ACTUAL PROBLEMS OF MODERN SCIENCE, EDUCATION AND TRAINING

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CONTENTS

UDC: 378.1

METHODS OF STUDYING THE MENTAL STATE OF ONCOLOGICAL PATIENTS AND CONDUCTING PSYCHODIAGNOSTICS.

Bahadirova Fatima Zafarovna
"Mamun-University" NGO
"History and psychology"
department teacher
Bahadirova_F@gmail.com

Annotatsiya : Maqoladaonkologik bemorlarni ruhiy holatini o'rganish va psixodiagnostika olib borish metodlarini tadqiq qilish qanchalik ahamiyatli ekanligi e`tirof etilgan.

Kalitso'zlar: Onkologiya, psixodiagnostika,bemorlar, diagnostika, Saratonkasalliklari, Psixologikmuammolar, metod, davolash.

Аннотация: В статье признается важность изучения психического состояния онкологических больных и исследования методов проведения психодиагностики.

Ключевые слова: онкология, психодиагностика, больные, диагностика, онкологические заболевания, психологические проблемы, метод, лечение.

Abstract: The article recognizes how important it is to study the mental state of oncology patients and research methods of conducting psychodiagnostics.

Keywords: Oncology, psychodiagnostics, patients, diagnosis, cancer, psychological problems, method, treatment.

Introduction. One of the social reforms currently being implemented in Uzbekistan is undoubtedly aimed at improving the health and decent living of the population. In particular, several reforms were made in the field of oncology, as a result of which the number of people suffering from this disease and the number of deaths related to it decreased. Also, in order to improve the psychological conditions of oncology patients during treatment and after treatment and to facilitate their adaptation to social life, our government adopted a number of normative legal documents: for example, PQ-2866 of the President of the Republic of Uzbekistan, adopted on April 4, 2017, "In 2017-2021 Decision "On further development of oncology services in the Republic of Uzbekistan and measures to improve the provision of special oncological care", Decision No. 643 of the Cabinet of Ministers of the Republic of Uzbekistan dated October 13, 2021. We can cite the decisions of the President of the Republic of Uzbekistan "On further improvement of the system of providing hematology and oncology services to the population" of May 27, 2021 PQ-5130. The international community is also doing some effective work in this regard. February 4 is included as the "Day of the fight against tuberculosis" and it is not for nothing, because this disease is one of the diseases that afflict the whole world.

Literature Review. One of the important activities in oncology is conducting psychodiagnostics activities and being an assistant in the therapy process. Cancer is

one of the most important health problems of our time, which threatens human health in our country and around the world, and its incidence rate is increasing rapidly. Identifying psychosocial problems of cancer patients and solving these problems is the main issue of today.

Cancer is one of the most important health problems of our time, which includes many symptoms, requires long-term treatment and care, threatens human health all over the world, and the incidence rate is increasing rapidly. Today, it is the second main cause of death after cardiovascular diseases in Uzbekistan, as in many other countries of the world.

According to data, 18.1 million new cancer cases and 9.6 million deaths were recorded worldwide in 2018. In 2020, 19.3 million new cancer cases were diagnosed in the world, and about 10 million people died from this terrible disease. If more than 20,000 cancer cases are diagnosed in Uzbekistan every year, the number of cancer patients in the republic is more than 100,000. In Turkey, the number of newly diagnosed cases was 210,537 in 2018, and the death rate was 116,710. In 2040, the number of cancer cases in the world is estimated to be 29.5 million [1].

Cancer, which brings out the concept of death, affects the patient's family physically and emotionally. In addition, it is perceived as a serious illness that causes pain, guilt, helplessness, despair and anxiety. For this reason, cancer, which is perceived as a problem with destruction, leads to a violation of the mental balance of a person and brings out many problems, including anger, despair, loss of control, loss of role, self-esteem, social problems. It is impossible to look at a person's attitude to illness separately from his attitude to health. In addition, psychological analysis of the internal landscape of health is necessary to assess the patient's position. We should also consider the sensitive, emotional, intellectual and moral aspects of this concept. All of these require the need to conduct a study of the internal landscape of the disease and the patient's relationship to the disease when choosing diagnostic methods. One of the important signs of a harmonious attitude to the disease is that the behavior of a person at the moment of the disease affects other people (relatives, colleagues, friends, doctors) [3]. Also, such situations affect the psychology of oncology patients, interpersonal and social relations. In addition, it can have a profound effect on patients and their relatives in the cognitive, emotional, spiritual and social spheres.

In patient care: diagnosis, treatment, determination of relapse periods after treatment, and study of many psycho-social problems that occur in each period are of great importance.

Research Methodology. The term **"psychodiagnostics"** means making a psychological diagnosis, making a complete conclusion about a person's mental state, a particular characteristic, where the "diagnosis" is based on the conclusions about the condition and characteristics of the subject based on the joint analysis of the person's progress indicator and descriptions. consists of [4]. The following psychodiagnostics methods and methods can be used in the diagnosis of cancer patients.

These are the questions of the questionnaire conducted with oncological patients. They are, for example [5]:

How did you feel when you found out about your illness?

Are you worried about your physical abilities and functions?

Do you feel weak?

How much do you know about your disease, its recovery and treatment options?

Do you always accept what you've been told? Do you know how they work, what to expect from them, and what possible effects they will have?

Can you calmly talk about your illness with your loved ones?

Do you feel alone?

Do you openly express all your feelings?

Do you express or hide your needs? Do you sacrifice yourself for others?

Are you worried about the future?

What is the meaning of life for you?

Can you accept your grief as an opportunity to explore an unknown area of healing?

It consists of a collection of questions included in the more than one question method. In the process of answering the patient's questions, I may feel difficulty from the mental state. After this process is complete, we may ask the patient the following questions:

- How did you feel while answering these questions?
- What difficulties did you have in the process of answering these questions?
- How did you overcome this difficulty in answering these questions?

By asking questions, it is possible to learn about the patient's condition and his inner feelings and difficulties. Therefore, we can develop psychodiagnostics methods to select and treat patients.

Analyzes and Results. A few diagnostic tests are used to study the mental state of oncological patients and perform psychodiagnostics: the personal questionnaire of the Bekhterev Institute (BISh) (Lichnostnyy Oprosnik Bekhterevskogo Instituta (LOBI)) consists of the following questions:

- Self-awareness (Samochuvstvie).
- Mood
- Sleep and awakening from sleep
- Appetite and reaction to food
- Reaction to illness
- Reaction to treatment
- Attitude towards doctor and medical personnel
- Relation to relatives and loved ones
- Attitude to work (study).
- Relation to others
- Attitude to loneliness
- Relation to the future [7]

In this method, the patient's illness, sense of self, as well as some aspects of his whole life are given importance. I need to mark the confirmation that is considered true in relation to the patient. You can choose from one to three answer options in each of the above sections.

It is possible to find out the relationship between the patient and the patient based on the patient's attitude and response to the questions in each section.

The name of this method is considered to be LOBI. This method is considered patient-specific. The goal of the method: the attitude of each patient to the disease, his mood, his attitude to treatment, his relationship to the doctor, his drugs, to the people around him, to his relatives, and to himself.

Mood lessness after conducting psychodiagnosis with an oncological patient is more important than the test to determine the level of sub depression (or minor depression).

- I feel bad, boring, bad.
- I feel good in the morning
- it will grow quickly
- I warn you at night
- as usual
- I like to communicate with beautiful women (men).
- I'm losing weight
- Constipation is bothersome
- her heart is ready.
- I tire for no reason
- I think clearly in my heart
- I am good at doing what I know.
- I can't sit still because I'm worried.
- I look forward to the future
- I'm more nervous than usual
- decision making
- I feel useful and useful.
- I am satisfied with my life.
- I feel that others will like it if I am not there.
- those who used to make me happy, still make me happy.

This method is carried out in order to determine the mentality, interpersonal relationship, physiological state of the oncological patient and how he perceives the illness. In the analysis of the answer options, 1 point for the answer "No, wrong", 2 points for the answer "so it is", 3 points for the answer "correct", "very correct" ” for the answer, we give 4 points and by adding their sum, we can determine the level of depression of the patient.

This method can be used to determine the level of depression in cancer patients after diagnosis or after chemotherapy.

All methods used in psychological research can be divided into four groups: 1) organizational methods; 2) empirical methods of obtaining scientific data; 3) data processing methods; 4) interpretation methods [6].

Psychosocial problems and psychological interventions for these problems are summarized below.

- Psychological and social problems of oncology patients are determined at the diagnostic stage.
- Cancer is a psycho-social stress and it consists of learning how it threatens all spheres of life.

Conclusion. In conclusion, in the prevention and treatment of patients with cancer, psychological factors play a major role in medical therapeutic processes, and in particular, psychological diagnostics carried out in accordance with the purpose of treatment serve to monitor the effectiveness of treatment. Studying the mental state of oncological patients and correctly applying psychodiagnostics methods is considered important for the psychologist's work in working with oncological patients. It means that conducting psychodiagnostics is the basis for the patient's life and the psychological service provided to him in the future.

If psychotherapeutic activities are carried out on the shortcomings identified by studying the mental state of oncological patients and studying their psychological characteristics, the probability of having a positive effect on the medical approach considered as the main method is high.

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UDK 159.9(575.1)

MODERN SCIENTIFIC-PSYCHOLOGICAL INTERPRETATION OF THE DEVELOPMENT OF VOCATIONAL QUALITIES IN THE PERSON

Sharipov Alisher Nuriddinovich,
Teacher of the Department of Pedagogy and Psychology
Navoi State Pedagogical Institute
alisher7416565@mail.ru

Annotatsiya: Ushbu maqolada shaxs irodaviy harakatlari rivojlanishining zamonaviy ilmiy-psixologik talqini yoritilgan.

Tayanch so‘zlar: shaxs, iroda, faoliyat, munosabat, ixtiyoriy harakatlar, irodaviy akt, nazorat lokusi, kategoriya, tavakkalchilik.

Аннотация: В данной статье описывается современная научно-психологическая интерпретация развития волевых действий личности.

Ключевые слова: личность, воля, деятельность, установка, произвольное действие, волевой акт, локус контроля, категория, риск.

Annotation: This article describes a modern scientific-psychological interpretation of the development of volitional actions of the individual.

Keywords: person, will, activity, attitude, voluntary action, volitional act, control locus, category, risk.

Introduction. A person, in the process of reflecting his existing existence, organizes his activities in a certain direction, comes to a certain decision on obtaining a solution to problems, and uses the help of actions aimed at overcoming difficulties in its implementation, ensures that the originally set goal will be realized. Due to the non-conformity of the structure of nature and society with the help of his actions and efforts, which arise due to various needs of a person (personal, collective, natural, cultural, material, spiritual) and determine the nature of goal orientation. rebuilds, improves, subordinates to the service of good intentions. Actions of all kinds arising from a person's need, motive, interest, unconscious or conscious inclinations are divided into involuntary and voluntary categories according to their occurrence.

Actions belonging to the other category are called voluntary actions, they require a person to imagine in his mind simple or complex mental processes, methods and tools that ensure goal-seeking, goal realization and its implementation, and approximate evaluation of their effectiveness. Accordingly, a separate group of voluntary actions, which differ in their essence, is a category called voluntary actions. Based on psychological data, they can be defined as follows: "The system of conscious actions combined with effort in the process of eliminating the contradictions encountered on the way to achieving a goal, directed to achieve its result based on a specific goal, is called voluntary action."

Literature review. In the science of psychology, there is no commonality and set of common views regarding the analysis of the spiritual basis of volitional qualities, just as there is no uniform attitude towards the understanding and definition of the will. In particular, V. A. Krutetsky includes in his work determination, independence, determination, patience, discipline, courage, courage and diligence.

P. M. Yakobson divides the important qualities of will into independence, determination, perseverance, and self-mastery. A.I. Shcherbakov includes the following among the voluntary qualities manifested in a person: steadfastness and initiative, organization and discipline, diligence and perseverance, courage and determination, endurance and self-mastery, bravery and courage.

However, in most scientific psychological literature, the term "confidence" is not listed among voluntary qualities. Nevertheless, trust deserves to be studied as a quality of will. For this, it is enough to give an example from A.I.Shcherbakov's research. The researcher stated that one student was offered to finish the institute in a short time (opportunity), but the probationer openly expressed his inability to do this. After that, the experimenter set the goal of instilling confidence in the student's own strength and formed in him the means of voluntary effort and overcoming difficulties. As a result, the student was able to achieve his goal.

Research methodology. Volitional activity has its own characteristics, and its essence is that a person subordinates motives of behavior that are less valuable for him to the goals that he has set for himself and that are important to him. Primary (leading) motives serve a common goal by mobilizing additional auxiliary motives in a specific direction.

There are various forms of personal activity, which differ from each other in terms of functionality, but the will is distinguished by the fact that it consists of a specific form of human activity.

The will requires a person to control his actions (behavior) by himself, to curb one or another specific aspirations and desires, therefore, it implies the embodiment of a system of various actions that are understood. The essence of volitional activity is evident in the fact that a person controls himself, controls himself, controls his own involuntary impulsive aspects, and even, if necessary, strives to completely eliminate them.

The main factor of the emergence of will is the systematic implementation of volitional actions by a person of various components of activity, and the activity of a person incarnating with consciousness in such actions. Volitional activity is understood by a person in a broad sense and requires mental actions that require voluntary effort in the nature of the implementation of mental processes. Such mental actions include assessing the emergency situation, choosing tools and operations for future actions, setting a goal and selecting ways to achieve it, and making a specific decision to implement them. All of these actions are considered to be the operational aspect of volitional activity.

Under the influence of social environment and upbringing, a person takes a conscious path based on the system of views (determinants), beliefs, trust and worldview, value, complex of life relationships, intelligence, and spirituality. The sense of responsibility, which is a valuable feature of a person's life (life), is embodied in his brain during the implementation of voluntary actions, and all the socially and psychologically conditioned qualities (attitude, faith, value, spirituality, etc.) are activated as a common sense, a priority emotion (high feeling). strengthens and affects the evaluation, decision-making, selection, execution processes, leaving its mark on the general cooperation system. The feeling of responsibility performs the function of controlling the quality of a person's spirituality, spirit, values, the stages of manifestation, development, and improvement.

In psychology, localization of control means a set of qualities that determine responsibility for the results of a person's individual activity in external forces and conditions, as well as their inclination to energy and ability. Localization of control is divided into external - external and internal - internal types.

According to the results of psychological research, the manifestation of the type of external localization of control is directly related to certain defects and vices of a person, such as irresponsibility, lack of confidence in one's own abilities, hesitation, risk-taking, neglecting the realization of personal intentions, etc. If a person takes responsibility for the consequences of his behavior and understands his actions as personal, this psychological reality means that there is an internal localization of control. People with internal localization of control feel responsibility or accountability for achieving goals, have the ability to self-analyze. In the process of social education, both types of localization (external, internal) can be made into a strong personal quality.

Specific manifestations of the will are realized in the behavior of a person in a risky situation. Risk-taking is a bold action that is accompanied by the elements of

danger, loss, and failure in the pursuit of an attractive goal. The expectation of unpleasantness in the risk-taking process is measured by the criterion of the combination of the degree of unpleasant consequences with the probability of failure. Risk-taking involves the expectation of success and failure, success creates a good mood in a person, and failure is the main factor in the unpleasant state. It is self-evident that success (winning) evokes joy, while failure brings punishment, material and spiritual loss, and stress. But despite this, people have never given up on taking risks. Despite the fact that it is a reality related to the problem of everyday life, whether it is complex work or military campaigns, risk has been participating in the life and activities of a person as a model and product of decision-making at all stages of the socio-historical development of the human world.

This reality is called risk taking when solving a situational problem, and is expressed in the fact that the motivation for success prevails over the motivation for avoiding failure. That's why risk is considered a mental phenomenon that is important for a person to make a decision and demonstrate his behavior by performing one or another action. Making a voluntary decision, his courage in taking risks, initiative, determination ensures success in work. But coming to such a decision is sometimes justified, and sometimes it may not be completely justified. In this regard, the implementation of a dangerous or safe way of action, the ideological and moral superiority of risk-taking, the rationality of the decision can lead to a happy accident. Sometimes the risk-taker's ability, determination, competence, correct calculation will bring him luck. Experience based on knowledge, intelligence and insight plays a decisive role in this.

The second cause of risk-taking is evident in the behavior that prefers the risky course of action. This reality is called the situational activity of the individual and is manifested in a person's priority over the demands of the situation.

Analysis and results. Volitional actions of a person are characterized by the acquisition of complex psychological content, essence, and meaning. It is also worth remembering that in order for a struggle of motives to appear in a person, he must be charged with a sense of responsibility, the need to make a voluntary action, doubt, hesitancy should arise in this situation, and voluntary efforts should be made in him.

Volitional action is put into practice only due to the achievement of a goal born in the human mind. When this idea is expressed in a different way, a person realizes the ways to achieve his goal with the help of this or that action, that is, the harmony between the action and the goal becomes clearer and more deeply understood. However, if this is the case, the person decides to change his mental state, brings his needs that need to be satisfied into a certain order, and finds it necessary to divide them into primary and secondary levels. In the same way, the scattered and collective contents (elements) of the implementation of voluntary action are directed to the goal. The mental preparation, both conscious and unconscious, that prompts the human personality to this process consists of a motive, which serves to explain the obligation to strive for the goal and achieve it.

As a mechanism of personal activity, the good intention of realizing a clear, obvious, object-oriented goal (making a decision) is realized.

In this case, the peculiarity of the act of will is not only to be able to choose the desired goal, but also to understand and understand that the possibility of its realization is more clear. In the same way, the important structure of voluntary action, therefore, the period of reflection on the form and essence of the directions for achieving the isolated goal, and the period of thinking about it (thinking process) begins. In this process, the compatibility of the considered means with the way to achieve the goal is analyzed, it is considered mentally, and auxiliary methods and actions that are absolutely suitable for its realization are selected. All of the mental actions considered above are embodied as mental processes, mental moments, mental situations that are part of the act of will.

The beginning of the volitional act is expressed in the rational decision that the guidelines for achieving the goal really serve the fulfillment of specific desires.

However, in most cases, coming to a decision becomes a complicated process, as a result of which there is a struggle of motives, therefore, the period of choosing, reaching a consensus (reasoned opinion) is somewhat extended.

It is worth mentioning that willpower is important in coming to a decision and overcoming difficulties in its implementation. In most psychological cases, it is inextricably linked with the process of seriousness and tension, which is combined with overcoming the influence of the level of priority of one's needs on the decision by a person. This attitude (necessity) to overcome contradictions in the individual is, firstly, certain desires of the subject, reinforced negative habits; secondly, the feeling of getting used to life events; thirdly, the course of struggle with unapproved principles of morality and traditions is controlled by volitional force, a characteristic feature of a voluntary act.

If the understanding (awareness) of this situation by a person is strengthened by the feelings of duty, responsibility, responsibility, determination, firm confidence, necessity, stable internal experiences (regulatory feelings), then this thing creates a real will power that allows to lose many aspirations. Higher feelings (such as duty, responsibility, responsibility, patriotism, self-sacrifice, etc.) show that moral requirements have become internalized, i.e., they become the spiritual property of a person, and are realized in an emergency situation when there is a conflict between egoistic (selfish) aspirations and altruistic (social self-sacrifice) desires (desires). reflects what has become the internal mechanisms of behavior. Higher (praxical, intellectual, moral-spiritual and aesthetic) feelings appear and pass in a stable, complex structure of the emotional state of a person, combined with the objective conditions and directions of conscious actions. In this place, in the struggle of motives, it is observed that striving always deviates in the positive direction, and higher feelings perform the function of a regulator in ensuring the realization of the goal.

Conclusions and suggestions. Based on the scientific literature and empirical data on our ongoing scientific research, it is appropriate to make the following conclusions:

1. Qualities of the will in a person is a little-studied area compared to other problems of psychology, and although the theories and approaches related to it have different content and importance, psychological laws in the development of the will, taking into account the individual psychological characteristics of young people at

different stages of development, and the appropriate organization of educational processes can be understood more deeply.

2. In the study and psychocorrection of the laws of the development of volitional qualities, the research from the perspective of the motivational sphere and the characteristics of the nervous system of young people allows to obtain real and objective information on the state of formation of the studied qualities.

3. There is a connection between personality traits, nervous system and motivational spheres with the development of volitional qualities in young people. As the level of volitional activity in young people increases, it was observed that their personality characteristics, motivational sphere and nervous system change proportionally.

4. Relying on national and general human values as the most important factor and psychological description of the development of voluntary qualities, studying and following the Uzbek folk art became of special importance. When students' sense of responsibility in their relationship to nature, society, people, work, things and events is formed in accordance with the purpose, independence, diligence, intelligence, steadfastness, goal-seeking, perseverance, enthusiasm, and initiative qualities increase in them.

5. With the program "Study of socio-psychological laws in the formation of volitional qualities and its development" it was found that comprehensive development of all volitional qualities is quite complicated. The creation of separate psychocorrective-developmental programs designed to develop each quality of the will created many difficulties in training the necessary will qualities.

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UDC: 37.02

METHODOLOGY FOR USING COMPUTER GRAPHICS IN THE DEVELOPMENT OF STUDENTS' CREATIVITY

Juraev Akmal Razzokovych
PhD, Professor, Department of Technological education,
Bukhara State Pedagogical Institute
akmal_djora@inbox.ru

Annotatsiya: Ushbu maqolada grafik tasvirlarni qayta ishlash texnologiyasini o'rganish orqali informatika darslarida o‘quvchilarning ijodiy qobiliyatlarini rivojlantirishga qaratilgan uslubiy tavsiyalar berilgan. Ushbu mavzuni o‘qitishning shakllari, usullari va vositalari ko'rib chiqiladi. Bular esa o‘quvchilarning ijodiy

salohiyatini ochish va takomillashtirishga ijobiy ta'sir qiladi. Maqolada kompyuter grafikasining vektorli grafika, grafik bitmap va fraktal grafika kabi turlari, 3D modellashtirish vositalari haqidagi asosiy tushunchalar keltirilgan. Shuningdek, ular orasidagi farqlar, yo‘llari, usullari va qo‘llanilishi yoritib berilgan. Grafik tasvirlarni qayta ishlash va 3D modellashtirish, Adobe Photoshop, Corel Draw uchun mo‘ljallangan dasturiy ta’minotlar haqida ham ma’lumotlar keltirilgan.

Kalit so’zlar: kompyuter grafikasi, kompyuter texnologiyalari, multimedia, dasturlash muhiti, CorelDraw, vektor, rastr, fraktal, grafik, tasvir, axborot texnologiyalari, kompyuter grafikasi toifalari.

Аннотация: В данной статье предлагаются методические рекомендации направлснные на развитие творческих способностей учащихся на уроках информатики посредством изучения технологии обработки графических изображений. Рассматриваются формы, методы и средства преподавания данной темы, наилучшим способом влияющие на раскрытие и совершенствование творческого потенциала учеников. В статье рассматриваются виды компьютерной графики, такие как векторная графика, графические растровые изображения и фрактальная графика, средства 3-D моделирования, освещаются различия между ними, а также способы, методы и области применения. Так же рассматриваются программные продукты, предназначенные для обработки графических изображений и 3-D моделирования, Adobe Photoshop, Corel Draw.

Ключевые слова: компьютерная графика, компьютерные технологии, мультимедиа, среда программирования, CorelDraw, вектор, растр, фрактал, графика, изображение, информационные технологии, категории компьютерной графики.

Abstract: This article offers methodological recommendations aimed at developing the creative abilities of students in computer science lessons by studying the technology of processing graphic images. The forms, methods and means of teaching this topic are considered, which in the best way influence the disclosure and improvement of the creative potential of students. The article discusses the types of computer graphics, such as vector graphics, graphic bitmaps and fractal graphics, 3-D modeling tools, highlights the differences between them, as well as ways, methods and applications. Also considered are software products designed for processing graphic images and 3-D modeling, Adobe Photoshop, Corel Draw.

Key words: computer graphics, computer technologies, multimedia, programming environment, CorelDraw, vector, raster, fractal, graphic, image, information technologies, categories of computer graphics.

Introductionю Currently, a number of scientific researches are being carried out in state educational institutions, where information technologies are widely developed, related to the development of students ' creative abilities in the direction of computer graphics and web design, the formation of graphic and spatial concepts, virtual reality, that is, an artificially generated information environment. Especially important in this direction are the directions of computer graphics, modeling, Web Design, multimedia Tools. One of the relevant issues is the development of knowledge, skills and abilities in the development of spatial thinking in students with the help of computer graphics, the development of design and multimedia literacy, the

strengthening of their knowledge in mathematics and drawing geometry. In the age of rapidly developing information technologies, the need for intellectually active individuals capable of creative changes is growing. Individuals with professional creative abilities do not appear on their own, but develop in the process of special training and education. Any person can realize their creative abilities either through individual self-development and upbringing, or by obtaining appropriate education.

Literature review. The development strategy of the New Uzbekistan for 2022-2026 provides for further improvement of the system of continuing education based on the development of education and science, increasing the potential of quality educational services, training of qualified personnel, radical improvement of the quality of educational literature of higher and general secondary schools. In addition, the importance of the use of digital technologies is emphasized in the radical improvement of the quality of education, in addition to ensuring the integration of Science, Education and production [9].

The tutorial entitled "Computer garfing" contains information about the types of computer graphics, digital technologies, criteria for studying the programming environment. The curriculum can be used by teachers and students of general secondary schools, students and masters of vocational colleges and technical schools, students and masters of higher education institutions [7].

Analysis. The rapid development of computer technology has led to the widespread introduction of personal computers into all aspects of our lives and opened the era of computer graphics for us. Computer graphics are used in various fields of human activity. For example: in science (visualization of the structure of matter, vector fields and other information), in various studies, in medicine (computed tomography), in architecture, in modeling clothes and shoes, in cinema, in special effects, in animation, etc. [1, b.47].

Computer graphics is a field of human activity in which computers are used as a tool for creating images, as well as for processing visual information received from the real world.

One of the main aspects of educating the younger generation in the educational process is the development of intellectual and creative abilities of students. Currently, the volume and level of complexity of the information offered to students for assimilation is constantly increasing, therefore, the process of intellectual development of students requires activation and a creative approach [3, b.58]. One of the ways to increase the intensity of training is the use of Computer Training Technologies. Unlike drawings on paper, it is considered more convenient to erase, correct, resize, color, experiment with the composition of the image created on the screen. In doing so, graphic program capabilities such as CorelDraw, Paint, PhotoShop, Adobe Flash, which perform creative work, make students more creative [8, b.74].

In the process of working with computer graphics, students develop skills in working with computer program interfaces, master techniques, strengthen their understanding of the peculiarities of vector and raster graphics [6, b.18]. CorelDraw is a vector graphics program that is one of the most popular graphics programs. The program gained popularity due to the fact that it allows you to create illustrations of different complexity, is simple and easy to learn. This program is equally suitable for

the development of almost any printed products [5, b.32]. Adobe Photoshop is considered one of the most popular raster image editing programs in the world. The Adobe Photoshop program is used for sets in which fragments of different images are combined to create interesting and unusual effects [11, b.72].

Let's consider a way to completely extract an image using the Adobe Photoshop program. It can be done in the same way as in office applications Ctrl+A (All - all derived from the word) can be called using a suffix. This is the action is again the first of the Videlenie (separation) section of the main menu it is also possible to do with the choice of bandi Bce (all). A continuous line will appear, which will move along the border of the separated part of the image.

First of all, we create a new page by selecting the file > Sozdat or Ctrl+N keys. Then we draw a straight line by pressing the Dvuxtochechnaya line or F5 button, which is located in the line of instruments. Draw one more shape around this straight line. This form is located in the string of instruments Svobodnaya forma or we draw in the form below by pressing the F5 key.

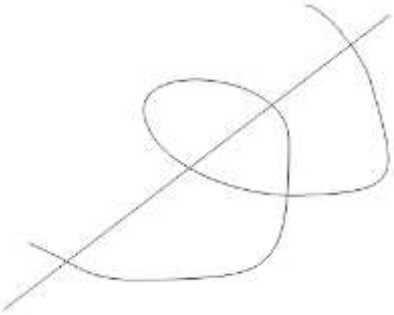

Figure 5. The Shape of a curved line formed around a straight line.

1. From the Peretekanie section located in the instruments bar, we draw the cursor by placing it on a straight line by selecting the peretekanie item and the following form is formed. We select it by right-clicking on the desired color from the palette section, marking the shape for coloring.

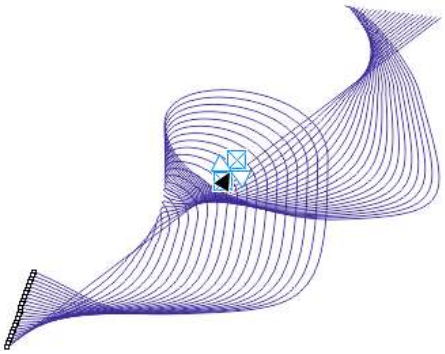

Figure 6. Change the appearance of the curve through the peretekanie section.

3. Having marked the form through the command Instrumentov Vibora, located in the line of instruments, we enter the number 70 in the item Peretekanie object located in the line of equipment and select the item Peretekanie po Chasovoy strelke located here.

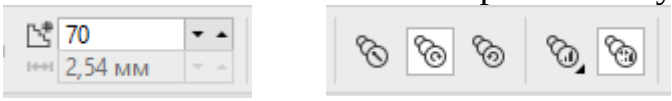

Figure 7. Color harmonization.

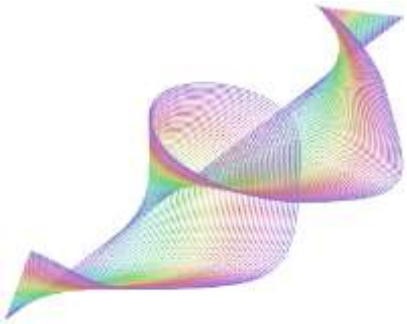

Figure 8. Changing the appearance of the curve through the peretekanie section

4. We change the appearance of the form by selecting the form or F10 button in the instrument setting, which is located in the instrument bar.

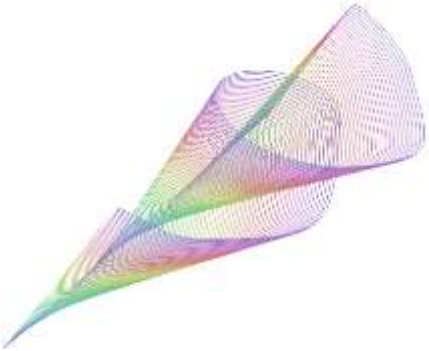

Figure 9. General view of the form.

And now let's see how to form a shape in the form of a ring around a straight line.

