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## Modern Ecological Characteristics Of The Southern Slope Of The Great Caucasus In The Ecotourism Conditions

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### ABSTRACT

In the article, the landscape complexes of the Southern slope of the Caucasus react differently to different impacts and recreational loads on the example of the Gabala region, which is the object of study in terms of ecotourism development. In this regard, safe loads for one natural complex have been found to be critical for others. Recreational use of forests has been found to be of great importance for increasing the resource potential of society. Field research In light forests with recreational grass cover, for example, in Bunut forests of Gabala region, oak-maple and oak-maple-hornbeam formations are not resistant to recreational vegetation. and the upper part of the soil is hard. As a result of trampling the seedlings, they perish. From this point of view, as a result of the transfer of forests around springs to private individuals, the forest is degraded, seedlings are trampled, the reaction force reaches a high level, anthropogenic pressure increases, and grass and moss cover is destroyed. Therefore, there are no young seedlings in the forests of Bunut. Forest grazing is more dangerous in this area. Thus, the existing seedlings are eaten by animals, trampled, and the soil is hardened. The current situation mainly affects a large area in the area around the basins of the Vendam, Damiraparan, Hamzali, Bum and Karachay rivers. Especially during the rainy season, animals damage the soil surface and vegetation more, causing the destruction of grass and moss layers, which is unacceptable.

### KEYWORDS

Ecotourism, recreation, urbanization, phytocenosis, anthropogenic, phylogenic, zoogenic, degradation, relief, etc.



## INTRODUCTION

Relevance of the study: Tourism is one of the fastest growing social and economic development directions of the XX century, which is of strategic importance. In this regard, tourism, which is part of the non-oil sector in Azerbaijan, has a special weight in strengthening the country's economy. It is also one of the areas of economic and political importance in the development of international economic relations.

For this purpose, the implementation mechanism of the State Program on Tourism Development in the Republic of Azerbaijan for 2010-2014, approved by the Decree of the President of the Republic of Azerbaijan dated April 6, 2010, is of special importance. The main goal of this important state program is to form a modern tourism industry in Azerbaijan that meets high economic, social and environmental requirements and to ensure that it becomes one of the main pillars of the country's economy. It should be noted that the work done in this direction in the Republic over the past 10-15 years, the important state decisions on tourism and landscaping in the regions have given impetus to the development of tourism. Azerbaijan has also joined the world tourism system and is recognized.

Tourism is one of the factors that positively affect the growth of people's knowledge and skills, worldview and recreation. It should be

noted that the understanding of self and the world through tourism has become possible due to the positive change in people's lives, the emergence of new modes of transport, the emergence of 21 new information technologies and, finally, the processes of globalization. In tourism, consumer models are intertwined, and tourism is no longer a luxury for most people, but an essential element of the natural physiology of life. In the field of tourism, the natural environment, landscape complexes, social and economic development, historical and cultural ties, etc.

Such components imitate people's tastes, give peace of mind and teach to love nature. In nature, it teaches the diversity of biodiversity in different places. From this point of view, Gabala region has its own place due to the richness of soil and vegetation. The total land fund of the region is 150,000 hectares and is very diverse due to its use.

In the south of the Gabala region, which is the object of research, from the low mountains bordering the Shirvan plain to the watershed peaks of the Greater Caucasus, the soil and vegetation cover is low. The rotation of areas and zones, which are distinguished by their diversity in accordance with the law of zoning, attracts attention. Since 1993, the Gabala State Nature Reserve with a total area of 39,680 hectares has been established in the basins of the Vandam, Damiraparan, Hamzali,

Bum and Garachay rivers, as well as in the Alvan gorge. The reserve is home to a variety of trees and shrubs of the plain and mountain forest landscape, as well as endangered mountain goats, blackbirds, deer, bears, wild boars, lynxes, etc. rare animals are protected.

### AIMS AND OBJECTIVES OF THE RESEARCH

The purpose of the assessment projects in terms of ecotourism is the proper organization of the area, efficient use of land cover, clarification of specialization, land reform, increasing productivity and protection of land cover.

When calculating the economic assessment indicators, the basic indicators were used in the economic assessment of the cadastral price regions, which are mainly included in the economy.

Environmental education of the population and ensuring the development of ecotourism in the area with great tourism potential is an important condition.

### OBJECT OF RESEARCH

In addition to protecting natural forest biocenoses around tourism facilities, it is also well promoted to tourists. As a result of field research, landscape changes in the Gabala region of the Southern Slope of the Greater Caucasus were noticeable, albeit insignificant. its resilience to the effects of recreation, increasing the recreational tolerance of the landscape. The most important thing is that the boundaries of the phytocenosis can withstand the recreational load, otherwise the cost of the phytocenosis itself may fall.

The tolerance of the boundaries of the phytocenosis allows to determine the recreational capacity, in other words, to

The vegetation of the area is difficult to adapt to climate change. Thus, as the drought lasts this year, the leaves of trees and shrubs are prematurely yellowed, protected and shed.

Impact of recreational vegetation on the southern slope of the Greater Caucasus.

As the process of urbanization intensifies, most people want to spend their holidays in nature. For this reason, plants are trampled in nature. This is usually called "recreation". Recreation is derived from the Latin word "recreat.o", which means the restoration of physical and all kinds of activity.

It is important to protect the area, as the increase in the number of people resting in recreational activities is inversely proportional. It is known that the recreational use of the forest is very serious. It is very profitable to use it for recreational purposes in some countries.

Although forests are of recreational and sanitary importance in our country, they are not used for recreational purposes. In the United States, 30% of state land is allocated for recreation. This figure can lead to the degradation of landscape recreation. The most important thing in the process of recreational use is the protection of nature.

One of the main issues of the day is the inspection of the area, registration, study of

determine how many people can rest in this area. At present, recreational weight is applied to different types of plants. Since most people come to the forest for recreation, many recreational effects take place in the forest phytocenosis. the most important work is to analyze the recreational tolerance of the forest. Recreation affects the grass and tree strata, forest floor, seedlings,

soil, wildlife, etc. from various components in the forest biogenesis. Under the influence of reclamation, the soil hardens, soil porosity, air permeability deteriorates and its structure is disrupted.

As a result of soil hardening, anaerobic processes increase, the process of oxidation and reduction changes, the water regime of the soil deteriorates, and root growth becomes more difficult. Forest debris, moisture, heat, and air are very important in storing nutrients in the soil. In recreational forests, sedimentation is reduced or absent, which leads to soil freezing, reduced humus, and weakened grass cover.

As a result of trampling, the undergrowth is reduced from 5% to 51%, the viability of all tiers is reduced, and the productivity of trees is reduced by 2-3 times.

### GRASS TIER

Studies have shown that when the forest phytocenosis is used for recreational purposes, the grass layer is primarily damaged. One of the main components of the forest phytocenosis is grass, grass plays a role in regulating the microclimate and microbiological processes in the forest. The grass tier is stable in carrying the recreational

load. According to the species composition of grasses, it is possible to determine the state of anthropogenic impact. Research shows that an increase in the recreational load affects the reduction in the number of plant species and the proportion of individuals.

In the forest, ornamental plants are not only trampled, but often collected as a bouquet of flowers, most often in the vicinity of cities. According to the duration of recreation, grasses are divided into 3 groups:

- 1) low-strength,
- 2) quite durable,
- 3) perennial plants.

From plants belonging to the less durable group, umbrellas, raspberries, etc., meadow grains from medium-resistant plants, chillies, etc., road grasses to perennial grasses, sagebrush, plantain, etc.

**Table 1**

**Recreational degradation of grass cover in forest phytocenosis.**

Mesophilic forest belt of high and medium mountains	A belt of xerophilous forests in the middle and low mountains
The grass cover is not damaged	The grass cover is damaged
Degraded forests and forest-meadow species are weakened	The grass cover is degraded, the number is sharply reduced, the stratification remains
In the upper part of the forest, the grass cover was sharply damaged.	The grasses characteristic of the forest phytocenosis are degraded.

Degraded forests and forest-meadow species are weakened. Grass cover is degraded, the number is sharply reduced, and stratification remains.

In the upper part of the forest, the grass cover was sharply damaged. The grasses characteristic of the forest phytocenosis are degraded



In light forests with recreational grass cover, for example, in Bunut forests of Gabala region, oak-maple and oak-maple-hornbeam formations are not resistant to recreation. The natural regeneration of the forest has been disrupted as a result of recreation of the seedlings under the forest, and the upper part

of the soil is hardened. Here, as a result of the trampling of seedlings, they perish.

From this point of view, as a result of the transfer of forests around springs to private individuals, the forest is degraded, seedlings are trampled, the reaction force reaches a high level, anthropogenic pressure increases,



and grass and moss cover is destroyed. Therefore, there are no young seedlings in the forests of Bunut.

Forest grazing is more dangerous in this area, the existing seedlings are eaten by animals, trampled, and the soil is hardened.

Especially during the rainy season, animals damage the soil surface and vegetation more, causing the destruction of grass and moss layers. This results in soil erosion on sloping slopes.

Forests are damaged by tourists (trees, bushes and grass are damaged) and cars. Mechanical effects cause soil compaction and destruction of perennial grasses. As a result of soil hardening, one part of the soil remains dry and the other part becomes moist, which worsens the nutrition of trees. Weakening of nutrition prevents the growth and development of trees. This is especially true in coniferous forests.

Soil hardening disrupts its structure, reduces porosity, and worsens the living conditions of soil microorganisms.

The landscape complexes of the southern slope of the Greater Caucasus react differently to different influences and recreational loads. Therefore, safe downloads for one natural complex may be critical for others. Recreational use of forests is of great importance for increasing the resource potential of society.

Rest in nature eliminates work stress and has a positive effect on people's ability to work. However, recreation around the city significantly harms the environment. Thus,

Relief is a major factor in the distribution of solar radiation and precipitation, depending on the visibility and slope of the slopes, and

recreational loads increase in forest areas, resulting in deteriorating forest quality or complete degradation. At the same time, the sanitary-hygienic, water protection and soil protection functions of forests are weakened, and their aesthetics is reduced.

All living and non-living worlds in the study area are interconnected. Thus, plants live under the influence of environmental factors. Factors surrounding plants are divided into 2 groups according to the nature of the impact.

- 1) Biotic factors
- 2) Abiotic factors

These, in turn, are divided into several groups.

Abiotic factors: Climate - light, heat, water and air; . Edaphic (soil rocks, soil properties); Applies to orography or relief. Biotic factors: Phytogen - the influence of plants on each other, etc. Zoogen - the interaction of animals, the impact of anthropogenic people on living things, etc. includes.

Environmental factors have a direct and indirect effect. Light from the climatic factor has a direct effect on plants, the forest phytocenosis can indirectly affect the meadow phytocoenosis by changing the climate more or less.

Climatic factor is the main factor that causes plants to spread on the earth in zones and zones. In mountainous areas, relief can change the climate by influencing it, in other words, it becomes a key factor in the spread of plants.

Relief is of great importance in the formation and development of soil and vegetation.

affects soil water, heat, nutrients, oxidation-reduction and salt regimes, plant productivity and species composition.



Studies have shown that the surface of different slopes and slopes do not receive the same amount of solar radiation. This is reflected in the temperature and water regime.

Depending on the altitude of the mountains, the vertical zone of climate, vegetation and

soils is formed due to lower temperatures and changes in humidity.

On the southern slope of the Greater Caucasus, as air masses approach the mountains, they gradually rise, cool, and cause precipitation.

**Table 2**

**Assessment of soil and environmental factors of the southern slope of the Greater Caucasus**

The degree of complexity of the area	Relief	Height	Humus	Ph	Temperature	Precipitation, in mm
Less complicated	Plains and foothills	300-500	2.62	7.40	10.4	600-800
Moderately complex	Low mountainous area	500-600	2.34	7.60	8.5	800-1000
Complex	Fragmented middle mountainous area	500-1500	3.26	7.60	6.5	1000-1200
Very complicated	Fragmented high mountain plateau area	1500-2000	3.84	7.30	4.8	1200-1400

As can be seen from the table, the degree of complexity of the area, relief, altitude, humus, Ph, temperature, precipitation were calculated on the basis of the collected data. In the plains and foothills of the region, 300-500 altitude, humus 2.34, Ph 7.40, temperature 10.4, precipitation 600-800 mm. In the low mountainous area, the height is 500-600 mm, humus 2.62, Ph 7.60, temperature 8.5, precipitation 800-1000 mm.

The height is 600-1500 mm, humus 3.26, Ph 7.60, temperature 6.5, precipitation 1000-1200 mm in the fragmented middle mountainous area.

In the fragmented high mountain plateau, the height is 1500-2000, humus 3.84, Ph 7.30, temperature 4.8, precipitation 1200-1400 mm.

The main criteria in assessing the soil ecological condition of the area were the

characteristics of the relief, altitude, soil environment (pH), humus, temperature, precipitation.

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## Studying Interactions Between Exam Stress And Cognitive Processes

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### ABSTRACT

This paper analyzes the psycho physiological changes that occur when exam stress affects healthy and mentally retarded schoolchildren aged 14-16 years. Psychological and cognitive indicators were studied. The experiments were conducted in three stages: on a normal school day (control), before the exam, and after the exam. The analysis of the obtained data showed that during the exam, healthy schoolchildren experience psycho physiological changes, i.e. the level of stress indicators (anxiety) increases and cognitive indicators weaken. After the exam, there was a tendency for these indicators to return to the control level. In contrast to healthy children, mentally retarded schoolchildren had a high level of anxiety index during the control examination, and their cognitive indicators were 35% lower than normal. During the examination period, these indicators remained at a relatively constant level. A comparative analysis of the data showed that depending on the level of mental development of students, exam stress leads to stress in the psycho-emotional state of students and this can have a serious impact on their health.

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## KEYWORDS

Exam stress, emotional stress, anxiety indicators, cognitive indicators, psycho emotional state, oligophrenics

## INTRODUCTION

The role of the regularities of formation of cognitive processes in the perception of the environment serves as one of the most essential problems. The adequacy of this type of activity ensures the survival and stability of the organism in the environment. Manifested through these psycho physiological indicators in humans, it identifies adaptive, individual-psychological abilities and different features that arise in the process of personality development (5). However, the integration features of psycho physiological mechanisms under the influence of emotion depend on the individual's ability to perceive the environment. Modern research in this area is mainly based on the provisions of cognitive theory (18). According to this theory, cognitive processes ensure the quality and intensity of emotional reactions by correctly assessing the nature of real conditions that have arisen. The analysis of the studies conducted to address this problem at the present time proves that the main focus is on the study of the organizational factors and the characteristics of the functions of the body in the context of various stressors. Psycho physiological aspects of emotional stress, its processes of formation of brain mechanisms have been less studied. In such conditions, the regularities of the reflection of adequate information equivalence in brain activity, as well as the characteristics of personal determination and the development of cognitive processes in emotional stress of various etiologies have not yet been fully studied.

In this regard, it is of interest to experimentally study the effect of emotional stress on the psycho physiological indicators of two groups of adolescents, depending on the level of mental development. The aim of the research is to study cognitive processes in students during exam depending on the level of emotional tension. Along with the study of cognitive processes, anthropometric, vegetative and psychological indicators in adolescents were studied. The aim is to comprehensively assess the mechanisms of action of emotional tension. The reason for choosing two groups of adolescents is to understand and emotionally assess the stress, depending on the level of mental development.

