is definite presence of major deficiencies in the quality of life of the examined subjects. The study conducted to identify the quality of life deficiencies in patients with oncological disease who are at different stages of their treatment showed that significant deficiencies in the quality of life were identified across all indicators examined. This necessitates the urgent need for introduction of a social work program with a pronounced clinical component for those diagnosed with oncological disease.

References:

1. Ganeva, Z. (2016). *Discovering statistics using IBM SPSS Statistics*. Publisher "Elestra" Ltd., ISBN 978-619-7292-01-5.

2. Ganeva, Z. (2010). *Social identities and psychological well-being*. Publisher "Valdex".

3. Ganeva, Z. (2013). *Something more about breast cancer*. Publisher "Elestra" Ltd..
4. (2015). National Conference "More" 2015, Psychosocial support and rehabilitation in oncology.
5. Mihaylov, M. (2015). *Quality of life aspects*. University Publishing House "Paisii Hilendarski" Plovdiv.
6. Nunev, S. (2009). *Anti-discrimination and anti-oppression social work - contemporary theory and practice*. Publisher "Paradigma".
7. Nunev, S. (2017). Development of the anti-discrimination and anti-oppression social work - contemporary theory, practice and models. Moscow.
8. Nunev, M. (2019). *Model of anti-discrimination training in social work. Contemporary theory and practice*. Publisher "Paradigma".
9. Todorova, K. (2015). *Health-related quality of life - assessment approaches and psychosocial aspects of epilepsy*. Publisher "Slavena", pp. 28-31.
10. Haralampiev, K. (2012). *IBM SPSS - Statistical solutions to applied research tasks*. Sofia: Publisher "Balon".
11. Haralampiev, K. (2012). "*Introduction to basic statistical methods of analysis*". Sofia: Publisher "Balon".
12. (1988). *The quality of life of stroke patients and their careers.* In: Anderson R. et Bary M. (Eds.). Living with Chronic Illness. London: Unwin Hyman.
13. Dunn, J., Adams, C., Holland, J., & Watson, M. (2015). Reinforcing the role of psycho-social oncology in global cancer prevention: applying psycho-oncology research in programmes and practice. *Psycho-Oncology, 24*: 1217– 1221. doi: 10.1002/pon.3923
14. (2010). Psychological problems of patients with cancer/ Rudolf Gregurek, Marijana Braš, Veljko Đorđević, Ana-Strahinja Ratković & Lovorka Brajković. *Psychiatria Danubina, Vol. 22, No. 2*, pp.227–230.
15. (2000). JC, Gooen-Piels J. Principles of psycho-oncology. In: Holland JF, Frei E, Bast RC, Kufe DW, Pollock RE, Weichselbaum RR, editors. Cancer medicine. Ontario
16. (1998). WHOQOL Group of the World Development Health Organization WHOQOL-BREF quality of life assessment. Med Psychol.

Clarivate
Analytics **indexed**

Contents

p.

Clarivate
Analytics **indexed**

International Scientific Journal
Theoretical & Applied Science
www.T-Science.org

«ISJ Theoretical & Applied Science, USA» - Международный научный журнал зарегистрированный во Франции, и выходящий в электронном и печатном формате. **Препринт** журнала публикуется на сайте по мере поступления статей.

Все поданные авторами статьи в течении 1-го дня размещаются на сайте **http://T-Science.org**.

Печатный экземпляр рассылается авторам в течение 2-4 дней после 30 числа каждого месяца.

Импакт фактор журнала

Impact Factor	2013	2014	2015	2016	2017	2018	2019
Impact Factor JIF		1.500					
Impact Factor ISRA (India)		1.344				3.117	4.971
Impact Factor ISI (Dubai, UAE) based on International Citation Report (ICR)	0.307	0.829					
Impact Factor GIF (Australia)	0.356	0.453	0.564				
Impact Factor SIS (USA)	0.438	0.912					
Impact Factor РИНЦ (Russia)		0.179	0.224	0.207	0.156	0.126	
Impact Factor ESJI (KZ) based on Eurasian Citation Report (ECR)		1.042	1.950	3.860	4.102	6.015	8.716
Impact Factor SJIF (Morocco)		2.031				5.667	
Impact Factor ICV (Poland)		6.630					
Impact Factor PIF (India)		1.619	1.940				
Impact Factor IBI (India)			4.260				
Impact Factor OAJI (USA)						0.350	

INDEXING METADATA OF ARTICLES IN SCIENTOMETRIC BASES:

International Scientific Indexing ISI (Dubai, UAE)
http://isindexing.com/isi/journaldetails.php?id=327

Cl.An. // THOMSON REUTERS, EndNote (USA)
https://www.myendnoteweb.com/EndNoteWeb.html

Research Bible (Japan)
http://journalseeker.researchbib.com/?action=viewJournalDetails&issn=23084944&uid=rd1775

Scientific Object Identifier (SOI)
http://s-o-i.org/

РИНЦ (Russia)
http://elibrary.ru/contents.asp?issueid=1246197

Google Scholar (USA)
http://scholar.google.ru/scholar?q=Theoretical+t-science.org&btnG=&hl=ru&as_sdt=0%2C5