First of all, we create a new page by selecting the file > Sozdat or Ctrl+N keys. Then we draw a straight line by pressing the Dvuxtochechnaya line or F5 button, which is located in the line of instruments. Draw one more speral simon shape around this straight line. This form we draw in the form below by pressing the spiral or a button located in the string of instruments.

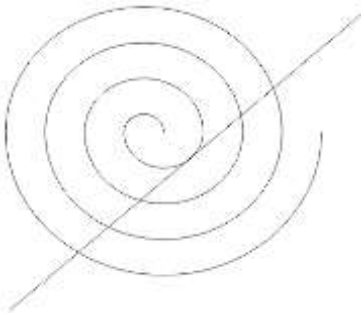

Figure 10. Form in the form of a ring around a straight line.

1. We draw the cursor by placing it on a straight line by selecting the peretekanie item from the Peretekanie section, which is located in the instrument bar. We select it by right-clicking on the desired color from the palette section, marking the shape for coloring. Having marked the form through the command Instrumentov Vibora, located in the line of instruments, we enter the number 70 in the item Peretekanie object located in the line of equipment and select the item Peretekanie po Chasovoy strelke located here.

Figure 11. Color harmonization.

2. We change the appearance of the form by selecting the form or F10 button in the instrument setting, which is located in the instrument bar.

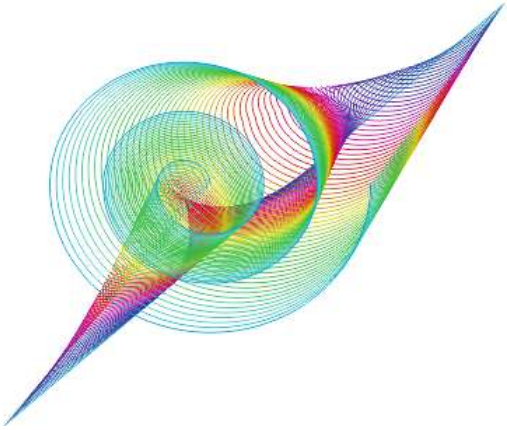

Figure 12. General view of the form.

And now let's take a look at the forms related to color matching in the CorelDraw program. First of all, we create a new page by selecting the file > Sozdat or Ctrl+N keys. Then we draw a curved line by pressing the Svobodnaya forma or F5 button, which is located on the line of instruments. On this curve we draw a shape that resembles the letter “v”.

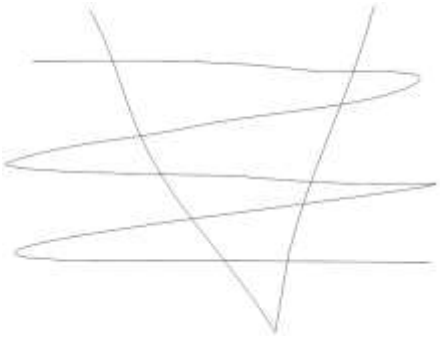

Figure 13. General view of curves.

1. By selecting the peretekanie item from the Peretekanie section located in the instruments bar, we draw the cursor by placing it on a straight line and the following form is formed. We select it by right-clicking on the desired color from the palette section, marking the shape for coloring. By defining the form through the Instrumentov Vibora Command located in the line of instruments, we enter the number 50 in the Peretekanie object item located in the line of equipment and select the Peretekanie po Chasovoy strelke item located here.

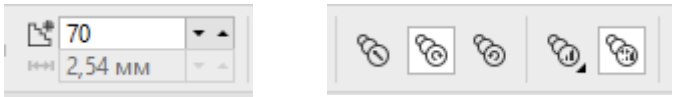

Figure 14. Color harmonization.

2. We change the appearance of the form by selecting the form or F10 button in the instrument setting, which is located in the instrument bar.

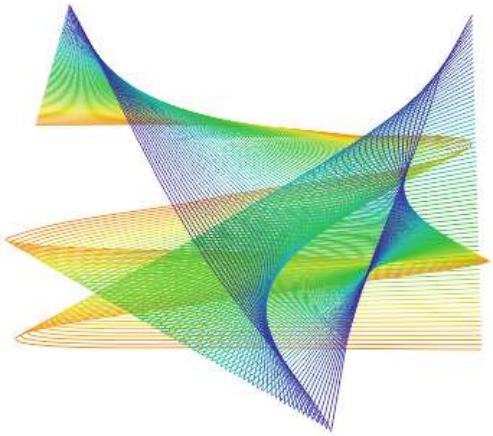

Figure 15. General view of the form.

Discussion. Pedagogical experience shows that in order to achieve high results in teaching students, it is necessary to harmonize the educational process with a methodically competent, serious organization of extracurricular activities with a thorough organization. The use of Corel Draw, Adobe Photoshop, Adobe Illustrator, 3D Max graphic editors plays an important role in the development of the creative abilities of schoolchildren, contributes to positive dynamics in the development of students ' cognitive interests, improves educational activities, etc. The organization of extracurricular activities facilitates the introduction of new approaches and teaching methods. It is aimed directly at developing the interests and abilities of the individual, satisfying his need for knowledge, communication and practical activity.

We conducted experimental and test work with students on the basis of a questionnaire questionnaire about the role of computer graphics in the course process. Answers to the questions of the questionnaire were obtained from them in the following content:

1. What will give you the use of computer graphics in the course of the lesson?
2. What types of software do you think are worthwhile if they are used in the lesson?
3. What exactly do you like software that works with computer graphics? Bring names.
4. What kind of processes are you interested in performing using computer equipment?
5. What advantages do you think there are in organizing classes on computer graphics and web design?
6. How does computer-assisted student assessment work?

The answers to the questionnaire questions received from the students were analyzed. In order to compare them, experimental and test work was organized. Pupils were attached to experimental and control groups according to the principle of random selection. In the experimental groups, work was carried out on the basis of a questionnaire representing concepts about gaming technologies and a methodology for determining their knowledge. And in the control groups, although at the beginning of the study general information was given about the issue under study, deeper and more comprehensive knowledge was provided in the experimental group.

And at the end of the experiment, the results of the experiment-test carried out to ensure the improvement of physical and moral qualities in students of general

secondary schools on the basis of the requirements of the period, at the end of the experiment-test (Table 1), received the appearance as follows.

Table 1.

Conducted experiment-test results

Readers mastering levels	In the experimental group m=214 X_i		In the control group n=224 Y_i	
	Experience in the beginning	Experience at the end	Experience in the beginning	Experience at the end
High	58 (27,1%)	84 (39,2 %)	56 (24,7%)	59 (26,1%)
Middle	70 (32,7%)	97 (45,3%)	72 (32,1%)	76 (33,9%)
Lower	86 (40,1%)	33 (15,4%)	96 (42,4%)	89 (39,3%)

As can be seen from the table above, if students who responded at a higher level at the beginning of the experiment were 27.1%, by the end of the experiment, they were combed by 39.2%, while students who responded at a medium level were 32.7% at the beginning of the experiment, by the end of the experiment, they were

Conclusion. Experience-test results show that when teaching computer graphics, taking a lesson using software such as CorelDraw, PhotoShop, Adobe Flash encourages students to have an interesting lesson, master the topic and research on themselves. It also shows that in a group, all students can be interested in a lesson, with an equally low level of control and mastery. Delivery of concepts about computer graphics to students in a simple and understandable way will prepare the basis for increasing self-confidence in them, the development of skills of ingenuity, presentability. Computer graphics are an important tool for the development of students ' creative abilities, helping them develop knowledge, skills and abilities, master programming languages perfectly, find their place in life.

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UDC: 37.09

ROLE OF SOFTWARE EDUCATIONAL TOOLS IN PREPARING FUTURE TEACHERS FOR PROFESSIONAL ACTIVITY

Shadieva Nigora Sharipovna,
Bukhara State University
Lecturer of the department
"Ecology and Geography"
nigrolashadiyeva-10@mail.ru.

Annotasiya. Maqolada bo‘lajak o‘qituvchilar faoliyatga tayyorlashda dasturiy ta’lim vositalari, jumladan multimedia ta’lim tizimlari, audio o‘quv materiallari, video o‘quv materiallari, amaliy mashg‘ulotlar, simulyatorlar, elektron kutubxonalar, shuningdek, ekspert ta’lim tizimlari, asboblari asosida kasbiy tayyorgarlikdan o‘tadilar, didaktik imkoniyatlar. elektron ko‘rgazmalarning o‘quv jarayoni sifati va samaradorligini oshirish hamda takomillashtirish mexanizmi ishlab chiqildi.

Kalit so’zlar: dasturiy vosita, elektron darslik, multimedia, elektron didaktik vosita, ekspert ta’lim, kasbiy tayyorgarlik, elektron kutubxona.

Аннотация. В статье будущие учителя проходят профессиональную подготовку на основе программных образовательных средств при подготовке к деятельности, в том числе мультимедийных образовательных систем, аудио-учебных материалов, видео-учебных материалов, практических занятий, тренажеров, электронных библиотек, а также экспертных образовательных систем, инструментов, дидактических возможностей. развития качества и эффективности образовательного процесса электронных выставок и разработан механизм улучшения.

Ключевые слова: программное средство, электронный учебник, мультимедиа, электронное дидактическое средство, экспертное образование, профессиональное обучение, электронная библиотека.

Annotation. In the article, future teachers are professional training on the basis of software educational tools in preparation for activities , including multimedia educational systems, audio educational materials, video educational materials, practical work, simulators, electronic libraries, and expert educational systems tools,

didactic possibilities of developing the quality and efficiency of the educational process of electronic exhibitions were analyzed and the improvement mechanism was developed.

Key words: software tool, electronic textbook, multimedia, electronic didactic tool, expert education, professional training, electronic library.

Introduction. The world education in the system of teaching modern didactic tools wide current reach through pedagogue of personnel modern technological knowledge to expand separately attention is being directed . Last in years education to the field very big attention is being directed . Including higher education system development , training processes fundamentally improvement , students independence strengthen this about of sciences electron didactic supply work exit and them education in the process apply big importance occupation is doing

Independence literally years _ Uzbekistan Republic socio-economic and cultural development perspective setting , world community countries from the ranks worthy place to take over aspiration on the way wide scope reforms done increase with passed . of the world developed countries experiences study , local conditions , economic and intellectual resources in consideration received without society of life all fundamental reforms in the fields done being increased brand new to achievements to achieve is providing Various in the fields to the road being placed international cooperation although own the effect giving although , but , national independence each in terms of strengthening , achieved achievements enrichment , available shortcomings fast eliminate reach society from the members separately dedication , enthusiasm , courage and persistence to show Demand is doing

Today's globalization period young people in particular future pedagogical personnel innovative to the activity preparation current from tasks one as is being considered . In our republic while education services the market in development avalambar competition environment to form just like that is enough Developed of states historical to his life attention which looks if so, theirs development strategy education to the process go is worn

Our government by developed of states teaching methodology our republic education to the process application to do about wide scope reforms done is increasing . In particular our republic continuously education in the system "Science" - natural sciences integrated without teaching current to do issue before is being pushed .

Analyzing on the basis of the above points, it shows the need to expand scientific research work on improving the teaching methodology of natural sciences.

Analysis. Software education opens opportunities for teaching on the basis of tools, turning to non-traditional sources of information for future teachers, increases the efficiency of independent work and creates ample opportunities for creative activities. Software educational tools allow the teacher to use various forms of teaching and their complex, that is, to create the necessary educational environment, in order to achieve the set methodological goals. When using teaching software tools, the teacher has the opportunity to make changes and additions to the computerized teaching and control programs depending on the conditions. As a result of the application of programmed educational tools of use-based teaching in an automated learning-information system, teachers will not only increase their level of information security,

but will have the opportunity to use information collections from almost the entire world.

1- drawing. Software training tools

Software educational tools are a didactic tool designed for partial or complete automation of the educational process with the help of computer technologies. They are considered one of the promising forms of increasing the effectiveness of the educational process, and are used as teaching tools of modern technologies. Pedagogical programmed tools are created using programs that implement effects such as dynamic illustrations, sound processes, animations.

Software education tools the following to species separates :

- teacher programs ;
- test programs ;
- exercise makers ;
- teacher virtual training with participation environment formative programs .

Main part. Software education The main didactic possibilities of the tools mean that they are used in several categories:

1. As a multimedia tutorial course, it consists of several demonstration animations, video lessons, illustrations, tutorial and interactive labs.

2. As an interactive laboratory, the multimedia teacher encourages students to be active and participate directly in the performance of laboratory work tasks, as a result of which they develop knowledge, skills and competences in the creation and application of software educational tools. will have

3. The teacher - as a supervisor, the teacher exercises and control tests are included for each topic, with the help of which the student learns the correct answer to the questions, his knowledge determines the level. In this case, learning the correct answer increases the efficiency of learning.

Software education introduction of tools into educational processes:

- future teachers to acquire professional knowledge;

- deep learning of the field of science by modeling the studied phenomena and processes;

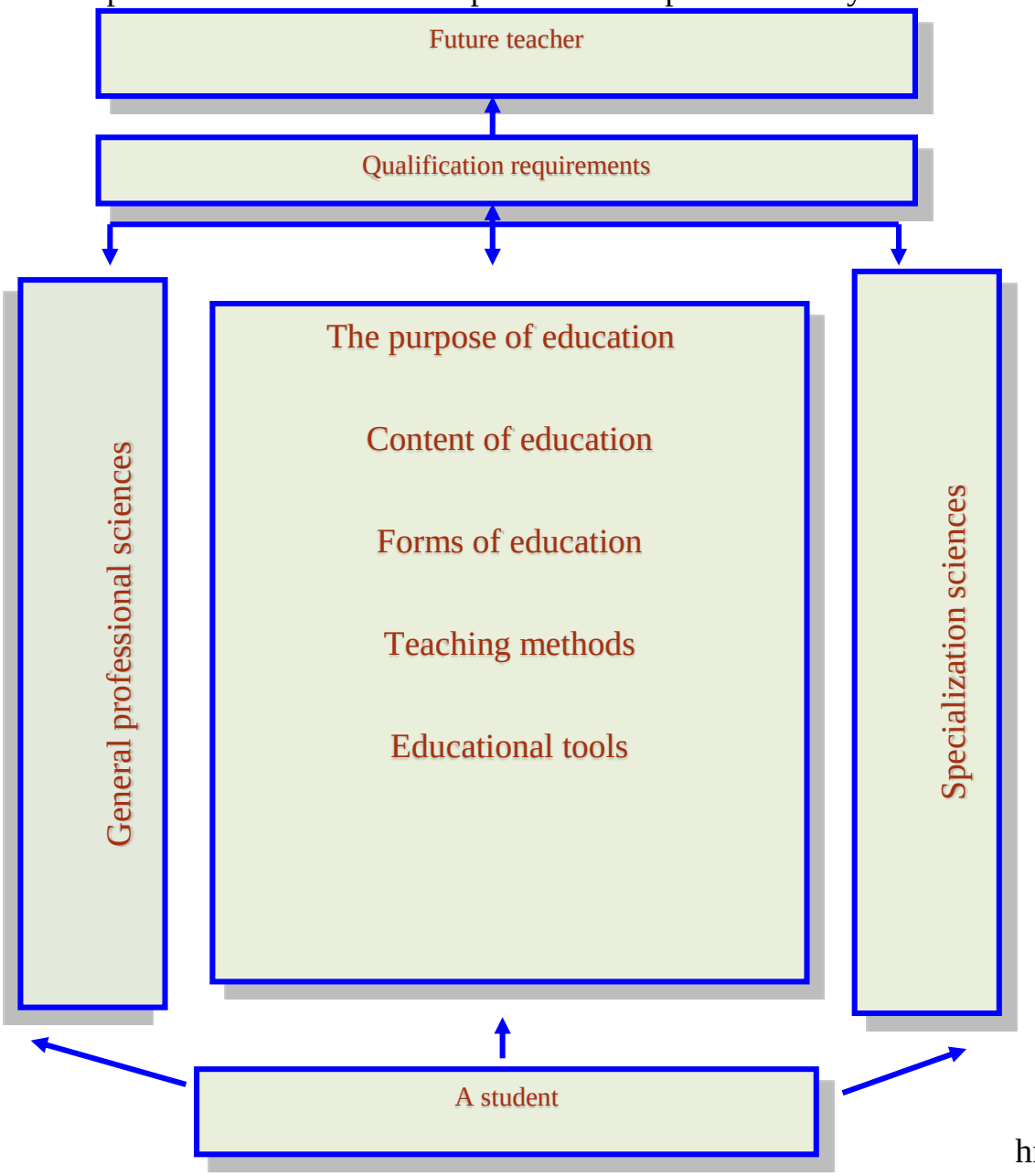
- the expansion of the field of independent activity of the student due to the diverse organization of educational activities;

- to individualize and differentiate the teaching process based on the introduction of interactive communication opportunities;

- by using the capabilities of the artificial intelligence system, the student acquires the strategy of mastering educational materials;

- formation of information culture in him as a member of the information society;

- presentation of the studied processes and phenomena by means of computer tec



hnologies is of great importance as it leads to increasing interest and activity in the basics of science among future teachers.

Figure 1. Software training will be based on tools model of professional training of teachers

Creating a model of the activity of an expert pedagogue is a complex and multifaceted task, the stages of which are distinguished by RS Nemov as follows: identifying the main parameters of the expert model first in the form of hypotheses, then at the level of research; selection, construction, standardization of its indicators for designing the model; development of methodological foundations for creating an expert model [5].

Thus, the process of training future teachers in the form of a model, the improvement of the mechanism of professional training of teachers in the information-educational environment, and the logical interrelationship of its components were developed (Fig. 1). According to him, it can be noted that the system of higher pedagogical education should be organized on the basis of software training tools, regardless of the teacher's specialty.

2- drawing. Software training tools

The future science teacher: guides the process of mental and physical actions performed by students, and ultimately forms their knowledge about work tools, tools and processes, as well as the practical skills and competencies necessary to perform production work in a certain field. , is understood as a person engaged in activities aimed at developing personal qualities and thoughts that allow them to consciously choose a profession and participate in labor activities for the welfare of society and the individual.

Vocational-pedagogical preparation in higher education: composition of the elements of professional skills that will be necessary during future professional activities.

Formation of professional qualities of future teachers: global thinking, professional organization, discipline, initiative, management, professional efficiency, hard work, curiosity, motivational character, intellectual potential, volition, emotionality, practical skills, self manage.

Professional knowledge in higher education: global knowledge, integration of disciplines, mastering of information technologies, knowledge of foreign languages, professional experience, professional flexibility.

Acquisition of information technologies: computer literacy, the ability to use information technologies in the process of labor education, to acquire qualifications, to use information resources.

Creation of electronic textbooks: a teaching tool designed to use educational methods based on computer technologies, which can be used for independent learning and comprehensively effective learning of educational materials. In the electronic textbook, the educational materials of the subject are used for students with interactive methods, psychological and pedagogical aspects, modern information technologies, audio and video animations.

Use of electronic textbooks: electronic publications, sample and working plans, as well as sets of exercises and problems, albums of maps and schemes, structural atlases, prepared on the most important sections of the sciences for the specialization and directions of the qualification requirements. is an electronic resource with instructions and references for the diploma project.

Creation of virtual laboratories: a software package with the possibility of remote access and presentation of the processes taking place in real objects of study through computer simulation.

Professional competence: a set of independent thinking competences, consisting of elements of logical, methodological and social activities related to specific objects of study, ability to see the goal, plan activities, analyze content, reflection, personal assessment of activities set of knowledge and skills.

Competence to receive information: the ability to independently search, analyze and select necessary information, analyze, change, store and transmit it using audio-video tools and information technologies (Internet, etc.).

Communicative competence: mutual relations, their methods, mastering the language that takes priority in the communication process, skills of working in groups, knowing how to organize and conduct various spiritual and educational events in the team.

Competence for practical activity: spiritual, motivational, intellectual, practical, volitional and emotional self-improvement.

As can be seen from the above model, the role of the information-educational environment in the professional training of future teachers is significant, in which the effective use of software training tools is considered appropriate.

Software educational tools can be used in teaching lectures, laboratory and practical exercises, monitoring student knowledge. Students will have the opportunity to use software tools individually in independent education, in addition to classroom training. Independent use of developed video lessons, interactive laboratory work, training, practice and control tests will have a great effect on the formation of competencies of future teachers.

Preparation of methodological developments for each subject, organization of group training with students (discussion, joint work on projects, etc.), individual support of the educational activities of each student by the teacher. -showed the need to implement such important tasks as organizing support, organizing training sessions and independent education using the created educational software tools, and using software educational tools in the process of creation. Special attention is paid to the

creation of information technologies, especially software education tools and their use in the educational process, in the professional pedagogical activities of bachelor's students in their field. Based on the stated opinions, it is necessary to carry out a number of processes in order to increase the effectiveness of the educational system by using software educational tools: including the selection of the field of education and the development of technology for creating software educational tools by analyzing and solving the necessary problems, and is preparing to put it into practice.

Pedagogical software tools created from the training of general and specialized subjects must meet the following methodological requirements:

1. Construction based on the interdependence of conceptual, figurative and moving components of the presentation of educational material.

2. Provision of educational material in the form of a high-order structure. Consideration of interdisciplinarity.

3. Creation of opportunities to determine whether the learner has gradually mastered the educational material based on the implementation of various controls.

The psychological and physiological effectiveness of software training tools is determined first of all by: mastering of educational materials, education and intellectual development of future teachers, performance indicators, levels of motivational stability. Secondly, it is related to the activity of the teacher and is determined by the indicators of the rational use of teaching concepts, pedagogical technologies and educational tools, the teacher's stable motivation in relation to work, the ability to work, the development of pedagogical programmed tools. Pedagogical programming tools must have a built-in programming support to communicate with each other. Taking into account the psychological and physiological characteristics of future teachers takes a special place in the development of software training tools.

In conclusion, it should be noted that wide pedagogical possibilities of using educational tools in the educational process are noted, and its features, consideration and improvement as a means of educational and educational activity are considered necessary and one of the leading principles.

In order to achieve this goal, science students should acquire theoretical knowledge, practical skills: pedagogical software tools and their types, methods of organizing mutual cooperation of pedagogical-software tools, principles of creating pedagogical-software tools, technology of creating scenarios of pedagogical-software tools, training in pedagogical software tools. management of educational activities, technology of creating pedagogical and software tools in programming languages, technologies and principles of creating electronic educational materials, voting technology, demonstration, control, training programs, didactic capabilities of software tools, expert-training systems , automated teaching systems, taking into account the psychophysiological characteristics of students and the technical capabilities of the computer, managing educational activities in pedagogical software tools, technical tools for creating pedagogical software tools, electronic textbooks, electronic training manuals lan, electronic directory, electronic chronology, electronic catalog, working in programs for creating electronic educational materials, working with pedagogical software tools, creating pedagogical software tools, working in automated teaching systems, Flash technology and its use in creating pedagogical software tools , it is

desirable to work in programs for creating electronic educational materials, to create electronic educational materials based on modern programming languages.

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UDC: 656.13

PRINCIPLES OF DEVELOPMENT OF CITY BUS SCHEDULE

Yuldoshev Davron Furqat ugli
PhD Student of
Tashkent State Transport University
davron.yoldoshev@bk.ru

Chariyev Xaliqul Shoniyozovich
Tashkent State Transport University
transportlogistikasi@mail.ru

Annotatsiya: Maqolada yo‘nalishli avtobuslar harakat jadvalini ishlab chiqish me'zonlari tahlil qilingan.

Kalit so‘zlar: Jamoat transportining tavsifi, harakatlanish oralig‘i, chastotasi, harakat jadvali.

Аннотатция: В статье анализируются критерии разработки маршрутного расписания автобусов.

Ключевые слова: Описание общественного транспорта, интервал движения, частота, график движения.

Abstract: The article analyzes the criteria for the development of the route bus schedule.

Keywords: Description of public transport, movement interval, frequency, movement schedule.

Introduction: The schedule of bus traffic is considered the main document of the operation department, on the basis of which the all links of tasks of the operation and technical services are determined. Significant changes in the flow of passengers by season and of the weekdays, it is considered appropriate to separate the traffic schedule into spring-summer and autumn-winter periods of the year, as well as weekdays, Saturdays and Sundays. In addition, it is required to develop special schedules for various events, concert programs, sports games and pre-holiday, fairs and public events from the outskirts of the city to the city center. [1,2].

Each route is determined individually, taking into account changes in the flow of passengers in local conditions. As an example, when developing the schedule of Tashkent city buses, it is necessary to take into account the number and density of the population, the mobility of passengers, and the number of people moving to the city throughout the year. In particular, in 2018, 25473, 2019, 34682, and 2020, 77971 residents moved to the city. These indicators show that in the last 3 years, the share of the population moving in the development of the bus timetable has increased by 300% compared to 2018. A number of studies have been conducted by world scientists on the development of the bus schedule. In particular, researchers from the Department of Civil Engineering, BITS, Pilani-333031-India, Makrand Wagale, Ajit Pratap Singha, Ashoke Sarkar and Srinivas Arkatkar have conducted a study on the real-time optimal bus scheduling for the city using DTR. In the study, traffic mode optimization models were developed taking into account bus stops [3]. The researcher of National Research

Tomsk Polytechnic University E.S. Gorokhova conducted research on the development of another public transport algorithmic mode of movement (muravinogo algoritm). In the study, the problems of reducing the time of passengers on the route were solved using the ant algorithm. It is calculated on the basis of the principle of separating the routes that passengers use a lot. [4] On the issue of developing a dynamic bus schedule based on a demand-driven schedule for short passenger waiting times for buses and minimization of bus delays for dispatchers © Iran University of Science and Technology researchers B. Anil Kumar, G. Hari Prasath and Lelitha Vanajakshi Research conducted.[5]

Research methodology: The bus schedule may provide for the organization of bus traffic from both end points of the route. For each bus route, the table must show the time of departure from TC (transport company), the zero kilometer, the starting and ending points of the movement, the time of arrival at TC, the number and duration of shifts. In addition, the table must show the number of trips per day, the frequency of movement, information about the intervals and the speed of passenger transportation. , must have information. In the timetable, the intermediate intervals of buses should be calculated in accordance with the data on the reduction of the passenger flow, the separate distribution of intermediate loading hours [6].

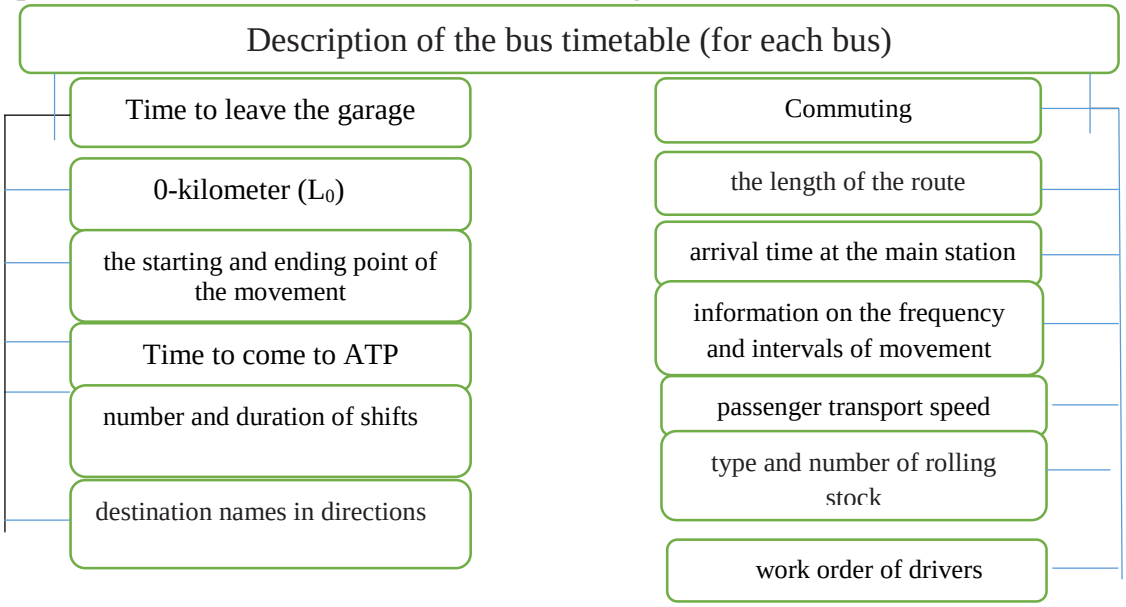

Figure 1. Indicator scheme describing the bus schedule

The organization of bus movement is performed based on the results of the study of the formation and distribution of passenger flow data according to the chronometer of the flight time on the route, which in turn serves to determine the interval and frequency of movement, and to choose the procedures for drawing up the bus movement schedule.

It is possible to create bus timetables and change the existing timetable, get geographic information of the route, real-time monitoring and test methods. Bus route No. 93 connecting Tashkent city "Quylyuk-1 massif - Yunusabad quarter 9" bus stops was chosen for the test route. This selected research object connects Yashnabad and Yunusabad districts, connecting different corners of Tashkent city, passing through the

central streets of the city. The length of the route is 22.5 km and this route is considered one of the longest routes within the city.

Research results: The average length of the research route connecting "Quylyuk-1 massif - Yunusabad 9-quarter" bus stops is 22.5 km, the average operating speed (V_e) is 19.9 km/h.

The theoretical value of the interval of buses moving in the direction of route 93 can be determined as follows.