The aim of the study is to determine the psychophysiological changes caused by exam stress and to clarify the relationship between cognitive processes and emotional stress. The exam process is a classic model of emotional tension. The aim of the experiments was to determine the effect of emotional stress on the cognitive, psychological and autonomic indicators of adolescents, depending on the level of mental development. The studies were conducted among 120 healthy schoolchildren from the Ecology Lyceum No. 291 in Baku and 60 schoolchildren of the special boarding school in Sumgait for children with mental and physical disabilities, who were diagnosed with dementia (oligophrenia), aged 14-16.

Psycho tests have been used in the study of psychological indicators:

Spielberg - Individual and situational anxiety through the Khan's test, general anxiety through the Taylor test, depression test on the depression scale. Among cognitive processes, short-term memory (through the "Memory by number" test), visual memory (through the pictorial visual memory table), voluntary attention (through the "Placement of numbers" test) were mainly studied.

The experiments were conducted in three stages: on one of the usual school days (1-1.5 months before exam); pre-exam period (45 minutes before exams); 2 hours after exam.

The results of the study of psychological and cognitive indicators are presented in Table 1

and Table 2. The results of research show that under the influence of emotional stress, changes occur depending on the level of mental development. At present, the psycho-emotional changes observed are assessed as the body's adaptive response to situation. It is known that emotional tension allows for the emergence of adaptive behavior as a reinforced purposeful reaction in the process of evolution, and enhances the reception of information, accelerates the course of neurophysiologic processes (8, 23). The integration of psycho physiological mechanisms of body is a decisive factor for the emotional state, allows body to adapt to different extreme conditions, to develop adequate response, and thus leads existing conditions to common psychological level (22).

**Table 1**

**The effect of emotional stress on the psycho physiological indicators of practically healthy adolescents.**

Age of schoolchildren	14 years			15 years			16 years		
Indicators studied	a	b	c	a	b	c	a	b	c
Situational anxiety	30,82 ±1,02	45,87 ±1,33 ***	40,29 ±0,26 **	31,92 ±1,55	46,18 ±1,86 ***	34,83 ±0,92	31,88 ±2,05	46,53 ±1,94 ***	33,76 ±1,05
Individual anxiety	40,47 ±0,66	45,93 ±0,55 ***	43,26 ±1,92	44,78 ±2,04	46,04 ±1,88	45,29 ±1,04	46,98 ±2,13	48,94 ±1,86 *	45,92 ±1,74
General anxiety	25,27 ±0,73	42,82 ±0,75 ***	38,34 ±0,79 ***	26,78 ±1,73	45,74 ±0,89 ***	34,76 ±1,96 **	29,89 ±1,15	48,33 ±0,94 ***	38,69 ±1,24 ***
Depression	42,03	41,57	40,27	42,44	44,83	41,36	44,02	45,49	44,26

indicator	±1,23	±0,96	±1,24	±0,77	±1,24	±1,09	±0,84	±1,33	±1,83
Short-term memory	7,25 ±0,23	5,91 ±0,25 *	5,97 ±1,08	7,55 ±1,28	5,93 ±0,29 *	7,09 ±1,05	5,87 ±0,34	5,01 ±0,34	6,29 ±1,04
Visual memory	9,55 ±0,57	7,03 ±0,54 **	8,22 ±0,19 *	11,54 ±0,57	9,67 ±0,94 *	10,23 ±0,77	10,88 ±0,86	9,28 ±1,02 *	10,23 ±0,94
Voluntary attention	22,16 ±0,49	20,29 ±0,43 **	20,33 ±0,46 **	23,64 ±0,84	21,44 ±0,74 *	22,14 ±0,76	23,38 ±0,67	21,17 ±0,77 *	22,27 ±0,46

Note: a - ordinary school day, b - before exam, c - after exam;

- -  $p < 0,05$ , \*\* -  $p < 0,01$ , \*\*\* -  $p < 0,001$ .

However, the integration features of psycho physiological mechanisms under the influence of emotional tension depend on individual's ability to perceive the environment. For this reason, modern research is mainly based on the provisions of cognitive theory (19), that is,

cognitive processes ensure the quality and intensity of emotional reactions by correctly assessing the nature of real situation. However, the regularities of the brain's response to information reaching the brain, the development of cognitive processes in emotional stress of various etiologies, and the characteristics of personal determination are not clear enough, and the genesis of their brain mechanisms is relatively understudied.

**Table 2**

**The effect of emotional stress on the psycho physiological indicators of oligophrenic students.**

Age of schoolchildren	14 years			15 years			16 years		
Indicators studied	a	b	c	a	b	c	a	b	c
Situational anxiety	41,22 ±1,03	41,45 ±1,36	41,83 ±0,75	41,96 ±1,65	41,43 ±1,75	38,94 ±1,66	40,72 ±1,25	43,83 ±1,57	42,94 ±0,98
Individual anxiety	47,33 ±0,58	47,67 ±1,84	47,01 ±0,45	47,18 ±1,04	46,29 ±1,82	46,93 ±1,09	50,57 ±1,19	49,82 ±1,54	48,85 ±1,43
Short-term memory	3,36 ±0,66	3,67 ±0,92	3,29 ±0,72	4,02 ±0,26	3,75 ±0,84	4,09 ±0,35	2,67 ±1,02	2,09 ±0,65	2,43 ±0,86
Visual memory	8,27 ±0,59	9,75 ±0,74	9,05 ±0,66	8,55 ±0,56	9,97 ±0,84	10,99 ±0,66	8,93 ±0,84	8,29 ±0,99	7,95 ±0,69
Voluntary attention	7,64 ±0,53	7,92 ±0,48	7,01 ±0,57	7,96 ±1,02	7,04 ±0,59	7,06 ±0,46	8,44 ±0,98	7,65 ±0,39	6,69 ±0,66

Note: a - ordinary school day, b - before exam, c - after exam;

Psycho physiological changes in adolescents due to emotional stress can have a negative impact on their development, laying the groundwork for neuropsychiatric and somatic illnesses that are likely to occur in the future. Adolescents form a special group in society: they are at a faster stage of development of the emotional sphere and cognitive processes, as they are at the end of childhood and the beginning of the future independent life. During adolescence, a child's belief system and personal qualities are developed. In particular, the effects of emotional stress at these early stages of development can lead to more serious complications and adaptive disorders, resulting in changes in behavior,

psychological state, temperament, and in loss of health (10,21).

It is known from the literature that under the influence of emotional stress, first, the normal course of cognitive and intellectual processes changes (13, 18, 21). In stress conditions occurred, normal human activity depends on the course of adaptation processes. It is known that the end product of adaptation processes in brain is the formation and fixation of new functional system. Adaptive processes include the interaction system, serving as the basis of memory, and the adequate change of the system during times of stress. On the other hand, the inability of the human body to meet its basic social or biological needs as a result of long-term adverse conditions caused by various conflict



situations also creates emotional stress (1, 23). This, in turn, leads to change in behavior and disruption of inter-system communication. During the experiments, along with the methods of psychological testing, the behavior of students during exams was observed. A feeling of excitement was observed visually among the majority of practically healthy schoolchildren. Thus, changes in psychological parameters and cognitive indicators during exam process, and changes in vegetative indicators once again prove the tension of the body's regulatory systems during this period. It is known that the body's close contact with the external environment is carried out by homeostasis self-regulatory systems, which reveal the ability to control and combine various functional processes. Changes in the environment cause tension in homeostasis, which, at best, creates a new functional state corresponding to all parameters or conditions. As a result, the emotional tension is eliminated. Thus, the stress process can be considered as a normal physiological adaptation response aimed to compensate homeostasis in emotionally tense situations (7,14). The results of personal studies showed that during exam, under the influence of emotional stress, depending on the level of mental development, adolescents develop psycho physiological reactions that are clearly manifested. In this case, the degree and duration of emotional arousal depends on the degree of perception of the factor influencing objectively and the psycho physiological characteristics of the personality. It is known from the literature that stress affects the whole organism, and the reaction of living things is different in such situations (16,17). People are extremely sensitive to the effects of stress, and an interesting feature is the ability to respond adequately to changes in

the external environment. The most common response to stress is fear, anxiety, and so on (9. 13). While the results of our personal experiments revealed that healthy adolescents had a moderate level of anxiety during psychological testing on a normal school day, a high level of anxiety was observed before exam process. After exam, the anxiety dropped to a medium level. Unlike healthy adolescents, mentally retarded adolescents showed lower levels of anxiety in all three cases. The obtained facts once again prove that the change in the level of anxiety depends on the emotional assessment of situation. Increase in anxiety levels was reflected in behavioral changes, anxiety, and clearly manifested neurotic states. As noted, stress is a complex integration of the body's defense systems against environmental factors. The body reacts to environmental factors through the physiological and psychological mechanisms of adaptation (15). As a rule, the former are aimed at maintaining homeostasis and against environmental factors, while the latter provide a program of behavioral activity to minimize the stress of physiological systems and are aimed at removing the organism from the area of said factor. That is, during stress, the body reacts both with non-mental response and personal mental reactions - negative emotions (the response can often be limited), and the corresponding act of behavior takes place. An increase in the level of excitement before exam serves to get the body out of the tense situation. However, it should be noted that in all experiments, healthy adolescents did not experience depression. The results showed that the mental functions of the CNS can adapt to the situation. As a result of incomplete adaptation processes and incomplete formation of CNS functions, there is an increase in mental indicators and an

increase in anxiety. Against the background of other levels of anxiety in mentally retarded adolescents, only the individual level of anxiety was high. The findings suggest that while the situation of emotional tension is not perceived by mentally retarded adolescents and is not able to give emotional value to the situation, the presence of constant internal tension in such people has led to increase in individual anxiety. It is known from the literature that emotional tension creates conditions for the emergence of adaptive behavior as purposeful reaction strengthened in the process of evolution, and consequently, the perception of information and the pace of neurophysiologic processes increase (14, 16, 17). The integration of the psycho physiological mechanisms of living organism is a decisive factor for the emotional state, allowing living things to adapt to different extreme conditions, the formation of adequate reactions, and ending with the formation of common psychological level. Nevertheless, the integration features of psychological mechanisms under the influence of emotional stress depend primarily on the ability to perceive the environment. Among neurophysiologic functions, cognitive processes play basic role (3, 15). The studies showed that cognitive processes change depending on the level of mental development under the influence of emotional stress. First, let's look at short-term memory. In practically healthy adolescents, short-term memory on normal school day was within norms among 14-15-year-old adolescents, but was below norm in only 16-year-olds ( $5.87 \pm 0.34$  points). In the older age group, short-term memory was lower than normal on ordinary school day, which can be explained by the fact that they also assess the testing process as an emotionally stressful

situation and excessive tension of cognitive processes.

It is known from the literature that the intensification of cognitive processes sometimes results in stress and manifests itself in the flow of self-awareness processes. In our experiments, this condition was observed in the upper age group of adolescents. During exam, a decrease of about 18% compared to the usual school day was observed in all age groups. This can be attributed to the acceleration of the processes of delay in the CNS due to the impact of emotional stress and the development of the body's defense reactions (14, 17). After exam, in the upper age groups, who realized that the factors affecting stress were completely eliminated, the indicator was observed to be in basic level, while in 14-year-olds it was 17% lower than the usual school day. As we noted, the process of activation of cognitive processes during exam can serve as a factor in the emergence of emotional tension. The delay of these processes after exam can play the role of eliminating one of the stressors, which can allow the body to return to its permanent state due to its adaptive capacity (18). Due to the incomplete formation of adaptation processes in minors, there was a delay in the process of returning the studied indicator to the level of normal school day. The results of short-term memory in mentally retarded adolescents were completely different. Thus, the said indicator on ordinary school day was  $3.35 \pm 0.64$  points, i.e., 47.8% below the normal level. Although a relative change was observed in studies conducted under the influence of emotional stress, the results were not reliable. The literature also shows that short-term memory for mentally retarded adolescents fluctuates between 2.5 and 3.5 points (4, 12). The lack of significant changes under the influence of emotional

stress proves once again that this group of adolescents has defective perception and memory processes are underdeveloped. It should be noted that as the physiological age increases, the short-term age indicator decreases.

Interesting facts were obtained during the study of visual memory among cognitive indicators. Thus, among practically healthy adolescents, visual memory was approximately 40–52% higher than normal in all experiments. The relative changes that occurred during exam were unreliable and remained within norm. This result is due to the fact that healthy adolescents have the opportunity to remember familiar images without any difficulty, and the normal functioning and perception of vision analyzers. Similar results were obtained in mentally retarded adolescents. Thus, it is known from literary sources that the perception of vision is of special importance and has its own significance for mentally retarded adolescents. Most of this group of people perceive the environment through their perception of vision. Unlike healthy adolescents, the increase in testing time allows mentally retarded adolescents to fully comprehend and remember the object being described. The main reason for this is the delay in the processes of analysis and synthesis due to the weakening of the functions of the cerebral cortex, which is peculiar to oligophrenics (12). L.I. Perseleni et al. (11) have found in specific experiments that the analysis of sensory information in mentally retarded adolescents is very slow and selective. Based on the results of our personal studies, we can say that the number of errors in the memory of familiar objects is minimized in mentally retarded adolescents. Due to the fact that the images used in the test were familiar to mentally retarded adolescents and

the duration of time was increased, the results were within the norm.

It is known from the literature that as a result of emotional stress, significant change occurs in attention processes (13). Thus, voluntary attention plays an important role in the regulation of cognitive processes (8, 23). It is through voluntary attention that a person concentrates and seeks a way out of the emotional situation and acts purposefully. Voluntary attention protects the CNS from receiving excessive information and facilitates the perception of necessary information (22). The results of our personal studies prove that voluntary attention in healthy adolescents remains within the norm, despite a significant decrease and change due to emotional stress. Cognitive impairments in mentally retarded adolescents were once again reflected in the results of voluntary attention. A relative change was observed which resulted from the effect of emotional tension. Thus, the literature states that voluntary attention disorder is one of the main symptoms in mentally retarded adolescents (2, 12). Low levels of voluntary attention are characterized by a number of disorders: small memory span, poor endurance and easy shift of focus from one object to another, lack of interest in focusing on areas of interest and unfamiliar objects, and so on. Even the slightest irritation can lead to diversion of attention. Their weak voluntary attention has a negative effect on purposeful activity and ability to work (6,12). The lack of reliable change during exam can be explained by the poor assessment of condition. The main role as a dominant factor in the regulation of intellectual activity in the context of emotional tension is the harmony of personality, the degree of compatibility between desired and real work and the achievement of goals. As practically healthy adolescents aimed to achieve high results

during exam, they also had high levels of emotional tension, which negatively affected the course of cognitive processes, which was reflected in the process of self-awareness. A number of studies have noted that, depending on the nature of the threat, not only in anxiety and worry, but also in cognitive processes perceiving the threat as risk and its assessment process take place. According to researchers, two independent reactions to stress by humans are distinguished: emotional (anxiety, etc.) and intellectual (risk assessment, analysis of the existing threat at cognitive level) (19). Other sources state that the emotional response may include fear, concentration difficulty, aggression, a number of autonomic stress reactions, and agitation. Other sources make it clear that there is a link between increased levels of anxiety and cognitive processes. According to Yerkes-Dodson Law, there is a U-shaped connection between the strength of the body's arousal and performance of task. The level of irritability required for optimal behavioral activity is at the center of the scale. According to the second law of the YD principle, the more complex the task, the lower the level of irritability is required to achieve maximum success. Levels of irritability that increase during the solution of simple task may lead to the impossibility of solving more complex task. The same is true for humans. For example, a medium level of arousal may not be enough to solve a task. Increase in the level of anxiety will lead to violation of normal human behavior and violation of the performance indicators of task (20). We witness this law in our personal experience. At the average level of arousal, the number of errors during testing was minimal. The decrease in the number of correct answers by mentally retarded students with high levels of individual anxiety and in all adolescents with

increased levels of anxiety during exam once again reflects the close link between emotional stress and cognitive processes.