Turk Egitim Indeksi (Turkey)
http://www.turkegitimindeksi.com/Journals.aspx?ID=149

Directory of abstract indexing for Journals
http://www.daij.org/journal-detail.php?jid=94

DOI (USA)
http://www.doi.org

CrossRef (USA)
http://doi.crossref.org

Open Academic Journals Index (Russia)
http://oaji.net/journal-detail.html?number=679

Collective IP (USA)
https://www.collectiveip.com/

Japan Link Center (Japan) https://japanlinkcenter.org

PFTS Europe/Rebus:list (United Kingdom)
http://www.rebuslist.com

Kudos Innovations, Ltd. (USA)
https://www.growkudos.com

Korean Federation of Science and Technology Societies (Korea)
http://www.kofst.or.kr

Clarivate Analytics **indexed**

AcademicKeys (Connecticut, USA)
http://sciences.academickeys.com/jour_main.php

Sherpa Romeo (United Kingdom)
http://www.sherpa.ac.uk/romeo/search.php?source=journal&sourceid=28772

Cl.An. // THOMSON REUTERS, ResearcherID (USA)
http://www.researcherid.com/rid/N-7988-2013

RedLink (Canada)
https://www.redlink.com/

Cl.An. // THOMSON REUTERS, ORCID (USA)
http://orcid.org/0000-0002-7689-4157

TDNet
Library & Information Center Solutions (USA)
http://www.tdnet.io/

Yewno (USA & UK)
http://yewno.com/

RefME (USA & UK)
https://www.refme.com

Stratified Medical Ltd. (London, United Kingdom)
http://www.stratifiedmedical.com/

THE SCIENTIFIC JOURNAL IS INDEXED IN SCIENTOMETRIC BASES:

Advanced Sciences Index (Germany)
http://journal-index.org/

SCIENTIFIC INDEXING SERVICE (USA)
http://sindexs.org/JournalList.aspx?ID=202

Global Impact Factor (Australia)
http://globalimpactfactor.com/?type=issn&s=2308-4944&submit=Submit

International Society for Research Activity (India)
http://www.israjif.org/single.php?did=2308-4944

Clarivate Analytics **indexed**

CiteFactor (USA) Directory Indexing of International Research Journals
http://www.citefactor.org/journal/index/11362/theoretical-applied-science

International Institute of Organized Research (India)
 http://www.i2or.com/indexed-journals.html

JIFACTOR
http://www.jifactor.org/journal_view.php?journal_id=2073

Journal Index
http://journalindex.net/?qi=Theoretical+%26+Applied+Science

Eurasian Scientific Journal Index (Kazakhstan)
http://esjindex.org/search.php?id=1

Open Access Journals
http://www.oajournals.info/

SJIF Impact Factor (Morocco)
http://sjifactor.inno-space.net/passport.php?id=18062

Indian citation index (India)
http://www.indiancitationindex.com/

InfoBase Index (India)
http://infobaseindex.com

Index Copernicus International (Warsaw, Poland)
http://journals.indexcopernicus.com/masterlist.php?q=2308-4944
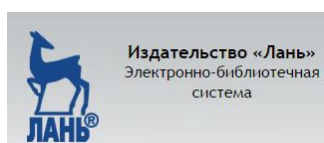
Электронно-библиотечная система «Издательства «Лань» (Russia)
http://e.lanbook.com/journal/

International Academy of Theoretical & Applied Sciences - member of Publishers International Linking Association (USA) - international Association of leading active scientists from different countries. The main objective of the Academy is to organize and conduct research aimed at obtaining new knowledge contribute to technological, economic, social and cultural development.

Academy announces acceptance of documents for election as a member:
Correspondents and Academicians

Reception of documents is carried out till January 25, 2020.
Documents you can send to the address T-Science@mail.ru marked "Election to the Academy members".

The list of documents provided for the election:

1. Curriculum vitae (photo, passport details, education, career, scientific activities, achievements)
2. List of publications
3. The list of articles published in the scientific journal ISJ Theoretical & Applied Science
   * to correspondents is not less than 7 articles
   * academics (degree required) - at least 20 articles.

Detailed information on the website   http://www.t-science.org/Academ.html

_____
Presidium of the Academy

International Academy of Theoretical & Applied Sciences - member of Publishers International Linking Association (USA) - международное объединение ведущих активных ученых с разных стран. Основной целью деятельности Академии является организация и проведение научных исследований, направленных на получение новых знаний способствующих технологическому, экономическому, социальному и культурному развитию.

Академия объявляет прием документов на избрание в свой состав:
Член-корреспондентов и Академиков

Прием документов осуществляется до 25.01.2020.
Документы высылаются по адресу T-Science@mail.ru с пометкой "Избрание в состав Академии".

Список документов предоставляемых для избрания:

1. Автобиография (фото, паспортные данные, обучение, карьера, научная деятельность, достижения)
2. Список научных трудов
3. Список статей опубликованных в научном журнале ISJ Theoretical & Applied Science
   * для член-корреспондентов - не менее 7 статей,
   * для академиков (необходима ученая степень) - не менее 20 статей.

Подробная информация на сайте   http://www.t-science.org/Academ.html

_____
Presidium of the Academy

Clarivate
Analytics indexed