Movement interval

$$I = t_{айл} \cdot 60/A_м = 3.6*60/10 = 21.6 \text{ мин.}$$

Movement frequency

$$h = A_м/t_{айл} \text{ or } h = 1/I, = 10/3.6 = 2.7 \text{ car/hour}$$

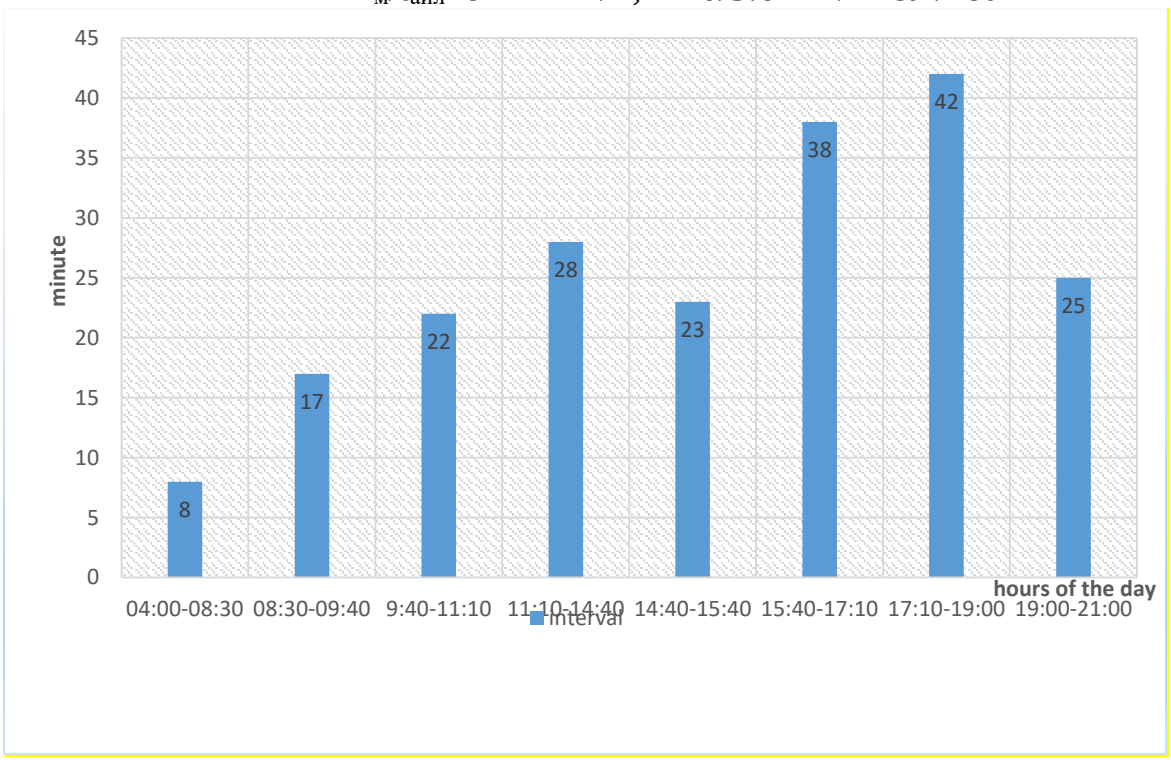

Figure 2. Cyclogram of change of one-day interval on bus route No. 93 "Kuylyuk-1 massif - Yunusabad, quarter 9"

The intervals between the buses of the research route differ from the theoretical calculation and the times specified in the table as seen from the cyclogram. The change of the intermediate interval in the research object is mainly due to the passage of different road sections according to the load of the route, getting caught in traffic jams along the route, the movement of vehicles other than the separate lanes reserved for public transport on the street "Fergana Yoli" where the "BRT" system is used, the time of passengers getting on and off the bus at intermediate stops. are caused by negative factors such as lengthening. This leads to bus departures along the route, passengers getting stuck at stops, longer flight times, and a reduction in the total number of trips or longer travel times.[7]

Conclusion. In conclusion, it can be said that it is necessary to make a schedule of public transport with a deep analysis of somewhat complex processes. As a result of

the study, the difference between the theoretical and practical indicators of the change of the time interval according to the movement schedule was analyzed.

It is advisable to take into account all the factors affecting the deviation of bus route times when developing a timetable. When developing a timetable, it is possible to take into account each of the factors that cause overstaying of buses, ensure the interval of buses, and increase the reliability of passenger service.

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UDC: 656.1

ANALYSIS OF METHODS FOR SURFACE HARDENING OF TOOL MATERIALS

Isayev Doniyor Toshbotirovich
PhD of the department
Mechanical engineering
Navoi state mining and technological university
Isayev_D@mail.ru

Annotatsiya: Asbob materiallarining sirtini o'zgartirish uchun mavjud bo'lgan turli xil usullarni to'rt guruhga bo'lish mumkin: sirtni issiqlik bilan ishlov berish; kimyoviy-termik ishlov berish; qoplama sintezi; kombinatsiyalangan qattiqlashuv. Issiqlik bilan ishlov berish materialning tuzilishini o'zgartirishga va kimyoviy tarkibida sezilarli o'zgarishsiz sirt xususiyatlarini yaxshilashga olib keladi. Kimyoviy-termik ishlov berish ko'proq darajada sirtning kimyoviy tarkibi, tuzilishi va xususiyatlarining o'zgarishiga olib keladi. Qoplama yangi kimyoviy tarkibga va sirt tuzilishiga ega bo'lgan materiallarni olish imkonini beradi, bu esa xususiyatlarning kuchli o'zgarishini ta'minlaydi. Kombinatsiyalangan qattiqlashuv yuqoridagi usullarning o'ziga xos superpozitsiyasidir.

Kalit so'zlar: sirt, material, asbob, mikroqattiqlik, asbob, kristallanish.

Аннотация: Разнообразие существующих способов модификации поверхности инструментальных материалов можно разделить на четыре группы: термообработка поверхности; химико-термическая обработка; синтезирование покрытия; комбинированное упрочнение. Термическая обработка приводит к изменению структуры материала и улучшению свойств поверхности без существенного изменения химического состава. Химико-термическая обработка в большей степени приводит к изменениям химического состава, структуры и свойств поверхности. Покрытие позволяет получать материалы с новым химическим составом и структурой поверхности, что обеспечивает сильное изменение свойств. Комбинированное упрочнение является своего рода суперпозицией вышеуказанных методов.

Ключевые слова: поверхность, материал, инструмент, микротвердость, инструмент, кристаллизация.

Abstract: A variety of existing methods for modifying the surface of tool materials can be divided into four groups: surface heat treatment; chemical-thermal treatment; coating synthesis; combined hardening. Heat treatment leads to a change in the structure of the material and an improvement in surface properties without a significant change in the chemical composition. Chemical-thermal treatment to a greater extent leads to changes in the chemical composition, structure and properties of the surface. The coating makes it possible to obtain materials with a new chemical composition and surface structure, which provides a strong change in properties. Combined hardening is a kind of superposition of the above methods.

Key words: surface, material, instrument, microhardness, tool, crystallization.

Introduction. Each of the processing methods that modify the surface assumes a different nature of interaction with the processed substrate, depending on the energy level of the particles acting on it, and their nature. When the surface is treated with ions of various gases with an energy of about 200 eV, the atoms of physically and chemically adsorbed impurities are desorbed. With a further increase in the particle energy, if it exceeds the energy of interatomic bonds of the tool material, defects are formed in the crystal structure and sputtering of atoms from the surface of the substrate. When the particle energy exceeds 3 ÷ 5 keV, their incorporation (implantation) into the crystal lattice of the product material begins.

When the surface is treated with metal ions or atoms, the energy level below the sputtering threshold of the product material (below 500 ÷ 700 eV) is the crystallization (deposition) of the coating. In addition, the particle energy determines the structure and composition of the coating.

Through the use of various surface methods of tool materials, the most important indicators of the cutting tool are increased.

Tool life. With an optimally selected modification method, tool life can be increased up to 6 times. High value of hardness, heat resistance, passivity in relation to the material being processed and volumetric properties of the tool material (high enough bending strength, impact strength, crack resistance).

processing performance. Depending on the type of surface treatment, the optimum cutting speeds for modified tool material are generally significantly higher than for untreated tool material. The reason for the shift in cutting speeds in the zone of higher values is the change in the characteristics of contact and thermal processes during cutting, which occurs as a result of changes in the surface properties of the tool material. Therefore, the critical temperatures for the modified tool are reached at high cutting speeds.

Surface quality and dimensional accuracy of workpieces. By changing the composition of the modified layer, it is possible to completely eliminate the process of build-up formation, which often accompanies the processing of metals with high-speed steel tools and has an extremely negative effect on the accuracy and quality of the surface layer of the machined products.

Consumption of high-speed steel tools. The use of complex tools (worm cutters, cutters, reamers, taps, etc.) subjected to surface modifying treatment makes it possible to reduce the cost of tool material by up to 30% as a result of an increase in the total number of repeated tools regrinding's. If re-sharpening is carried out on one of the working surfaces of the tool with a hardened layer, then its further operation is possible, since the unsharpened surface will continue to perform its functions.

Research Methodology. The first group of methods for modifying the surface of tool materials is heat treatment (laser and electron beam processing). The basis of laser processing (hardening) is the impact on the surface layer of the instrumental material with a highly concentrated source of energy - a laser beam. This method of surface modification is implemented without volumetric heating of the tool material, that is, it is local and does not cause additional distortions and deformations of the tool and allows processing only those areas that are most susceptible to wear during the cutting process.

When scanning the surface of an instrumental material with a laser beam, it undergoes significant structural changes due to ultrafast heating (up to 10^5 deg/s) and cooling (up to 5 10^8 deg/s) of a thin surface layer. By changing the power and time of laser radiation in the treated areas, it is possible to obtain a wide range of structural states of the surface layer of the material: microcrystalline structures, supersaturated solid solutions, structures with increased homogeneity, and even amorphous ones. With a change in the structure of the surface layer of the tool material, its physical and mechanical properties also change.

For laser surface treatment in industry, solid-state pulsed lasers are used, as well as some models of gas lasers.

Laser surface treatment is mainly applied to tools and tooling made of carbon and alloyed tool steels - У8, У10, ХВГ, 9ХС, ШХ15, Х12М etc. In addition, there are examples of laser treatment to improve the surface durability of high speed steels. Р6М5, Р6М5К5, Р9К5, Р6М6Ф3-МП.

The experience of using in the production of cutting tools, which was carried out by laser surface treatment, shows an average increase in tool life by 1.5-2.5 times. This increase in resistance is a consequence of a change in the microhardness and / or heat resistance of the surface layer of the original tool material due to the possibility of obtaining a more alloyed base.

The most significant change in microhardness after laser treatment is observed in carbon and alloyed tool steels due to an increase in martensitic hardness. Considering that laser processing of hypereutectoid steels can lead to additional dissolution of secondary carbides in austenite, it is advisable to use it for simple profile tools due to a decrease in the ductility of martensite caused by the growth of austenite grains and high carbon content in martensite.

The microhardness of high-speed steels after exposure to laser radiation does not increase so much, but the heat resistance of the surface layer increases up to 10°C, while this figure for carbon and alloy steels practically does not change. Therefore, laser cut high speed steels can operate at higher cutting speeds than high speed steels subjected to standard heat treatment - quenching and triple quenching. However, it should be taken into account that during laser surface treatment of high-speed steels, there is a risk of significant grain growth and strength reduction, which can reduce the durability of small-sized tools, as well as tools operating under shock-cyclic loads.

Laser processing of the cutting tool must be carried out without surface melting, since otherwise the initial height of the surface microroughness increases and, as a result, the frictional interaction with the material being processed increases.

Despite the obvious advantages of laser surface treatment (hardening) of tool steels, economic calculations show that the use of this method of surface modification in tool production is unprofitable for the following reasons. Laser technological installations have a rather high cost (mainly CO_2 lasers), low efficiency (no more than 15% of the input energy) and low productivity. In addition, there are great difficulties in the need to process the shaped tool. There are a sufficient number of alternative methods in the industry that provide similar changes in the surface properties of tool materials. Therefore, today there are only a few examples of the industrial application of this method for modifying the surface of tool materials.

The effect of electron beam processing of tool steel is similar to that achieved as a result of laser processing. However, unlike a laser, electron beam processing is carried out under high vacuum conditions, which is necessary to protect the electron emitter from oxidation and prevent their scattering. The essence of electron beam processing is that the electron beam acts on the surface of the device with a specific power of about 8 MW / cm^2 and moves from one localized area to another at certain intervals. The cooling rate after the emission of an electron beam is very high, as a result of which the separation of secondary carbides can be partially prevented and martensite with a large number of alloying components can be obtained. This method of modifying the surface of tool materials has the same disadvantages as laser processing, although equipment for electron beam processing has a higher efficiency (up to 75% of the applied energy).

The second group of methods for modifying the surface of tool materials is chemical-thermal treatment, including laser alloying, ion nitriding and cyanidation, as well as ion implantation.

The formation of a surface layer obtained by introducing additives in the process of laser heating of tool materials is called laser alloying. With the help of a laser, the process of nitriding and cementation of the surface of tool materials, as well as its alloying with various metals (Ti, Al, Zr, etc.) is relatively easy. In this case, the choice of alloying systems is carried out purposefully, depending on the operating conditions of the cutting tool. New phases are formed and compounds sharply increase the microhardness of the surface layer, and in some cases increase its heat resistance, which in turn increases the durability of the cutting tool. Laser alloying has the same advantages and disadvantages as laser hardening.

Ion implantation of the surface of tool materials is used to harden high-speed steels and hard alloys. Ion implantation (doping) of thin subsurface layers of instrumental material is based on irradiation in vacuum with a beam of gas or metal ions accelerated to an energy of 104–106 eV, which leads to the introduction of a dopant into the surface of ions and atoms. The effect of strengthening the surface of the tool material is achieved by increasing the density of defects in the crystal structure of the material, fixing these defects with atoms of alloying elements, and forming an additional number of finely dispersed carbide, nitride, and intermetallic structures. This method is universal in terms of the range of dopants, processed materials and the range of impurity concentrations in the doped layer of the tool material. In addition, the implantable layer does not change the size of the cutting tool and cannot peel off, unlike coatings. The most important parameters of the ion implantation process are the injection energy (keV), radiation dose (ion/cm^2) and current density (μA/cm^2).

Analysis and results. The wide industrial distribution of implantation technology is limited by the low productivity and high cost of such an operation. These problems are particularly acute when large doses of implantation are required, where the performance of the implantation equipment is a decisive factor in the cost of the entire operation. Even in semiconductor technology, where the size of the treated surface is insignificant, the duration and cost of operation of the doping emitter or acceptor layers on standard implantation equipment is often unshakable. For the needs of metalworking, this problem is exacerbated by the scale of production and the relative

cheapness of other operations in the technological chain for the production of cutting tools. Therefore, in relation to the production of cutting tools, this method is of interest only for research and search purposes. Nevertheless, today there are many examples of successful application (mainly abroad) of the implantation of nitrogen, titanium, aluminum and other ions to increase the durability of tools made of high-speed steels and hard alloys.

In table. Table 1.1 provides information on the effect of ion implantation on the characteristics and performance of some instrumental materials.

Table 1.1

Changes in surface properties and stability of various instrumental materials after ion implantation.

tool material	dopant ion	Integral dose of doping ion/cm^2	Microhardness after ion implantation GPa	Operating conditions	Tool life increase factor
P6M5	N^+	$8 \cdot 10^{17}$	11,5	Steel drilling 45 and 40X	4

From an industrial point of view, there is great promise for ion nitriding. Ionic nitriding, as well as other methods of diffusion saturation of the surface of tool steels - cyanidation, carburizing, etc. compare favorably with the classical types of chemical-thermal treatment carried out somewhere in furnaces or in salt baths. At present, the most developed and used in industry is the method of ion nitriding in low-temperature glow-discharge plasma. The nitriding technology is faster and more economical than carburizing and cyanide, and is often the final step in the manufacture of cutting tools. During processing, the surface of the tool is bombarded with positive ions of the alloying element from the gas-discharge plasma, which can significantly reduce the duration of surface saturation. For example, in ionic nitrogen, the processing speed, compared with the speed of ordinary furnace nitrogen, increases by two to five times due to the acceleration of diffusion processes and a reduction in the number of preparatory operations. The heating temperature of the devices decreases, it becomes possible to adjust the phase composition by changing the technological modes, there is no emptying of the developed tools. In addition, this process is non-toxic and environmentally friendly. Technological factors affecting the performance of ion nitriding are both traditional: temperature and duration of saturation, the composition of the gaseous medium, and additional, due to the specifics of the process under glow discharge conditions: gas pressure, interelectrode distance, configuration, size and location of the processed objects, most of These factors are interrelated. The composition of the gas medium affects the ignition voltage, and the change in voltage and current density is limited by the allowable heating temperature and gas pressure, that is, the possibility of carrying out the process in a glow discharge is primarily determined by the stability of its existence, are limited to obtaining a nitrogen-saturated

solid solution and curing as a result of dispersion curing due to the dispersion of nitrides from it.

All known coating methods are not universal, so it is advisable to establish the possible areas of their use. First of all, it is necessary to take into account the heat resistance of the tool material.

The most widely used tool manufacturing methods were chemical CVD - chemical vapor deposition (gas phase) and physical PVD - physical vapor deposition (from the plasma phase).

Compounds of refractory transition metals of IV-VI groups of the periodic system of elements with nitrogen, carbon and oxygen were used as wear-resistant coatings. The choice of coating material is based on the brand of the tool and the materials being processed, the nature and modes of the cutting process.

In general, chemical deposition coating processes are based on heterogeneous chemical reactions in the gas-vapor environment surrounding the tool, resulting in a wear-resistant coating. The deposition of coatings on the tool takes place in a furnace in the presence of hydrogen at temperatures of 900 ... 1100 ° C as a result of the interaction of gaseous halides, such as TiCl4, AlCl3 with mixture components - nitrogen during the deposition of nitrides of refractory metals, methane during the deposition of carbonitrides and carbon dioxide during deposition oxides.

This method provides a uniform coating on all working surfaces of the tool and has a high productivity, which makes it especially attractive for mass production. The average growth rate of the coating thickness is ~10 μm/hr. The fact that chemical deposition processes are implemented at temperatures of 900 ... 1100 °C excludes the possibility of applying this method to tools made from high-speed steels, so its main area of application is carbide tools.

The methods of physical deposition of coatings are universal in terms of obtaining a number of single-layer, multilayer and composite coatings based on nitrides, carbides, carbonitrides, oxides, borides of refractory metals of groups IV-VI of the periodic table and for the implementation of deposition processes at temperatures of 300-800°C, which makes it possible to use them for high-speed steels and hard alloys.

Today, the most common coatings in industry are TiN, TiCN, (Ti, Al) N, and many others.

The application of wear-resistant coatings by physical deposition can be carried out in various ways. These methods are based on the evaporation of a substance into the vacuum space of a chamber with the supply of a reaction gas (N2, O2, etc.). The difference between the methods lies in the principles of physical evaporation of matter, different degrees of plasma flow ionization, and design features of objects. Among the methods of physical deposition of coatings, the most common are: condensation of matter from the plasma phase in vacuum with ion bombardment (CIB method) and magnetic ion sputtering (MIR method).

It should be noted that the hybrid technology of PACVD coating by the method of plasma-assisted chemical vapor deposition (Plasma Assisted Chemical Vapor Deposition) is currently being actively developed. The deposition of coatings in this method occurs in a wide temperature range, which makes it possible to use it for coating heat-resistant high-speed steel.

The fourth group of methods for modifying the surface of tool materials consists of various types of combined processing, consisting of a combination of modification methods belonging to different groups - heat treatment, chemical-thermal treatment and coating. By combining various surface modification methods, it is possible to obtain a tool material with a unique combination of surface properties that cannot be obtained by any of these methods separately. The surface layer obtained as a result of combined processing is referred to in the literature as a wear-resistant complex (IR).

Like foreign, domestic researchers agree that it is advisable to perform additional surface treatment of high-speed steels before coating. This is due to the fact that at the interface between the coating and the tool material, there is a sharp change in the physical, mechanical and thermophysical properties (primarily the elastic modulus and thermal expansion coefficient), which leads to the formation of high residual stresses in the coating and, as a result, to a decrease in adhesion strength of the binder coating to the base, which is the most important condition for the successful operation of a cutting tool with a wear-resistant coating. Reducing the level of residual stresses in the coating and increasing the adhesion strength of its bond with the tool base can be achieved by forming a transition layer, which can be obtained by laser processing, ion implantation, or ion nitriding. The creation of such a layer followed by the application of a harder coating is one of the options for combined surface treatment, which is currently receiving special attention.

Conclusion/Recommendations. To more effectively harden the tool, it is necessary to develop a technology consisting of three stages: the first is bombardment with a beam of fast argon atoms, created due to collisions with ions accelerated in the space charge between the plasma and the grid with a negative bias; the second is nitriding of the tool surface; the third is the synthesis of the TiN coating using magnetron sputtering. All three stages take place in the plasma of a non-self-sustained glow discharge.

Therefore, the following tasks were formed:

Work tasks:

1. Modernize the cutting tool hardening process by compatibility of AC double magnetron sputtering and DC glow discharge systems with electrostatic electron confinement in a vacuum chamber;
2. Analysis of the influence of the technological process on the hardened tool;
3. Carrying out resistance tests of the cutting tool - reamers.

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UDC:677.21

INVESTIGATION OF LOCAL RESISTANCE AND AIR VELOCITY IN NARROWING PIPES FOR THE TRANSPORT OF FIBROUS MATERIALS

Sharopov Bobir Nabijon ugli assistant of the Department “Natural Fibers and Fabric Processing” Jizzakh Polytechnic Institute
Ruzmatov Botir Shermatovich Senior teacher of the Department “Natural Fibers and Fabric Processing” Jizzakh Polytechnic Institute
Kholbutayev Uktam Senior teacher of the Department “Economics and management” Jizzakh Polytechnic Institute
Kholbutayev_U@gmail.com

Аннатация. Ушбу мақолада пневмотранспорт ҳаво қувурларининг торайиш жойларидаги маҳаллий қаршиликлар назарий ва амалий изланишлар натижалари орқали аниқланди ҳамда ҳаво тезлигининг ўзгариши график кўринишида келтирилган.

Калит сўзлар. Пахта хомашёси, толали материал, ҳаво тезлиги, маҳаллий қаршилик, торайиш бурчаги, оқим, майда заррачалар.

Аннотация. В данной статье по результатам теоретических и практических исследований определены местные сопротивления в зонах сужения воздухопроводов пневмотранспорта, а изменение скорости воздуха представлено в графическом виде.

Ключевые слова. Хлопковое сырье, волокнистый материал, скорость воздуха, местное сопротивление, угол конусности, поток, мелкие частицы.

Annotation. In this article, based on the results of theoretical and practical studies, local resistances are determined in the zones of narrowing of pneumatic transport air ducts, and the change in air speed is presented in graphical form.

Keywords. Cotton raw material, fibrous material, air velocity, local resistance, taper angle, flow, fine particles.

Introduction. In addition to the main processes of cotton pre-treatment technology in the world, one of the important tasks is also the transportation of raw materials, in particular, the transportation by pneumatic transport and the prevention of damage to the fiber and seeds in it. In the priorities of the Decree of the President of the Republic of Uzbekistan dated January 28, 2022 No. PF-60 “New Development Strategy of the Republic of Uzbekistan for 2022-2026”, the third priority area called “Advanced development of the national economy and ensuring high growth rates” clarifies the inclusion of a number of tasks in the state program. In particular, "... to continue the industrial policy aimed at ensuring the sustainability of the national economy and increasing the share of industry in the gross domestic product, increasing the volume of industrial production by 1.4 times" "... further liberalization by the leading industries and the economy and the final transformational processes” “...in the textile industry, comprehensive measures are being taken to double the volume of production. This research work to a certain extent serves the implementation of the tasks specified in the Decree of the Cabinet of Ministers No. 53 of November 25, 2018 "On additional measures to organize the activities of cotton and textile industries and clusters" and other legal documents related to this activity [1-3].

Air tubes are used in most of the primary processing of cotton, resulting in the loss of fibers and fibrous materials in the tubes. At present, the cotton ginning industry needs to take urgent measures not only to improve the technological process of receiving, storing and preparing cotton for processing, drying, cleaning and processing, but also to improve cotton air transport systems. The study of the current state of the theory and practice of preventing aerodynamic drag in narrowing pipes, creating patterns of movement of fibrous materials in a pneumatic transport system allows us to draw the following conclusions.

The necessity of theoretical and practical research on the prevention of aerodynamic drag in pneumatic transport based on the development of theories of air movement in the narrowing of pneumatic transport pipes while preventing aerodynamic drag while holding pneumofibrous materials is shown. However, there is not enough research in the literature on the prevention of aerodynamic drag.

The forces that affect the movement of a cotton swab in an air stream have been extensively studied. Basically take into account the force of resistance, the force of inertia, the force of gravity.

In the general case, the equation of motion can be expressed as follows:

$$m\frac{du}{dt} = \sum Fi$$

here: m - the mass of a piece of cotton, kg;

u - particle velocity, m/s;

$\sum Fi$ - the sum of the forces acting on the particle, N

An analysis of the research works carried out to date shows that the regularities and practical results established by the researchers to a certain extent serve the development of science and practice of cotton processing, as well as its transportation by pneumatic transport. However, the nature of some of the phenomena that occur during the processing of cotton and its transportation has not yet been fully disclosed,

and some technological machines and equipment, including pneumatic transport, have not yet been fully developed. For example, the theoretical basis for the influence of the pipe narrowing edge on the aerodynamic drag during the transportation of cotton products and dusty air has not been created. The theories that have been identified have mostly dealt with specific problems and aircraft components, with inconsistent and sometimes conflicting results.

Based on the foregoing, in this article, the researchers set themselves the goal to develop the theory and practice of transporting cotton by pneumatic transport to a certain extent and offer effective technical solutions to reduce aerodynamic drag during the transport of cotton and fibrous materials [4-6].

Methods. If Local resistances cause air decompression that occurs when it encounters various obstacles in the movement of air and fibrous materials in separation systems in sharp cones and separations [7].

There are many types of local resistances, each with a net pressure loss. Therefore, in the process of extracting fibrous materials from a mixture of air and fibrous materials, one of the important tasks is to analyze the loss of fibrous materials in the air flow based on the determination of local resistances [8].

Using the results of our previous research on the prevention of local resistance in expanding pipes, we develop recommendations for the prevention of resistance and bending angles in convergent pipes [9].

According to Figure 1, consider the movement of air inside a pipe narrowed due to the angle $\alpha\pi$ - narrowing.

Considering the symmetry of the flow through the air pipe, we consider the narrowing pipe of the equipment that captures fibrous materials.

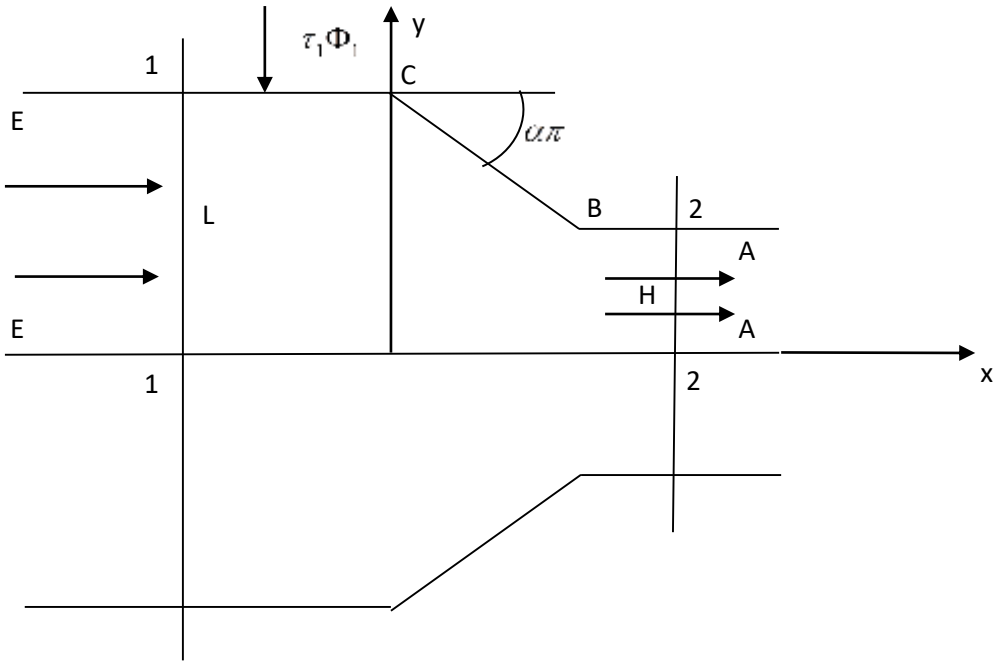

Figure 1. Narrowing pipe scheme.

An air duct was provided in which the narrowing of the cross-section along the flow direction is carried out on the upper wall with a narrowing angle $\alpha\pi$ (Fig. 1).

From the daily section 1-1 to the narrowed cross-section 2-2, we select two normal sections [10,11].

Due to the symmetry force of the flow field of a mixture of air and fibrous materials (Fig. 1), work was carried out on pressure losses during the transition from section 1-1 to a narrowed section 2-2, a deflection zone was formed, which required additional energy costs. In this regard, it is easy to create a smooth contour that ensures smooth circulation of the flow of a mixture of air and fibrous materials in the flow bend [12, 13]. In this case, using Figure 1 to solve the problem, we draw section 1-1 before the duct narrows and section 2-2, located at a sufficient distance from it.

Results and Discussion. To solve the problem we use the methods of Taliev V.N. [14].

As a result, the pressure loss in the pipe is determined by the formula.

$$\Delta P = P_1 - P_2 + \frac{\rho}{2}\left(\upsilon_1^2 - \upsilon_2^2\right) \tag{1}$$

Consider the aerodynamic condition between two sections and, depending on it, write the equation for the momentum on the tilt column BC.

$$P_1 L_1 \cos\alpha\pi + \tau_1\phi_1 \sin\alpha\pi - P_2 L_2 = \rho L_2 \upsilon_2\left(\upsilon_2 - \upsilon_1 \cos\alpha\pi\right)$$

$$\tau_1 = P_1 + k_1 \cdot \frac{\rho\upsilon_1^2}{2} \quad \text{ва} \quad \phi_1 \sin\alpha\pi = L_2 - L_1 \cos\alpha\pi$$

here: τ_1 - the pressure acting on the field;

ϕ_1 - Up to the height of the $\alpha\pi$ corner located in section 1-1

The following follows from this

$$P_1 L_1 \cos\alpha\pi + \left(P_1 + k_1 \frac{\rho\upsilon_1^2}{2}\right)\left(L_2 - L_1\cos\alpha\pi\right) - PL_2 = \rho L_2\upsilon_2\left(\upsilon_2 - \upsilon_1\cos\alpha\pi\right)$$

$$P_1 L_1 \cos\alpha\pi + P_1\left(f_2 - f_1\cos\alpha\pi\right) - P_2 L_2 = \rho L_2\upsilon_2\left(\upsilon_2 - \upsilon_1\cos\alpha\pi\right) - k_1\left(L_2 - L_1\cos\alpha\pi\right)\cdot\rho\frac{\upsilon_1^2}{2}$$

In this we get the following.

$$P_1 - P_2 = \frac{\rho}{2}\left[2\upsilon_2\left(\upsilon_2 - \upsilon_1\cos\alpha\pi\right) - k_1\left(1 - \hat{L}_1\cos\alpha\pi\right)\upsilon_1^2\right] \tag{2}$$

According to the consumption equation $q_E = q_A$ or $q_1 = q_2$ we have:

$\frac{L_1}{L_2} = \frac{\upsilon_1}{\upsilon_2}$ and therefore,

$$P_1 - P_2 = \frac{\rho}{2}\left[2\upsilon_2\left(\upsilon_2 - \upsilon_1\cos\alpha\pi\right) - k_1\upsilon_1\left(\upsilon_1 - \upsilon_2\cos\alpha\pi\right)\right] \tag{3}$$

Given the following equation for pipes

$$\upsilon_E = \frac{L_C}{L_B}\left(\upsilon_c - \upsilon_E\right), \quad \upsilon_c > \upsilon_E, \quad L_c > L_E \tag{4}$$

Then from (4) we get the following for pressure loss.

$$\Delta P = \frac{\rho}{2}\left[\left(\upsilon_1^2 - 2\upsilon_1\upsilon_2\cos\alpha\pi + \upsilon_2^2\right) - k_1\upsilon_1\left(\upsilon_1 - \upsilon_2\cos\alpha\pi\right)\right] \tag{5}$$

here: η_0 - If we introduce the constant coefficient and cancel the unknown aerodynamic coefficients, we have:

$$\Delta P = \eta_0 \frac{\rho}{2}\left(\upsilon_1^2 - 2\upsilon_1\upsilon_2 \cos\alpha\pi + \upsilon_2^2\right) \tag{6}$$

To determine the relationship of local pressure losses to the air velocity with the narrowing of the pipe, we take the derivative of the last function with respect to υ_2

$$\frac{\partial \Delta P}{\partial \upsilon_2} = \eta_0 \frac{\rho}{2}\left(2\upsilon_2^2 - 2\upsilon_1 \cos\alpha\pi\right)$$

From this

$$\upsilon_{1opt} = \upsilon_{2opt} = \upsilon \cos\alpha\pi \tag{7}$$

Thus, after the narrowing, the optimal air speed υ_2 at the beginning of the channel multiplied by the cosine υ_1 is equal to the air speed, taking into account the narrowing, and this air speed leads to the smallest pressure loss in the narrowing of the pipe.