It is known that under the influence of stress factors, both physiological and psychological processes are activated simultaneously and work in combination. Activation mechanisms play important role in the development of psycho-emotional tension: emotional resilience plays an important role in a person's reactions to emotional stress conditions such as emotional endurance, will characteristics, self-induction level, arousal, etc. It determines the level of emotional tension in such situation (2,10). People with high emotional resilience often have an adequate response of active type. It was found that the response to stress depends largely on the characteristics of the nervous system: the regulation of nervous processes, the level of emotional tension, temperament, adaptation to situation, and so on.

All of the abovementioned and the literature once again prove that the main role in the emergence of emotional tension plays the activation of cognitive processes, the ability to understand the real situation and emotional evaluation. Cognitive processes play a key role in the development of emotional stress, depending on the level of mental development under the influence of test stress that we used experimentally, leading to the development of psychological and autonomic reactions, cognitive and perceptual processes, the results of which is reflected, as in our example, in the learning process and life activities of adolescents (difficulty in mastering learning material, fatigue, headaches, insomnia, sometimes unreasonable aggression and depression, sometimes loss of appetite due to the development of autonomic dysfunction,



diarrhea, vomiting, fever, hand tremor, etc.). Taking into account the above-mentioned, it is possible to increase the self-confidence of teenagers before exam period, to adapt them to real exam process by creating conditions similar to exam process, and to reduce the level of emotional tension that can arise through a series of psychological conversations. And this is the basis for ensuring the development of healthy future.

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## Linguoculturological Analysis Of Phraseological Units And Different Approaches To Linguoculturology

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### ABSTRACT

This article is about cultural linguistics, its main lexical and cultural factors, linguoculturological analysis of phraseological units. In it analyzed different approaches to cultural linguistics and relationship between culture and language.

### KEYWORDS

Culture, linguistics, language, factors, approaches, culturology, linguo culturology, phraseological units.

### INTRODUCTION

Cultural linguistics is a branch of linguistics that deals with the study of the relationship that arises between language and cultural concepts. Cultural linguistics is also called cultural linguistics. Cultural linguistics acts as a catalyst for the theoretical and analytical development of such scientific areas as:

cognitive science is a multidisciplinary scientific direction that unites sciences that study the process of cognition and the functioning of human thinking from different positions; anthropology is a multidisciplinary scientific field that unites sciences that study a person as such, his origin and development, as



well as existence in natural (natural) and cultural (artificial) environments. The direct subject of cultural linguistics is the diversity of reflections of existing and pre-existing languages with the help of their inherent special features of cultural concepts, which include cultural metaphors, cultural categories and cultural models.

Under a cultural concept, it is customary to understand the content of a linguistic unit (as a rule, words or phrases), behind which there is a concept (meaning) reflected in thinking, relating to the cultural sphere of a person's life. Culture is a concept that covers a huge range of issues and categories. The most widespread and widespread definition of "culture" is the sum of the many manifestations of human activity. In a narrow sense, culture is understood as a set of creative works characterized by the presence of spiritual value in society. Culture is the subject of a separate scientific discipline called culturology. And in the case of the relationship between culture and language (which is studied by linguistics) at the junction of theoretical teachings about them, a new science was formed - cultural linguistics or cultural linguistics.

### THE MAIN FINDINGS AND RESULTS

Within the framework of the hypothesis of linguistic relativity, which is also called the Sapir-Whorf hypothesis, the existence of the influence of the structure of language on the worldview, mental and cognitive processes of its speakers is asserted. This assumption also applies to some extent to cultural linguistics, which in this concept is understood as a holistic study of objects. The essence of this research lies in the theoretical description of objects. The objects are cultural values

Cultural linguistics sees language as something rooted in the cultural (and therefore also at the group) level of cognition. Currently, the results of cultural linguistics, as well as the approaches used in it, are actively used in applied areas of linguistics, for example, in intercultural communication, in teaching and mastering a foreign language, as well as in contact variantology of the English language. However, according to some studies, the methods used for the purposes of linguoculturological research (first of all, establishing the direct dependence of culture on linguistic structures) do not meet the basic requirements of theoretical science. Based on this fact, cultural linguistics is often ranked among a number of pseudoscientific disciplines. Approaches to the definition of cultural linguistics In addition to the above generally accepted definition of cultural linguistics, some scholars, considering cultural linguistics from different points of view, offer their own interpretations of this concept. The main definitions of cultural linguistics, to which the overwhelming majority of definitions formulated by individual linguists can be attributed to one degree or another, are: the definition presented in the hypothesis of linguistic relativity; the definition given by V.V. Krasnykh; the definition given by El Zinovieva and EE Yurkov.

reflected in the language, which in their totality represent a functioning system. In addition, cultural linguistics can be called a contrastive analysis (that is, based on comparison) of the linguocultural spheres of different peoples and the languages they use. Moreover, this analysis should be based on the provisions of the hypothesis of linguistic relativity. Remark 2 Therefore, we can conclude that cultural linguistics (from the standpoint of the Sapir-Whorf hypothesis) is

the study of culture that exists in linguistic form.

The Russian philologist V.V. Krasnykh considers cultural linguistics as a discipline that studies how culture manifests itself, is reflected and fixed in language and discourse. At the same time, the interrelation of this discipline with the study of the national picture of the world, linguistic consciousness, features of the mental-lingual complex is noted. Thus, from this point of view, cultural linguistics is in many ways similar to another linguistic discipline - ethnopsycholinguistics. That is, cultural linguistics studies the expression of culture in a language, depending on the national characteristics inherent in specific carriers and all the characteristics arising from them.

EI Zinovieva and EE Yurkov defined cultural linguistics as a philological science, the main task of which is to study the diverse ways of representing knowledge about the world of speakers of a particular language. This research itself is the study of the language system and its units, speech activity and behavior of native speakers, as well as discourse. Consequently, cultural linguistics studies the culture of a particular society through the study of the language used in it.

1. Several directions have taken shape in cultural linguistics by now.
2. Culturology linguistics of a particular social group, ethnic group in some culturally bright period, ie, the study of a specific linguocultural situation.
3. Diachronic cultural linguistics, i.e. study of changes in the linguocultural state of an ethnic group over a certain period of time.
4. Comparative cultural linguistics, which investigates the linguistic and cultural manifestations of different, but interrelated ethnic groups.

5. Comparative cultural linguistics. It is just beginning to develop. Today it is represented by only a few works, the most interesting of which is the work of M. K. Golovanivskaya "The French mentality from the point of view of a native speaker of the Russian language", in which the peculiarities of the French mentality are studied from the standpoint of a native speaker of the Russian language and culture. The material for the analysis was abstract nouns in Russian and French - fate, danger, luck, soul, mind, conscience, thought, idea, etc.
6. Linguocultural lexicography, engaged in the compilation of linguistic and cultural dictionaries.

As you can see, the latter direction is developing especially actively. Let us briefly characterize one of the cited linguistic and cultural dictionaries, for example, DG Maltseva's dictionary. It contains 25 large thematic sections, arranged in no particular order. These are linguistic units that reflect the geographical realities of Germany, its climatic features, flora and fauna, the history of the country, old folk customs, beliefs, traditions, signs; old legends, symbolism of numbers, symbolism of color; weddings, funerals, holidays; religious beliefs, the development of the monetary system, measures of length, weight, volume, area, the history of industrial development, trade, science, technology, medicine; occurrence of a mail message; history of architecture and urban planning. Among the topics that are reflected in the dictionary, you can list the following: language, typography, writing, students and student life, school, nationally-specific clothing items, traditional cuisine, games, folk dances, traditional greetings and wishes, etiquette phrases, national gestures, personal names and surnames, linguistic units

of literary origin, aphorisms, German songs, national character. On the basis of such dictionaries, the study of the nature of the interaction of language and culture becomes quite productive.

With all the differences in existing directions, the subject of modern cultural linguistics is the study of the cultural semantics of linguistic signs, which is formed by the interaction of two different codes - language and culture, since each linguistic personality is also a cultural personality. Therefore, linguistic signs are capable of performing the function of the "language" of culture, which is expressed in the ability of the language to reflect the cultural and national mentality of its carriers. In this regard, we can talk about a "cultural barrier" that can arise even if all linguistic norms are observed. As an example, we can cite the case described by A. Vezhbitskaya with an English conductor, when he was invited to lead a German orchestra. The work was not going well. The conductor decided that this was due to the fact that he speaks English and the musicians do not perceive him as "theirs". He began to study the German language, and the first thing that asked the teacher how to say this phrase in German: "Look, I think it would be better if we played like this." The teacher pondered, then said: "Of course, you can construct a phrase like this, but it is better to say: "You have to play like this. " Hence the conclusion: the cultural barrier is associated with differences in the norms of speech behavior, as well as with different meanings that communication participants put into seemingly the same words, with inadequate background knowledge, etc.

Cultural linguistics as an independent branch of knowledge must solve its specific tasks and at the same time answer, first of all, a number

of questions, which in the most general form can be formulated as follows:

1. How culture participates in the formation of linguistic concepts;
2. To which part of the meaning of a linguistic sign are "cultural meanings" attached;
3. Whether these meanings are realized by the speaker and the listener and how they influence speech strategies;
4. Is there in reality the cultural and linguistic competence of a native speaker, on the basis of which cultural meanings are embodied in texts and recognized by native speakers. As a working definition of cultural and linguistic competence, we take the following: this is the natural knowledge of the linguistic personality of the processes of speech production and speech perception and, which is especially important, the knowledge of cultural attitudes; to prove this, new technologies of linguocultural analysis of language units are needed;
5. What are the conceptual sphere (a set of basic concepts of a given culture), as well as cultural discourses, focused on the representation by carriers of one culture, a plurality of cultures (universals); cultural semantics of these linguistic signs, which is formed on the basis of the interaction of two different subject areas - language and culture;
6. How to systematize the basic concepts of this science, i.e. to create a conceptual apparatus that would not only allow analyzing the problem of interaction between language and culture in dynamics, but would provide mutual understanding within the framework of a given scientific paradigm - anthropological, or anthropocentric.

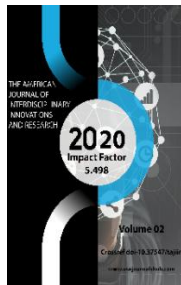
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## CONCLUSION

The above list of tasks cannot be considered final, because progress in solving them will generate the next cycle of tasks, etc. These are the so-called high, or general epistemological, tasks that R.M. Frumkina considers common to all sciences, but there are still particular tasks related to the problem of translation, language teaching, compilation of dictionaries, where cultural information would be taken into account, etc. ... It seems that they can be solved only after solving "lofty" tasks, or at least with some advance in solving epistemological tasks.

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## The Science Of Geographical Ecology: Problems And Solutions

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### ABSTRACT

The article reveals the content and essence of Geographical Ecology, and shortly the science of Geoecology. It has been proven which system of sciences it stands for and what specific aspects of research it consists of.

### KEYWORDS

Geoecology, science, scientific basis, object, subject, method, evaluation, control, monitoring, expertise, audit, consulting, practice.

### INTRODUCTION

By the third millennium, the rapid development of science, and especially technology, has led to a wide networking of science, education, and practice. It is the most popular disciplines that emerge between two or more disciplines. It is a natural and objective process. “Pure sciences” such as physics, mathematics, chemistry, philosophy,

law, geography, biology serve as a fundamental basis for new sciences. This, on the one hand, reduces their aspiration for innovation, and, on the other hand, in the absence of events and processes in society and, especially in nature, that are not interconnected, one does not arise from the other. Because all social and natural



conditions, events, processes and happenings are inextricably linked and interrelated. Geographical ecology – The science of “Geoecology” is no exception [1, p. 120].

For each science, including Geoecology, to take part in the scientific field, it is necessary to have its own goals, objectives, object, subject, method, history of development and formation, methodology and methods, practical aspects. Otherwise it will not be recognized as a science network [2, pp. 16-28].

The reason why Geoecology is considered as a separate subject in this field is three unresolved issues:

- ✓ The first – “Geoecology” geographical ecology or geological ecology?
- ✓ The second – the mixing of environmental research with geoecological research?
- ✓ The third – to what direction of geography does Geoecology belong and what are its practical aspects?

### THE MAIN FINDINGS AND RESULTS

It is necessary to pay attention to a specific case, which can be called an axiom, which proves that Geoecology is geographical ecology. The object of universally recognized ecological science is the biosphere crust of the planet Earth and the ecosystems in it, that is, the general and specific habitat of organisms. The object of geography is the geosphere crust of the planet Earth and the geosystems in it. The geosphere – the geographical crust is the most active layer of the biosphere (we will focus on this issue below). In other words, the geosystem is within the ecosystem, but differs in content and essence [3, pp. 11-13].

So the geosystem and the ecosystem seem to be in the same space. However, we cannot fully apply this situation to the science of geology. Because the object of Geology is the

Earth's crust and the Earth [4, p. 512]. The lower boundary of the Earth's crust descends to the Earth's mantle, where organisms do not enter. This means that Geology goes beyond ecosystems, and therefore the Earth's crust cannot be an ecological object. Yes, living organisms are found at depths of up to 6 km, in layers where oil and gas are scattered and the remains of the organic world are found. But the geological object is not limited to this mineral layer! If we want to study the ecological aspects of geology within the boundaries of the distribution of organisms, then we need to use some other terms. For example, “Ecology of oil reservoirs” or “Ecology of gas reservoirs”, etc. In addition, there is an unwritten but generally accepted rule in science – if a field of science uses a particular term or phrase for the first time in its research, that term or phrase remains relevant to that science. For example, soil erosion – the subject of “Erosion studies” and the subject was first used by soil geographers to reflect soil erosion. But the word “erosion” is widely used in both medicine and journalism. They adopted this process under the full names of the disciplines of “Medical erosion” and “Journalistic erosion”, but not “Erosion studies”. Well-known erosion scientist, professor of Moscow State University named after V.V.Lomonosov M.N.Zaslavsky says – “We must admit that we do not always pay enough attention to monosemantism in scientific terminology – the uniform interpretation of terms. Such ambiguity in science (especially in education – A.N.) is not only a hindrance, but a real guilt” [5, p. 17]. The landscape geographer K. Troll first introduced the word “Geoecology” to science in 1939 [6, p. 23-34]. This is clearly stated in the textbook “Geoecological bases of environmental protection” published by geologist E.V. Kadyrov and his followers [7, p.

19]. A.V. Sidorenko first made a mistake in 1967 in his article “Man, technology, land” that Geoecology is geological ecology. He was unaware of K. Troll's work and did not focus on the geographical literature. For the USSR, which in the 1960s sought to win the Cold War by mining new deposits in the former Soviet Union, the conclusion of geologists was above all geographical scientific rules. The ideological approach to science, and especially to its theory, has led to the view of Geoecology as a Geological Ecology. This error, unfortunately, is also widely popularized by other geologists. A similar situation is happening today in Geotourism – Geological tourism [8, pp. 284-295].

Now let's talk about the second problem. Indeed, some research in the field of ecology repeats research in other related sciences or conducts research very closely related to it. Such parallelism also exists in General Ecology with the Science of Geoecology. For example: geological and environmental monitoring, evaluation, forecasting, monitoring, etc. In order to clarify these issues, it is necessary to first focus on the aspects of Geoecology that are recognized as an independent science.

### THE OBJECT OF GEOECOLOGY

We have already mentioned this, but in addition it should be noted that the geosphere includes the entire hydrosphere, the upper lithosphere and the lower atmosphere, the crust is formed, where endogenous and exogenous processes directly affect the Earth's surface and relatively active movement of organisms. This active geographic crust is called a “large geosystem” or “geosystem”, and the rest are geosystems or geosystems in different taxonomic units. Thus, geoecological research can never go beyond this geosphere. But the question of how thick the geographical crust

will be in a particular place is still a mystery [9, 120]. This problem is a separate object of research and discussion.

In Geoecology, geosystems or geosystems are considered to be the habitats of organisms, and it is advisable to study geographical systems within these geosystems. This is the main difference between ecological research and geoecological research. For example, geosystems include natural geographic zoning objects and smaller taxonomic units – region, landscape, place, urochisha, and facies. However, the development of science and technology requires the study of geoecological objects into smaller natural geographical parts than facies. Oral organisms are divided not only into flora and fauna, humans, but also into microorganisms and nano-organisms (10-9 and smaller in size). Similarly, it is inevitable that their habitat – “house” will be studied not in km<sup>2</sup>, hectares, m<sup>2</sup>, but in a very small area of geosystems in cm<sup>2</sup> and mm<sup>2</sup>.

### THE SUBJECT OF GEOECOLOGY

Changes in the object of Geoecology make additions and changes to its research goals, objectives, subject, and methodology. In general, the subject of Geoecology is the study of any aspect of a geosystem or geosystem. It examines the territorial, complex, (systematic), periodicity, and aspects of the natural, economic, social, political, and even legal geographical aspects of the relationship between organisms (including humans) within geosystems and between them and the environment. Therefore, the science of Geoecology in Uzbekistan is included in the specialized council “11.00.05 – Environmental protection and use of natural resources”. In a number of countries, such as Kazakhstan, the Russian Federation, Ukraine, specialty codes in the



USSR have been revised over the next 15-20 years, and Geoecology is seen as a separate discipline. It is time for the Higher Attestation Commission (HAC) under the Cabinet of Ministers of the Republic of Uzbekistan to review the specialization codes used in the former Soviet Union in accordance with the requirements of time and space, and to assign a special specialty code to Geoecology.

It would be absolutely wrong to say that Geoecology is only specific to natural geography or that it only studies the natural geographical aspects of the terrestrial part of the Earth's surface. Because the geographical crust must take into account both the water part of the Earth's surface and the social, social, economic, legal, political and even enlightenment-spiritual aspects, processes and events that take place on it. After all, all natural and social phenomena and processes affect the ecological condition of the geographical crust [10, p. 192].

### GEOECOLOGICAL METHODS

Another requirement for the formation of Geoecology as an independent science is the availability of specific methods of study, research and research. These methods are also available in other fields of natural, concrete, technical, humanities or social sciences, but the science of Geoecology has specialized or generalized them depending on its purpose, object, and subject. We need to choose geoecological methods in a way that connects the events and processes taking place in geosystems to a specific area and approaches it complexly geographically. This approach differs from the general systematic approach in pure environmental methods. Because it is distinguished by its territoriality, periodicity, complexity. For example, the method of remote territorial complex observation (a method of studying and

monitoring natural complexes through a geographic information system [11, pp. 35-37]); conducting semi-stationary and stationary experiments on natural geographical complexes; modeling of exogenous and endogenous processes or other dynamic phenomena in taxonomic units of landscapes using computer technologies, etc.

In recent years, the method of conducting experiments through the artificial creation of small space (microcosm), natural geographic complexes, is widely used in geoecological research. Data from man-made artificial Bios-6 (Russian Federation) and Biosphere-2 (USA) cameras lead to very interesting conclusions.

Another modern geoecological method is geoecological modeling. A model is a mathematical representation of changes in organisms and the natural environment [12, pp. 69-80]. This simulation method allows you to test very large processes in a short period of time using information technology. Dozens of methods for quantitative assessment of events and processes in geosystems (neural networks or multifactorial theoretical hardware programs) serve to conduct geoecological monitoring and create promising geoecological programs.

In general, the development of new geoecological methods as a separate research subject in science, and equipping it with new pedagogical methods in education is one of the current issues.

**Geoecological assessment, monitoring and forecasting**, of course, differs from general ecological assessment, monitoring and forecasting in its content and essence. This difference is mainly in their object. For example, according to the scope of environmental monitoring: local, national,

regional, regional, geoecological monitoring is carried out within certain natural geographical complexes – continents, zones, districts, provinces, regions, landscapes, places, factions or socio-geographical carried out within taxonomic units. It mainly uses the above-mentioned geoecological methods. Another area for further research is the establishment of general geographical (natural and social geographical) zoning to identify geoecological areas. The separate natural and separate economic and socio-geographical zoning made to date may not correspond to the subject of geoecological research. Because Geoecology is just a field of natural or social geographical science and education.

Geosystems within a defined geographic crust have a variety of methods for tracking, accounting for, evaluating, and predicting changes in organisms and their environment: traditional (terrestrial geographic) observation: aerospace (remote sensing) observation.

Traditional observation is instrumental, visual. Instrumental observation uses all environmental indicators in geosystems, instruments that record events and processes affecting organisms and their natural environment. For example, measuring the passage of erosion processes through taximetrics, geophysical and reference points. Representation of the geoecological situation on maps of different scales through chamber–field–chamber surveys. Visual observation is carried out by recording the situation on the route-expeditions on certain geocards.

Aerospace remote geoecological monitoring is carried out on the basis of images and videos taken from aircraft, helicopters, spacecraft (Figure 1) in a generalized way or by assessing, analyzing and recommending

appropriate measures for their components. Recently, quadcopters and drones have been widely used in geoecological monitoring (Figure 2). Using the above-named methods, two groups of geoecological indicators are identified: first, to identify abiotic, biotic and anthropogenic factors affecting geosystems, collect and analyze data such as their strength, direction, size, area; the second is to assess, analyze the condition of geosystems and carry out by the competent authorities of the relevant state. Regional and global geoecological monitoring is carried out by specialized interstate associations or international organizations. Such geoecological monitoring covers a wider and deeper layer than geomonitoring. However, environmental monitoring stems from geoecological monitoring and one complements the other.

Typically, local and national monitoring is carried out by the competent authorities of the state. Regional and global monitoring is carried out by specialized interstate associations or international organizations. Such environmental monitoring covers a wider and deeper layer than geo-monitoring. However, environmental monitoring stems from geoecological monitoring and one complements the other.

It shall be carried out in accordance with the principles set out in the 1972 United Nations Stockholm Conference on Environmental Protection. Its legal basis is Article 28 of the Law of the Republic of Uzbekistan "On Nature Protection"; The Regulation "On State Monitoring of the Environment" approved by the Resolution of the Cabinet of Ministers No. 111 of April 3, 2002 is the charter of specially authorized state bodies and other by-laws.

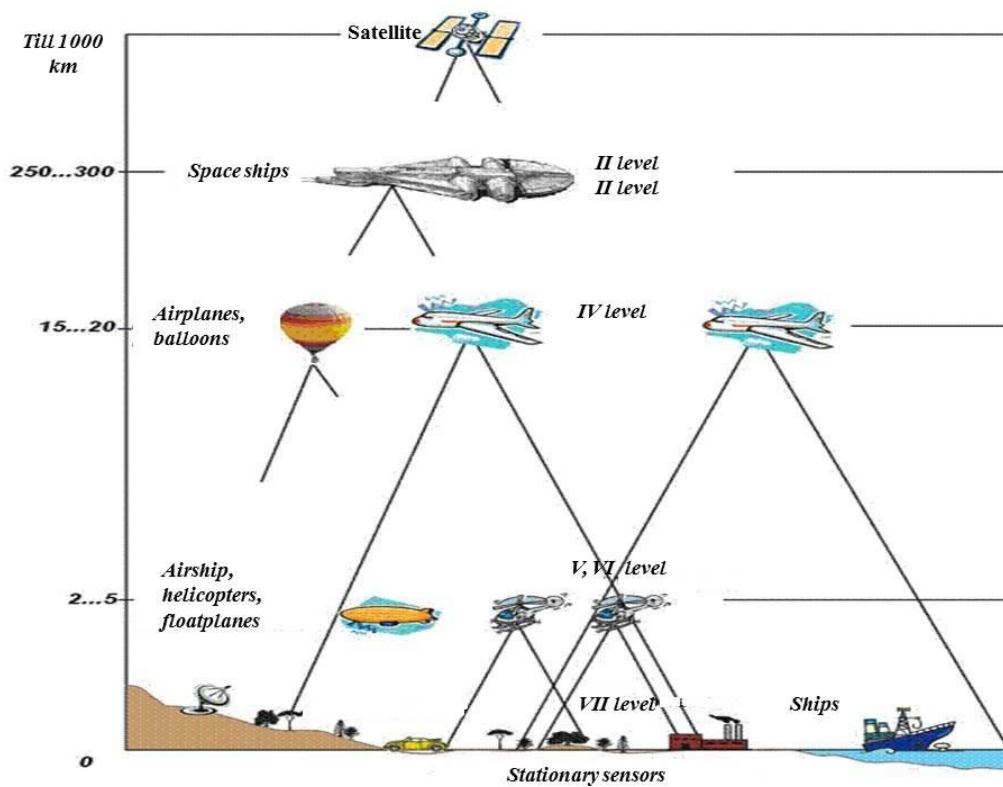


Figure 1. Methods of geoeological monitoring



Figure 2. Use of quadcopters and drones in geoeological monitoring

Approved by the Resolution of the Cabinet of Ministers No. 273 of August 23, 2016 "Environmental Monitoring Program in the Republic of Uzbekistan for 2016-2020" Currently, environmental monitoring is carried out at 390 industrial enterprises, 68 surface water points, 87 water discharges, collectors, 1,694 groundwater wells, 74 springs, and 61 atmospheric air monitoring posts. Finding an answer to the question of what non-state geoecological monitoring should look like in future geographical research is crucial.

**Geoecological expertise** is the determination of the compliance of economic and other activities of a human society planned or carried out in geosystems with environmental requirements and the conclusion that the object of ecological expertise can be realized. The main goals and objectives of geoecological expertise are to plan and carry out the planned economic and other activities, to determine the extent to which these activities may affect environmental requirements, in particular the health of citizens, as well as to protect geosystems, their resources and their rehabilitation, to determine the adequacy and scientific validity of the measures taken to meet environmental requirements.

### **GEOECOLOGICAL AUDIT**

The inspection of accounting books, reports and documents of the subjects of geoecological relations. Auditing is carried out by auditors (audit firms) in the form of business activities. Geoecological audit has a somewhat peculiar appearance. Geoecological audit is of three types: 1) production geoecological examination; 2) territorial geoecological expertise; 3) geoecological consulting.

The purpose of the geoecological audit of production facilities is to verify the compliance of financial and economic activities of enterprises with the requirements and guidelines for the protection of geosystems, the preparation of recommendations on measures for the protection of geosystems and the use of natural resources. Such an inspection is carried out before the financing of the case and in cases of conflict with the regulatory authorities.

Regional geoecological audit is used to assess the natural resource potential of specific geosystems to identify adverse natural phenomena and the impact of anthropogenic processes on them and their types. This type of environmental audit involves dealing with real estate and land transactions; to formulate an initial conclusion and present it to the public; submission of expert opinion and approval by higher authorities; dispute resolution, etc.

### **GEOECOLOGICAL CONSULTING**

Examination of issues of financing of geosystem problems arises as a result of production technologies, urban planning, land use rights and other economic activities in cities and urban agglomerations (sets). For example, geoecological consulting is a summary of geosystems on the ecological consequences of projects on the use and acquisition of geosystems, geoecological assessment of existing or designed technologies, evaluation of the effectiveness of measures for the protection of geosystems; assessment of the application of environmental measures; participation in the preparation of permits, etc.

### **GEOECOLOGICAL PRACTICE**



The application of the results of research, studies and research in Geoecology at the national, regional and global levels is also one of the main requirements for modern science. Because the main goal of the individual, society, state and international community is to achieve prosperity and sustainable development. One of the key indicators of prosperity is environmental safety. It is one of the key elements not only of human well-being, but also of national and international security.

Developed by the Gro Harlem Brundtland Commission (1987), approved at conferences and summits in Rio de Janeiro-1992, Johannesburg-2002, New York-2015, the “Concept of Sustainable Development” addresses environmental, economic and social issues together and simultaneously. or proposed within the framework of natural geographical units – geosystems, rather than within administrative divisions. Such natural geographic units include: mountains, deserts, small islands, seashores, anthropogenically disturbed, crisis-ridden natural geographic complexes. This requires large-scale geoecological research within the framework of geosystems and the introduction of their results at the local, national and international levels.

**The third geoecological issue** is which system of sciences includes Geoecology. By the end of the twentieth century, “Geoecology” began to be used simultaneously in geography, geology and ecology. This situation has led to a number of confusions in science [13, PP. 14-16]. Because while ecologists study ecological relationships in the geographical crust as an object of study within an ecosystem, geographers tend to view it as an object of study within a geosystem. Geologists, on the other hand, have not clearly defined the

subject of his research, and it is also a mystery. As a result, one field of science “settled” into three systems of science. Geoecology is a science that is currently in the system of geographical sciences. In many countries, this specialty is trained in the faculties of geography [14]. However, in the near future, after the ecological sciences become firmly established in the field of independent science, education and practice, it is inevitable that it will completely leave the field of geography and join the family of ecological sciences.

## CONCLUSION

In short, geoecology is an independent branch of science that is still part of the system of geographical sciences, which is not yet fully formed. Disclosure of its geographical potential is one of the most pressing issues of our time.

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## Role Of Exports Of Fruit And Vegetable Products In Ensuring The Sustainability Of Foreign Trade

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### ABSTRACT

The article considers and discusses the factors and opportunities for increasing the role of fruit and vegetable exports in ensuring the stability of foreign trade in Uzbekistan.