From (6) C_x – resistance coefficient:

$$C_x = \eta_0 C\left(1 - 2\frac{\upsilon_2}{\upsilon_1}\cos\alpha\pi + \left(\frac{\upsilon_2}{\upsilon_1}\right)^2\right) \tag{8}$$

When we obtain the following bond conditions between the section,

$$q_E = q_A \Rightarrow L_E\upsilon_E = L_A\upsilon_A \quad L_1\upsilon_1 = L_2\upsilon_2 \Rightarrow \frac{L_1}{L_2} = \frac{\upsilon_2}{\upsilon_1}$$

Based on this, formula (8) can be written as follows

$$C_x = \eta_0\left(1 - 2\hat{L}_1 \cos\alpha\pi + \hat{L}_1^{\,2}\right) \tag{9}$$

If (7) is taken into account, then: (9) we get the following formula:

$$C_x = \eta_0(1 - \cos\alpha\pi)^2 \text{ so } \alpha\pi = \frac{\pi}{6} \text{ or } \alpha = \frac{1}{6} \tag{10}$$

So,

$$C_x = \eta_0(1 - \cos 30)^2 = \eta_0\left(1 - \frac{\sqrt{3}}{2}\right)^2 = 0{,}2\eta_0$$

C_x=0,016 and the coefficient of variation will be equal to $\eta_0 = 0{,}89$.

η_0 - the constant coefficient for the expanding and narrowing medium has not yet been determined.

Based on the obtained results, the increase in local resistance when the narrow angle of the pipe is 10, 20, 30 and 40 degrees is presented in Figure 2.

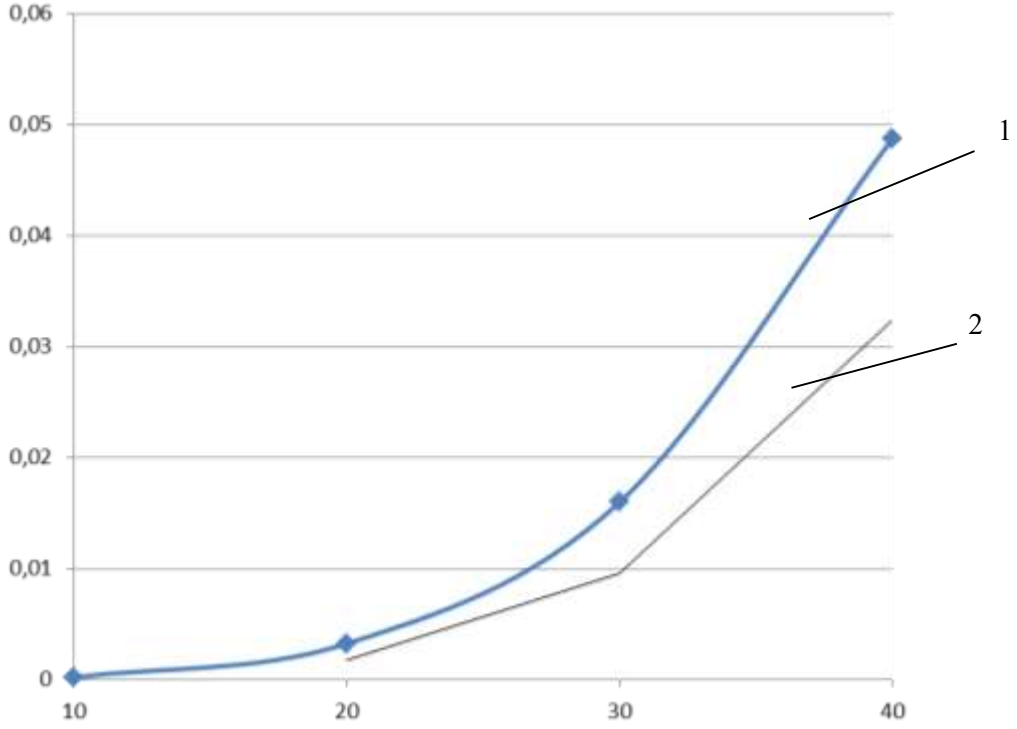

Figure 2. Graph of the dependence of the local resistance on the narrow angle
1-local resistance when narrow angle 1 is 10, 20, 30 and 40 degrees;
2- filter line.

From Figure 2, it can be said that from the data using the linear filtered trend line, it can be seen that a sharp change in the trend line occurs at a taper angle $\alpha\pi=30^{o}$, which occurs at a local resistance value up to $C_x=0,016$.

In order to verify the results of the obtained theoretical studies in practice, practical studies were carried out in the tapering part of the fibrous material retention device installed in the testing laboratory of the Jizzakh Polytechnic Institute.

A change in the angle of contraction in narrowing pipelines leads to a change in local resistance, which in turn leads to resistance to air intrusion At a contraction angle of 45 degrees, if the air speed at the point of narrowing of the pipe is 1 m/s compared to 30 degrees, the air speed is lost by 0.5 m/s. Therefore, if the optimal value of the angle of narrowing of the pipes is 30 degrees, the occurrence of local resistances is prevented. The air velocity was measured over a large area in the section;

The results of my research are not presented, since the change in air speed over a large area is not important in my research work. In a pipe with a narrowing section, the slope is theoretically 30 degrees. The results presented in Table 1 were obtained by measuring air velocities at points in the narrow pipe.

Table 1

Air velocity in narrowing pipes

Measuring parts	Points for measuring speed and air velocity in the daily section of the pneumatic pipeline, m/s									
	1	2	3	4	5	6	7	8	9	average
30 degree										
Part I	18	19,4	20,9	18,5	18,5	19,1	17,9	18,1	18,6	18,778
Part II	16,5	15,5	14,9	17,8	17,6	18,3	14,2	14,7	15,8	16,144

Part III	11,1	12,1	14,2	16,9	17,1	18,2	11	12	10,3	13,656
45 degree										
Part I	18	19,4	20,9	17,5	18,5	19,1	17,9	18,1	18,6	18,667
Part II	16,3	15,2	14,6	16,8	16,6	17,3	14	14	15,2	15,556
Part III	10,1	11,1	14	15,9	16,1	17,2	11	12	10,3	13,078

The average values of the obtained results are presented in the form of a graph in Figure 3.

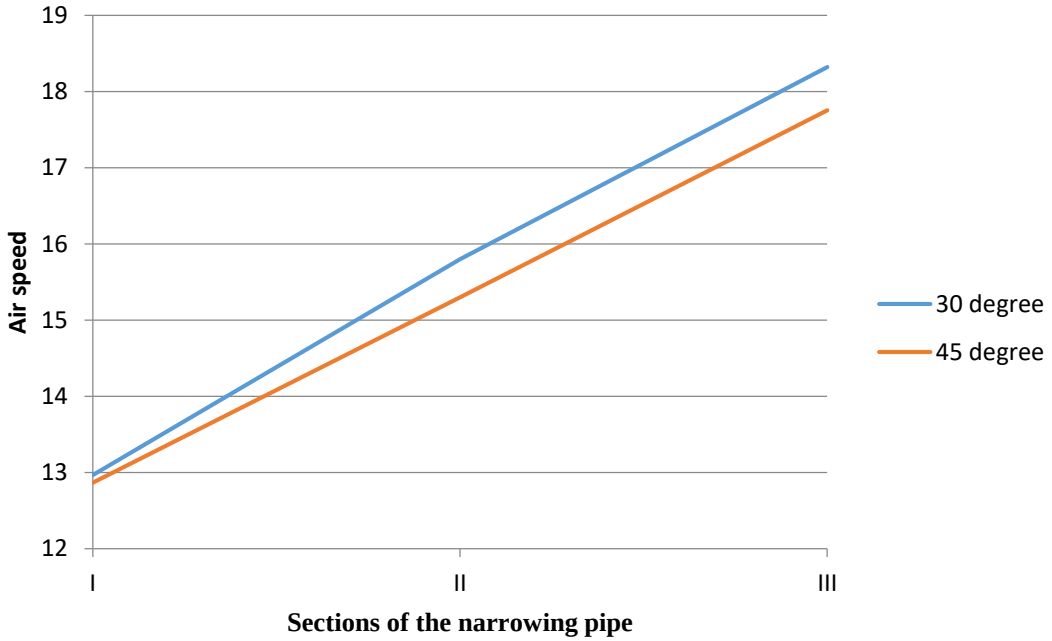

Figure 3. Effect of air speed on the angle of narrow in the narrowing pipe

In narrowing pipelines, the narrow angle increases local resistance, which in turn leads to air resistance. At a narrow angle of 45 degrees, if the air velocity at the pipe constriction differs by 1 m/s compared to 30 degrees, the speed is lost by 0.5 m/s. Therefore, if the optimal value of the angle of narrowing of the pipes is 30 degrees, then the occurrence of local resistances can be avoided.

Conclusion. In conclusion, theoretical equations for the velocity of a mixture of air and fibrous materials are developed at optimal values of local resistances, when the diameter of the pipe $H = 0{,}2$ is equal to the diameter of the outlet pipe $L = 0{,}4$, and the solutions are based on a graphical method. The analyzes carried out show that it is necessary to take into account that the outflow of air or a mixture through local resistance is always accompanied by a pressure loss. Due to the lack of a broad theoretical and analytical development of these problems, equations for calculating local resistances in a mixture of air and fibrous materials in narrowing pipes were developed and justified by analyzing particle velocities.

In theoretical and practical results, it was theoretically established that local resistance C_x=0.016 at the optimum value of local resistance in a mixture of air and fibrous materials in narrowing pipes $\alpha\pi$=30°. The graphs were obtained on the basis of

theoretical studies. The trend lines of the obtained graphs were linearly filtered and it was proved that the narrow angle sharply increases the local resistance, and it was found that the minimum value of the local resistance is reached at a narrow angle of 30 degrees.

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UDC: 633.551:575+631.52:

PROTEIN CONTENT OF WOOD OF THE MAIN STEM IN COTTON

Nasim Mamenovich Khozhambergenov Doctor of Agricultural Sciences, Head. Lab, (Scientific Research Institute of Breeding, Seed Production and Agrotechnologies of Cotton Growing)

Rasulov Dilmurod. Ibodullaevich Junior Researcher (Research Institute of Breeding, Seed Production and Agricultural Technology of Cotton Growing)

Karimov Ulugbek Quvondiqovich Doctor of Physical Technical Sciences, (PhD) (Paxtasanoat ilmiy markazi JSC)

Atanafasov Mukhiddin Rakhmanovich Doctor of Physical Technical Sciences, (PhD) (Tashkent Institute of Textile and Light Industry)

Sobirov Doniyor Xolmurodovich Lecturer, Department of Light Industry Technology and EquipmentTechnologies in Faculty of Chemical Technology, Urgench State University.

Shamuratov Muratbek Ziynalovich student. Urganch State Univeritety.
Sabirov19861010@gmail.com

Annotasiya: Ushbu tadqiqotlarda biz topkross kesish tizimida yog'och oqsili tarkibining merosxo'rligini o'rganish va tahlil qilingan liniyalardan amaliy naslchilik uchun foydalanish bo'yicha tavsiyalar berish vazifasini qo'ydik.

Kalit so’zlari: tola hosildorligi, tolaning nozikligi, tola mustahkamligi, duragayligi, irsiyligi, birlashma qobiliyati, bo‘linish, ustunlik, o‘zgaruvchanlik, individual tanlash, qishloq xo‘jaligi texnologiyasi, metodologiyasi, nav ko‘paytirish.

Аннотация. В данных исследованиях мы ставили задачу изучить наследование белковостью древесины в системе топкроссного скрещивания и дать рекомендации об использовании анализируемых линий для практической селекции.

Ключевые слова: выход волокна, тонина волокна, крепость волокна, гибрид, наследование, комбинационная способность, расщепление,

доминирование, изменчивость, индивидуальный отбор, агротехника, методика, размножение сорта.

Annotation. In these studies, we set the task of studying the inheritance of wood protein content in the system of topcross crossing and giving recommendations on the use of the analyzed lines for practical breeding.

Key words: fiber yield, fiber fineness, fiber strength, hybrid, inheritance, combinative ability, splitting, dominance, variability, individual selection, agrotechnics, technique, variety propagation.

Introduction. Proteins are complex compounds of colloidal order and consist of (approximately about 20) amino acids, all of which are various organic acids in which 1 or 2 hydrogens in the radical are replaced by an NH2 group. Proteins are composed of C, H, O, N and S. Most common in plant proteins are glutamic acid and leucine.

The number of proteins in plants is not as great as the content of carbohydrates, but these substances must be given exceptional importance in all physiological processes of the plant organism.

Proteins are divided into simple - spare and complex - constitutional, which are part of the protoplasm of nuclei, plastids and other cell formations:

Reserve proteins accumulate mainly in seeds and serve during seed germination as a building material during the formation of shoots - the main stem, monopodial and sigmoidal branches, and also as an energy source. Note that one gram of protein contains 5.6 calories.

Constitutional proteins accumulate mainly in young parts of plants in places of increased growth and are least of all involved in the general metabolism, however, they can be partially used by plants for respiration only in the absence of other respiratory materials - light, oxygen, mineral nutrition, and other factors.

is not difficult or completely impossible due to their colloidal state, and this occurs only after the breakdown into individual amino acids, which are sent to the growth sites. Here they are again synthesized into proteins, but are combined differently than the original ones, which leads to the formation of new proteins, while being individual for each plant, variety and species, but also at different stages of plant development.

Research Methodology. Therefore, the study of the protein content in wood and its effect on growth and development, productivity, early maturity, resistance to diseases, and other economically valuable traits in hybrids, varieties, forms and types of cotton is an urgent problem and is of great theoretical and practical importance, since morpho-physiological methods of analysis make it possible to find new methods of breeding, selection of initial forms combining the optimal combination of vegetative and generative organs and, at the lowest cost of mineral nutrition, to obtain the maximum yield by including the internal energy resources of the plant.

The protein content of wood was determined using the Kjeldahl micromethod. The studied percentage of total nitrogen was multiplied by a factor of 5.5, thus obtaining the amount of protein (according to Pleshkov, 1976).

The results of the analysis of variance of the protein content of the stem wood proved the significant differences between the variants of the experiment, which made it possible to proceed to further analysis of the combination ability of cotton varieties and

lines. An analysis of the combination ability indicates that the original varieties and lines differ significantly in the effects of GCA and SCA variations for the trait under study.

Of the studied cotton lines, L-158 L-75 and L-1703 and varieties S-6530 had the highest protein content in wood, and the lowest in lines L-302 and L-257.

Analysis and results. The data in the table show that the protein content in wood in F1 hybrids is inherited as a polygenic trait, i.e., in 2 combinations, a higher protein content in wood was observed, in 4 - intermediate inheritance, and in the remaining hybrid combinations (in 9 cases) there is partial dominance or dominance towards low-protein parents.

The analysis shows that the highest OC effect was observed in the L-257 line with low wood protein content, while the L-158 line, which has a high wood protein content, had a low OC effect. In this case, the effects of GCA do not correspond to the absolute indicators of the trait of varieties and lines.

For example, lines L-1703 and L-1858 had the lowest and most negative effects of OKS, although their wood protein content was not low, while line L-597 ranks 3rd in terms of the effect of OKS, and 6th in terms of protein content. . This indicates that varieties and lines with a high protein content of wood cannot always be good donors, and vice versa, lines and varieties with low protein values are good combinators for this trait. This once again proves the opinion that the varieties involved in the breeding process should be tested for donor properties according to the main morpho-economic and physiological-biochemical characteristics.

The highest SDR variants are observed in L-158, L-75 and L-302. At the same time, it should be noted that the ratio of GCA and SCA variances allows us to state that in the studied parental forms L-158, L-75, and L-302, wood protein content is controlled by a large number of non-additive genes, while variety S-6530 and lines L -1703, L-1858, L-257 and L-597 are characterized by additive interaction.

Thus, of the studied varieties and lines, in terms of protein content in wood, the line L-158 was the best in terms of the effects of OKS, and the lines L-597 and L-257 were the best combinators, that is, with their participation, it is possible to obtain various recombinants in the hybrid progeny, which will have breeding value as a starting material for the creation of various forms with different amounts of wood protein content. It should be noted that the inheritance of this trait in F1 hybrids is complex, i.e., overdominance, dominance and intermediate type of inheritance. The phenomenon of overdominance was expressed as positive and negative. It can be seen from the data in the table that the lowest protein content in wood is in line L-302 (3.83%) and the highest in variety S-6530 (4.23%). At the same time, they were characterized by relative stability. The coefficients of variation were 6.9% -9.1%.

Hybridological analysis of F2 plants showed the complexity of the studied trait. So, for example, in five hybrid combinations, an intermediate type of inheritance of the protein content in wood is observed, in three, positive overdominance and in two, negative heterosis, and in four combinations, the dominance of parents with a higher protein content. In absolute terms, hybrids L-75 x S-6530 and L-158 x S-6530 had the highest rates of this trait, and hybrid combinations L-158 x L-302, L-1703 x L-302 had the lowest values. It should be noted that in the studied hybrid combinations there is no

significant difference in the range of variation series. So, for example, in F2 hybrids, the protein content of wood varied from 2.25 to 6.24.0%, i.e., positive and negative transgression was noted.

However, in some combinations with the participation of the original forms L-75 and L-257, there is no negative transgression, and in hybrids L-75 x L-302, L-1703 x S-6530, L-1703 x L-597 and L-257 x L-597 lacks positive transgressions. Moreover, in Table 1 Combining ability of parental forms and indicators of F1 hybrids according to the protein content of wood.

Table 1.

Combination ability of parent forms and indicators F1 hybrids according to wood protein content

№	lines				Effects ACS gl	Kontakt SCS			Var. SCS Qsi	VAR. OKS Qgi
		C-6530	L-302	L-597		1	2	3		
1	L-158	-3.37	3.54	3.91	0.0677	-0.2627	0.0277	0.2523	0.0221>	0.0104
2	L-75	-3.83	3.43	-3.47	0.0388	0.2299	-0.0534	-0.1588	0.0161>	0.0027
3	L-1703	-3.39	-3.30	-3.48	-0.1468	-0.0212	-0.0012	0.0401	-0.0036 <	0.0528
4	L-1858	-3.33	-3.33	-3.34	-0.2034	-0.0312	0.0221	-0.0432	-0.0013 <	0.1024
5	L-257	3.89	3.62	3.74	0.2143	0.1143	-0.0357	-0.0610	0.0004 <	0.1138
6	Gj	0.0246	0.0921	0.0499	(gi-gi) – 0,072148 (gi-gj) –0,06453					
7	Qsi	-0.0012	0.0106	0.0017	(gj-gj) – 0,0558 (Sij-Se) –0,1070					
8	Qgj	0.0639	0.0025	0.0439						
9		4.36	3.38	3.72						

Table 2.

Variation in wood density of the main stem in F2 hybrids

№	Varieties and hybrid combinations	Class boundary, %								X±Sx	V %
		2,25-2,74	2,75-3,24	3,25-3,74	3,75-4,24	4,25-4,74	4,75-5,24	5,25-5,74	5,75-6,24		
1	C-6530			3	17	10				4,23±0,06	7,6
2	L-302			10	17	3				3,83±0,06	7,2
3	L-597			10	19	1				3,85±0,05	6,9
4	L-158			3	15	12				4,15±0,06	7,9
5	L-75			9	11	10				4,00±0,07	8,1
6	L-1703			8	15	7				3,98±0,06	8,4
7	L-1858		2	15	12	1				3,70±0,06	9,1
8	L-257		3	19	8					3,60±0,06	8,2
9	L-158 x C-6530	5	7	12	12	7	4		1	3,78±0,12	21,0
10	L-158 x L-302	10	6	24	15	4	1			3,50±0,08	12,2
11	L-158 x L-597		7	13	20	6	1	1		3,83±0,08	14,1
12	L-75 x C-6530		1	9	15	14	3			4,10±0,07	11,6
13	L-75 x L-302		13	15	10	8				3,64±0,08	14,6
14	L-75 x L-597			20	24	9	1	1		3,92±0,06	16,0
15	L-1703 x C-6530		6	14	18	10				3,91±0,06	12,7
16	L-1703 x L-302	7	14	28	12	4	1	2		3,51±0,08	18,3

17	L-1703 x L-597	3	8	19	13	5				3,64±0,07	14,5
18	L-1858 x C-6530		16	19	18	6				3,73±0,08	17,0
19	L-1858 x L-302	6	15	17	14	3	1			3,52±0,08	16,7
20	L-1858 x L-597	4	6	17	13	5				3,54±0,08	16,1
21	L-257 x C-6530		5	15	14	7	3	1		3,93±0,09	15,2
22	L-257 x L-302	1	12	14	7	3	2			3,60±0,09	16,5
23	L-257 x L-597		10	26	13	8				3,72±0,06	12,7

All combinations positive transgression plus variants (5%) is very low. A small amplitude of variation of the trait in hybrids and in parents indicates weak paratypic variability, which is typical for genetically stable traits. Therefore, the trait under study appears to be controlled by a small number of dominant and recessive genes.

The nature of inheritance and variability of protein content in wood in F3 hybrids were studied family by family, parental forms served as controls.

The data shows that the protein content in the wood of the parent forms ranged from 2.72% to 4.74%. The L-302 line had the least amount of protein in wood (3.75%), while the L-158 line had the highest content (4.25%). At the same time, this trait has a slight trend of variability over the years of study and varied in 3-4 classes.

A family-by-family study of the protein content in wood in F3 hybrids indicates a complex polygenic inheritance, however, the range of variability was somewhat less than in F2 hybrids of 4-8 classes, 4-5 in F3 hybrids.

The decrease in classes is explained not only by the family-by-family analysis of the studied trait, but also by the fact that the analyzed families had greater stabilization in terms of morphological and physiological-biochemical parameters of one or another parent and due to the imposition of selection in F2 for a complex of morphological and economic traits. The protein content in wood varied depending on the hybrid combinations from 2.25% (L-75 x L-302, L-1703 x L-302, L-257 x L-302, L-257 x L-597) to 4.75% in combinations varied depending on the hybrid combinations from 2.25% (L-75 x L-302, L-1703 x L-302, L-257 x L-302, L-257 x L-597) to 4.75% in combination L- 75 x S-6530.

Families with a higher and lower protein content are observed in terms of the range of variation than in the original forms, i.e., there is a transgression both to the left and to the right side, but the main number of families located in intermediate classes between parents. Therefore, regardless of the genetic complexity of the studied trait, it is possible to obtain families, lines and varieties with different protein content in wood and with high morphological and economic indicators.

Thus, based on the results obtained, the following conclusions can be drawn:

- Parental forms differ in the content of protein in the wood and have a certain stability over the years of study.

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Thus, based on the results obtained, the following conclusions can be drawn:

- Parental forms differ in the content of protein in the wood and have a certain stability over the years of study.
- Analysis of variance revealed a different combinational ability of parental forms and the severity of this trait in F1 hybrids, as well as some difference in the genetic control of this trait - additive (C-6530, L-1703, L-1858, L-257, and L-597) and non-additive (L-158, L-75 and L-302) gene interactions.
- F1 hybrids have a different nature of inheritance in terms of protein content in wood; overdominance, dominance and intermediate type. The phenomenon of overdominance, both positive and negative. a 3.

Table 2.

Variability in the density of the main stem in hybrids F3.

№	Varieties and hybrid combinations	Class boundary, %								X±Sx	V %
		1,75--2,24	2,25-2,74	2,75-3,24	3,25--3,74	3,75--4,24	4,25--4,74	4,75--5,24	5,25--5,74		
1	C-6530				3	12	5			4,10±0,09	9,6
2	L-302				8	9	3			3,75±0,09	10,6
3	L-597			5	8	5	2			3,63±0,11	10,8
4	L-158				3	9	8			4,25±0,09	9,5
5	L-75				6	7	7			4,10±0,11	9,4
6	L-1703				6	9	5			3,90±0,08	9,5
7	L-1858			4	10	6				3,64±0,09	8,9
8	L-257			5	8	7				3,60±0,11	10,8
9	L-158 x C-6530			3	7	12	8			3,98±0,09	12,1
10	L-158 x L-302			7	10	8	5			3,72±0,09	14,1
11	L-158 x L-597			3	13	8	6			3,94±0,08	13,6
12	L-75 x C-6530				8	12	8	2		4,15±0,08	11,1
13	L-75 x L-302		4	11	10	5				3,47±0,08	14,4
14	L-75 x L-597			3	14	11	2			3,79±0,07	12,4
15	L-1703 x C-6530			1	8	15	6			3,92±0,07	12,3
16	L-1703 x L-302		2	8	11	7	2			3,45±0,10	17,1

17	L-1703 x L-597			4	13	12	1			3,71±0,07	10,8
18	L-1858 x C-6530			6	14	5	5			3,74±0,09	13,5
19	L-1858 x L-302			8	13	7	2			3,55±0,08	12,5
20	L-1858 x L-597			7	15	6	2			3,61±0,08	11,9
21	L-257 x C-6530			6	13	7	4			3,74±0,09	13,1
22	L-257 x L-302		2	8	10	9	1			3,51±0,09	14,3
23	L-257 x L-597		2	6	9	8	5			3,60±0,11	16,1

Conclusion/Recommendations. The nature of the inheritance of the trait in F2 hybrids is intermediate, and the dominance of one or another parent is also observed. The severity of the trait depends on the hybrid combination. The range of variability is large, there is transgression and, apparently, controlled by a small number of dominant and recessive genes.

- F3 hybrids have a similar pattern of inheritance of the studied trait as in F2 hybrids, but with a lower amplitude of variability and higher average values.

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UDC: 633.551:575+631.52:

COMBINATION ABILITY OF PARENTAL FORMS AND INHERITANCE OF F2 AND F3 HYBRIDS ACCORDING TO THE DENSITY OF WOOD OF THE MAIN STEM IN COTTON

Nasim Mamenovich Khozhambergenov Doctor of Agricultural Sciences, Head. Lab, (Scientific Research Institute of Breeding, Seed Production and Agrotechnologies of Cotton Growing)

Karimov Ulugbek Quvondiqovich (PhD) (Paxtasanoat ilmiy markazi JSC)

Rasulov Dilmurod Ibodullaevich Junior Researcher (Research Institute of Breeding, Seed Production and Agricultural Technology of Cotton Growing)

Khojametov Sobir Jabborbergenovic scientist (Scientific Research Institute of Selection, Seed Production and Agricultural Technology of Cotton Growing)

Atanafasov Mukhiddin Rakhmanovich (PhD) (Tashkent Institute of Textile and Light Industry)

Sobirov Doniyor Xolmurodovich
Lecturer, Department of Light Industry Technology and Equipment Technologies in Faculty of Chemical Technology,
Urgench State University.

Shamuratov Muratbek Ziynalovich student. Urganch State Univeritety.
Sabirov19861010@gmail.com

Annotasiya: Maqolada F1, F2 va F3 duragaylarida g‘o‘zaning asosiy poyasining yog‘och zichligi bo‘yicha irsiylik xususiyatini o‘rganish bo‘yicha tadqiqot natijalari keltirilgan.

Kalit so’zlari: tola hosildorligi, tolaning nozikligi, tola mustahkamligi, duragayligi, irsiyligi, birlashma qobiliyati, bo‘linish, ustunlik, o‘zgaruvchanlik, individual tanlash, qishloq xo‘jaligi texnologiyasi, metodologiyasi, nav ko‘paytirish.

Аннотация: В статье приведены результаты исследований по изучению характера наследования плотностью древесины главного стебля хлопчатника у гибридов F1, F2 иF3.

Ключевые слова: выход волокна, тонина волокна, крепость волокна, гибрид, наследование, комбинационная способность, расщепление, доминирование, изменчивость, индивидуальный отбор, агротехника, методика, размножение сорта.

Annotation. The article presents the results of research on the study of the nature of inheritance by the density of wood of the main stem of cotton in hybrids F1, F2 and F3.

Key words: fiber yield, fiber fineness, fiber strength, hybrid, inheritance, combinative ability, splitting, dominance, variability, individual selection, agrotechnics, technique, variety propagation.

Introduction. It is known that the main economically valuable indicators in cotton are quantitative traits, and are controlled by a large number of genes, the influence of which on the formation and severity of traits is mainly additive, dominant, over-dominant, and less often epistatic.

Litirature review: Wood comes in two types - soft and hard. Soft wood is the wood of gymnosperms, hard wood is the wood of dicotyledonous plants. They have significant structural differences in the shape and size of cells, in density, hardness and strength of wood, as well as in the content and arrangement of fibrous bundles, (trachyd) K. Esau (1980). The stem is an organ that carries leaves and fruit elements, which connects them to the root, which provides mineral and water nutrition for the growth and development of the plant. The stem consists of the epidermis, the primary cortex and the central cylinder, consisting of the core and vascular-fibrous bundles.

S. Kh. Yuldashev (1966) notes that lodging-resistant plants are characterized by a high percentage of dense shells throughout the wood, and especially closer to the periphery of the stem. In his opinion, the strength depends on the size and number of vessels, radial rays, the strength of the core and the eccentricity of the stem. Physiological and biochemical studies by L.D. Prusakova (1965) found that the non-lodging wheat-couch grass hybrid-1 contains more inhibitory growth substances (phenolic compounds and flavinoids) than the lodging wheat-couch grass hybrid-666.