### KEYWORDS

Agricultural sector, fruits and vegetables, agro-marketing research, Global GAP, export-import operation.

### INTRODUCTION

Market changes in agriculture in Uzbekistan will lead to significant structural changes in the agricultural sector of the economy. The food industry is strengthening, there is a rapid growth in the production of fruits and vegetables. This is due to both the presence of favorable natural and climatic conditions, labor resources, national historical traditions, and the direction of material, technical and financial resources in agriculture, the transfer

of agricultural production to a modern technology and technological basis, the introduction of technical and selection achievements.

The fruit and vegetable direction of agriculture in Uzbekistan has great opportunities for exporting its products and can take a worthy place in foreign trade and contribute to ensuring its sustainability. Accordingly, the study of the problems

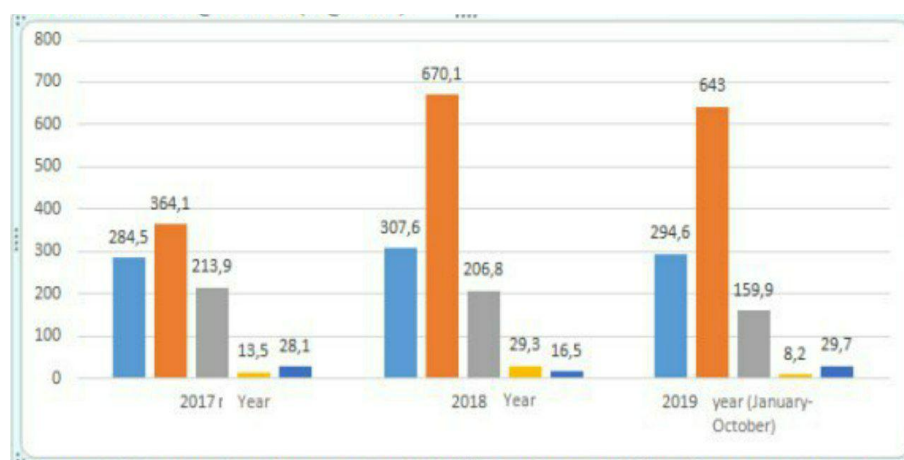
associated with the organization and expansion of exports of fruits and vegetables is of particular relevance and importance. With a general approach, state support for entrepreneurship, the provision of wide opportunities and benefits for producers, the consistent liberalization of export-import operations and currency relations have become an important factor in increasing the export potential of enterprises in all sectors of the economy, including those who produce fruit and vegetable products. Serious work is being done in the regions of the country to provide the population with quality food products, increase horticultural products, expand the area under vegetables and potatoes to create intensive early ripening and fertile gardens.

### THE MAIN FINDINGS AND RESULTS

In recent years, more than 20 new high-quality, high-yielding, disease-resistant varieties of fruits and grapes have been

created in the country. A new method of growing fruit trees in special pots allows the development of horticulture on reclamation, saline and low-fertile lands. However, an increase in agricultural production by itself does not lead to an increase in product exports. In modern conditions, even for the domestic market, products should be manufactured taking into account the needs and preferences of potential consumers. In cases of export, it is necessary to clarify the main groups of consumers and the characteristics of the needs in the respective countries. Agromarketing research contributes to a more successful solution of such problems and allows you to respond in a timely manner to changes in the needs and demand of buyers at all stages of the movement of fruit and vegetable products from production to the final consumer.

In Uzbekistan, in recent years, there has been a noticeable increase in the export of fruits and vegetables (Figure 1).



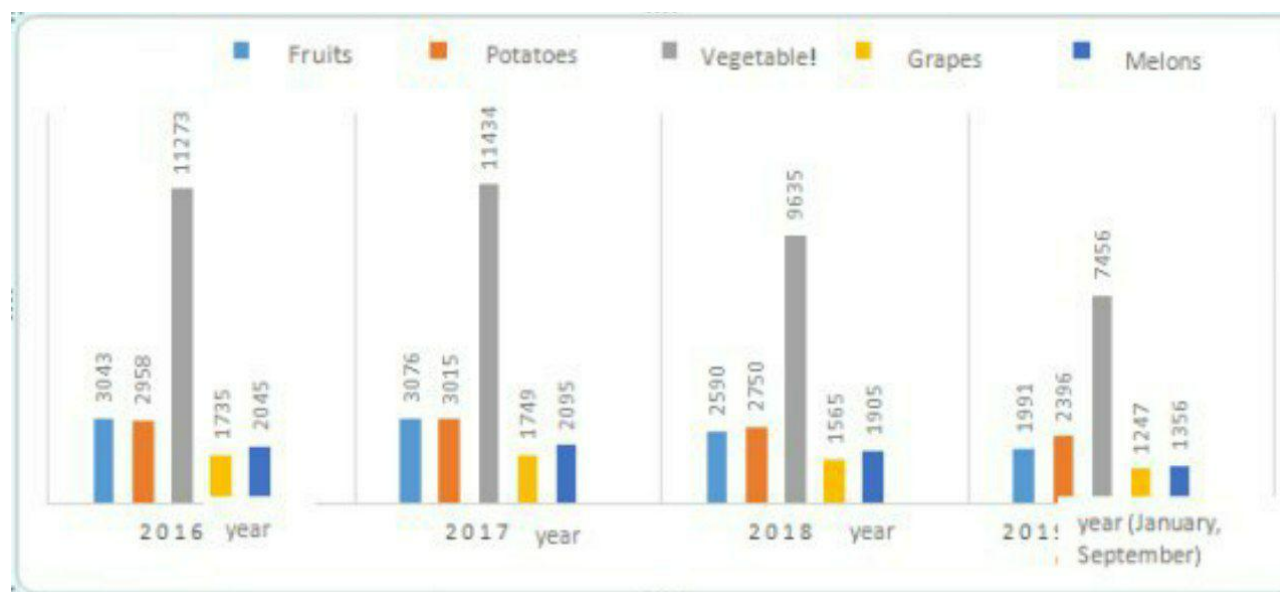
**Figure 1. Dynamics of exports of fruits and vegetables (thousand tons)**

According to Figure 1, it can be seen that in 2017 Uzbekistan exported 284.5 thousand tons of fruits, 364.1 thousand tons of vegetables, 213.5 thousand tons of grapes,

13.5 thousand tons of peanuts and 28.1 thousand tons of melons and watermelons. (Total 1004.1 thousand tons). In 2018, these figures were, respectively, 307.6 thousand

tons, 670.1 thousand tons, 206.8 thousand tons, 29.3 thousand tons and 165.5 thousand tons (Total 1230.3 thousand tons. ) for the nine months of 2019, the total volume of exports of fruits and vegetables amounted to 1,135.4 thousand tons, i.e. the trend towards accelerated growth in exports of products continued. Uzbekistan has great potential for a sharp increase in exports of fruits and vegetables, first of all, the specificity of the products grown here and the nutritional value of vitamins. One of the serious problems with exports is that the products offered do not meet the standards of developed countries.

The accelerated development of the market for fruits and vegetables has led to the fact that in the USA, the European Union and in many developed countries there is no demand for products that are not included in the category "Premium". In addition, each country has its own requirements for color, caliber, organoleptic properties, minimum amount and composition of chemical fertilizers. In 2020, Uzbekistan began extensive work on the introduction of 250 farms of the European Global GAP standard, which should open access for their products to the markets of European countries.



**Figure 2. Volumes of production of fruits and vegetables (thousand tons)**

Of course, every exporter should start their foreign trade activity by developing a marketing strategy that includes studying and understanding the specifics of the foreign market. That's what making effective and efficient marketing decisions is all about. As it is known, the President of the Republic of Uzbekistan has obligated all diplomatic

missions of the country for the sake of foreign exporters in the study of relations with foreign partners. In the beginning of 2020, the government decided to compensate for the high expenditures of exporters on the transportation of goods by rail. Since May 2020, this procedure has been extended to the transportation of export goods by road

and air, which greatly facilitates the export of fruit and vegetable products.

Currently, the world food market is growing demand not only for fresh fruits and vegetables, but also for deeply processed form. In almost all countries of the world, the share of fruits, vegetables and melons in the diet of the population is growing, which leads to a steady increase in demand for them. In such conditions, agricultural producers in Uzbekistan should fully use the opportunities to increase exports.

### CONCLUSION

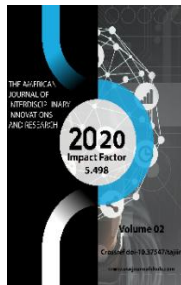
The coronavirus pandemic requires more effective and widespread measures to support the production and export of fruits and vegetables. Uzbekistan plans to double the production of fruits and vegetables by 2020, 55 regions specialize in the production of such products, 86 clusters and 125 cooperatives are being established. In 2020, 10.3 million tons of products will be directed to the consumption of the population, and 2.3 million tons will be exported, which means almost a doubling of the volume of exports, the Government intends to allocate \$ 377.6 million to the development of the fruit and vegetable industry in the regions in 2020 US foreign exchange funds. The financing of the industry is expanding through all channels. For example, in the Pap district, 25 billion soums are allocated for the repair of water pumping stations, and 800 wells will be drilled for irrigation in the Chust district.

Unfortunately, one of the factors limiting fruit and vegetable exports is the monopolization of fruit and vegetable exports. A limited number of business entities are licensed for this activity. This allows them to take full responsibility for the economic risks they face, which significantly reduces their financial and

investment opportunities. In our opinion, the full functioning of fruit and vegetable clusters should allow to overcome this negative trend.

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## Prospects For The Development Of A Tourist Route "Safed Broth Or Horn Jarir"

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### ABSTRACT

This state provides information about palomnic tourism, the development of tourism and the development of new directions in the time of the coronavirus pandemic, the history of palomniches in the Namangan region and the Fergana valley, in particular in the Kyrgyz Republic. Sovremennoe sostoyanie otrasli, puti budushchego razvitiya uje razrabotany.

### KEYWORDS

Pilgrimage tourism, tourism, recreation, Safed Boulogne, King Jarir, archeological monuments, architecture, tourist routes, shrine, 3D model, electronic card.

### INTRODUCTION

Tourism has a special place in the development of the world economy, and in recent years, pilgrimage tourism has been developing rapidly in the tourism industry. Today, the world economic income from the history of religion, its monuments, and the travels of those interested in the present day is estimated at about \$ 18 billion. Therefore, the development of pilgrimage tourism in the

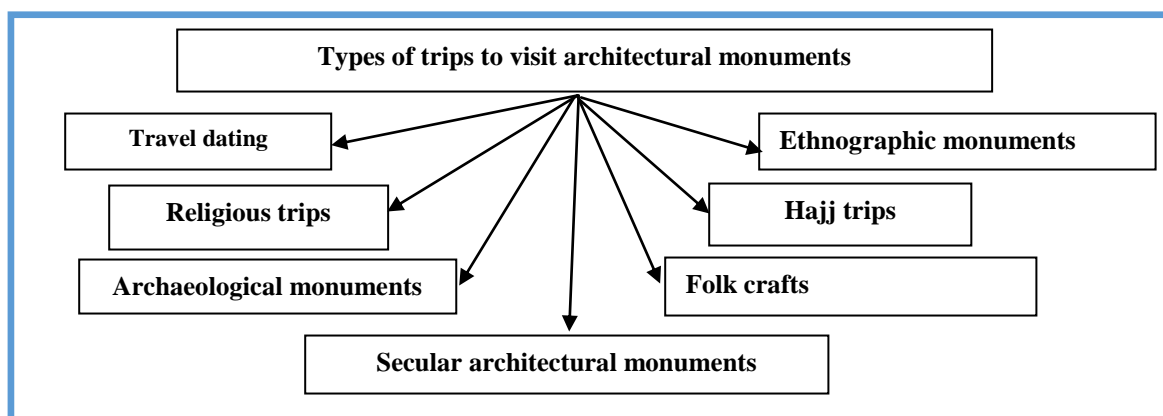
Republic of Uzbekistan and in cooperation with neighboring countries in Central Asia, the existing shrines can be used for tourism and recreational purposes in a comprehensive way through cooperation between a number of countries. The Cabinet of Ministers of the Republic of Uzbekistan intends to approve within two weeks the allocation of grants to guides and tour operators for the

development and promotion of new tourism products and directions [1].

### MAIN PART

The structure of the tourism industry is pilgrimage tourism, which has been developing rapidly in recent years. Pilgrimage tourism includes religious destinations where people can rest and gain spiritual strength. They include pilgrimage architectural monuments. It is a monument that has existed since ancient times and has survived to the present day, including churches, monasteries,

Orthodox temples, Catholic sabers, Lutheran kerchens, Jewish synagogues, Buddhist pagodas, Muslim mosques and mosques. Currently, people's travel to places of religious ceremonies is expanding. Religious pilgrimage has expanded among the population and is now becoming the most relevant, most lucrative species. The development of this sector is well established in many countries. Visits to the visiting architectural monuments are carried out in groups and individually. Visits to visiting architectural monuments are divided into several types (Fig 1).



**Fig 1. Types of trips to visit architectural monuments**

Travel dating - includes travel to various religious sites, monasteries, mosques, madrassas, khanogakhs. It is possible to get acquainted with the cultural and religious sites of the country or region.

Religious trips include the practice of people of different faiths coming to religious sites to perform acts of worship and people visiting shrines. At the same time, the tourist will be given detailed information about the history of the monastery, mosque, madrasa, the religious object in general, the service system there. Not only religious ceremonies but also cultural complexes are closely acquainted

with the religious object. There are parks of natural-historical monasteries, where monks are engaged in traditional farming: growing ecologically clean agricultural products, picking and cooking mushrooms, collecting medicinal plants, preparing various dishes in the kitchens of monasteries on the basis of ancient recipes, samples of folk crafts and various souvenirs. get acquainted with the processes of preparation of materials. Children can get souvenirs. Hajj - the process of performing Hajj in religious objects. Umrah and Hajj are prescribed for certain months in Islam. It involves performing a series of acts in separate garments, a few days in religious



objects. One of the new promising directions in the field of tourism of the Republic of Uzbekistan is the development of one of the directions of pilgrimage tourism, thereby increasing the tourist and recreational potential of the Fergana Valley, the establishment of a new pilgrimage route "Safed Bouillon or Shah Jarir" in cooperation with the Kyrgyz Republic.