Consequently, a higher content of growth inhibitors in a plant - predetermines its ability to balanced growth - the plant is formed low, with a thickened and resistant to lodging stem. N.R. Turkova (1965) writes that a high concentration of auxins in plants promotes active cell growth, elongation of the stem internode, especially the lower ones, and thereby worsens the physical and mechanical state of the stem and reduces its resistance to lodging.

According to N.V. Kudryavtseva (1965), resistant varieties of grain crops are characterized by a higher content of nucleic acids in the upper internodes of the stem. In his research, V.A. Zemskaya (1977) notes that in plants, a certain amount of auxins are in a labile and stable relationship with various proteins, and through such complexing, free auxin can be regulated, transferred to a reserve form, and its physiological action can be neutralized or blocked.

K.Z. Hamburg, N.I. Rekoslavskaya (1977) write that the binding of auxin into conjugates and its release from them may have some significance for plant regulation and development, presumably during seed maturation and germination.

Riev A.S. et al. (1979) write that one of the analytical features characterizing the resistance of cotton to wilt is that this is the state of starch grains of the woody parenchyma, i.e., in resistant cotton plants, starch grains of cells (especially cells of the vezi centric parenchyma) are almost not affected by wilt. are destroyed and do not undergo hydrolysis, in susceptible ones they are completely destroyed in almost all parenchyma cells in the affected area and beyond.

Dariev A.S. (1985) notes that the drought resistance and precocity of cotton is mainly characterized by a large proportion of vascular fibrous bundles, rapid development (maturation) of the libriform, i.e., the greater the number of vessels, the smaller their diameter, the shorter the segment of the vessels and the poorer the wood parenchyma, the faster the cotton and the more resistant to moisture deficiency.

The anatomy and morphology of the structure of a cotton bush was studied by A.I. Schleicher (1959), A.D. Dadabaev and N.G. Simongulyan (1960), A.A. , on the anatomical and morphological structure of the bush, as it is interconnected with lodging, disease resistance, productivity, drought resistance, early maturity, and other features.

Analysis and results. Thus, the analysis of the literature data indicates that the wood density trait has been little studied, especially in conjunction with other physiological and biochemical parameters in cotton. Therefore, the study of the inheritance of wood density in hybrids and its relationship with morpho-economic and physiological-biochemical characteristics, as well as the influence of natural growth regulators on plant development, are very relevant from a scientific point of view.

The study of this issue will make it possible to create varieties and forms of cotton with high resistance to lodging, which will have a high adaptive capacity for high yields, mineral and water nutrition, as well as well adapted to mechanized cultivation and harvesting.

The density of wood was determined according to the law of Archimedes. To do this, at the end of the growing season, equal segments were taken from each accounting plant from the root collar in order to obtain mutually comparable results.

Then, these segments were weighed and dried in a thermostat at a temperature of 104 0 C. to a constant weight. When determining the density of wood, we used a pycnometer - a glass cylindrical vessel with divisions and filled with water in an amount of 100 ml. The test sample was immersed in a pycnometer filled with water, and thus the volume and weight of the displaced water were determined, and then its density was calculated. The density of a body is the ratio of body mass to its volume (Yakovlev, 1946).

The results of the analysis of variance of parental forms and F1 hybrids by wood density

Table 1

№	Source Variation	wood density
1	Options	2.09*
2	Repetitions	1.09
3	Random	4.28
4	OKS	2.02*
5	SCS	0.02*
6	RE	1.67*
7	Random	1.42

Note: *P=0.05

ANOVA data on wood density and results on combining ability proved the significant differences between the studied varieties and F1 hybrids (Table-1), which made it possible to proceed to the analysis of GCA and SCA of the studied varieties and lines of cotton and their standard error.

From the data in Table 1, it can be seen that the density of wood is inherited as a complex trait, i.e., when hybridizing with close indicators of parental forms, positive heterosis was observed, and with sharp differences in the trait, intermediate inheritance is observed. So, for example, in 5 cases it was inherited intermediately, and in 10 combinations heterosis was observed (table-1.).

The data in Table 2. show that the lines L-302, grade S-6530, and L-1703 turned out to be the best in terms of wood density, and looser wood had L-75 and L-597. L-1858 and variety S-6530, L-302 have the highest effects of ACS, and low rates were noted in L-158, L-257 and L-597. At the same time, it should be noted that the correspondence between the absolute indicator of the trait and the effect of GCS does not fully correspond, that is, the L-1858 line is the best combinator for this trait.
However, the density of its wood is not high, line L-302 has a high wood density, but ranks 3rd in terms of the effects of ACS (table-2.). Therefore, the determination of GCA and SCA is necessary in breeding work in order to determine donor properties by wood density in the original forms.

Thus, L-1858, S-6530 and L-302 turned out to be the best in terms of wood density and the effects of OKS, which can serve as donors when creating varieties with dense wood of the main stem

The results of SDR effects are of interest from the point of view of heterotic selection and confirm the degree of manifestation of heterosis and intermediate inheritance of traits, that is, high positive values of SDR effects indicate the level of heterosis in F1 hybrids. From the data in Table 3, it can be seen that from the parental

forms, L-302 and S-6530 have the densest wood. It should be noted that the coefficient of variation in parents was in the range of 7.6 - 10.5%. The analysis of the obtained results shows that F2 hybrids have overdominance, the dominance of parents with a higher wood density.

№	lines				Effects ACS gl	SCS effect			Var. SCS Qsi	Var. OKS Qgi
		C-6530	*L-302*	*L-597*		1	2	3		
1	L-158	1,625	1,595	1,62	-0,0024	-0,0231	-0,0646	0,0953	0,0027	-0,0002
2	L-75	1,61	1,64	1,565	-0,0204	-0,0326	0,0414	-0,0013	-0,0001	0,0008
3	L-1703	1,655	1,60	1,54	-0,0317	0,0734	-0,0289	-0,0369	0,0011	0,0023
4	L-1858	1,695	1,655	1,57	0,0495	0,0666	0,0018	-0,0608	0,0013	0,0059
5	L-257	1,595	1,655	1,58	-0,0077	-0,0717	0,0629	0,0163	0,0016	-0,0000
6	Gj	0,0432	0,0283	0,0791						
7	Qsi	0,0024	0,0008	0,0090						
8	Qgj	0,0075	0,0046	0,084		(gi-gi)-0.03084 (gj-gj)-0.02389		(gi-gj)-0.0275 (Sij-St)-0.04574		
9		0,815	0,845	0,595						

In three combinations, hybrids were at the level of parents, and in other cases, positive and negative heterosis or intermediate inheritance was established. In absolute terms, the hybrid combination L-175 x L-597 (1.48 g/cm3) had the loosest wood, and in other cases the average value of this feature was within 1.49-1.56 g/cm3.

The results of hybridological analysis indicate that F2 hybrids have a wide range of variability in wood density compared to parental forms (from 1.3 to 1.73 g/cm3); transgressive splitting takes place, both to the left and to the right side of the variation series.

The frequency of negative transgression in most combinations was slightly higher than the frequency of positive transgression. Although the top of the Gaussian curve in hybrids is at the level of one or another parent or between them. The coefficients of variation in the F2 hybrid populations were slightly higher than in the parental forms, 12.4-14.8% (Table-3.).

Table-3

Variability in the density of the main stem in hybrids F2.

№	Varieties and hybrid combinations	Class boundary, in F2, %											X±Sx	V, %
		1,30-1,33	1,34-1,37	1,38-1,41	1,42-1,45	1,46-1,49	1,50-1,53	1,54-1,57	1,58-1,61	1,62--1,65	1,66-1,69	1,70-1,73		
1	C-6530						14	16	26	5	4		1,57±0,06	8,8
2	L-302						8	14	22	13	5		1,60±00,5	7,8
3	L-597				12	14	18	9	7				1,49±0,07	9,3
4	L-158					14	12	20	10	4			1,55±0,06	10,5
5	L-75			12	14	21	9	4					1,47±0,06	9,2
6	L-1703					13	15	19	13				1,54±0,07	8,1
7	L-1858				14	13	20	8	5				1,50±0,06	9,6
8	L-257				12	13	25	5	5				1,49±0,06	9,6
9	L-158 x C-6530		8	17	24	25	54	96	42	23	11		1,53±0,04	14,6
10	L-158 x L-302		5	10	13	37	62	80	67	17	9	5	1,55±0,03	12,4
11	L-158 x L-597		8	14	26	44	45	86	36	28	3		1,53±0,04	14,4

12	L-75 x C-6530	4	13	24	27	56	15	12	21	15	3		1,51±0,04	14,3
13	L-75 x L-302	2	12	13	34	61	70	57	29	14	8		1,51±0,03	12,8
14	L-75 x L-597	2	11	25	36	102	58	31	26	9			1,48±0,04	13,0
15	L-1703 x C-6530		7	17	18	31	53	83	42	33	16		1,55±0,04	14,0
16	L-1703 x L-302		8	17	25	37	40	60	56	28	24	3	1,56±0,04	13,8
17	L-1703 x L-597	4	14	23	31	39	97	47	48	29	16		1,51±0,04	14,2
18	L-1858 x C-6530		8	17	25	29	47	83	70	132	4		1,54±0,04	14,7
19	L-1858 x L-302		5	13	24	25	41	101	54	18	17	2	1,55±0,04	14,2
20	L-1858 x L-597	4	29	36	42	43	70	41	35				1,49±0,04	14,8
21	L-257 x C-6530	3	12	21	23	40	109	50	28	14			1,52±0,04	13,5
22	L-257 x L-302	5	14	23	30	37	72	58	43	20	8		1,53±0,04	13,9
23	L-257 x L-597	6	7	12	31	60	86	57	31	10			1,50±0,04	13,5

It should be noted that the decrease in positive transgressions compared to negative transgressions in terms of wood density is apparently associated with the limit of the genetic possibility of this trait in the original forms, since from an evolutionary point of view, this trait does not play a big role for cotton in this case. This trait is of great importance in the mechanized cultivation and harvesting of raw cotton.

Thus, wood density in F2 hybrids is inherited as a typical complex trait and is apparently controlled by a relatively large number of dominant and recessive genes, and is also characterized by high polymorphism.

The density of wood in F3 hybrids was studied individually for each accounting plant (Table-4.).

Table-4.

Variation in wood density of the main stem in F3 hybrids

№	**Varieties and hybrid combinations**	**Class boundary, % g/cm 3**											**X±Sx**	**V %**
		1,30-1,33	**1,34-1,37**	**1,38-1,41**	**1,42-1,45**	**1,46-1,49**	**1,50-1,53**	**1,54-1,57**	**1,58-1,61**	**1,62-1,65**	**1,66-1,69**	**1,70--1,73**		
1	C-6530					2	10	16	23	9			1,58±0,06	9,2
2	L-302						3	7	20	22	8		1,62±0,06	9,8
3	L-597				8	13	23	14	2				1,51±0,06	9,9
4	L-158					9	13	19	14	5			1,56±0,07	9,2
5	L-75			14	14	17	12	3					1,46±0,06	9,5
6	L-1703					13	10	27	10				1,53±0,07	9,6
7	L-1858				9	17	21	13					1,51±0,07	8,2
8	L-257			4	7	31	15	3					1,48±0,05	7,0
9	L-158 x C-6530		4	9	25	28	41	86	58	36	3		1,55±0,04	12,5
10	L-158 x L-302		3	7	28	34	45	62	44	34	32	11	1,56±0,03	12,4
11	L-158 x L-597			14	13	30	90	199	52	12			1,54±0,08	10,5
12	L-75 x C-6530	2	10	18	45	79	90	31	19	6			1,49±0,03	12,2
13	L-75 x L-302		16	19	37	41	101	68	13	5			1,51±0,03	12,4
14	L-75 x L-597	9	16	45	62	90	53	23	2				1,50±0,03	11,6

15	L-1703 x C-6530		5	11	28	37	43	97	39	23	17		1,54±0,03	14,3
16	L-1703 x L-302			14	18	56	47	70	56	16	7	6	1,55±0,03	14,2
17	L-1703 x L-597		9	16	45	61	93	41	22	13			1,51±0,03	12,2
18	L-1858 x C-6530		8	14	27	40	64	102	32	13			1,52±0,04	13,0
19	L-1858 x L-302			4	12	22	30	54	81	50	31	16	1,57±0,04	14,1
20	L-1858 x L-597		14	22	36	45	95	67	15	6			1,50±0,04	12,5
21	L-257 x C-6530		9	14	37	62	96	36	21	13	12		1,51±0,04	13,5
22	L-257 x L-302		4	14	22	42	69	84	52	3			1,54±0,03	12,4
23	L-257 x L-597		4	35	26	57	96	43	24	15			1,51±0,04	13,4

Analysis of the obtained results shows that the basic principles of inheritance and variability of the studied trait are similar to F2 hybrids. At the same time, it should be noted that the average value of the trait is slightly higher than that of F2 hybrids. This increase is related to the type of selection of the F2-mother plant, paternal or intermediate type and including a complex of the best morphological and economic features.

Conclusion/Recommendations. A family-by-family study of F3 hybrids made it possible to identify families with different wood densities from loose to very dense. The character of family variability in F3 (V= from 10.5% - 14.3%) is approximately the same as in plants in F2. The largest number of families with a high density of wood than in parental forms was isolated in populations from crossing testers with the line L-1703, as well as L-1858 x L-302, L-257 x S-6530, L-257 x L-597 (table-4). Transgressive splitting in F2 and F3 is explained by the fact that the analyzed lines and testers are similar in terms of wood density, but apparently have a different state of allelic genes controlling this trait.

Thus, based on the results obtained, the following conclusions can be drawn:

-Parental forms differ from each other in terms of wood density and have different combinational abilities. According to the effects of OKS, S-6530, L-1858 and L-302 were the best, which are good donors in terms of wood density.

- Wood density in F1 hybrids is inherited as a typical polygenic trait and is apparently controlled by different states of allelic and non-allelic genes. Positive heterosis, overdominance, dominance and intermediate inheritance are observed.

- Hybridological analysis of F2 plants revealed the intermediate inheritance of wood density, as well as the manifestation of negative heterosis. But in the variability of the trait, there is a large range of variation from very loose to very dense.

-Analysis of F3 hybrids showed a similar pattern of wood density inheritance as in F2, but with less variability of the trait.

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ACTUAL PROBLEMS IN MODERN ART AND ARCHITECTURE

UDK 784.4

EPIC ART IN THE HERITAGE OF UZBEK FOLK MUSIC

Rashid Tashkulovich Primov
Head of the department of
Music Education, Faculty of Arts
Karshi State University
musiceducationkarshi@gmail.com

Annotatsiya: Ushbu maqolada o‘zbek xalq musiqa ijodida dostonchilik san’ati, dostonchilik maktablari, udumlari, dostonchilik sa’natining o‘ziga xos xususiyatlari va o‘zbek baxshichilik san’ati haqida fikr mulohazalar uchbu maqolaning asosini tashkil etadi. Unda har bir xalqning og‘zaki ijodi uning ko‘p asrlik tarixi, etnik xususiyatlari, dunyoqarashi, urf-odatlari, ijtimoiy- maishiy turmushini poetik ifodalovchi tarixiy-badiiy-estetik hodisa sifatida ko‘rib chiqilgan. O‘zbek xalqining og‘zaki ijodi asrlar bo‘yi umuminsoniy qadriyatlarga hissa qo‘shib kelgan milliy ma’naviyatimizning tarkibiy qismi ekanligi va bunda eng mo‘jaz maqollarning ham, yirik hajmli dostonlarning ham o‘z o‘rni hamda o‘z ahamiyati borligi haqida qimmatli ma’lumotlar muallif tomonidan taqdim etilgan. Dostonchilik san’ati rivojida Qashqadaryo-Surxandaryo baxshilarining munosib o‘rni borligi ta’kidlab o’tilgan.

Kalit so`zlar: Ma’naviyat,doston, terma, folklor, baxshi, jirov, jirchi, oqin, oxun, doston tirkumi, tasnif, tipologiya, noma, ichki ovoz, ustoz-shogird.

Аннотация: В основу данной статьи положены эпическое искусство в создании узбекской народной музыки, школы эпического письма, обычаи, специфические черты эпического искусства и искусства узбекского направления бахши. В ней устное творчество каждого народа рассматривается как историко-художественно-эстетическое явление, поэтически выражающее его многовековую историю, этнические особенности, мировоззрение, обычаи, общественно-бытовой быт. Что устное творчество узбекского народа является составной частью нашей национальной духовности, вносившей свой вклад в общечеловеческие ценности на протяжении веков, и что свое место и значение в нем имеют как самые замечательные пословицы, так и масштабные былины

предоставлено автором. Подчеркнуто, что Кашкадарьинско-Сурхандарьинские бахши занимают достойное место в развитии эпического искусства.

Ключевые слова. Духовность, эпос, терма, фольклор, бахши, джиров, джирчи. окин, ахун, сборник былин, классификация, типология, нома, внутренний голос, наставник-ученик.

Abstract: This article is based on epic art in the creation of Uzbek folk music, schools of epic writing, customs, specific features of epic art and the art of the Uzbek bakhshi direction. In it, the oral creativity of each people is considered as a historical, artistic and aesthetic phenomenon, poetically expressing its centuries-old history, ethnic characteristics, worldview and customs, social and everyday life. That the oral creativity of the Uzbek people is an integral part of our national spirituality, which has contributed to universal human values for centuries, and that both the most wonderful proverbs and large-scale epics have their place and significance in it, provided by the author. It is emphasized that the Kashkadarya-Surkhandarya bakhshis occupy a worthy place in the development of epic art.

Key words: Spirituality, epic, terma, folklore, bakhshi, jiro, jirchi, akyn, akhun, collection of epics, classification, typology, noma, inner voice, mentor-student**.**

Introduction. Music is formed as an important component of human spiritual culture.Music is considered as one of the important methods of researching the human factor and artistic mastering of the world, and it is one of the leading factors in the formation of human mental, moral maturity and spirituality, and in the spiritual education of young people.

"Spirituality is an incomparable force that calls a person to spiritual purification and spiritual growth, strengthens his inner world, strengthens his will, completes his faith, awakens his conscience, and is the criterion of all his views" [2;19] In the high level of development of Uzbek national values, the fact that it was nourished by the traditions of folk art, that is, the consistent relationship between folklore and our spiritual values, has also become important.

As the President of our country Sh. Mirziyoyev noted: "Strengthening and developing the moral spirit of the people is the most important task of the state and society in Uzbekistan.Spirituality is such a precious fruit that it ripened in the hearts of our ancient and modern people together with the feeling of understanding one's independence and loving freedom in the huge family of humanity.Spirituality is absorbed into a person along with mother's milk, father's example, and ancestors' fertilizer". [1]

Oral creativity of every nation is a historical-artistic-aesthetic phenomenon that poetically expresses its centuries-old history, ethnic characteristics, outlook, customs, and social and domestic life.Oral creativity of the Uzbek people is considered an integral part of our national spirituality, which for centuries has contributed to universal values, and in it the most wonderful proverbs and large-scale epics have their place and significance.

Literature review. According to the Decree of the Cabinet of Ministers of the Republic of Uzbekistan No. 304 “On measures for the further development and improvement of the art of poetry and epic” dated April 26, 2018, masterpieces of the

intangible cultural heritage created on the basis of the high artistic creativity of our people, epic writers, Uzbeks Masters-bakhshi, who contributed to the further development and popularization of the art of bakhshi, young bakhshi and epic performers who won high places at prestigious international and republican competitions, large-scale work to promote the best examples of epic poets.

In the musical heritage of the Uzbek people, the epic art is one of the oldest and most widespread genres of Uzbek folklore.The word "epic" is used in the meaning of short story, telling of interesting events, adventure, description and praise. As a literary term, it is a large-scale epic work in folklore.

According to the information, in the past, the authors of epics and dramas were also organized into special poetic schools.One such poetic school existed in the XIX century in the village of Juma, Samarkand region, and its last representative lived as a dervish-kalandar.

The scientist A. Troitskaya gives interesting information about the existence of special schools of qalandars and dervishes and their offshoots in Central Asia before the beginning of the XX century.Based on the information of ancient and historical sources, she writes that in the XIX century the city of Samarkand was the center of qalandars.In the branches of this center in Bukhara, Khiva, Afghanistan, Kashgar and other places, specialists-kalandars and maddohs have been trained.The preparation was carried out on the basis of strict rules, and those who mastered a certain course got the right to walk in the country only after passing a special exam [7;191-223].

As can be seen from the data, there are a number of common features between the preparation of folk bakhshi and the preparation of kalandars and maddohs.We believe that if, after special training conducted by a teacher, the future folk bakshi passed the test with the participation of people and won the right to sing an independent epic, then kalandars and maddohs pass a special exam, and also receive blessings from teachers for independent activities.It shows that the graduates of this school are called kalandars and maddohs, and the level of their knowledge and tasks is different, like a storyteller and a composer.

The features, classification and typology of folklorisms, which are a peculiar form of artistic and aesthetic connection between folk oral and poetic creativity and performance, are discussed, the opinions of such scientists as B. Sarimsakov [6;34-46], I. Yormatov are expressed.“In the process of performing the epic, the bakhshi observed certain rituals, customs, rules, took into account the social composition of the public,” says scientist T. Mirzaev.

Materials and methods. The epics are thematically diverse and grouped into certain categories based on the commonality of their content. For example, the series of epics "Gorogly" consists of more than forty fully completed and independently performed love-romantic epics, in which the didactic theme is of particular importance. In Uzbekistan, in our fiction "Alpomysh", "The Birth of Gorogly", "MalikaiAyyor", "Ravshan", "Kuntugmysh", "Rustamkhan", "Avazkhan", "Ashik Garib" and many other widespread epics from the cycle "Gorogly”, which have been orally sung by bakhshi in folklore for centuries.

Its creation is closely connected with the spiritual and everyday image, political views, moral and aesthetic education, the ideals of justice and truthfulness, freedom

and equality, the heroism and patriotism of our people. The theme of the centuries-old struggle and ideals determines the ideological content, the essence of reality.

The fact that the repertoire of Uzbek epics is deliberately limited to epics and termas is partly due to this patronage“Bakhshi,” says Tora Mirzaev, “although they knew many examples of works of other genres (fairy tales, songs, anecdotes, and so on) than termas and epics, they did not sing about them” [5;22]. Among the performers of such epics were Ergash the son of Zhumanbulbul, Fazil the son of Yoldosh, the poet Polkan, the poet Abdullah and others.

It should be noted that in almost all local regions of Uzbekistan, except for the Khorezm oasis, epics are performed with recitative and declamatory melodies, accompanied by dombra in a special deaf voice.In Khorezm, it is performed in a melodic voice accompanied by a dutar or a traditional ensemble.This is especially evident in the performance of the great bakhshis of Kashkadarya and Surkhandarya, who tell the story today, and young talents who are faithful to their school.

The Surkhandarya-Kashkadarya saga of the oasis is very ancient, and at the same time, local customs and traditions are well preserved in it.It is defined by its unique literary and prose, poetic, as well as musical and creative qualities.Among the most common historical and romantic epics in the Surkhandarya and Kashkadarya oases are "Alpomysh", "Avazkhan", "Rustamkhan", "Gorogly" and others.

Based on the reflections of Tora Mirzaev, we considered it necessary to give an opinion about the terma and its creator based on the history of the study of termas in Uzbek folklore.Talking about the creators and performers of folklore, the scientist expresses the following points directly related to the terma genre:"Creators who glorify epic works - storytellers, are known among the people in different regions of Uzbekistan under different names: bakhshi, poet, fat, jirchi, okin, akhun, sanovchi, yuzbashi, juices, sozanda, sozchi, halfa, who own the epic repertoire divides the Uzbek bakhshi into the following levels:a) non-professional bakhshis; b) professional bakhshis.At the moment, non-professional bakhshis themselves are divided into two types: a) amateur bakhshis; b) terma bakhshis [5;12-18].

Each epic consists of songs and melodies that express dozens of different situations and moods. Based on the specific situation of reality, the performer selects musical samples in his performance and uses them accordingly.

Vocal and purely instrumental melodies play an important role in the process of step-by-step narration about the events of the epic. Also, "noma" are song samples of various content, which are regularly sung during its performance. “Noma” are performed by the narrator, accompanied by a drum instrument in a thick, muffled voice, which is why they are called "internal" [4;53].

Epics, a genre of Khorezm oral art, tell stories and tales about bygone times, various exploits, artistic stories about the battles experienced by our people.

Musicologist R. Yunusov describes these oasis epics as follows: “The epic traditions common in Khorezm differ significantly from other epic traditions of the neighboring Turkic-speaking peoples, that is, other regions of Central Asia, in particular, Uzbekistan. In general, Khorezm epics are more musical. Poetic texts, associated with a phased narrative of events are more suitable for singing. As mentioned above, the storyteller sings songs "open", that is, in a natural voice. He is

often accompanied by dutar, bolamon, gizzhak and doira. It is known that over the past 70-80 years, some epic poets from Khorezm have mastered playing the Azerbaijani string and used it for their musical accompaniment [4;53].

Epic noma of different content have more developed and complete musical forms. Some noma can be compared with terma, songs, others with folk songs. One notable aspect is that most of the noma in epics have become very popular with listeners. Because in Khorezm it became a custom to sing them not only in the form of a direct epic, but also freely and separately from the tunes of many artists and amateur singers.

In this oasis, large and small epics on dozens of different topics are very common. Among them, the most famous are, in particular, “Ashik Garib and Shahsanam”, “Avazkhan”, “Baziren”, “Khirmondali”, “Yusuf and Zulaikho”, “Rustamkhan” and others.

For Uzbeks, bakhshi is an artist who reminds, sings, and passes on folk songs from generation to generation. Popularly, the word bakhshi is used to refer to a person who performs two tasks of a different nature. Epic storytellers are known under different names in all corners of Uzbekistan. For example, in Surkhandarya and Kashkadarya they are called yuzboshi, among the Uzbeks of Southern Tajikistan they are called sokhi, a musician, in the Ferghana Valley they are called sanovchi, and in some places they are called jirov, jirchi, akin, akhun.

Among Uzbeks, folk storytellers of epics are also called poets. In colloquial speech, a poet is an Arabic word, and it is also used to refer to a representative of literature, the creator of a poetic work, and in a figurative sense, a resourceful, sweet-spoken person. In folk art, poets are called the creators of epic works and the creators of new epics - bakhshi. In Khorezm, epic singers are called bakhshi. The word "bakhshi" is close to the Persian word "bakhshidon", and when translated into Uzbek, the word "bakhshidon" means "to shine", "to give", and is suitable for the work of bakhshi in Khorezm. In fact, the bakhshi artistically performed epics dedicated to one event, as if they were experiencing it from memory.

Khorezm bakhshi mainly performed epics with dutar accompanied by gidjak, bulaman, doira. Since the 30s of the last century, Khorezm bakhshi began to sing epics mainly on stringed instruments. In this regard, some bakhshi and their ensembles are distinguished by their originality and musicality. An example of this is the performing and creative activity of Bola Bakhshi Abdullayev. In Khorezm, epics, often parts of them, are performed to harmonic music. The difference between the performing styles of the Kashkadarya-Surkhandarya and Khorezm epic schools in Uzbekistan is that the Kashkadarya-Surkhandarya epics are sung through the throat (in a dull voice); Khorezm bakhshi sing with an open voice.

Conclusion: Epic art embodies dreams and hopes, thoughts about the bright future of our people throughout the centuries. The historically and culturally significant Uzbek folk epic, the art of the Uzbek folk epic has a high artistic value and continues for centuries. Thanks to the relationship of masters and students, who have made a worthy contribution to the world cultural and spiritual heritage of our people and this, is an invaluable art form. Uzbek folk epics serve as an important source of education

of national pride and self-consciousness, patriotism, education of a new generation that can inherit our rich musical heritage.

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ACTUAL PROBLEMS OF NATURAL SCIENCES

UDC 316.3/4

TECHNOGENIC ACTIVITY OF PEOPLE-NEGATIVE IMPACT ON NATURE

Seitova Zukhra
Candidate of Philosophical Sciences,
Associate Professor
named after Ajiniyaz in
Nukus Republic of Karakalpakstan
Seitova_Zukhra@mail.ru

Annotatsiya. Biz zamonamizning ekologik muammosining global tabiati haqida bormoqda. Zamonamizning eng o‘tkir muammolaridan biri – Orol va Orolbo‘yi muammosi o‘rganildi, bu yerda tabiatga antropogen tazyiq nafaqat keskin nuqtaga yetdi, balki bu chegaralardan ham chiqib ketdi. Orol fojiasi, aslida, global ijtimoiy-tabiiy ekologik halokatdir.

Tayanch iboralar: ekologiya, falokat, Orol va Orol dengizi, jamiyat, biosfera, ijtimoiy-tarixiy taraqqiyot.

Annotation. We are talking about the global nature of the environmental problem of our time. One of the most acute problems of our time has been studied - the problem of the Aral Sea and the Aral Sea region, where anthropogenic pressure on nature has not only reached a critical point, but also gone beyond these limits. The tragedy of the Aral Sea is, in fact, a global socio-natural ecological catastrophe.

Key words: ecology, catastrophe, Aral Sea and Aral Sea, society, biosphere, socio-historical progress.

Аннотация. Речь идёт о глобальности экологической проблемы современности. Изучена одна из острейших проблем современности – проблема Аральского моря и Приаралья, где антропогенное давление на природу не только подошло к критической черте, но и вышло за эти пределы. Трагедия Аральского моря является по сути дела глобальной социоприродной экологической катастрофой.

Ключевые слова: экология, катастрофа, Аральское море и Приаралье, социум, биосфера, социально-исторический прогресс.

Introduction. Labor, consciousness and speech have distinguished man from nature. The ability to work is an essential characteristic of a person. Environmental problems have become particularly acute in the modern world. The main reason for the aggravation of environmental problems is man-made human activity, which causes adverse manifestations of natural elements. The traditional consumer attitude of man and society to nature and resources has a negative impact on the environmental situation in the world, in regions and in individual countries.

The degree of knowledge of the problem. The aggravation of environmental problems has called into question the security and very existence of human society, as well as its ability to adequately respond to the threats and challenges that have arisen. Academician N.N. Moiseev outlined the global environmental problem especially acutely and visibly in his famous book "To be or not to be a human civilization" [6.-p.288]; the concept of ethical attitude to nature was formulated by A. Schweitzer in his famous book "Culture and Ethics"; Legal issues of water use in connection with the works of many scientists are devoted to irrigation of lands: M.Ataeva[9], O.S. Kolbasova[11], N.V. Storozheva N.V.[15], S.G. Strumilina [16], Yu.P. Balichesco[10], M.M.Shedova [10] and others.

Materials. The current stage of development of society is characterized by the aggravation of the global environmental crisis, which becomes the main obstacle in solving socio-economic, political, spiritual and other problems and largely determines the current life of people. Humanity has come to a very important stage of its interaction with the natural environment. With the increase in the activation of human activity, the impact of which on the natural environment doubles every 12-15 years, and with the development of deep patterns of social reality that determine the nature of socio-natural relations, there is an increase in the increasing influence of society on nature, a change in its structure and a violation of ecological relationships, dynamic balance, integrity between nature and society.

At the same time, the pace of development of society is significantly ahead of the pace of self-development and reproduction of the natural environment. Therefore, as a result of the discrepancy between the rates of restoration of the natural geological and biospheric cycles of the natural environment and the socio-economic development of mankind, the threat of a global ecological crisis is aggravated, turning into a formidable, accelerating movement and an active factor of social development.

The global nature of the environmental problems of our time also consists in the fact that they are primarily of universal and general historical significance. After all, we are essentially talking about people's health, about the threat to the very foundations of humanity's existence due to the exhaustion of natural resources and pollution of its habitat that is dangerous for human life. Moreover, these are questions of the future.

The conditions in which future generations will live depend on their joint decision. The modern socio-ecological crisis in the Aral Sea region was largely provoked by techno the cratic methods of transformation of society, which have manifested self-employed in various fields-from economics and environmental management technology to ideology.

Already in the 1980s, the natural component of the crisis was vividly outlined by the Soviet press, which wrote about the drying up of the Aral Sea, salt storms and the deterioration of the climate of the region. In the late 1980s and early 1990s, natural scientists were able to summarize the results of studies of the phenomenon of natural degradation of the Aral Sea region not only during the Soviet period, but throughout its three thousand-year history. And here a similar summary analysis of the crisis in the Aral Sea region as a social phenomenon was not carried out then. Apparently, it could not have been done for political reasons, since the Aral crisis was an organic part of the general crisis of the Soviet system.

In this regard, special attention of the general public has been attracted for several years to one of the most acute problems of our time – the problem of the Aral Sea and the Aral Sea region, where anthropogenic pressure on nature has not only come to a critical point, but has also gone beyond these limits. The tragedy of the Aral Sea is essentially a global socio-natural ecological disaster. If we do not jointly solve the problem of saving the Aral Sea and the Aral Sea region, we will not be able to prevent the spread of the ecological disaster zone to new territories.

Contradictions that have arisen in the Aral Sea region in the interaction of society and nature, affecting the conditions of human existence, socio-economic and political processes of our time, affect human health, determine the main content of the environmental problem. The Aral Sea, located in the depths of Central Asia, is the final link in the chain of intercontinental reservoirs of the Euro-Asian continent. The history of its development differs markedly from other seas by sedimentation conditions and is characterized by sharp changes in the level and salinity. In recent years, due to the environmental disaster, interest in the Aral Sea has increased dramatically, many publications devoted to its study have appeared.

Many philosophers consider the source of environmental disasters to be man himself, his ability to create and use technologies that can become destructive to life in nature. Philosophers note the unstoppable craving of mankind for enrichment at the expense of nature and the philistine attitude towards it from the position of the owner, the "king of nature". This standard of thinking and behavior should be changed[1].

Ensuring the safety of humanity is becoming more important than continuing technological progress. The central focus is not a further increase in production, but transformation, taking into account the environmental consequences of its implementation. It is important to make a transition to a more "natural", less dependent way of life and to an economy that would take into account the need for the revival and protection of nature.

Thus, there are new tasks facing philosophers: a spiritual understanding of the problems of interaction between man, society and nature and the identification of specific ways to solve them. The main one is the understanding of the model of the further structure of society as an ecological and informational culture capable of being in harmonious relations with the natural environment. This is, without a doubt, the main strategic task for the future facing philosophical thought.

Another fundamental task is to re–target society from a dependent attitude to nature to a relationship where both society and nature develop together and are able to bring the "society–nature" system into harmony. Since the main cause of the existing

environmental problems comes from a person, therefore, changes are required by him, and mainly by his spirituality. The spiritual reserve of a person and society needs to be studied, defined and used to solve difficult environmental problems facing the world community.

Another area for the study of environmental problems by philosophers are wars – a special type of armed conflict resolution by force. At the moment, the major powers have atomic bombs, missiles reaching anywhere on Earth. The existence of various types of bacteriological and chemical weapons, as well as the constant build–up of conventional weapons, makes it possible to assert that a new, third world war - nuclear missile – could be the last, because it would be the end of all life on Earth [2].

A strong increase in radioactivity in a short period of time will lead to the death of all living things that survived after the nuclear strike itself. Most major cities, scientific and industrial centers will be liquidated. The entire biosphere will be contaminated with radiation. In view of this, life on our planet will be forever impossible. The prevention of nuclear missile war requires the reduction, or better, the cessation of all local and territorial armed conflicts. Understanding this is the basis of new political thinking. That is why the task of philosophy is to comprehend the content and direction of such changes, as well as to indicate the path leading to socio-historical progress without wars.

Having emerged more than 100 years ago as the doctrine of the relationship between the organism and the environment, ecology is now the science of the structure of nature, the science of how the living cover of the Earth works in its integrity, how human activity affects these processes. Therefore, the main theoretical and practical task of ecology is to study and uncover the laws of these processes, the ability to manage them in the conditions of inevitable industrialization and urbanization of our planet.

The main reason for the aggravation of environmental problems is man-made human activity, which causes adverse manifestations of natural elements. A factor exacerbating environmental problems is also a sharp increase in the world's population in the twentieth century, which led to increased pressure on the environment. The traditional consumer attitude of man and society to nature and resources has a negative impact on the environmental situation in the world, in regions and in individual countries.

The enrichment of certain business circles is still carried out at the expense of nature without due consideration of the consequences for the natural environment of human habitation. In recent decades, phenomena and processes such as natural anomalies in the form of floods, droughts, fires, and temperatures have been especially catastrophic for man and society and for natural systems.

Man is not the king of nature, he depends on natural resources, on the state of the biosphere. The resources of nature are not infinite, but finite, and many of them are close to exhaustion. To change the attitude to nature, to take care of all living things: both nature and man,to save natural resources, to recycle waste – these are tasks that have come to the fore today. The preservation of the biosphere is a necessary condition for the survival of mankind.

Conclusion. Thus, the ecological philosophy allows you to correctly pose environmental problems, to comprehend them more deeply, comprehensively and to

develop the best environmental strategy. It requires not only the restructuring of society, production, but also environmental education, education as a new morality, morality, the formation of ecological consciousness as a set of opinions, knowledge and beliefs that reflect the system of "society – nature" and aimed at a reasonable attitude to it.

At the present stage, philosophy can help solve the environmental problem in various directions, because it forces the formation of a new public consciousness, oriented by the need to overcome environmental contradictions associated with cultural devices of the past, helps to overcome the limitations of private scientific positions, the one-sidedness of spiritual and practical interests of man in his relationship with nature, disunity of opinions [4].

The time of carelessness has passed, the era of ecological morality has come. It must be clearly realized that a person must change the role of conqueror of nature to the role of its ordinary member and citizen. Any action will be considered correct if it does not violate the order and beauty of the biotic community, and insignificant if the opposite happens. It's time to stop being proud of your own exclusivity, to believe that the laws of nature are not important to man.

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UDK 94: 323: 929 Fitrat (575.146)"18/19"

SELFLESS ENLIGHTENMENT (IN THE EXAMPLE OF ABDURAUF FITRAT)

Ahmadova Zebiniso Shavkatovna,
Chief specialist of the regional council of Bukhara branch Democratic Party "National Revival"
Independent researcher of Bukhara State University
Ahmadova_Z@gmail.com

Annotasiya: Ushbu maqolada Buxoroni o‘rta asrlarga xos qoloqlik va diniy xurofotdan ozod etish, shariatni isloh qilish, xalqqa ma'rifat tarqatish, amirlik hududida konstitusion monarxiya va parlament, keyinchalik demokratik respublika tuzumini o‘rnatish orqali ozod va farovon jamiyat qurish, milliy valyutani joriy qilish va milliy qo‘shin tuzishni maqsad qilib qo‘ygan Buxoro jadidchilik harakatining taniqli namoyandalari hamda Buxoro jadidchiligining asosiy yo‘nalishlari haqida so‘z borgan.

Kalit so‘zlar: Maorif, maktab, madrasa, Abdurauf Fitrat, jadidchilik, Turkiston, Buxoro, tafsir, hadis, kalom, fikh, usuli fikh, hisob, tajvid, tarix, farovon, jamiyat, jadid maktablari, ma'rifatparvar, Buxoro yoshlari, Sadriddin Ayniy, Abdulvohid Munzim, Fayzulla Xo‘jaev, Usmon Xo‘ja, globus, xarita, taraqqiyparvar.

Аннотация: В статье рассматривается научная и творческая деятельность Абдурауфа Фитрата, великого сына бухарского народа, борца за национальную свободу, политика, публициста, журналиста, и жизненный путь виднейшего и яркого представителя бухарского джадидизма, его усилия. в обществе его деятельность по открытию джадидских школ, а также его деятельность по открытию джадидских школ, не выражались политическими вопросами в уставе общества направления, в которых шла речь о возможности реформирования государственного строя Бухарского эмирата, введение передовой молодежи в государственное управление и, таким образом, осуществление прогрессивных изменений в государственном политическом строе.

Ключевые слова: Абдурауф Фитрат, образование, модернизм, Туркестан, Бухара, Садриддин Айни, Абдувахид Мунзим, Ахмаджон Хамди, Хамидходжа Мехри, тафсир, хадис, калам, фикх, усул, история, общество, современные школы, просвещенные, Турция, Иран, застройщик, "Тарбия атфол", народный, Туркестан.

Abstract: In the article, the scientific and creative activities of Abdurauf Fitrat, the great child of the Bukhara people, national freedom fighter, politician, publicist, journalist, and the life path of the most prominent and bright representative of Bukhara Jadidism in society, his activities in opening Jadid schools, and his activity in opening Jadid schools, were not expressed in political issues in the society's charter. directions, in which there was talk about the possibility of reforming the political system of the

Bukhara Emirate, introducing advanced young people into the state administration, and thus making progressive changes in the state political system.

Key words: Abdurauf Fitrat, education, modernism, Turkestan, Bukhara, Sadriddin Ayniy, Abduvahid Munzim, Ahmadjon Hamdi, Hamidkhoja Mehri, tafsir, hadith, kalam, fiqh, usul, history, society, modern schools, enlightened, Turkey, Iran, developer, "Tarbiya atfol", folk, Turkestan.

Introduction. Bukhara aims to liberate Bukhara from medieval backwardness and religious superstition, reform Sharia law, spread enlightenment to the people, build a free and prosperous society by establishing a constitutional monarchy and parliament in the territory of the emirate, and later a democratic republic, introduce a national currency and form a national army. well-known representatives of the militant movement - Abdulvahid Burkhanov (1875-1934), Mukamil Burkhanov (1884-1937), Sadriddin Ayniy (1878-1954), Abdurauf Fitrat (1886-1938), Faizulla Khojaev (1896-1938), Usman Khoja (1878- 1968), Otaulla Khojaev (1880-1937), Abdugadir Muhiddinov (1892-1934), Musa Saidjonov (1893-1937), Qilich Khojaev (1896-1937) and others [15, 41]. Ahmadjon Hamdiy, Hamidkhoja Mehriy, Muhyiddin Raf'at, Muhyiddin Mansurov, Mukhtar Saidjonov also actively participated in this movement.

They used the experience of Tatar intellectuals and Samarkand Jadids in establishing new schools of method. Four years after Ismailbek Gaspirinsky's visit to Bukhara, modern schools began to be established in Bukhara. In 1897, with the permission of Badriddin Qazikalon, the son of Mulla Joraboy Nematullah opened a Jadid school in the city of Bukhara [6]. He translated the textbook "Khojai Sibyon" into Persian and started teaching 13 children. Having learned about this, Ismail Gaspirinsky says that he will print 10 pieces of ferns and 1000 copies of the alphabet book in his printing house as a gift to this school [8].

Literature review. In 1900, an exam was held in this school, and at the end of it, the son of merchant Mirkhan Porso gave a speech about the need to reform education in schools and madrasas [14]. After some time, the activity of this school stopped.

In 1907, with the permission of Badriddin Kazikalan, Nizamiddin Sobiti opened a new Usul school in Tatar language in his house in Bukhara. At first, 10-12 Tatar children studied in this school, and Abdurahman Sa'di from Kotz was the teacher [1, 33]. In the spring of 1908, Ismailbek Gaspirinsky visited the emirate for the second time and met with Amir Abdulahad Khan in the city of Bukhara. During this meeting, the crown prince also got to know Sayyid Olimkhan and made sure that he was educated, knew the Russian language well, and was aware of secular science and the press [20, 23]. He also held a meeting with Tatar and Bukhara educators on the establishment of modern schools.

Analysis. It was decided to get a separate place from the government for the school in the house of Mullah Nizam and to create an opportunity for children from Bukhara to study there, and it was agreed to give this school the name "Muzaffaria" in honor of Amir Muzaffar Khan, according to the proposal of I. Gaspirinsky [18, 81]. When Ismailbek Gaspirinsky approached Amir Abdulahakhan about these issues, he agreed with him and supported the opening of a Jadid school. Soon, the school in Mullah Nizam's house was moved to Khalid Burnashev's house, and only a few Bukhara children were admitted to this school [1, 33]. When the situation became

complicated, on September 26, 1909, the governors of Astanaqul, Bagakhoja and Burhoniddin officially announced the closure of the school to Mirza Abduvahid [1, 33].

In the same year, Abul Qasim Saifullazoda, one of the Jadids of Bukhara, opened a Jadid school in the city of Bukhara. In 1909-1910, 100-150 students studied in this school. A special feature of the Abulqasim school was that it dealt with talented students separately and prepared them to become teachers. This school was also soon closed due to the instigation of black-minded school teachers and the mufti's fatwa that "modernity is forbidden". But Abulqasim secretly collected children in private houses at night and continued to teach them [9].

When Ismailbek Gaspirinsky met with Amir Abdulahad Khan in Yalta, the amir said: "You mentioned us, it happened in Bukhara, that is, they opened a school in the style of students, let the people learn, I repaired and opened the school by myself... I expressed my thanks and prayers." But soon the schools are closed by the government. In the next meetings, when Ismail Gaspirinsy asked the emir the reason for closing the schools, he said: "Olan is a new age, not an old age." The method of consultation is current in every school. In Bukhara as well, the ghouls, with their advice, wanted this new school not to be built. Therefore, the school was connected...[13,375-381]", he answers.

After Amir Abdulahad Khan personally allowed the opening of new method schools, the number of such schools in the capital and provinces increased dramatically. But after discussions against the emir's government were organized in some evening schools for adults, the emir ordered to close such schools.

But historical sources confirm that after some time, the activity of Jadid schools expanded. By 1911-1912, 57 schools of the new method were operating in the Emirate of Bukhara [5, 260].

In 1913, Usmonkhoja Polathojaev opened a new school in the house of his cousin Latifkhoja, a large merchant, in Govkushon neighborhood. A year later, the number of students studying at this school reached 200. Pupils of the Osmankhoja school were mostly his own relatives, and later many fathers brought their children to this school for education. In the summer of that year, as a result of the increase in the number of schoolchildren, Osmankhoja rents another building and begins to teach children with two assistant teachers. In 1914, as the number of students reached 200, Osmankhoja moved the school to his house [19, 3].

In the Osmankhoja school, children should be divided into classes according to their age, classes should not take more than 4-5 hours in one day, a ten-minute break should be introduced after each lesson, religious and secular subjects should be taught equally, children should be given a two-month holiday every year, and students should be tested from time to time. new procedures have been introduced such as standing. In addition to national textbooks and textbooks, teaching aids, globes, maps, and European literature translated into Turkish were widely used in the course of the lessons.

Officials of the Russian Empire in Bukhara began to worry about the growing popularity of Jadid schools among the people and decided to use bigoted clerics to

close them down. Pretending to be sympathetic to the youth of Bukhara, they actually incite the clerics against them.

Historical sources confirm that clerics and court officials tried to offer Jadid schoolmasters large sums of money and prestigious high positions.

According to Sadriddin Ayniy, the representative of Bukhara qazikal Burhoniddin, Mulla Qamariddin Usmonkhoja, said: "If you join your school of your own free will, I will make you a judge or chairman in your desired land, I promise from the qazikal." Then Usmonkhoja answered: "We put so many hardships on ourselves not because we are teachers, because of hunger or because we could not reach the position, but because we want to benefit the people and the children of our country.

Discussion. The assistant political agent of Russia in Bukhara, goes to Shulga Osmankhoja School unannounced and is shocked to see the conditions there. According to him, Osmankhoja organized two very spacious classrooms on the first and second floors in the inner courtyard of his house, where there were tables and chairs made in Europe and Bukhara, two or three globes on shelves inside the wall, and many books published in Samarkand, notebooks given to students.

Shulga admitted that "... the school was very neat and very advanced compared to the old method schools" [12]. This visit of Shulga, who pretended to be a defender of Bukhara youth and modern schools, was actually to make Russia's political agency in Bukhara innocent when the schools were closed.

In 1913, Hamidkhoja Mehriy in Labi Hovuz neighborhood, Mirzo Ismail in Khiyabon neighborhood, Mullah Vafo in Poyi Astana neighborhood, and Hamidkhoja Eshon in Yangi Bozar neighborhood established new schools. During 1913-1914, in addition to the city of Bukhara, Kori Yoldosh Polatov in Karki, Ismailqul Toksabo in Shahrisabz [16, 135-136], Atoulla Khoja [11, 17] in Karakol, Ghulam Kadir and Qazi Ikram Makhdum [7, 42] established modern schools. Jadid intellectuals contacted Bukhara youth studying in Turkey and through them bought every new book and textbooks for Bukhara libraries.

Some of these books are kept today in the Institute of Oriental Studies Manuscripts named after Abu Rayhan Beruni of the Academy of Sciences of the Republic of Uzbekistan. The books were compiled taking into account the age and abilities of schoolchildren, and were used until Mahmudhoja Behbudi, Munavvar Qori, Abduqadir Shakuri, Haji Muin, Sadriddin Ayniy wrote the textbooks. In particular, the textbooks written for school by the mature enlightener, intellectual and statesman of the Turkic world, Ahmad Midhat, such as "Khojayi avval", "Child Education" were very valuable for the new school teachers of Bukhara, Samarkand and Tashkent.

Also, the textbook "Methodical Geography" published in Istanbul in 1866 by the Turkish enlightener Ahmad Hamdi was used as the main textbook in new Methodist schools in Tashkent, Samarkand and Bukhara. The book consists of 187 pages and was published with a positive review by the General Education Inspector Kamal Effendi. The textbook includes 59 topics and provides information on the flora and fauna of the world, continents and their geography [3, 133]. Also, Ahmad Hamdi's book "Mukhtasar usuli fiqh" was used as a textbook in Turkestan, Bukhara and Khiva madrasas [3,133].

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UDC: 930.1

FROM THE HISTORY OF URBAN RAILWAY TRANSPORT-SUBWAYS

Ozodbek Radjabov,
Senior teacher of the National University
Of Uzbekistan named after Mirzo Ulugbek
ozodbek.radjabov.94@inbox.ru

Annotasiya: Mamlakatlarning iqtisodiy salohiyatini belgilashda transport va infratuzilma tarmoqlari bilan aholining qamrab olinishi darajasiga alohida indeks sifatida e'tibor qaratilishi odat tusiga kirgan. Ayni paytda transport tizimi, xususan,

temir yo‘llar tarmog‘i davlatlarning nafaqat iqtisodiy holatiga, balki, aholi turmush tarziga ham o‘zining sezilarli ta'sirini ko‘rsatib kelmoqda. Yo‘lovchi va yuk qatnovida eng qulay va nisbatan resurs tejovchi tarmoq shubhasiz temir yo‘llar tizimidir.

Kalit so‘zlar: Metropoliten, temir yo‘llar, tirbandlik, yerosti infratuzilmasi, kommunikasiya, O‘zbekiston SSR

Abstract: In determining the economic potential of countries, it is customary to pay attention to the level of coverage of the population with transport and infrastructure networks as a separate index. At the moment, the transport system, in particular, the railway network, is showing its significant impact not only on the economic situation of the countries, but also on the lifestyle of the population. The most convenient and relatively resource-saving network for passenger and cargo transportation is undoubtedly the railway system.

Key words: Metropolitan, railways, traffic, urban infrastructure, communication, Uzbek SSR

Аннотация: При определении экономического потенциала стран принято обращать внимание на уровень охвата населения транспортно-инфраструктурными сетями как на отдельный показатель. В настоящий момент транспортная система, в частности сеть железных дорог, оказывает существенное влияние не только на экономическое положение стран, но и на образ жизни населения. Наиболее удобной и относительно ресурсосберегающей сетью пассажирских и грузовых перевозок, несомненно, является железнодорожная система.

Ключевые слова: Метрополитен, железные дороги, движение, городская инфраструктура, связь, Узбекская ССР.

Introduction. In the world, scientific research is being conducted in the directions of communication and transport structures of certain countries or regions. Including the socio-economic life of Uzbekistan, which is considered the richest region in the material and human resources of the Central Asian region, the state of national economic sectors in the former Soviet era, including the transport system, the role of railways in the economic life of the republic, the stages of development, the position of the sector in the industry, the livelihood of the population It is important that they study problems such as the impact on the level of railways and improvement processes of railway networks as priority topics.

In recent years, special importance has been attached to improving the railway system and improving the quality of railway services provided to the population and business entities in Uzbekistan. In particular, the 36th goal of the Development Strategy of New Uzbekistan indicates such tasks as "increasing the attractiveness of intercity and suburban railway traffic, developing the market and infrastructure of transport and logistics services, increasing the level of electrification of the railway infrastructure to 60%, and rapidly developing the highway network"[1] it is noteworthy that it has been passed. After all, it is important to objectively study the historical analysis of the problem in this process. Considerable work is being done in order to adapt railway transport, which has a unique place in the economy of the country, to world standards, as well as to improve the qualifications of railway transport employees and to adequately encourage the work of railway workers.

Literature Review. Research on the topic can be divided into three groups: 1) literature published in the Soviet era; 2) research in the years of independence; 3) foreign publications.

Most of the works belonging to the first group, i.e., created in the early period of Soviet power, were satisfied with reflecting the achievements of the system, growth indicators in the volume of transportation, without paying enough attention to the railway system and its problems.

In the 1950s and 1960s, economists created a number of scientific works on the transport structure of Uzbekistan, as well as the railway network, but even in them the goals of the Soviet government in the field of railways were single-sidedly covered [2].

A number of scientific publications, created in the later years of the Soviet era, dedicated to the history of the development of the transport system and railways in Uzbekistan, in particular, the researches of V. Suvorov and J. Kalimbetov, covered the issue of the role of railway workers and political organizations in the republican industry of the Central Asian republics, especially in Uzbekistan [3], in the articles of R. Aminova, B. Burikhonov [4], the main attention is focused on such issues as the formation of the working class in the railway network, the contribution of the workers-servants of the industry to the development of the national economy of the Soviet state, the role of the communist party in the creation of the local working class.

The scientific works published in the following years were devoted to the situation in the railway system during the Second World War, the contribution of industry workers to the victory in the war, and the activities of the party organizations and trade unions in the railway structures related to the wartime propaganda[5].

In the 80s and 90s of the 20th century, a number of literatures were created on the problems of the republic's economy, transport system, and increasing the production potential of industrial enterprises. For example, the book on the formation of the Uzbek working class[6], published under the editorship of Academician I.Mo'minov, and the work co-authored by Sh.Olmasboev and S.Sliva describe the role of the railway system in the activity of industrial sectors in the Uzbek SSR, in particular, coal mining and primary oil processing enterprises. noted [7].

In the multi-volume works on the history of Karakalpakstan edited by S. Kamalov[8], one can find some information about railway workers and their activities in the Uzbek SSR.

In the second group - the researches of the period of independence, the history of railways was evaluated from the point of view of our national statehood, and an attempt was made to reveal the negative influence of the Soviet ideology on the industry. N.U. Musaev's scientific work on the history of the introduction and development of industrial production in the Turkestan region records the facts about the creation of the Central Asian and Tashkent railway networks, shows the construction of the railways, as well as the life of the Turkestan region and trade relations with the Russian Empire. the problems of influence are touched on[9].

A.Z. Togaeva's research is devoted to the history of the construction of the Tashkent-Orenburg railway, its role in the economic life of Turkestan. In this work, the military, political and economic interests of the government of the Russian Empire

from the construction of railways in the country, economic and social consequences of the construction of railways are expressed[10].

F. B. Jumaniyozov's dissertation on the formation, development and problems of Khorezm transport reveals the development of vehicles and networks and changes in the field of transport infrastructure between 1873-2018 on the example of the Khorezm oasis.

Most of the publications of foreign researchers on the subject analyzed the issues of vehicles and their use in the republic. Also, there are a number of scientific works focused on the development processes of the railway network in the territory of Uzbekistan, which mainly cover technical aspects and economic efficiency [11].

Research methodology. As the main methodological approaches for writing the article, methods of historical accuracy were used with respect to the submitted diplomatic documents, and the method of a civilizational approach was also used, in which all objective and subjective factors were taken into account in the study of the main events.

Analysis and Results. Railway transport is a type of transport that transports cargo and passengers on railways by means of locomotives and motor cars, and its emergence is connected with the development of large-scale industry, especially the development of the mining and metallurgical industries. At the end of the 18th and the beginning of the 19th century, the development of industry radically changed the structure of cargo circulation, the need for mass transportation of iron ore, coal, construction materials, and the like grew. In 1825, the world's first public railway transport was founded in Great Britain. This railway line in Stockton-Darlington direction is 21 kilometers long, and this railway designed by engineer Stephenson J.

By the 30s of the 19th century, railways began to be built in countries such as Austria, Germany, Belgium, France, and Russia. In 1850-1870, railway tracks were laid in the regions of Asia, Africa, South America and Australia. At the beginning of the 20th century, the network of railways around the world exceeded 1 million km[12]. In our opinion, the rapid popularization of railway networks in the late 19th and early 20th centuries, the acceleration of construction processes of new railway routes in different countries is explained by its great military-strategic importance. In addition to serving economic, economic and strategic tasks, railway transport also participates in the development of inter-country and inter-regional cultural relations, social issues, international tourism, and makes a significant contribution to the scientific and technical development of a particular country. In addition, one of the advantages of railway transport is the low cost of transportation compared to other means of transport, the ability to transport large volumes of cargo in any season of the year.

The process related to the construction of transport networks in Central Asia, especially in the Uzbekistan SSR, can be conditionally divided into two groups. The first group consists of solving problems related to the construction related to production in the republics and the expansion of existing transport networks in the territory, as well as the foundation of new ones.

According to the data of 1924, Uzbekistan contributed 1,843 kilometers, Turkmenistan had 1,346 miles, Kyrgyz ASSR had 983 miles, Karakyrgyz Autonomous Oblast had 100 miles [13]. There are several other issues related to the construction of

the railway in the territory of Uzbekistan, including the establishment of a network of elevators in the republic, the introduction and introduction of refrigerated vehicles into railway traffic, as well as the electrification of the Pishpak railway station.

Conclusion. The comparative analysis of the given data means that the condition of the transport system in Central Asia, especially in Uzbekistan, was not at a satisfactory level. Stations, transfer points, network roads did not meet foreign standards. In addition, there was a huge difference between the conditions in the central republics of the Union and the situation in Central Asia, as well as in the roads and transport networks of Uzbekistan. In particular, the division of local transport into groups such as roads of state importance, dirt roads used by local residents, and roads planned to be taken over by the state, which was not observed in any region of the Union, existed only in the Central Asian republics. The deplorable state of transport networks in Uzbekistan has caused the government to focus its main efforts and attention on railways.

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UDC: 930.1

A LOOK AT THE HISTORY OF CHRISTIANITY IN THE TASHKENT OASIS

Bobir Eshkuvatov,
Senior teacher of the National University
Of Uzbekistan named after Mirzo Ulugbek
ozodbek.radjabov.94@inbox.ru

Annotasiya: Ma'lumki, Toshkent vohasi Buyuk ipak yo‘lining asosiy savdo trassalaridan birida joylashgan. Bundan shuni anglash mumkinki, bu hududda savdo munosabatlari orqali nafaqat ijtimoiy-iqtisodiy va madaniy aloqalar tizimida turli din vakillari o‘rtasida munosabatlar o‘rnatilgan. Ushbu jarayonlarda xristianlik diniga e'tiqod qiluvchilar o‘ziga xos o‘rin tutadi. Mazkur maqolada xristianlikning Markaziy Osiyoda keng yoyilishi, xususan qadimiy Choch vohasi hududidagi xristianlik ob'ektlari borasida fikr yuritiladi.
Kalit so‘zlar: Choch, Buyuk ipak yo‘li, Ak-Beshim, Vinkard, Aspasak Sanak Kavatenak, Safijob, mogiylik, yepiskop, Xushchaqchaq Rodjer, masihiylik.
Аннотация: Известно, что Ташкентский оазис расположен на одном из основных торговых путей Великого шелкового пути. Отсюда можно понять, что отношения между представителями разных религий в этой сфере устанавливались не только в системе социально-экономических и культурных отношений через торговые связи. В этих процессах особое место занимают верующие в христианство. В данной статье рассматривается распространение христианства в Средней Азии, в частности христианские предметы в древнем оазисе Чох.
Ключевые слова: Чоч, Великий шелковый путь, Ак-Бешим, Винкард, Аспасак, Санак, Каватенак, Сафиджоб, Моги, епископ, Хущагчак Роджер, христианство.

Abstract: It is known that the Tashkent oasis is located on one of the main trade routes of the Great Silk Road. From this it can be understood that relations between representatives of different religions have been established in this area not only in the system of socio-economic and cultural relations through trade relations. Those who believe in Christianity occupy a special place in these cases. This article discusses the spread of Christianity in Central Asia, particularly the Christian objects in the ancient Choch oasis.

Key words : Choch, Great Silk Road, Ak-Beshim, Winkard, Aspasak Sanak Kavatenak, Safijob, Moghi, bishop, Khushchagchak Rodger, Christianity.

Introduction. The ancient history and culture of Central Asia, various historical and cultural processes in the region, material and spiritual culture of the country are being researched on a global scale. However, in this regard, the socio-economic, ethnic and political factors of the development of religious beliefs and views in the region in the pre-Islamic and post-Islamic period, especially the aspects related to Christianity in the region, have not been sufficiently studied. In the researches on the history of the spiritual culture of Central Asia during the early and advanced Middle Ages, the descriptive features of the monuments of the Christian religion were not recorded. The study of scientific problems related to religious views and beliefs, which have a certain place in the spiritual-spiritual aspect of society's life, is an urgent task of the science of history.