It is necessary to study the information about this historical event before establishing this route. There are large archeological monuments in the Fergana Valley, which include: Safed Boulogne, Podak, Akkurgan, Asht, Piskokat, Pupuk, Pangaz, Shaydon, Chodak [2]. About twenty thousand Arab armies, led by Muhammad Ibn Jarir, came to the Fergana Valley in the 7th century to spread Islam, conquered various territories along the way, converted the fire-loving peoples to Islam, and then settled in what is now Safed Boulon. According to sources written by historians, Muhammad ibn Jarir urged the locals and their leaders to convert to Islam without shedding blood. Realizing that the Arabs would not be able to fight in an open battle with an army larger than himself, the local governor was forced to accept the demand and become a Muslim. The current governor of the Aksi district, Karvon Bas, converted to Islam in the Bas language and gave his daughter, Bibi Ubayda, to Shah Jarir as his son-in-law. The caravan Bas also adds a nanny to his daughter, and with this he acquires his own spy among the Muslims. Thus, the nurse-old woman informs her governor about the behavior of Muslims and the conditions of prayer. According to intelligence, Caravan Bas attacked Muslims during Friday prayers and 2,227 people were beheaded before the prayers were over. The place where the Arabs were martyred is now called the Massacre Mosque, and Friday

prayers are still held in this mosque. According to legends and various books, the black Boulogne, who gathered the heads of the martyrs and washed them, was rewarded by Allah for this work and began to emit a white light like a hur. It has since been called Safed (white) Bouillon. Since Boulogne died unmarried, his mausoleum was decorated with chimpanzee-like devices and was inaccessible to men. The place where the heads were collected and buried is called "Kallakhona", and the bodies were buried at a distance of 300 meters from it. It is called the Tomb of the Martyrs. This information was revealed as a result of excavations and research, which proved that not only the number of heads, but also the heads were cut with a sword. "The defeated Shah Jarir tells his soldiers that whoever wants can return to Madinah with him, and whoever wants can stay there. The daughter of Caravan Bas is loyal to her husband Shah Jarir and goes with him to the Arab lands. Those who did not go to Madinah at that time settled in areas such as the present King Ata, Hazrat Eshan near Kosonsoy, and Imam Ata in Nookat, and continued to encourage the local population to convert to Islam.

Built by the Karakhanids in the 11th century, this unique architectural complex in Central Asia is a mausoleum built in honor of Shah Fozil, who came to the Fergana Valley after his father Shah Jarir. One of the valuable exhibits in the historical and cultural museum "Shah Fozil" is a delicate calligraphy carved on tombstones. Safed said that despite the fact that tourists from Central Asian countries as well as European countries visit the village of Boulogne to see historical monuments, their number is not large, the number of tourists does not exceed about 4000-5000 per season. The main reason for this is that the village is

located in a remote area and the roads are bad.

Research shows that many historical monuments and shrines in the territory of the Republic of Uzbekistan are associated with the above historical event. Through the study of historical sources, it will be possible to clarify, unify existing shrines, revive historical events, present them to visitors in a virtual way, and then develop tourist routes in these areas and attract tourists. There is an opportunity for this pilgrimage route not only in Uzbekistan, but also in Central Asia, as well as in a number of Arab countries, through which to launch an international tourist route.

## RESULTS AND DISCUSSIONS

One of them is the Khojai Dod shrine in the village of Ogasaray, Chust district, Namangan region. The history of Khoja Dod buva is associated with the Safed broth event around 1200 years. At the beginning of the ninth century, Hazrat Khoja Dod, the grandson of the Prophet (peace and blessings of Allaah be upon him), came to the Fergana Valley with his Companions under the leadership of Shah Jarir (Muhammad Jarir). In the villages around Chust, there are the shrines of many saints, such as Hazrat Khoja Abdurahman ibn Awf, who settled in Tashkurgan, and Hazrat Khoja Dod, who settled in Agasaray, and Khoja Alamdor (who carried the flags of King Jarir).

**Table 1**

### Pilgrimages to Safed Boulogne or Shah Jarir

#№	Name of shrines	Location and state	Which period it belongs to
11	Safed Boulogne Shrine	Jalal-Abad region, Kyrgyz Republic	7-8 centuries
22	Mausoleum of King Fozil	Jalal-Abad region, Kyrgyz Republic	11th century
33	Podshota shrine	Jalal-Abad region, Kyrgyz Republic	10th century
44	Shrine of Hazrat Eshan	Namangan region, Republic of Uzbekistan	9th-10th centuries
55	Karapolvon shrine	Namangan region, Republic of Uzbekistan	9th-10th centuries
66	Abdulloburug Shrine	Namangan region, Republic of Uzbekistan	
77	Ahtam Sahaba Shrine	Namangan region, Republic of Uzbekistan	
88	Otchopar Eshan Shrine	Namangan region, Republic of	14th-15th centuries

		Uzbekistan	
99	Shrine of Khoja Abdurahman ibn Awf	Namangan region, Republic of Uzbekistan	8th-9th centuries
110	Shrine of Khojai Dod	Namangan region, Republic of Uzbekistan	17th centuries

Another shrine is called Haja Abdurahman ibn Awf. Hoja Abdurahman ibn Awf was a contemporary of our Prophet and he was raised and educated by our Prophet. When the Prophet (peace and blessings of Allaah be upon him) came from the Eid al-Adha prayer and saw a child about five years old crying, he put the child on his shoulders and played with him like a camel. The child cried again, why are you crying? They say that the camel forgives everyone, why don't you tell me. When the Prophet (peace and blessings of Allaah be upon him) said amnesty to cheer up the child, "Amnesty" was added to the child's name as a surname. According to the narrations in the Safedbulon Kisasi, at the beginning of the ninth century, the grandsons of the Prophet (peace and blessings of Allaah be upon him) came to the Fergana Valley with their Companions under the leadership of Shah Jarir (Muhammad Jarir). Hoja Abdurahman ibn Awf, one of the Companions who survived the massacre in the mosque, was chased by the enemy, wounded, and when he was chased, he entered his room wounded, but the enemy who invaded behind him could not find him there. It is estimated that the mosque, built next to his tombs, cells and chillakhanas, is more than two hundred years old, and the two-meter-wide wall indicates that the complex has been renovated several hundred times by fans. Haja 'Abdu'r-Rahman ibn' Awf also said that where his tomb was in Mashhad, there was definitely a tomb and a place of pilgrimage.

It is necessary to study in depth the new tourist route "Safed Boulogne or Shah Jarir", which is expected to be established, and clearly indicate the types and directions of activities;

- Development of a 3D model that reflects the appearance of the tourist route "Safed Bouillon or Horn Jarir";
- Development of an electronic map of the new tourist route;
- Development of the Safed Boulogne or Shah Jarir pilgrimage tourist route on the basis of international cooperation (Kyrgyzstan, Uzbekistan, Tajikistan, Turkmenistan, Iran, Turkey, Saudi Arabia);
- Identify the names of historical figures, turn them around the graves into shrines and bring the existing ones in line with international standards (Karapolvon shrine in Karapolvon village of Yangikurgan district, Abdullah burug shrine near Yorilgan MFY, Yangikurgan district);
- In order to introduce the new pilgrimage to the public, it is necessary to prepare booklets, create electronic websites.

## CONCLUSION

In conclusion, the new tourist route, which is expected to be developed, should be based on a completely new digital platform. With the opening of this route, new tourist sites will be developed in the Fergana Valley on the basis of the construction of a number of new

shrines. At the same time, it can be said that there are many destinations in Namangan region within the pilgrimage-tourist route "Safed Boulon or Shah Jarir" and it is expedient to identify them, to prepare address directories. One of such objects is the mosque "Goyib Yoronlar" located in the village of Toda, Pop district, Namangan region. According to historical records, the wounded and surviving Companions and Tabein from the Masjid Mosque in Safed Boulogne decided to gather there, and from there it was approximately the crossing of the Syrdarya. There is a legend that a man and two women disappeared in this place alive, so it is not surprising that this place was called the Missing Yorans. It is necessary to build a shrine complex in this place.

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## Photosynthetic Apparatus Of Cotton Leaf: Activity Under Harmful Factors And Inductors

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### ABSTRACT

The article deals with the effect of a typical representative of sucking pests on the photosynthetic apparatus of the plant - the mite, and the effectiveness of measuring photosynthetic activity using a highly sensitive fluorescent method. Alternatively, photosynthetic apparatus activity was measured using the fluorescent method, and it was used to assess the degree of pest infestation of the plant, especially mites, and to determine the plant's resistance after red light treatment. When damaged by mites, the long-wave native forms of cotton chlorophyll are disrupted and the electron-transport chain of the photosynthetic apparatus is blocked. As a result of QN treatment of seeds, the distribution of algae in plants decreases, while the activity of photosynthetic apparatus, on the contrary, increases. This means that phyto-chrome photo conversion has a specific effect on the photosynthetic apparatus.

### KEYWORDS

Photosynthesis, fluorescent method, fluorescence, light-collecting complex, luminescence, electron-transport chain, fluorescence induction, spectral-kinetic parameters.

### INTRODUCTION

It is known that one of the integral indicators of the general condition of the plant is the activity of the photosynthetic apparatus in

them: the better the condition of the plant, the higher the photosynthetic activity in them [1, p. 176].



Logically, the level of activity of the photosynthetic apparatus in plants decreases when pests and insects spread and are damaged as a result. This is confirmed by the data in the literature. For example, a typical representative of sucking pests in plants - the level of photosynthesis in the leaves decreases during the initial stage of the spread of mites [2, p. 43].

The damage of mites, unlike other rodent pests, is mainly limited to mechanical damage to the tissues of plants. The whitewash injects the suction-oral apparatus into the plant's covering tissue, sends digestive enzymes to it, and absorbs the liquid food processed outside the gut from the plant. The mechanical effect of the pest on the damaged plant is less noticeable. However, the physiologically active substances that send them to the plant disrupt physiological and biochemical processes (water metabolism, photosynthesis, hormonal regulation, etc.). Perhaps the hydrolysis products of biopolymers that are partially increased and not used by the pest can also alter plant development. Metabolic disorders eventually adversely affect the growth and development of the plant organism [2, p. 43].

### THE MAIN FINDINGS AND RESULTS

Measurement of photosynthetic activity using a highly sensitive fluorescent method is effective [3, p. 188; 4, 40]. Therefore, we measured the activity of the photosynthetic apparatus using the fluorescent method and used it to assess the degree of infestation of the plant with pests, especially mites, and to determine the resistance of the plant after treatment with red light.

We used the ratio of fluorescence intensity (I<sub>690</sub>/I<sub>732</sub>) at 2 wavelengths as the indicator

describing the changes in fluorescence, as well as the ratio of the maximum fluorescence intensity (F<sub>p</sub>) to the stationary fluorescence intensity index (F<sub>o</sub>) ( $P = F_p - F_o / F_p$ ). Simply put, the smaller the I<sub>690</sub>/I<sub>732</sub> ratio and the larger the F<sub>p</sub>-F<sub>o</sub>/F<sub>p</sub>, the higher the PHA activity.

In the first step, we learned that the LIF parameters depend on the number of mites on the cotton leaf. To do this, we selected three groups of cotton leaves with different levels of mites: 1 - control, insect-free and no signs of damage to the plant, 2 - moderately widespread pests, signs of damage were less noticeable and 3 - strongly distributed pests, signs of damage were clearly visible leaves.

The results show that the I<sub>690</sub>/I<sub>732</sub> ratio also increases as the plant is damaged (Table 1).

This figure appears to have increased by 28% when the average number of insects in the plant. As the number of algae in the plant increases, the I<sub>690</sub>/I<sub>732</sub> ratio increases almost linearly, reaching a maximum of 1.5 times that of the control.

The changes in the I<sub>690</sub> / I<sub>732</sub> ratio associated with the increase in fluorescence intensity at 690 nm we observed are due to the disruption of the electron transport chain (ETC) in the sections between I (FS I) and II photosystem (FS II). As a result, FS II is restored, which helps the energy of the excited molecules to be used for luminescence. A decrease in the peak intensity belonging to I FS at 732 nm relative to the control indicates a decrease in its amount as a result of I FS distortion or a violation of the phosphorylation of the light-collecting complex (LFC). Such a disruption can occur as a result of the effect of protein metabolites on the thylakoid membrane and a decrease in the proton gradient, and hence on the effect on AT synthesis.

**Table 1**

**Influence of white matter damage on the ratio of the fluorescence spectra of the leaves of the “Orzu” variety of cotton at wavelengths of 690 and 732 nm and the ratio of the maximum level of fluorescence (Fp) to the ratio of the stationary index of fluorescence intensity (Fo) ( $P = F_p - F_o / F_p$ ).**

<b>Experiment options (cotton plants)</b>	<b><math>I_{690}/I_{732}</math></b>	<b><math>P = F_p - F_o / F_p</math></b>
Control	1,943±0,185	0,819±0,112
the pest was moderately prevalent and signs of damage were less noticeable	2,495±0,239	0,617±0,124
The pest is strongly distributed and the leaves clearly visible signs of damage	2,942±0,264	0,562±0,084

**Note:** The mean magnitudes of the 6 spectra are given by the mean deviations. The reliability probability interval of the mean values is not less than 95% ( $P \leq 0.05$ ).

The kinetics of fluorescence, which reflects the processes occurring in ETC, also vary depending on the degree of damage to the plant. In this case, the decrease in the  $(F_p - F_o)/F_p$  index depends on the degree of damage to the plant, both for the 690 nm wavelength kinetics and for the 732 nm wavelength kinetics. This figure reaches 32% when half of the plants are damaged and 46% when all are damaged. This suggests that

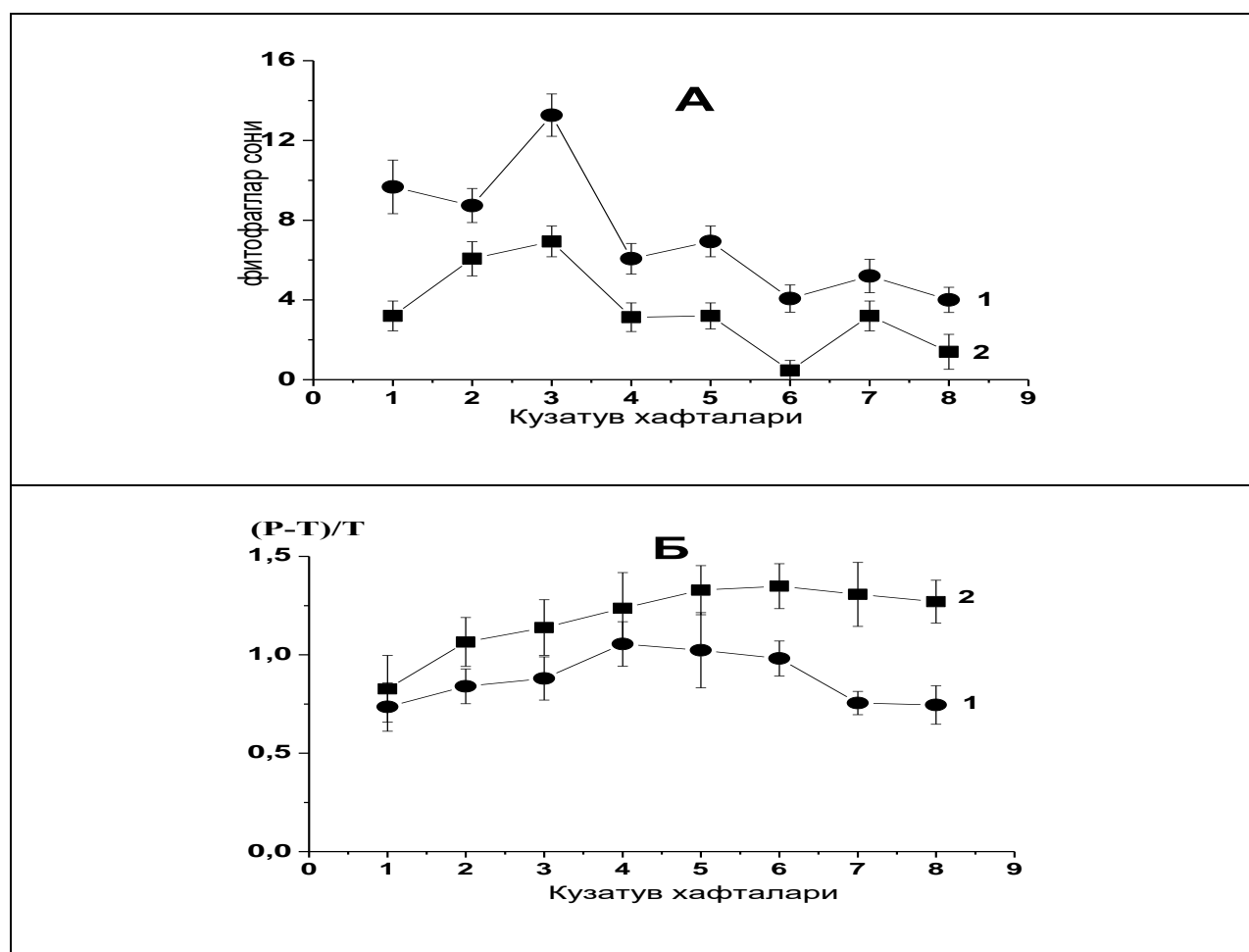
protein metabolites affect both the photosystems of the cotton photosynthetic apparatus itself and ETC.

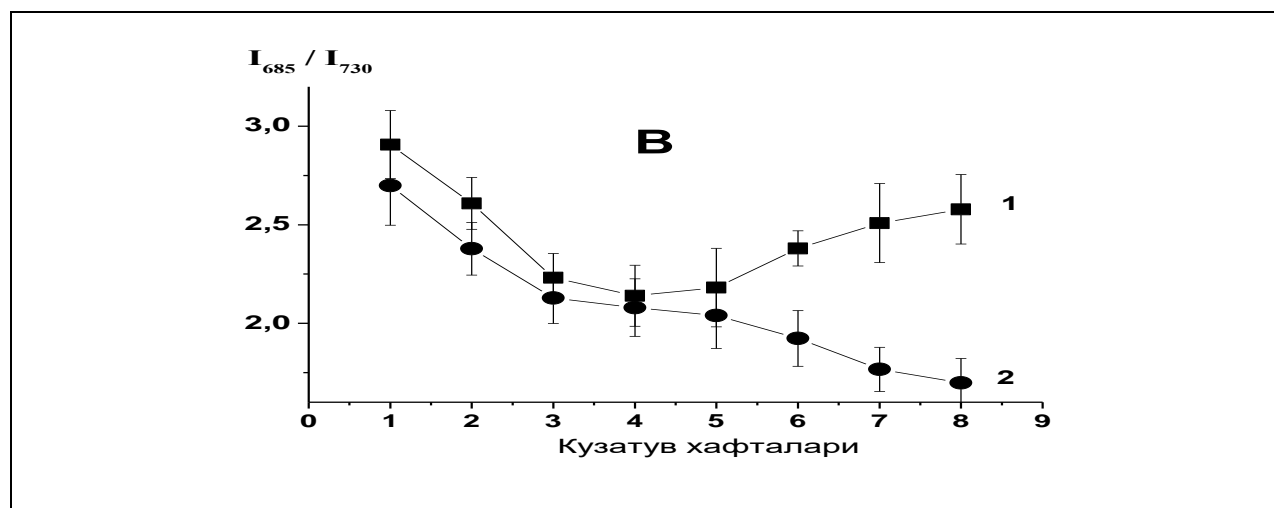
The kinetic kinetics of induction curves and changes in the luminescence spectra of chlorophyll are due to disturbances in the activity of ETC and in the structural structure of long-wavelength forms of chlorophyll-protein complexes of plants PH [3, p. 188; 5, pp. 263-272; 6, pp. 123-134].

Thus, it can be concluded from the above that when the “Orzu” cotton variety is infested electron-transport chain of the photosynthetic apparatus is blocked.

We measured the LIF of a cotton leaf extracted from controlled and QN-treated seeds throughout the growing season. This allowed us to determine the relationship

with algae, the long-wave native forms of cotton chlorophyll are disrupted and the between changes in fluorescence parameters over a long period of time (8 weeks) depending on the number of insects on the leaves of plants in the two groups. The results are shown in Figure 3.6. For comparison, we have shown Figure 3.1 again in this figure (Figure 3.6A).





**Figure 1. Influence of QN treatment before sowing on seeds of “Orzu” cotton variety on changes in the number (A) of greenhouse effluents and LIF (B and V) indicators at different stages of vegetation.**

**Note: 1 - controlled plants, 2 - plants grown from QN treated seeds. The mean magnitudes of the changes in LIF values obtained from the 6 spectra were given with mean deviations ( $P \leq 0.05$ ).**

As shown in Figure 1.A, the number of insects in controlled plants decreases over time, as in plants grown from QN-treated seeds, due to the activation of defense mechanisms that respond to plant damage by insects. Moreover, these protective mechanisms are more clearly reflected in plants grown from QN-treated seeds.

As the number of algae in plants increases, the efficiency of PH work decreases, which indicates that the value of the  $(F_p - F_0)/F_p$  ratio was small in all periods of our observations and also sharply decreased from week 4 of our observations. These figures indicate the failure of the PH electronic transport chain (ETC).

A sharp change in the ratio of fluorescence intensities at 685 and 730 nm wavelengths, as mentioned above, indicates either a decrease

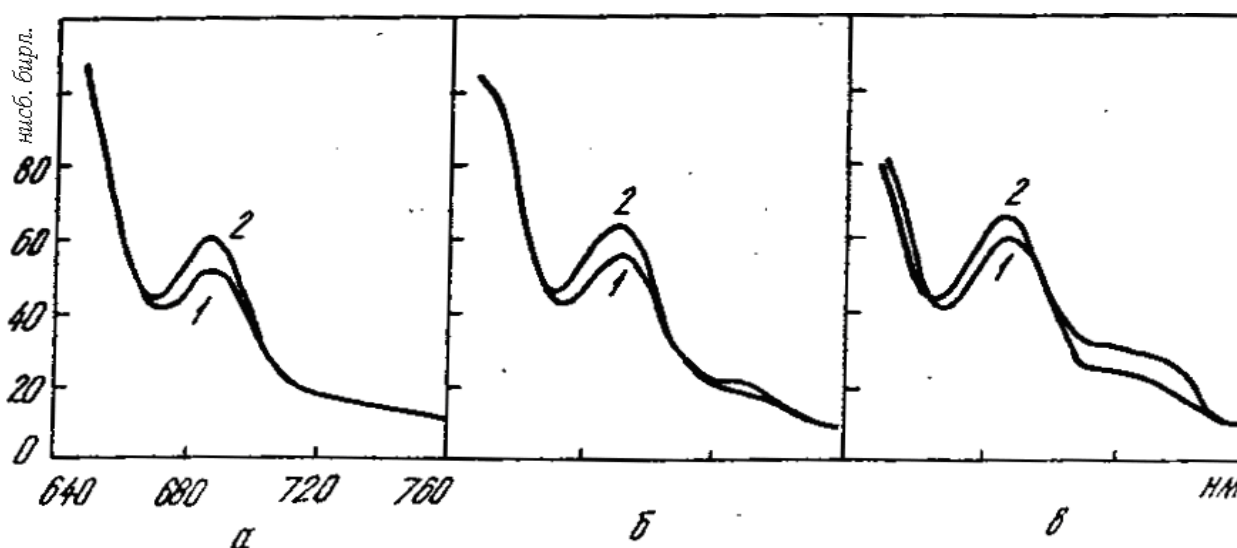
in its number due to a violation of the I photosystem (I FS) or a violation of the phosphorylation of the light-collecting complex.

When the seeds were treated with QN before sowing, the coefficients  $(F_p - F_0)/F_p$  and  $I_{685}/I_{730}$  had a constant value from week 4 of our observations, which corresponds to the luminescence of the pest-infested leaves of cotton. This evidence suggests that photo-stimulation of seeds significantly inhibits the inhibition of photosynthetic apparatus activity of plant leaves associated with disruption of long-wavelength forms of chlorophyll and blockade of cotton PH, ETC under unfavorable phytopathogenic conditions. As a result of QN treatment of seeds, the distribution of algae in plants decreases, while the activity of photosynthetic apparatus, on the contrary, increases. This means that phytochrome

photo-conversion has a specific effect on the photosynthetic apparatus.

Thus, the results of the above studies allow us to conclude that when the seeds are treated with QN, by activating the plant's defense mechanisms, the leaf of the cotton variety "Orzu" prevents the occurrence of harmful effects of algae at the level of PH activity.

Figure 2 shows the spectra of fluorescence of the seed of the cotton variety "Orzu" at different stages of development. As can be seen in the figure, the spectra of both photosystem I (732 nm) and photosystem II (685 nm) in the luminescence fields change slightly during seed processing.



Note: Measured 24 h (a), 48 h (b) and 72 h (c) after leaf opening.

**Figure 2.** Typical spectra of laser-induced fluorescence of the seed of the cotton variety "Orzu" grown from seeds of intact (1) and irradiated with red light (2).

However, it should also be noted that the effect of light on I FS was found to be much weaker than on FS II and delayed over time relative to FS II. When the seeds were irradiated with QN, the fluorescence intensity of the leaves at 685 nm increased by an average of 27% after 24 hours compared to the control, and at 732 nm it increased by 13% only

72 hours after germination. Presumably, this is due to the later formation of FS I than FS II, and the results of research on the effects of QN on plants [8] suggest that its stimulatory effect decreases over time. When we analyzed the spectra of laser-induced fluorescence (LIFC) of chlorophyll, we found that the stimulating effect of QN did not affect the

formation of the light-collecting complex (LFC). This is because no difference was observed between the spectra of plant leaves grown from irradiated and non-irradiated seeds with QN at wavelengths around 700 nm ( $\pm 20$  nm).

Table 2 shows the results on the effect of red light treatment on seeds on the ratio and spectral-kinetic parameters of the leaf surface 24, 48, 72 hours after the opening of the leaf blade.

Analysis of the slow-acting fluorescence induction curve (Table 2) shows that the activity of the photosynthetic apparatus (PH) electron transport chain (ETC) increases significantly when seeds are irradiated, especially in the early stages of leaf development. In controlled plants, the induction curves began to be corrected on the first day after leaf opening -  $(R-T) / T < 1$  (R is the maximum intensity of the induction curve, T is the intensity of the stationary level) indicating the absence of this formed electron transport chain.

**Table 2**

**Influence of red light treatment on seeds on the surface ratio and spectral-kinetic parameters of the leaves of the seed pod 24, 48, 72 hours after the opening of the leaf plate of the cotton variety "Orzu"**

Time, hour	Control		Irradiation with QN		$I_{685KH}/I_{685H}$	$I_{732KH}/I_{732H}$
	$(P-T)/T$	$S_1/S_{24}$	$(P-T)/T$	$S_1/S_{24}$		
24	$0,17 \pm 0,06$	1	$4,02 \pm 0,31$	1	$1,27 \pm 0,11$	$1,02 \pm 0,09$
48	$4,07 \pm 0,53$	$2,31 \pm 0,05$	$5,34 \pm 0,27$	$2,97 \pm 0,23$	$1,17 \pm 0,09$	$1,11 \pm 0,12$
72	$3,51 \pm 0,31$	$4,05 \pm 0,27$	$3,06 \pm 0,19$	$5,06 \pm 0,35$	$1,09 \pm 0,07$	$1,13 \pm 0,06$

Note: St is the surface area of the leaf at the time of measurement: t = 24, 48, 72 s; S24 is the surface of the leaf 24 hours after the opening of the cotton seed;  $I_{685H}$ ,  $I_{732H}$  - fluorescence intensity at 685 and 732 nm wavelengths under control;  $I_{685KH}$ ,  $I_{732KH}$  - fluorescence intensity of 685 and 732 nm wavelength of plant leaf grown from irradiated seeds; R is the maximum intensity of the induction curve, T is the intensity of the stationary level. The reliability probability interval of the mean values is not less than 95% ( $P \leq 0.05$ ).



It is known that the efficiency of electron transport in cells during cell division is much lower than in differentiated and mature cells, which means that when seeds are irradiated, the process of cell differentiation is accelerated and, as a result, the formation of photosynthetic apparatus is accelerated [41]. ontogeny, the intensity of photosynthesis increases rapidly per unit area, reaches a maximum in 40–70% of the area, and then gradually decreases [25].

According to the data on the amount of pigments (Table 3.4), the number of CV increases when the seeds are treated with red light, and the CA / CV ratio decreases due to this. Therefore, the amount of light-collecting complex increases with respect to FS I and FS II [41].

The formation of a and b chlorophylls in the photo-regene phase of proto-chlorophyll, the synthesis of chlorophyll and the integration of chlorophyll-binding polypeptides of pigment-protein complexes, the control of light stabilization of a protein such as pigment in

Our hypothesis of faster leaf development is also confirmed by the results we obtained when we measured its surface, i.e. in plants irradiated with QN, the leaf surface increases by 25-30%. This evidence is important because it is known that in leaf

these complexes are generalized as a model [41]. For example, the use of rays of different spectral lengths not only induces the biosynthesis of photosynthetic enzymes, the formation of chlorophyll and carotenoids [106], the role of phytochrome in the activation of LFC accumulation associated with FS II in leaves [126], but also photo-regulatory systems that control growth, de-etiolation and photosynthesis also allowed to determine its role in the management of the relationship between. Our results are fully consistent with modern views on the possibility of controlling plant growth and development, photosynthetic pigment synthesis, and photosystem formation using phytochrome.

**Table 3**

**Effect of red light (QN) treatment on seeds on the amount of pigments (mg / g wet mass) in the leaves of “Orzu” cotton variety**

Pigment	Control	QN
Chlorophyll <i>a</i>	1,521±0,053	1,575±0,045
Chlorophyll <i>b</i>	0,552±0,016	0,742±0,037
<i>a</i> and <i>b</i> are the sum of chlorophylls	2,073±0,069	2,317±0,082

The sum of carotenoids	0,462±0,015	0,475±0,019
Chlorophyll <i>a</i> / <i>b</i>	2,755±0,069	2,123±0,082
Chlorophylls / carotenoids	4,487±0,084	4,878±0,101

**Note: Average values of the number of pigments measured in at least 15 leaves ± standard deviations. The reliability probability interval of the mean values is not less than 95% ( $P \leq 0.05$ ).**

However, according to the results of our study, it is impossible to give a definite answer as to where phytochrome affects the formation of PH, because the photosynthetic activity of a leaf depends not only on the number of chlorophylls in it, but also on all ontogenetic changes of the leaf. Leaf growth, tissue differentiation, and aging are accompanied by continuous changes in the structure and functional state of all elements of the PH. As a result, the occurrence parameters of photosynthetic function change continuously and this can be reflected in the LIF spectral-kinetic parameters of the leaves.

However, we hypothesized that the stimulating effect of QN was not related to its direct effect on chlorophyll synthesis, but to its effect at the level of the whole organism. As previously shown [13], the spectrum of action of phytochrome is very wide, which indicates the activation of processes in the leaf, where it affects, more precisely at the genome level.