One of the historical and cultural regions in the territory of Uzbekistan is the ancient Choch oasis, which is located in the northeast of the country. This oasis was one of the regions where large-scale trade and handicrafts, irrigated agriculture developed. Located on one of the trade routes of the Great Silk Road, it was impossible not to have monuments related to Christianity. Because the entry and spread of the earliest Christian communities into the territory of our country was directly related to this main trade route. Also, the favorable climatic conditions of the Tashkent oasis, which is considered the main part of Choch, created conditions for Christian communities to settle here and make a living. Another aspect that should be paid attention to here is that if we look closely at the geography of the spread of Christian communities throughout Central Asia, there are large Christian communities in the lower reaches of the Syrdarya, in the Talas valley in the north of the Choch oasis, in the vicinity of Samarkand in the Zarafshan oasis, and in the Choch oasis. traces of Christianity were not identified for a long time. One of the biggest reasons for this is that there are almost no sources of information about the Christian communities that worked in the Choch oasis. Excavation in this area was considered irrational for many years without having a written basis. At the beginning of the 20th century, as a result of the serious research of travelogues and memoirs of medieval Arab historians, the first signs related to Christianity in the Choch region began to be published. For example, Arab travelers such as Ibn Havqal and al-Istahri note that the western parts of Choch bordered the Christian village named Winkard. Al-Istahri in his work "Kitab masolik al-mamolik" "One border (of Choch) extends to the confluence of the Choch river with the Sea of Khorezm (probably the Syr Darya), the other border extends to the iron mines on the borders of Safijab (Isfijab - the present-day Sayram city of the Republic of Kazakhstan), (the other) to Vinkardi, the Christians goes" [1,77] he said. The fact that

the author mentions the name of Winkard when determining the boundaries of Choch, a large trade and craft center, means that this village was a famous place in the 10th century.

Literature Review. Research on the topic can be divided into three groups: 1) literature published in the Soviet era; 2) research in the years of independence; 3) foreign publications.

Most of the works belonging to the first group, i.e., created in the early period of Soviet power, were satisfied with reflecting the achievements of the system, growth indicators in the volume of transportation, without paying enough attention to the railway system and its problems.

As mentioned above, finding the exact location of Winkard, a Christian village in the Choch oasis, and carrying out archaeological excavations there began with the settlement of Kanha, which is considered an ancient urban ruin in the oasis.

Kanha - the ruins of an ancient city dating back to the III century BC - the beginning of the XII century AD. At first, in 1898, a member of the Turkestan archeology amateur circle, E.T. Smirnov, later in 1934, M.E. Masson, and in 1969-1972, the scientific staff of the Society for the Protection of Material Culture Monuments under the leadership of K. Abdullaev, started the investigation[2,60] . Excavations carried out in recent years have managed to find traces of Christianity in this monument.

In 2010, during the excavations carried out by the scientists of the Archaeological Institute of the UzFA, the remains of a building where Christians lived were found in the southern part of the monument[3,142].

Firstly, the construction of the structure was built on a different plan from the buildings opened in the shakhriston and its surroundings, that is, this southern part was surrounded by a semi-circular wall. This situation exactly repeats the history of the "Oval House" which was the settlement of the Christian community near Marv. In this part, you can also see a room with a special place on the wall, which is planned to house one of the Christian shrines.

The second is the identification of finds with Christian symbols in the interior of the building and its exterior. Among the finds are a number of tablecloths with the image of a cross, lids and handles of dishes, and an inscribed part of a container used for storing or transporting water, dating back to the first half of the 11th century[4,142]. Crucifixes are also found in the common room of the third church. The cross is of a regular shape, with an elongated base, plastered with red paint. Another find associated with the third city is a fragment of a bronze cross [5,73]. Excavations carried out in the ruins of the city of Kangha in recent years fully prove that the Christian community lived in the monument. For example, a bronze ring with two skulls was found, and the image of the bone is a sign of death and was accepted as a symbol of the transience of the world in Christianity[6,315].

Research methodology. As the main methodological approaches for writing the article, methods of historical accuracy were used with respect to the submitted diplomatic documents, and the method of a civilizational approach was also used, in which all objective and subjective factors were taken into account in the study of the main events.

Analysis and Results. This sign, accepted as an icon in Orthodoxy, first appeared in church organizations of a military nature, and was called "Jolly Roger", although it looked terrible. Starting from the 9th century, the sign of the cross began to be placed under the mass[7,168-169].

Also, a large number of metal objects related to the Christian faith were found in the monument area, proving that it was in constant contact with and under the influence of Kattakiztepa (the city of Winkard in written sources of the 10th century) on the right bank of the Syrdarya, 20 km south of Kangha.

In particular, the excavation work in the ancient Choch oasis is no exception. In particular, a deeper study of the history of newly opened settlements may end or provide answers to several controversial issues. One such monument in the Tashkent oasis is Korkhana Manzilgoho.

As part of archaeological research, it was found that there is a circular hill with a diameter of 50 m and a height of 10-11 m in the mountainous Norbeksoy valley of the Ohangaron district of Tashkent region, about 200 m above the Kizotasoy, which flows into the Norbeksoy. Inside this hill is a system of large artificially dug caves, which are known to be managed by the local inhabitants under the name of "Korkhana". Here in the 30s M.E. Observations were made by Masson and plans of the Caves of the Enterprise were documented[8,100-103]. The entrance to the M.E. Masson enterprise complex is on its north side , where a 14 m long porch has been built, from the porch there is an entrance to the large hall on the south side, the main room of the complex is a large hall with a cross-shaped frame, the length of the hall is 17 m, and the width is 4 m. in the middle of it, there is a mihrab on the west wall, and besides the main hall, there are also many other rooms built separately with several cave-like arches. A. Raimkulov, who conducted research in the object, mentioned that the porch was built later, that is, after the Enterprise was converted into a mosque[9,77].

The question of what purpose the monument was built in ancient times was M.E. Several assumptions were made by Masson. For example, the view that romantic meetings or similar customs may have been carried out in the area of the monument has not been proven. In field surveys, the local population living in the area completely rejected this idea. According to A. Raimkulov, if such events were taking place in the caves, it would not be allowed to turn the structure into a mosque, which is considered the holiest place for Muslims[10,54-57].

All the caves have almost a common shape, that is, a cross-shaped appearance. The architectural solutions of the enterprise caves and the period of construction confirm the hypothesis that this monument was built by ancient Christians. Because, by the end of the early Middle Ages, Christian communities had begun to enter Central Asia more widely, and a number of Christian villages, temples, and other structures had begun to appear in the region.

It is not accidental that all the caves are dominated by a cross-shaped appearance, but this indicates that the Enterprise caves were excavated according to a special plan[11,92-93].

Unfortunately, until now, no archaeological objects related to Christianity have been discovered from these caves. Considering that these caves served the population for centuries, the early Christian finds in the monument were lost or were destroyed by

human activities in the following centuries. In the course of our research, it was repeatedly emphasized that in the ruins of Christian communities studied in Central Asia and other regions, in many cases, archaeological finds related to Christianity were not found at all.

In a careful study and comparative analysis of the architecture of Christianity, we can observe that the first churches and temples associated with this faith were built underground in the form of caves and semi-basements. This situation was, first of all, a process related to the fact that Christianity was severely persecuted by the political authorities and the people of the regions in the early periods of its emergence. In the territories of Byzantium and Armenia, a lot of structures serving as churches and temples were built underground and inside the hills [12,35].

Cave-like Christian temples have also been found in Central Asia. For example, around the town of Takhta Bazar near the city of Kushka in Southern Turkmenistan, there is a complex of about fifty ancient caves artificially excavated on the steep, high banks of the Murgob River. In 1986, the geologist VA Obruchev, who first studied these caves, wrote that a cross was depicted at the entrance to one of the rooms of these caves and assumed that this cave complex belongs to ancient Christians[13,34]. The Forlar complex was also found near the village of Ayvaj in southern Tajikistan. Researchers T.M. Otakhanov and S.G. According to Khmelnytskyi, these artificial caves are Christian cave-monastery[14,77].

Korkhona cave complex was built as a Christian church-monastery. Later, it was converted into a mosque according to the popular trend in the Islamic world. There are two reasons for this conclusion, the first of which is related to the company's tarx solutions. That is, the porch occupying the northern side of the complex was built later, that is, after the enterprise was converted into a mosque. Until then, its entrance was from the south side of the main hall - the shrine, ten wide and inconveniently high, and not narrowing upwards[15,103], but widening downwards[16,76] stairs lead to the rooms above, and at the end of the stairs There is a door separating these rooms. Also, the south and south-east sides of the Enterprise are occupied by its yard, and the existence of the yard is proof that its main entrance was on this side.

Second, the fact that the Enterprise functioned as a mosque until the 1930s seems to indicate that it was originally a Christian church. It is possible that the enterprise was originally a Christian church-monastery and later turned into a Muslim mosque as a result of the Islamization policy of the Arabs. In the territories conquered by the Arabs, there is a lot of information in medieval written sources about the conversion of Christian, Zoroastrian, Monist and Buddhist temples and shrines into Muslim mosques. In particular, according to Narshahi, the Christian church located near the Attaron Gate in Bukhara was converted into a mosque of the Arab tribe Banu Khanzala after the Arab conquest[17,128]. Later, Masjid Kalon mosque was built in its place. According to As Samani, this mosque was called "Masjid al-Sham" for many years[18,210].

After conquering the Talos Valley in 893-894, the great Samani ruler Ismail Samani converted the existing Christian church and the church in the city of Mirki into mosques[19,287]. Korkhana, which was built as a Christian church-monastery in the early Middle Ages, probably turned into a Muslim mosque.

Conclusion. According to the object researcher A.Raimkulov, the establishment of Erostite churches-monasteries like Korkhona and worshiping in these places shows that the persecution of Christians is a frequent occurrence in the territory of Central Asia. The Koshki Ruins in Marv, Kojartepa and Kultepa in Kashkadarya, the underground structure opened in Registan Square in Samarkand, the cellars in Afrosiyob's houses, the cave with a cross-shaped plan in the III-Shakhriston of Uzgan city are the proof of our opinion.

In turn, the practice of building structures in the form of caves came to Central Asia, especially to the ancient Choch oasis, through the efforts of Christian communities from the Middle East, Mesopotamia and Syria. There is also another aspect of the matter, that even though the Christian communities in the regions of Central Asia lived peacefully together, this religion could not rise to the level of the official state religion in Iran, Central Asia, East Turkestan and China, and it is self-evident that , not under the protection of the central government. Because of this, the Christians were forced to live in self-defense, and as a result, they resorted to building erostic religious structures like the Enterprise.

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UDC: 930.1

THE HISTORY OF NATIONAL COSTUMES AND FABRICS OF UZBEK WOMEN, THE PROCESS OF ITS MANIFACTURE IN THE XIX-XX CENTURIES.

Yulduz Gaybullayeva,
Associate Professor of the Webster University Of Uzbekistan
ygaybullaeva@webster.edu

Annotasiya: O‘zbek xalqining madaniy merosi bo‘lgan an'anaviy kiyimlar uzoq tarixiy jarayonlar davomida, ijtimoiy – iqtisodiy rivojlanish hamda urf – odat va marosimlar ta'sirida shakllangan bo‘lib, matochilik an'anasi (to‘qimachilik) asrlar davomida avloddan - avlodga o‘tib kelgan. To‘qimachilik haqida o‘rta asrlarga oid ma'lumotlar keng tarqalgan. Arxeologik manbalardan tashqari tarixchilar va sayyohlar o‘z asarlarida ham bu haqida yozib qoldirganlar, shuningdek o‘rta asrlarga oid turli xil hujjatlarda ham ko‘plab ma'lumotlar saqlangan. Arablar hukmronligi davrida Turkistonda ip-gazlama to‘qish boshqa joylardagiga nisbatan juda rivoj topgan, bu yerda ko‘p miqdorda ip-gazlamalar chetga chiqarilgan. Ushbu maqolada O‘rta Sharqda kiyim tayyorlash texnologiyasining barcha murakkab jihatlari ko‘rib chiqilgan.

Kalit so‘zlar: To‘qimachilik, matolar, ayollar kiyimi, milliylik, ipak, hunarmandchilik markazlari.

Аннотация: Традиционная одежда, являющаяся культурным наследием узбекского народа, формировалась в ходе длительных исторических процессов, под влиянием общественного и экономического развития, обычаев и обрядов, а традиция ткачества (ткачества) передавалась из поколения в поколение. поколения на века. Средневековые сведения о текстиле широко распространены. Помимо археологических источников, о нем писали в своих трудах историки и туристы, а также сохранилось немало сведений в различных документах Средневековья. В период арабского владычества прядение в Туркестане было более развито, чем в других местах, куда вывозилось большое количество прядения. В данной статье рассматриваются все тонкости технологии производства одежды на Ближнем Востоке.

Ключевые слова: Текстиль, ткани, женская одежда, народность, шелк, ремесленные центры.

Abstract: Traditional clothes, which are the cultural heritage of the Uzbek people, were formed during long historical processes, under the influence of social and economic development, customs and ceremonies, and the tradition of weaving (weaving) has been passed down from generation to generation for centuries. Medieval information about textiles is widespread. In addition to archeological sources, historians and tourists have written about it in their works, as well as a lot of information has been preserved in various documents of the Middle Ages. During the period of Arab rule, spinning in Turkestan was more developed than in other places, where a large amount of spinning was exported. This article examines all the intricacies of clothing manufacturing technology in the Middle East.

Key words: Textiles, fabrics, women's clothing, nationality, silk, handicraft centers.

Introduction. In the 19th century, among the main fabrics used in sewing Uzbek national clothes, yarn-gazlama (kalami, olacha, susi, chit), silk (silk, satin, khan-atlas), nimshoi (beqasam, banoras, pasma, adras, duruya, yakruya, atlas, velvet) and wool gauzes were included. Wool gauzes were used for outerwear.

Mainly two types of weaving were more developed: the popular thread weaving and the relatively more expensive silk weaving. Mainly women were engaged in weaving thread-gauze cloths, men were engaged in weaving silk and cotton gauzes.

At the end of the 19th century and at the beginning of the 20th century, fabric preparation methods were mainly prepared at home in the territory of Uzbekistan. Although the Khans did not have factories and manufactures until the conquest by Russia, according to some researchers, "there were buds of centralized and mostly scattered manufactories based on home-based peasant crafts." Samarkand, Margilon, Kokand, Andijan, Bukhara were handicraft-weaving centers. Fabrics are made of cotton, wool, a certain amount of silk. Its unique features, such as colors and patterns, indicated a person's national and social affiliation. The beautiful, rich and sensitive heart of the Uzbek people, the ability to joyfully perceive the world around them and to praise the beauty of women are clearly reflected in the bright colors of the gazlama,

in the wonderful color and at the same time in harmony with each other, in the variety of patterns and flowers.

Literature Review. The state of textiles and women's clothing in the Central Asia, in general, and in Uzbekistan, in particular, has attracted the attention of historians and researchers on international relations for a long time. However, in a number of monographs and scientific works, various rather pretentious railway projects are covered in a rather one-sided, subjective way. Therefore, the main emphasis on this article is placed on a large layer of precisely archival materials obtained from the Archive of the Foreign Policy of the Russian Empire, the Russian State Historical Archive and the National Archive of the Republic of Uzbekistan.

Research Methodology. As the main methodological approaches for writing the article, methods of historical accuracy were used with respect to the submitted diplomatic documents, and the method of a civilizational approach was also used, in which all objective and subjective factors were taken into account in the study of the main events that took place in the Central Asia at the end of the 19th century and at the beginning of the twentieth century in Uzbekistan.

Analysis and Results.Textiles of each region had their own characteristics. Textiles is considered a branch of industry, and it is specialized depending on what it weaves or what it weaves. They mainly used cotton, silk and wool as weaving material. In addition to these, many plants (flax, hemp) are used for thread. Silk woven fabrics are highly valued.

Textiles in Khorezm reached a new stage in the XVI-early XX centuries. This period Khorezm textiles can be studied in two groups: weaving for own needs and weaving for sale. The reason for such a division is that both the settled population and the nomadic population engaged in weaving and provided themselves with products in natural form within the scope of their possibility. Fabrics such as gray, olacha, silk, adras, dukhoba were produced for the market. Gray was used everywhere and was mainly bought by the poor[1]. Fabrics such as olacha, silk, adras, dukhoba were highly valued and clothes were made from them for the nobles. Among the rich traditional art of the Uzbek people, the artistic decoration of national fabrics occupies a special place.

In addition, high-quality cotton yarns are produced in Tashkent, Bukhara, Margilon, Namangan, Samarkand, Shahrisabz and other cities of Uzbekistan. For example, residents of the Qarluq, Qatagon, Turk, Kipchak, and Mogyoni clans living in the Northern Surkhan oasis weaved different types of fabrics from cotton[2]. Cotton is cultivated in Denov, Qarluq, Mirshodi, Batosh, Jindibulok, Karsagan, and Sarosiy areas. Also, cotton was bought from trade caravans coming from Bukhara to the Sherabad market.

The inhabitants of the clans such as Dorman, Uz, Kunhirot, who were engaged in animal husbandry, wove cloth from wool more. In the villages of Vakhshivor, Sangardak, Sina, Khanjizza located in the mountainous regions and Denov, Yurchi, Karluq, Mirshodi, Sarosiyo in the lower latitudes of the oasis, the weaving of cotton and woolen cloth is very advanced[3].

In Samarkand and Bukhara, various types of crafts were developed, and the dyers of these lands also dyed yarn, silk and woolen fabrics in red, blue, yellow, yellow, gold, black and other colors. Weavers use turban, boz, gauze, lacha; the word silk

canoviz, silk, khanatlas, bekasam, adras; woolen felt, various types of carpets, hurjun, salt bags, spoon bags, maproch, bags, horse saddles, horse saddles, etc. were woven[4].

In the markets of the cities around Kokan and Fergana valley, furs, brightly colored satins, various local tickets, bordon, olacha and foreign Russian chits, Chinese gazlams, Bukhara velvet, silk, semi-silk, embroidered caps of various colors, leather shoes, and ready-made clothes were sold[5].

In Margilan and Namangan, special methods of making flowers were created, and local schools with different methods and styles were formed. Although the striped fabric that is widely used in women's turbans looks the same, hundreds of varieties are created by changing the width of the colored stripes. Adras, which is a light fabric, is close to the khanatlas and bekasam with its cloud patterns, striped or sidrga colored types[6].

In Tashkent, most of the women sewed daily clothes from striped pencil, gray, even thinner and white cloth called Khosa, such as Khosa. Xhosa was mainly used for the bride's wedding dress, turban and women's headscarf. Shasha gauze was used to make women's scarves and other clothes. Striped olacha fabric is mainly woven for making hats. Jajda gazlama, in which belt roads alternated with wide and reticulated roads, was also common. Lining fabric, which is necessary for sewing hats, is also produced[7]. These fabrics were regularly taken outside. The Russian Empire's interest in Tashkent was especially developed during the establishment of direct trade relations between Tashkent and Orenburg. Because, in 1736, the Russian emperor issued a decree on the establishment of trade in Orenburg, and indicated to attract merchants from Tashkent to Orenburg in any way and to create full conditions for them.

National costumes, as a historical-cultural object, reflect some elements of traditions, social relations, educational, religious and aesthetic forms that go back to the history of a nation, and reflect the culture and lifestyle of each nation. That's why clothes are inextricably linked with people's history and are an important source for studying the ethnic history and culture of peoples. National costumes, in particular, the formation and uniqueness of the traditional clothes of Uzbek women have a centuries-old history, written historical and literary-folklore monuments, archeological findings, and examples of fine art have become important in the study of the history of costumes[8].

Clothing, on the one hand, as a product of human labor, has a certain material value and satisfies certain needs, on the other hand, it is also an example of practical and decorative art.

Clothing serves as a unique symbol of the owner's social status, property and family status, and it is possible to know what ethnic, class and age-sex group a person belongs to, and in what social environment the headpiece itself was prepared. Women's traditional clothes were formed under the influence of long historical processes, social and economic development, customs and ceremonies, and the tradition of weaving (textile) has been passed down from generation to generation for centuries and has a long history[9].

In general, the rise of textiles to the level of art showed the skill of the craftsman-master. The color of the fabrics used to make women's clothes depended on their age

and marital status. From the end of the 19th century to the beginning of the 20th century, fabric preparation methods were mainly prepared at home in the territory of Uzbekistan. Goldsmithing is one of the handicrafts used to decorate the national costumes of Uzbek women.

Conclusion. The production of fabrics by the factory method began in the 20s of the 20th century, and fabrics characteristic of the Western European textile industry began to enter the production of national fabrics. However, the demand for cheap local fabric remained high due to the coarser and looser yarn of the local yarn to keep the body warm.

National textiles are not only priceless wealth, but also an example of exquisite art woven with ancient values, which embody the people's long past, ancient traditions, taste, aesthetic views and unique characteristics. Uzbek fabrics are not only of historical and household importance, but also have great artistic value.

In the years of independence, the wide use of national fabrics has led to the popularization of new models.

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UDC: 1:130.1

FAMILY AND NEIGHBORHOOD COOPERATION IN FORMING A HEALTHY SPIRITUAL ENVIRONMENT.

Rozimurodov Siroj Madatovich
Docent (PhD) of the Department of "Philosophy and National Idea" of Samakand State University named after Sharof Rashidov.
rozimurodov86@mail.ru

Annotatsiya Maqolada oilaning jamiyatda tutgan o‘rni falsafiy tadqiq etilgan. Unda sog‘lom ma’naviy muhitni shakllantirishga qaratilgan mahallaning o‘rni va oila hamkorligi ilmiy asoslangan. Ijtimoiy taraqqiyotda oila bevosita mahalla bilan uyg‘unlashib ketgan tizim ekanligi ijtimoiy-falsafiy tahlil qilingan.

Kalit so‘zlar: Oila, farzand, tarbiya, ma’naviyat, qadriyatlar, ota-ona. mahalla, an’ana.

Аннотация: В статье философски исследуется роль семьи в обществе. Она научно обоснована ролью общинно-семейного сотрудничества, направленного на создание здоровой духовной среды. Социально-философский анализ показал, что семья представляет собой систему, непосредственно интегрированную с махаллой в социальном развитии.

Ключевые слова: Семья, ребенок, воспитание, духовность, ценности, родитель, махалля, традиция.

Abstract: The article explores the role of the family in society philosophically. It is scientifically based on the role of the community and family cooperation aimed at creating a healthy spiritual environment. Socio-philosophical analysis has shown that the family is a system that is directly integrated with the neighborhood in social development.

Keywords: Family, child, upbringing, spirituality, values, parent, neighborhood, tradition.

Introduction. In our society, no environment can be compared to the family in raising a healthy generation. Family is the environment in which crucial components of lifestyle exist. In addition, a healthy lifestyle in the family serves as an important factor in improving the level and quality of life of our people. Since ancient times in our country, the family has been considered sacred as a place of education. For ages in our country, it is considered when the family is strong, its members are peaceful, prosperous and healthy, and the society will be stable. Separate assessment of young people by separating them from their family environment and homeland does not bring the expected results. For example, the social appearance of each family has its place, evolution, and history. Their forms are also different. They do not repeat each other completely. But the family is always a whole social phenomenon that presupposes the natural biological, economic property, legal and spiritual unity characteristic of people. Family is the basic foundation of society. The family is a great place that ensures the continuity of the people or the nation, preserves the national values, and makes it able to educate the new generation.

Analysis of literature on the topic. The strength and tranquility of the society depend on the peace and tranquility in the family, and the healthy lifestyle in the society depended on the sincere attitude and moral education of the family members. President Shavkat Mirziyoev explained the role of the family in the life of each person, especially the upbringing of children, "...in today's rapidly changing conflicted era, it is difficult to find answers to many complex questions in social life without a deep study of family issues on a scientific basis." [1-464] he emphasizes.

In this prospect, such a worldview and manners, formed among our people, continue to express the spiritual image of a person even today. A person with high spirituality realizes the value of the neighborhood and family, duties, responsibilities, family duties, proper upbringing of children in the family, providing for the family materially, maintaining its peace, and adheres to it. High spiritual parents raise their children to be a patriotic, morally pure, educated, humble, and noble human. Healthy social relations in children are formed in the family under the influence of parents and older family members. The more friendly, organized and strong the family is, the more effective its influence on the child's personality will be. As President Shavkat Mirziyoyev noted, "Actually, our generation was formed under the influence of that system. The moral standards of our parents' generation, the prompt response to social demands, and the observance of the principles of collectivity have been passed on to our generation" [2-233] he emphasizes. In addition to its own values, such a family respects the values, rules and norms of the society, the child learns to live in the society from a young age and its level increases.

Family and neighborhood are connected to each other in every way. The neighborhood is made up of families. Neighborhood is the family's closest advisor. Neighborhood is one of the important means of unity and solidarity among young people. Everyone in the neighborhood is also responsible for the education of the young generation. The neighborhood is a place that guides young people to the profession. A neighborhood is a place that strengthens family harmony and cohesion. Therefore, any changes in social relations and society affect women who are prone to impulsive perception of existence and life, and through them affect the institution of the family. Observations show that this influence often acquires a negative, destructive character, as a result of which a criminogenic atmosphere is created in the family, number of divorces increase, the number of orphans increases, property and housing disputes become a tradition.

Therefore, the countries that have made the strengthening of the family institution their internal policy, when they start reforms, find effective ways to reduce the negative consequences of this influence, to make the family and women active subjects of social changes and transformation processes.

The advantage of the neighborhood is that it is inhabited by people who have lived together for many years, know each other, tried and known each other. They know well the atmosphere in each family and the upbringing of each child, the place and prestige of their parents in the community, the status and opportunities of each family. The neighborhood is made up of families. The children [3] have matured in the family and strive for a bright future. If necessary, the neighborhood is the closest advisor and support of the family. Eastern peoples, for example, the Uzbek people,

understand well the essence of a healthy lifestyle, deeply understand its meaning. In fact, an important feature for the nations of the East is to sympathize with each other in times of joy and hardship. The basis of such unity and solidarity between people is formed in the family and neighborhood. In the family, it is considered an important criteria for parents to be a personal example, model, example in the upbringing of their children. The behavior of parents in the family, the culture of behavior, and behavior play a key role in the formation of the spiritual education of their children. Therefore, the parents themselves should observe the rules of oriental etiquette, have high respect for national and spiritual values, and have high universal human qualities. Children with such positive qualities have patriotism, self-sacrifice, loyalty, bravery, courage, forms qualities such as endurance, restraint, dignity, and initiative. Everyone must follow the rules and values of the neighborhood. Spiritual and moral education is formed and flourishes in the neighborhood. As stated by President Shavkat Mirziyoyev, explaining that "Mahalla Institute, therefore, in the true sense of the word, becomes a local expert and helper, a "scale of justice" will further strengthen people's trust in the state" [4-59], while explaining that adults in this regard they should be role models and initiators.

Research methodology. The neighborhood is a place that strengthens family harmony and cohesion. Naturally, sometimes quarrels break out in the family over a trivial matter, and the husband or wife should contact the neighborhood committee about it. While carrying out reconciliation work, they should keep in mind that these quarrels have a very heavy impact on the education of children, and that it will affect their future. Because the child does and follows what he sees at home. The creation of a healthy environment in the neighborhood and family depends on many factors. For example, children's interaction with family heads, respect and attention to adults, proper upbringing of children's interactions in the family, parents' attention to children's education, family structure These include good order and acquired good habits, correct attitude of parents to work and social events. If any of these are out of balance, conditions will be created for a healthy environment in that family. An unhealthy family environment has a negative effect on the psyche of a growing child, it ensures the emergence of bad habits in them. A child is not born with a unique character. School, neighborhood, peers, and the environment as a whole have a great influence on the upbringing of a positive character in a child. A number of regulatory documents on education and training adopted in our country in recent years, including the Law of the Republic of Uzbekistan "On Education", "National Program of Personnel Training" successfully work in the conditions of the market economy. requires the training of capable, independent thinking personnel and raising the prestige of the family, school and neighborhood to a higher level, or else "continuous education that is integrally connected with the intellectual, spiritual and moral upbringing of a person means to educate a well-rounded person" [5-30] through the system. Therefore, if the family [6] and the neighborhood work together, a spiritually healthy environment is created. The implementation of family, community and school cooperation is a very complex task and requires a lot of time and effort from the school and teacher, family members and community activists. Because ideological propaganda is especially

elementary Educating students in the spirit of national independence ideas requires teachers to have extensive knowledge.

Analysis and results. Therefore, bringing up spiritually rich, morally pure, physically healthy children and bringing them to adulthood is first carried out in the family. All human qualities that accompany a person for a lifetime - kindness, goodness, hard work, creativity, selflessness, loyalty, and courage - all begin in the family. The family prepares the ground for young people to grow up morally, honestly, hardworking and honest. Family upbringing plays an important role in the development of children in the future, and from this point of view, there are specific rules for healthy child upbringing in the family, which parents should know and children should follow: In the family, parents, children and other members love, understand and respect each other;

to consider study, work, labor as the main need;

do not give in to idleness, laziness;

adherence to a strict routine and acceptable living conditions in the family;

to respect the elders in the family and to honor the younger ones;

creating psychological peace and a healthy environment in the family;

formation of qualities such as independence, freedom, and self-confidence in each member of the family.

Adherence to these rules is the basis for improving mutual relations, strengthening the family and, in turn, raising a healthy child to become a citizen of society. Of course, it is always necessary to remember that parents and adults play an important role in this. Raising a child in a family should be the first duty of all adults living in it. Because the upbringing of a young child by our grandparents through national values, the heroism of our historical figures, and the oral creativity of the people is more effective. That's why the head of state tries to pay more attention to children's education and its bright prospects. As the First President noted, if a child receives seventy percent of information before the age of five, it shows how important the family is in the formation of a person's spirituality.

Conclusions and suggestions. Every sane person understands that as long as there is life in this bright world, there is a family, as long as there is a family, there is a priceless gift called a child, and as long as there is a child, the human being always lives with good dreams and aspirations. "Today, everything we do is for the happiness of our children, is being implemented for their bright future. But happiness is not determined only by wealth and possessions. A polite, knowledgeable and intelligent, hardworking, faith-believing child is the greatest wealth not only of parents, but of the entire society" [7-55-56]. As we are raising healthy and deep-thinking children in our family today, we need to make sure that their spiritual world is rich, they have a deep knowledge of our historical heritage, and that they reflect perfection in themselves. The maturity of spiritual education in the family in the development of our children, who are gaining modern knowledge and thinking, is largely rooted in the moral issues of parents. That is why our parents themselves must strictly observe the rules of high humanity and ethics. In particular, each parent:

- formation of a person who is physically and mentally mature, fully (materially and spiritually) ready for raising a child;

- being aware of the national identity, deeply feeling the principle of succession and being able to apply it to life;
- should have the historical memory created by the ancestors and should have developed a sense of respect for national and spiritual values.

As a conclusion, we should emphasize that attention to the formation of a healthy lifestyle in families at the level of state policy is an important basis for our young people to grow up physically mature and intellectually mature. The young generation that matures under the upbringing of parents with these qualities will have high spirituality, and friendly, healthy cooperation between the family, neighborhood and school is a guarantee of our future and also the creation of a healthy environment in the family. In order for the offspring to be healthy, not only the parents, but also their offspring must be healthy. The time has already come for parents and family heads to think about it.

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UDC: 09.004

THE IMPORTANCE OF WATER IN THE HUMAN AND NATURAL WORLD

Adilov Zafar,
PhD on History,
Urgench State
Pedagogical Institute,
Urgench, Uzbekistan.
adilovzafar@gmail.com

Annotatsiya: Tabiatga antropogen ta'sirning kuchayishi hozirgi ekologik holatning yomonlashishiga va ko‘plab ekologik muammolarning paydo bo‘lishiga olib keladi, bu global o‘zgarishlardan dalolat beradi. Xususan, atmosfera havosining ifloslanishi, global isish, o‘rmonlarning kesilishi, tuproqning degradatsiyasi, chuchuk ichimlik suvining yetishmasligi, ozon qatlamining yemirilishi kabi ekologik muammolar alohida e’tiborni talab qiladi. Bu borada muhim ekologik g‘oyalar orqali odamlarning ekologik ongi va ekologik madaniyatini yuksaltirish va bugungi kunda bunday muammolarning oldini olish bilan bog‘liq muammolarga yechim topishda diniy manbalarning muhim konstruktiv roli, ijtimoiy taraqqiyotni ekologik rivojlanish bilan uyg‘unlashtirib, qulay tabiiy muhitni asrash. o'zaro ta'sir qilish va "tabiat-jamiyat-inson" tizimida muvozanatga erishish muhim ahamiyatga ega.

Kalit so'zlar: diniy manbalar, ifloslanish, global isish, o‘rmonlarning kesilishi, tuproq degradatsiyasi, ijtimoiy-iqtisodiy faoliyat.

Abstract: The rising anthropogenic impact on nature is causing the current ecological state to deteriorate and a multitude of environmental concerns to emerge, as evidenced by global shifts. In particular, environmental issues such as air pollution, global warming, deforestation, soil degradation, lack of fresh drinking water, and ozone depletion require special attention. In this regard, raising people's environmental awareness and environmental culture through important environmental ideas and the important constructive role of religious sources in finding solutions to problems related to the prevention of such problems today, the preservation of a favorable natural environment by combining social development with environmental interaction, and achieving balance in the "nature-society-human" system are all important.

Keywords: religious sources, pollution, global warming, deforestation, soil degradation, socio-economic activity.

Аннотация: Возрастающее антропогенное воздействие на природу приводит к ухудшению современного экологического состояния и возникновению множества экологических проблем, о чем свидетельствуют глобальные сдвиги. В частности, особого внимания требуют такие экологические проблемы, как загрязнение воздуха, глобальное потепление, вырубка лесов, деградация почвы, нехватка пресной питьевой воды и разрушение озонового слоя. В связи с этим повышение экологического сознания и экологической культуры людей через важные экологические идеи и важную созидательную роль религиозных источников в поиске решения проблем, связанных с профилактикой таких проблем сегодня, сохранение благоприятной природной среды путем

сочетания социального развития с экологическим взаимодействие, достижение баланса в системе «природа-общество-человек».

Ключевые слова: религиозные источники, загрязнение, глобальное потепление, вырубка лесов, деградация почв, социально-экономическая деятельность.

Introduction. A third of the world's population currently lacks access to safe drinking water. According to the United Nations, four out of ten people on the planet live in areas where fresh drinking water is scarce. Every year, ten million people die as a result of drinking contaminated or poisoned water. There were one billion individuals on the planet at the turn of the twentieth century. There were 6.2 billion at the end of the twentieth century, and 7.7 billion at the start of the twenty-first. The world's population could reach 8-9 billion people by 2025. Every everyone has the right to "enjoy" the natural resources of fresh water, fertile soil, and beautiful nature on the globe.

We know that water has been valued as the most necessary source of need in the history of human society. Water is the most basic and earliest liquid on the planet, but it is also the most crucial ingredient for all living beings, including critters and humans. Water is a marvel, an unrivaled blessing that defines nature as well as human existence and vitality.

Even today, water is of vital importance for all spheres of socio-economic activity. It is a unique element of nature and is a vital resource in all sectors of the economy, from the daily needs of people, especially in agriculture and industry, as well as in maintaining ecological balance.

Water accounts for 80–90% of all food ingested by all living species on the globe, and an average human consumes 35 tons of water in his lifetime. As a result, water makes up 70-80 percent of the human body, 90 percent of the brain that regulates vital activities, and 95 percent of the blood.[1]

His majesty Jalaliddin Rumi emphasized the natural importance of water for all living organisms, plants and humans by this stich:

Suv sadosi bongu Isrofil erur,
Tirgizur hatto olik jonarni ul [2],
(English)The sound of water is the trumpet blow of Israfil,
That can even resurrect the dead body.

The United Nations estimates that 97.5 percent of the world's water is saline, making it unfit for irrigation and drinking. Pure drinking water makes about 2.5 percent of the water, with two-thirds of it coming from icebergs and mountain glaciers. Only 1% of the world's water supplies are suitable for human consumption. Potable water is water that can be consumed. Water that is safe to drink is water that does not hurt the human body. The salt level is less than 0.1 percent, it passes all applicable regulations, and it is safe for humans and other species to consume on a daily basis. So, e. coli levels of 3 in drinking water are considered normal.

Historical data show that for five thousand years, the volume of water has remained unchanged as the main ecological component, during which time the world's population has increased several hundred times and technological innovations have

been put into practice. Today, drinking water remains the most unique and valuable natural resource in the world.

Uzbekistan has 97 oil fields with a total water reserve of 64 million cubic meters, according to the State Geological Committee. The Tashkent, Samarkand, Surkhandarya, Namangan, Andijan, and Fergana areas have the most water resources. However, fresh water is scarce in the Khorezm region and the Republic of Karakalpakstan. The water reserves in the Bukhara and Navoi regions are average. Due to our country's unequal allocation of water resources, it is now vital to use water wisely and not waste it.

Materials and methods. According to the World Meteorological Organization's report "The State of Global Water Resources", by 2050, more than five billion people on Earth are expected to experience water shortages of varying degrees. Much of the world will experience drier-than-normal weather conditions in 2021, according to the analysis. Currently, 3.6 billion people face the problem of insufficient access to water for at least one month of the year.

This indicator is expected to exceed 5 billion by 2050.According to data, 74 percent of all natural disasters observed on Earth from 2001 to 2018 were related to water. In 2021, large areas of the world recorded drier-than-normal conditions compared to the 30-year average.

In Africa, water levels in the Niger, Volta, Nile and Congo rivers were significantly below normal in 2021. A similar situation was observed in some regions of Russia and Central Asia.

Countries affected by tropical cyclones such as China (Henan region), Northern India, Western Europe, Mozambique, the Philippines, and Indonesia have recorded many catastrophic floods.

In 2021, Central and South America, North Africa and Madagascar, Central Asia and the Middle East, Pakistan and Northern India will see below-average terrestrial water supplies in 2021, according to the report.

According to the data, by 2025, more than half of the world's countries will face water shortages. In 2050, this figure is expected to reach ¾ part of the world's population. In our country, as well as in the world, fresh water with limited water resources accounts for 8% of the total water resources and 67% of the drinking water. 161.4 thousand cubic meters per day in 2019 for the supply of drinking water to the population in the country. That is, sufficient fresh water reserves have been approved for 950,000 people, and in 2020, 193,000 cubic meters / day, or sufficient water reserves for 1 million to 140,000 people, have been approved.

One billion people lived in the biosphere during the twentieth century. The amount of water consumed was 360 billion meters3. The population had grown to 6 billion people by the end of the twentieth century, and drinking water consumption had reached 4,000 billion meters^3. In other words, the amount of water used increased by 11.1 times.

According to the World Health Organization, there is a shortage of clean drinking water for more than 2 billion people. If we look at the data, if the water amount was 3300 liters per person per year, In the Middle East and North Africa in 1960, this figure was 1250 liters. At present, this number has reached the danger line

(corresponding to 1000 liters of water per person per year, which is the lowest danger line of the sanitary norm).

Syria and Lebanon are on the verge of crossing this perilous border. Kazakhstan is one of the Commonwealth countries that frequently faces water shortages. Kazakhstan has the lowest water supply of the Commonwealth countries, with 37,000 cubic meters of water per square kilometer and 6,000 cubic meters per person each year. Kazakhstan provides 56% of its water supply, while the remaining 44% is covered by other neighboring countries. This is the biggest sign of economic and environmental catastrophe. Today, 2 billion people in the world suffer from a shortage of clean drinking water, and every year, 10 million people die from drinking contaminated or poisoned water. There are many ideas about the relationship between man and nature in Islamic sources, and it is stated in the Qur'an: "Have you ever thought about the water you drink? Did you send it down from the clouds, or are We the senders? Had We willed, We could have made it salty and bitter. Will you not then be grateful? (Surah al-Waqi'a, 68-70).

The Quran also mentions the blessings of God that has been bestowed on human beings and mentions about water in them: “He is the sender of the water from the cloud for you to drink. The plants that feed your animals are also watered by that water.

He grows crops for you, including olives, dates, grapes, and all fruits. Indeed, that is a sign for people who give thought. "(Surah an-Nahl, 10-11) According to experts, a person can live without food for a week or two, but cannot stand even three days without water. The human body will perish if the water content is reduced by 15%. Most of the human body is made up of water.

Through this verse, Allah calls on people to appreciate water and not to waste it. We come across many hadiths of the Prophet (peace and blessings of Allah be upon him) about conserving water and not wasting it. In today's developed society, how much water do we save? How much water do we use to wash our hands and faces? How much water do we use for bathing? If we calculate that at least 15 l of water is discharged in 1 minute, 45 l in 15 minutes,

Everyone uses 180–200 l of water for bathing. The Prophet (peace and blessings of Allah be upon him) used 1 mut (688 gr) for 1 mut of water for ablution and 3 mut (2 l of water for ghusl.

Conserving and saving water is our duty. In particular, excessive waste and pollution of water resources are strongly condemned in Islamic teachings. It is narrated in a hadith narrated by Tabarani: “""The Prophet (peace and blessings of Allah be upon him) strictly forbade the flow of water." (reported by al-Tabarani). It is shown that the planet Earth is able to meet the needs of all people when the blessings of nature are used wisely, "within the limits of need", with satisfaction and without waste. "Lord, allow us everyone the opportunity to know our limitations and live respectfully on your property!" says Shams Tabrizi, while Jalal al-Din Rumi highlights the value of water in his knowledge:

Uzbek: Obi hayvon qiblai jon, ey rafiq,
Suv ila yashnaydi bo`ston , ey rafiq.
English: The water is the life source of any creature, my friend.
A garden can blossom with water, my friend.

In the 11th century, an artist named Fahriddin Gurgoni advised against polluting water and advocated for its preservation with the following lines:

Uzbek: ’’Bugun chashma suvni qilsang agar hor, boshqa icholmassan bu suvdan zinhor”.

English: If you waste the stream water today, You can’t drink it anymore.

According to UNESCO, by 2030, more than 3 billion people on the planet will suffer from water shortages. Despite the fact that the UN's Millennium Development Goals call for "an end to the misuse of water resources" and "assistance in ensuring the equitable use of water," nearly half of the world's population is affected by water-related issues every day, with nearly 1 billion people lacking access to safe drinking water. And 2.5 billion people do not have enough water to meet sanitation and hygiene requirements. A lack of drinking water or water pollution causes 80% of all diseases in the world. Every second, a child dies around the world due to a shortage of drinking water[3].

Uzbekistan is also one of the countries suffering water problems, according to the UN classification. Uzbekistan is ranked 25th out of 164 countries in need of water in 2020, according to World Resource Institute data.[4]

According to the statistics, 700 liters of water per person per year implies a water scarcity, whereas 1,000 liters per person per year suggests an ecological water catastrophe.

According to experts, another 17 countries will be included in the list of countries suffering from a water crisis by 2025, including India also. Every Indian family now has access to 250 gallons of water each day. It's tough to comprehend the ramifications if this water crisis also affects China.

A quarter of a century later, the water threat is estimated at 8 billion. Water shortages can be a threat, so it is necessary to start practical work on water conservation now. Allah has created everything in an interconnected way, with its own measure and account, and there is much evidence for this in the Qur'an. For example: "Allah sends down water from the sky, and the waters flow in the valleys according to their measure and reckoning...” [5] (Surah Raad, Verse 17). In another verse, "We sent down water from the sky on His account, and set it on the earth (according to the need of all things on earth)." We can also remove these waters from you and deprive you of them.”[6] (Surah al-Mu'minun, Verse 17). Through these verses, the Almighty informs us that everything on Earth, including water, was created by His own calculation and measurement. That is, if more rain fell than necessary, floods would occur and destroy everything from crops to settlements, and if it did not rain at all, there would be a drought, i.e., a shortage of water. It is a pity that today there are people who are indifferent to this priceless blessing. The waste of water, which is the most necessary blessing for our lives, is on the rise. We must never forget that it is our duty and responsibility not to waste water. Currently, the problem of drinking water in the world has become a priority, and in Africa, Central Asia, the Middle East, and South America, there is a strong debate on river resources and inland drinking water lakes.

China, India, and even the United States are experiencing shortages of drinking water for people, and even deficiency of water for agriculture, and industry. To solve this problem in China, they are planning to divert the rivers in the northern region to

the south, and to implement this project, they need 12 billion. dollars and enough work for 10 years.

Gulf states with huge oil reserves want to use their groundwater to alleviate their drinking water problems. Water that has accumulated over thousands of years is fast dwindling and disappearing.

The entire volume of water on the earth is 1,400 million cubic meters, or 35 million cubic kilometers, of which only 2%, or 35 million cubic kilometers, is suitable for human use. The majority of it is found in Antarctica, Greenland's permafrost, and snow. Only 200,000 cubic kilometers of fresh, potable water are available. Freshwater resources' remoteness from human settlements is also a source of environmental conflict, as it makes water consumption problematic.

According to the World Resources Institute, 13 countries in the world belong to the group of countries with insufficient water supply.

Egypt is the first country in the list of countries with up to one thousand cubic meters of drinking water per capita.

Result and discussion. The natural-ecological norm of water per capita for a year is 13,000 meters3. (One meter3 of water corresponds to 1000 liters) while in Egypt (Egypt) 30 meters3, Israel 150 meters3, Turkmenistan 206 meters3, Moldova 236 meters3, Pakistan 350 meters3, Algeria 440 meters3, Hungary 594 meters3, in the eighth place, Uzbekistan 625 meters3, the Netherlands 676 meters3, Bangladesh 761 meters3, Morocco 963 meters3 , Azerbaijan 972 meters3, JAR 982 meters3 of water. This means that people per person per year use 13 million liters of water. This is a natural and ecological norm. It should be noted that there is a shortage of water resources in the Middle East and North America. In the arid parts of the planet, water scarcity remains a serious problem. Water scarcity remains a pressing problem in the arid parts of the planet. In countries with the lowest water supply, only 5,000 cubic meters or less of water is consumed per capita per year. Only 35% of the population of India’s 7 largest cities has access to 100 liters of water per day. The average Indian family consumes 220 liters per day. India has 213 m3 of water per capita per year.

By 2020, Africa alone will have grown from 75 million to 250 million. The population is facing water shortages. This figure varies from country to country, with water shortages reaching 1,250 liters per year, especially in Lebanon. In the Arab world, it is 1.5 thousand cubic meters per person per year. That is, water consumption is 9.5 times lower than normal. Worldwide, water consumption has increased by 11.1 times.

India, China, the United States, Pakistan, Japan, Thailand, Indonesia, Bangladesh, Mexico and Russia are among the countries that need the most water.

According to the estimation of the United Nations, in 2025, Russia, Scandinavia, South America, and Canada will be among the countries with the highest supply of fresh, clean drinking water, with 20,000 meters^3 of water per capita per year. per). This is much higher than the norm.

The essence of President Shavkat Mirziyoyev's address to the Oliy Majlis was environmental issues: "Next year, we must increase access to safe drinking water through the centralized network from 65 percent to 75 percent..." and the introduction of advanced technologies for the rational use of water resources..."; "Widespread use

of water-saving irrigation technologies..."; "Adoption of the National Program..." We are witnessing a logical approach to all natural resources in order to promote environment-based technology on a broad scale and improve people's wellbeing.

Conclusion. The development of the Uzbek economy today largely depends on the biological and ecological condition of ecosystems. While the population of Uzbekistan was 24 million. In the early years of its independence, there were 32.65 million people living in the country, according to the statistics of January 1, 2018. In 2020, the population of Uzbekistan exceeded 34 million. Human procreation necessitates the construction of housing, the construction of large cities... The period demands basic ecological, economic, and legal aspects of the use of nature by everyone living in Uzbekistan; the management and control of environmental protection, the rational use of every resource in nature; and strict observance of the laws of nature.

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UDC: 101

ANALYSIS OF MODERN RESEARCH ON IBN ARABI TEACHINGS

Boltaev Abduraxim Omonovich,
Candidate of political sciences,
Associate Professor,
Bukhara State University,
boltaev_a@gmail.com

Annotatsiya: Ushbu maqolada tasavvuf va faylasuf Muhyiddin ibn Arabiyning G‘arb va mahalliy olimlarning tasavvuf ta’limotiga oid zamonaviy tadqiqotlarida falsafiy tahlili va ularning o‘ziga xos jihatlari yoritilgan.

Kalit so‘zlar: Ibn Arabiy, so‘fiylik, falsafa, “vahdat ul vujud”, Qur’oni karim, hadis, usul, tahlil, ta’limot, tadqiqot.

Abstract: This article describes the philosophical analysis of the works of the mystic and philosopher Muhyiddin ibn Arabi in the modern studies of Western and local scientists regarding the mystical teachings and their specific aspects.

Key words: Ibn Arabiy, Sufism, philosophy, “vahdat ul vujud”, Qur'anic verse, hadith, method, analysis, teaching, research.

Аннотация: В данной статье представлен философский анализ произведений мистика и философа Мухиддина ибн Араби в современных исследованиях западных и отечественных ученых относительно мистических учений и их конкретных аспектов.

Ключевые слова: Ибн Арабий, суфизм, философия, «вахдат уль вуджуд», коранический аят, хадис, метод, анализ, учение, исследование.

Introduction. The sacred heritage of our scholars is so rich not only in terms of spiritual content, but also in size that it is compared to the bottomless ocean. It is so powerful that the attractive jewels of the depths of ocean are so strong that it continues to grow in times and places, delighting the people of the world. It has many unexplored, undiscovered facets. Discovering them is important not only to realize identity, but also to realize that we are worthy successors to ancestors. The unique and rare gem collected from this ocean is the heritage of Muhyiddin Ibn Arabi (1165-1240), a major figure in the Muslim mystical world. The life and work of a specialist so far has its own followers, supporters or hypocrites.

At the beginning of the 20th century, there was a renewed interest in Sufi teachings, as well as in relation to the teachings and ideas of Ibn Arabi Sufi. Ibn Arabi is an English Orientalist and mystic researcher Reynold Allen Nicholson (1868-1945) from scholars who studied Sufi-philosophical doctrine. The researcher gave an

assessment of the work of Sheikhu-L-Akbar and said: “Ibn Arabi interprets the verses and hadiths of the Koran in such a way that this style of him is known to us as the Jewish Filon (25 BC) and Origen Alexandriysky (185-253) are similar to those. It is difficult to understand the theories that the **mutasavvif** described in his books. Even more difficult is to interpret and explain it. Because the **invasions** used by Ibn Arabi are a special language in the figurative language. Any meaning can be deduced from them. For this reason, the meaning in the text cannot be understood if its terminology is not taken seriously. His works will literally serve as an example of a philosophical-mystical style that is difficult to understand. ”

The French Arabologist and Islamist Bernard Kara De Vo (1867-1953) also gives close points to Nicholson in his assessment of Ibn Arabi. He says that Ibn Arabi ideas are much different from early Sufi ideas and are more inclined towards Christianity. Karra de Vo: "when the books of Ibn Arabi are analyzed, we will witness that their content goes away from the formation of the great Sufi school and tends towards Christian traditions, as well as in it, along with various views, the ideas of qabbalah (Jewish religious-mystical doctrine in the Middle Ages) and Neoplatonism. Even among the Sunnis, there is still controversy over this particular style. In my opinion, this style of Ibn Arabi, which avoids the framework of analysis, is not recognized for the fact that the analysis is correct or incorrect, left in the suspect, ” writes,

According to the German Orientalist scientist Anna-Marie Schimmel, Ibn Arabi enriched the world of Muslim mysticism with new traditions. The peculiarity of this teaching is that it elevated the lore of Sufism ("acquaintance with Allah"ان عرفة الـ) to the highest status. "Ibn Arabi," writes Shimmel, " with his activities realized the traditions of Sufi schools. Ibn Arabi is one of the brightest Sufis of his time. Thanks to the official, the invasion of “Irfon” has become the best occupation that determines the Sufi character. Ibn Arabi created a doctrine famous all over the world that, with its external simplicity, achieved a complete victory over all Sufi thought. Ibn Arabi himself made a name for himself as the creator of the teachings of” wahdatu-L-vucud “(”single body“) and” Al-Manu-L-Kamil “(”perfect man”)".

American Orientalists Joseph Schacht (1902-1969) and Edmund Bosworth (1928-2015) believe that Christian elements are rare in Ibn Arabi teachings. In this case, they write: “it is known that the teachings in Christianity, such as the likeness of God to man and the Trinity, are also described in Ibn Arabi, as stated in other mutasavifs and Sufis. He was able to successfully analyze to the Muslik, relying on his knowledge. ”

Swedish theologian Andre Thor (1885-1947) highly appreciates Ibn Arabi's work and writes that the mystic is one of the great people: "Ibn Arabi," says Andre Thor, "has been of special interest to those interested in the history of religions." Traces of ancient Hellenistic religious-ideological traditions have been preserved in the works of the mystic. But when viewed from the perspective of faith, this faith is like a barren desert or a landscape without paths.”

The English scientist Trimingham said: ” it is difficult to imagine the development of mystical ideas without Ibn Arabi ideas " – gave a high opinion to the mutasavif doctrine.

Russian researcher in this regard a. V. Smirnov focused his views on what opportunities the Ibn Arab philosophical system opened up before Arab Thought. A.

V. Smirnov Ibn Arabi philosophy showed that a new era could be a kind of paradigm for the development of Arab philosophy.

Materials and methods. The creative heritage of Ibn Arabi was focused on a huge number of ideological directions. Part of them fell under the influence of European scientists, the second part joined the opinion of the scholars of the Hanbali sect, who resisted this doctrine. Among the two sides, those who recognized the teachings of Ibn Arabi were also the majority.

Ibn Arabi enriched it with a new spirit and direction while preserving the poetic style and traditions of his predecessors. This poetry was later continued with interest and went to Europe. Swedish poet Gunnar Ekylof (1907-1968), famous in Northern Europe, believed in Ibn Arabi so much that he used some Arabic words in his poems written in Swedish. Gunner Ekilyof cites a poetic passage from Ibn Arabi's Tarjumanu-l-Ashwaq ("Translator of Passions") as an epigraph for his collection of poems "Prince Emgion":

There is no rhyme in our poem,
All I need is a yes.
My goal is "yes" and I'm for it
I only sell "yes" and "yes" again.

Evaluating the work of the researcher Ibn Arabi, the British R. Based on the research of Nicholson and the Frenchman Carra de Vallar: "Ibn Arabi is outward in prayer and inward in faith. The mystic tried to connect the Ash'ari faith with Alexandrian philosophy. He tried to put Sufism into a single philosophical system, which was compiled from different philosophical schools," he wrote.

American mystic scientist V. Chitik writes about the influence of the theory of "vahdatul wujud" put forward by Ibn Arabi on subsequent tariqas, and looks at the history of the development of this theory in India. The scientist lists Naqshbandi pirs such as Baqibillah, Khojai Khurd, Ahmad Sirhindi, i.e. Imam Rabbani, who made great contributions to the spread of this theory in India.

Russian orientalist A. V. Smirnov can also be listed as one of the scientists who have a place in the study and translation of Ibn Arabi's legacy.. A. V. Smirnov's research on the work of the mystic "Fususul hikam" ("Bows of Wisdom") is particularly noteworthy. He also wrote works in which Ibn Arabi's life path and creativity were deeply studied, and Ibn Arabi's teachings and theories were introduced to the general public.

Result and discussion. At present, a kind of deconstructive method has arisen in the study of the theoretical and religious aspects of mysticism in Arab literary life, one of the representatives of this method is the Egyptian prose Hamid Abu Zayd (1943-2010). In his work entitled 'philosophatu-t-TA'wiyl' ("philosophy of interpretation"), using the achievements of modern interpretation of the Quran, Ibn Arabi took an important and powerful step, making a comparative understanding of the Arab ideas and the Botanic meanings of the interpretation of the Koran. Based on these, Nasr Hamid Abu Zayd Ibn Arabi assessed his philosophical-mystical ideas as the absolute truth and essence of Islam: "the voodoo (existitentialism) and enlightenment (gnoseology) promoted by Ibn Arabi are teachings that lead from any religious, religious and political shell, disagreements. Without retreating from the religious

beliefs of Islam, mutasavvif concludes that this religion has been rated as the most recent and absolute truth as an elitist religion. ”

Arab researcher Sulayman al-Attar (1945-2020) suggests that Ibn Arabi's worldview managed to find a way to maintain moderation among jurists and mutakallims and reconcile their concepts with the ideas of rationalist philosophers.

In Uzbekistan, the study and scientific research of Ibn Arabi's work was established in the years of independence. Ibrahim Haqqul, Najmiddin Kamilov, Shaykh Muhammad Sadiq Muhammad Yusuf, a well-known literary critic, scientist and religious scholar, evaluated the teachings of Ibn Arabi. Various researches and scientific articles have been published in which the mystic's views on existence and its essence have been studied.

Sufi scientist I. Haqqulov brings the following idea to Ibn Arabi's work: “this is a path of knowledge, a path of pleasure and inspiration, the achievement of which was rarely given to a creator both in the East and in the West. The main reason why Ibn Arabi's creativity is recognized as an unparalleled phenomenon in the history of World Science and spirituality is when he has the talent of mukoshafa in the literal sense of ul. As a teenager, Ibn Arabi was diligently interested in the secrets of mukoshafa, trying to find out his meanings related to science, status and pleasure. Mutasavvif was a lover of mysticism with all his being. Ibn Arabi was Benazir in the study of mysticism, the study of his batinian and apparent truths. It is with Ibn Arabi that the concept of perfect man and Wahdat ul-vujd maslagi take a place that is more than Sufi ideology.”

Shaykh Muhammad Sadiq analyzes the works of Muhammad Yusuf Ibn Arabi as follows: Muhyiddin Ibn Arabi was the main reason for the spread of the Wakhdatul Wujud theory, he was born in 560 AH and died in 638 AH. Muhyiddin ibn Arabi explained the theory of Wakhdatul existence in his books "Al-Futuhhotu al-Makkiyya" and "Fususul hikam". This theory was widely spread at that time. Especially among the Sufi sects, this theory became the place of blood in the body. Time and time again, the theory of existence has become the slogan of people's pleasure and research. Those who denied this theory were condemned as heedless people and alien elements to Sufism. Here, we should emphasize that Muhyiddin ibn Arabi and his comrades appeared at a time when Sunni Sufism was weakening, and when Islamic sciences in general began to decline.

By scientists such as N. Komilov, G. Navro'zova, J. Kholmo'minov, comparative analysis and general conclusions were given about the conditions for the emergence of Ibn Arabi's teaching and its influence on the development of Sufi thinking after him. The issue of existence put forward by the mystic is being extensively philosophically researched by contemporary Uzbek philosophers. B. Toraev's philosophical analysis of the work of Ibn Arabi shows that Ibn Arabi's unique concept of existence remains relevant for all times.

Mystic scientist N. Kamilov evaluates Ibn Arabi's theory and creation of "Wahdat ul Vujud" as follows: "The period of "philosophizing" of Sufism - in the XIII-XIV centuries, a number of thinkers, writers, learned Sufis appeared, which we call those who connect with philosophy. For example, Ibn Arabi, Abu Hamid Ghazali, Fariduddin Attar, Azizuddin Nasafi, Yahya Suhrawardi, Jalaluddin Rumi, Abdurrahman Jami, Abdul Qadir Bedil are such thinkers. That is, observing the unity

of the universe and not the unity of existence of the universe and God was brought to the first plan.

G. Navro'zova studies the generality and specificity of the teaching of Ibn Arabi and Khoja Ahror as follows: "How much influence of Ibn Arabi's teaching is there in the ideas of Khoja Ahror?" The results of the research show that information about Ibn Arabi is mentioned in 6 out of 206 rashhas preserved from Khwaja Ahror. Both mystics assert that animate and inanimate nature, that is, these aspects of existence, are interrelated. He brings the idea that the way a person affects inanimate nature with his actions and morals, that effect will return to the actions of a person.

J. Kholmo'minov tried to justify the philosophical, historical and scientific aspects of the influence of Ibn Arabi's Wahdatul wujud philosophy on the Naqshbandi doctrine in his scientific research on the study of Ibn Arabi and the Naqshbandi doctrine. The researcher, Khwaja Muhammad Porso Bukhari, Khwaja Ahror Vali and Maulana Abdurrahman Jami, proved that the mystical ideas in Ibn Arabi's "Philosophy of Unity of Being" were "elevated to the level of philosophical teaching" in Naqshbandi. In the history of Islamic philosophical-mystical thinking, no book has become more popular than "Fususul Hikam". Scholars of later periods, belonging to different directions, sects, wrote short, sometimes detailed scientific comments on it. In addition, a number of scholars who wrote books on mysticism and mysticism and the philosophy of mysticism considered it necessary to express their opinions and attitudes about the doctrine of Wahdat al-Wujud in order to demonstrate their scientific potential.

Researcher E. Zoyirov studied the philosophical views of Makhdumi Azam, a theorist of the Naqshbandiya sect, and especially recognized the place of Ibn Arabi doctrine in the writing of the mutasavvif's treatise “vujadiya”: “in the teachings of Ibn Arabi, the conquest of 'True' (Allah) is explained by various definitions, descriptions and interpretations. He sometimes explains “Right”as the same thing as “people” (created beings), sometimes referring to the degradation of truth to the level of the people. It is noteworthy that there is harmony in the views of Mahdumi Azam and Ibn Arabi on the issue of relations between the people with the truth, that is, the beings in existence, which are God and his embodiment, including Man.”

Therefore, the different assessment of Ibn Arabi's scientific and philosophical heritage shows how powerful and influential his mystical and philosophical teaching is.

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