Thus, QN treatment suggests that it accelerates the formation of the photosynthetic apparatus (PH) in the early stages of ontogeny, and that this acceleration can compensate for the damage of this

apparatus by pest-insect-organisms. In addition, irradiation with QN results in rapid enlargement of the leaf plate surface.

## CONCLUSION

Summarizing the data on the increase of plant resistance to pests as a result of treatment of seeds with red light and low-frequency electromagnetic field, it can be concluded that the increase in this resistance is due to various mechanisms. We identified 3 of these mechanisms: 1 - changes in the anatomical and morphological parameters of the leaf, 2 - an increase in the amount of phytoalexins, 3 - the rapid formation of the photosynthetic apparatus and the maintenance of its functional activity under conditions of increased phytopathogenic state.

When seeds are treated with red light before sowing, the rate of formation of the cotton photosynthetic apparatus increases during ontogeny, which is a factor that helps maintain the functional activity of the photosynthetic apparatus (PH) under adverse entomopathogenic conditions.

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## Political and Dynastic Relations Of Kievan Rus

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### ABSTRACT

This article discusses the main political ties formed as a result of dynastic marriages in Kievan Rus. This trend is of great importance in Russian history, as dynastic marriages were the basis of the political structure of the Russian state during the Kievan Rus.

### KEYWORDS

History, dynastic marriages, Kievan Rus.

### INTRODUCTION

As a result of the long internal formation of the Slavic tribes, a strong state - Kievan Rus was established. In the 9th century it was considered one of the largest states in Europe. The middle Dnieper region became the center of Russia, since it was here that signs of socialization arose. Many Byzantine authors considered the first Slavic community to be Rus. The people who were part of this association were called Russians. Kievan Rus

began to be called because it has long been considered the capital of the state. The role of Kievan Rus in the history of the Eastern Slavs is enormous. The Slavic tribes gradually formed the ancient Russian nation, which was associated with the formation of ethnic unity against the background of the unification of the whole state. Statehood was based on territorial unity, linguistic unity, a single culture, and so on. Ethnic unity was based on Russian, Ukrainian, and Belarusian peoples. The people of Ancient Rus were formed through further consolidation. Also, the formation of a single

state has significantly improved the economy, politics and culture of the Slavic people. The culture created by the ancient Russian people withstood all the temporary difficulties. The formation of Kievan Rus was of great importance to other peoples who did not belong to the Slavs. All the assets of Kievan Rus were actively used by other peoples. Some of these peoples were ethnically and politically united within the Old Russian state. Ancient Russia had an important place in the world. This basic position was related to economic, political and cultural relations with many eastern and western states [1].

#### **Development of the Trade Route “From the Varangians to the Greeks” The Content and Meaning of the Russian-Byzantine Treaties of Oleg and Igor**

In the 9th century, a center was established in Novgorod under the leadership of Rurik. The main direction of the policy was to establish new ties with the southern states. This was due to the great interest in the Black Sea. Traders in the southern regions brought a variety of goods from there. According to the description of the travelers, the main focus was on the great Constantinople [3].

In 866 there were attempts by Askold and Dir to march to Constantinople, but they were unsuccessful. A year later, Patriarch Photius managed to establish a diocese there that converted to Christianity [2].

In 882, Prince Oleg again undertook a campaign to the south along the Dnieper. The mission was no longer of an intelligence nature, but as an establishment of contact with the people who live along the Dnieper. The Dnieper was considered a very attractive trade route, and very profitable in the captivity of the control of trade between the southern and northern territories.

Of particular interest is the campaign of Prince Oleg, which was in 907. According to The Tale of Bygone Years, this was a combined raid across Bulgaria. The raid combined the cavalry and sea routes. Several thousand boats took part in the latter. Thanks to such a move, Constantinople was attacked both from land and sea. However, its outskirts were brutally plundered and destroyed.

The inner part of the city was defended by the Greeks, but Oleg was still able to break through the city's defenses and burst inside. The Greeks asked for peace. Later they agreed to pay tribute and conclude a trade union, the terms of which were certainly beneficial for the Russians. Before leaving the city, according to legend, Oleg hung his shield on the city gate [5].

The authenticity of this campaign is still debated among modern historians. The only proof of the truth is the content of the treaties with Byzantium concluded in 907 and 911. The first agreement in the “Tale of Bygone Years” was briefly mentioned, and the second agreement is presented in full, which proves its veracity and which were signed only for the reason that Byzantium suffered a military defeat [4].

This agreement assumed that the Russians would have certain privileges. There are also payments of 12 hryvnia for each soldier and tribute to the mayors of the cities under Oleg's control. Also, Byzantium was obliged to provide products and goods to merchants who stayed in the city. Russian merchants had the right to visit the city (without weapons and accompanied by a city official) [7].

The 907 treaty was supplemented by a number of amendments in 911. The legal framework for relations between Greeks and Russians was determined. This was appropriate for the

regulation of contentious situations. The responsibility of both parties arose for the crimes committed. Also, agreements in the field of military affairs were concluded between Constantinople and Kiev. There is a known fact that in 911, Russian soldiers were part of the Byzantine soldiers in the campaign against the Arabs [8].

The conclusion of a peace treaty between Kievan Rus and Byzantium is of historical importance. This treaty shows Russia as a young and strong state.

Russia was also attracted by the countries of the Arab Caliphate. They are located on the southwestern coast of the Caspian Sea. In the annals of Arab writers, evidence was found of campaigns in these states.

Oleg's success in the southern territories opened a very profitable trade route for the Russian state.

After Oleg's death in 912, Igor (912 - 915) became prince. There are discrepancies in the letters about Igor's reign and Oleg's death. The very personality of Igor is very contradictory and mysterious. The connection between Igor and Rurik is highlighted only in the only chronicle about the capture of Kiev by Oleg [9].

During the reign of Igor, the biscuits approached the southern borders of the state. But in 915 a peace treaty was made with them and they returned to the Danube. Peace lasted until 920 years. It is not entirely clear who was the first to violate the terms of the peace treaty, but there are records that the Byzantine side was to blame for this. With the threat of the Pechenegs, Byzantium tried to put pressure on Russia. In Kiev, this was not immediately noticed and continued to provide military assistance to the imperial court [10].

In 941, relations between Russia and Byzantium collapsed. Igor used martial law between Constantinople and the Arabs, and attacked Byzantium. However, Igor was defeated. In 943 the Russians made a number of successful campaigns. One of which goes east to the cities of Berdaa and Derbent. Warriors returned home with good booty [11].

In 944, another campaign was launched against Byzantium in retaliation for the campaign. But the emperor was warned and sent ambassadors to make peace. A new peace treaty was signed, but it was less beneficial for Kievan Rus. Now the merchants had to pay the Byzantine tax. Igor was obliged to defend the Byzantine lands from the Bulgarian troops from the Crimea. This agreement is considered a very important achievement of Igor in politics [13].

#### **Christianization of Rus and its Consequences: Strengthening the International Positions of Rus.**

The ninth century is one of the most interesting in history. The most remarkable event in which he distinguished himself is the formation of Kievan Rus in the East of Europe. The young power gradually strengthened and after a while its position was getting better. Over time, both trade and relations with the surrounding peoples developed. But, not everything is so smooth. All major states of the north were not in any business with Russia. The reason for this was their paganism [15].

Time passed, but the position of Russia did not get better, and over time paganism began to hinder the development of medieval statehood. This type of statehood was characterized by the fulfillment of strict requirements of the feudal type, the centralization of the institutions of society,



where a single ruler stood at the head of everything.

To answer the question: why did paganism hinder development? You need to know its features. The peculiarities of paganism were the interpretation of the freedom-loving people, who made speeches against the government. A person who was a pagan could encroach on personal freedom. In addition, because of paganism, trade with countries professing other cultures, usually Christianity and Islam began to suffer more severely. All this did not fit the principle of strict control of the feudal type, and therefore, the adoption of another religion was an urgent need. Only in this way it was possible, at least partially, to equate Russia with other states.

A peculiarity of paganism was that people who relied on this faith entered into a certain agreement with the gods who were responsible for one or another force of nature. However, the resulting inequality in society did not give the right to life for this religion. Feudalism began to strengthen with every year. All this influenced the current traditions of some groups of free communes. Along with the loss of this role came another - ancient traditions no longer connect different groups of the population. In this regard, other contradictions arose, but one way or another, this religion did not allow society to develop, and therefore it had to be replaced.

Against the background of the development of society, a new stratum of society appeared - these are the people who owned land. They were unhappy with the current situation when a person, relying on his faith, wanted to preserve everything for subsequent existence after death. This layer needed to get a certain surplus product. This was one of the conditions for the development of feudal relations. The situation worsened, and therefore required

urgent action. To begin with, Prince Vladimir in the 980s carried out a reform that was supposed to change the situation, however, this did not happen and the people did not accept the imposed images of the gods [16].

The penetration of Christianity in Russia took place at the beginning of the 9th century. Then they started talking about the Apostle Andrew as a mission. As you know, at that time there was a struggle between Russia and Byzantium for possessions in the Crimea, in the 12th century. Thus, the author who brought this information to us wanted to show that Russia owes its baptism only to Vladimir, and not to Byzantium.

However, we have no evidence that Christianity also penetrated in the middle of the first millennium AD. And we also cannot say about the Christianization of Bravlin, the prince of Novgorod. Although this prince could undergo Christianization only during the campaign against Suroj in the late 8th, early 9th century [20].

The very first Russian Christians were merchants. All this is not casual. Merchants did business with other nations, and therefore, the adoption of Christianity helped them to carry out transactions and also made them a discount, and the discount consisted of 50% of the cost of the goods.

They tried to baptize Russia several times. The first attempt was made in 866. This attempt was unsuccessful, and they decided to do so in view of the anti-Byzantine campaign and the outbreak of the disease. The bishop's work was also affected, but as mentioned above, it all failed. They then tried to baptize Russia again in the period from 872 to 877. This baptism also affected the gladeus in Kiev [17].

In 882, a new prince appeared at Kiev - Oleg. In the same year, it was decided to unite Novgorod with Kiev. At that time, there were also constant conflicts between Byzantium and Russia. All this caused certain disturbances in society, and so people did not want to accept the Byzantine religion. At the same time, the role of the Christian community in Kiev grew, and over time began to influence the government. However, these are not the only reasons for the spread of Christianity. Oleg's argument with the priests played an important role. The subsequent warming of relations with Byzantium increased the influence of Christianity on Russia. After that, in the 10th century, the union of Russia and paganism fell apart.

When Igor began to rule, the number of Christians began to grow. Moreover, its influence began to occur in all spheres of society. Thus, he entered a vicious circle, as well as the principdom, drujina, and so on.

But, undoubtedly, over time various, unrest began to arise within the people, and therefore, at a certain point, this led to a conflict. This conflict arose at the time of Olga's reign. When Olga's husband died, she decided to seek help from the Kiev Christian community. Olga, having made a decision, went to Constantinople in 944 and adopted Christianity of the Byzantine type. Thus, she was able to improve relations with Byzantium and received some kind of power. The Kievans also gave her their support, and therefore she removed her son from the throne and suppressed the uprising of the Drevlyans. But, this does not end there, and Olga then decides to go back to Byzantium in order to strengthen the alliance with Constantine Porphyrogenitus, who was the new emperor [21].

A pagan political society appeared in Russia and was headed by Svyatoslav. Parallel to this,

a Christian political group, headed by Olga, also arises. The second is to spread Christianity and build a church. Christianity is still part of the military, despite Svyatoslav's denial.

But Olga's attempts to baptize Russia will not be crowned with success. Svyatoslav completely prevents this. And Olga turns to the west for help, but Western Catholics, having arrived in Russia, met negative and rushed to leave the state. Olga, having lost allies, finally transferred power to Svyatoslav and his "paganism".

Svyatoslav was almost not interested in the internal problem of Russia. He felt like a warrior who had to conquer distant territories. Svyatoslav conquered many Khazar lands and strengthened the position of Russia in the south. After the war with Byzantium, Russia came under control of Bulgaria.

Christianity in Russia was going through hard times. Many adherents of the religion were denied many of the privileges that the pagans had. During the reign of Svyatoslav, the church of Nicholas was destroyed.

The prince died at the hands of the Pechenegs, and most likely the Russian Christians had something to do with this.

After the accession to the throne of Svyatoslav's son, Yaropolk, Christianity was again strengthened in the state. This did not quite please the pagans. A rivalry arises between Christians and pagans.

The pagan society is headed by Vladimir. An important part of the content goes to him. Soon Vladimir fires Yaropolk. The other dies at the hands of his detachment. Christianity was defeated in 979 [22].

However, pagan religion failed to achieve its goals for the state. In 980, there were attempts

by Vladimir to implement a series of reforms to improve the political situation. Relations with Christian countries have become increasingly complicated. As a result, all reforms failed.

In 988, Kievan concluded a treaty of mutual aid between the Russian and Byzantine empires, which, according to the custom of the time, was to be made in conjunction with Vladimir's dynastic marriage to the Byzantine queen Anna. The Kiev Imperial Court helped suppress the revolt of Bardus Focas, who was on the verge of collapsing due to many unfavorable domestic political factors. Probably that year Vladimir was secretly baptized.

Nevertheless, the Byzantine emperors did not fulfill their part of the treaty - they did not give either Princess Anne or an autonomous church organization to the Prince of the Rus. In response to this deceit, Vladimir laid siege to the center of the Byzantine Crimea, the city of Chersonesos (Korsun), and captured it in the spring of 990. Byzantium was forced to concede and fulfill its part of the treaty. The wedding of Vladimir and Anna probably took place in Chersonesos. In the summer of the same year, the Byzantine clergy, accompanied by the princely army, arrived in Kiev.

The city was baptized in several stages during the summer of 990. Even in Korsun, the prince's detachment underwent Christianization. The Kiev nobility, humbled by that time by the princely power and the army, also received baptism. Vladimir ordered the destruction of statues of pagan gods throughout the city, which served as a kind of psychological preparation of the townspeople to accept the new faith [18].

On July 31, a new decree was issued: the entire population of Kiev should come to the banks of the Pochayna River the next day. On August 1, 990, an official mass baptism took place in

Kiev. Not all citizens obeyed the order - many pagans left the city and hid in the "forests and deserts."

In general, thanks to the adoption of Christianity, Kievan Rus was included in the European Christian world, and therefore became an equal element of the European civilization process. However, the adoption of Christianity also had negative consequences. Orthodoxy contributed to the isolation of Russia from Western European civilization. With the fall of Byzantium, the Russian state and the Russian Orthodox Church found themselves, in fact, isolated from the rest of the Christian world. It is this circumstance that can partly explain the refusal of Western Europe to come to the aid of Russia in its confrontation with the infidels (Tatar-Mongols, Turks and other conquerors) [19].

### **Search for new ways to strengthen the international positions of Russia. Dynastic marriages of the ruling dynasty**

Dynasty marriages were rare in Kievan Rus. Vladimir also sent his wax to save the Byzantine Empire from revolts, in exchange for the hand of his sister Basil and Constantine (Byzantine emperors). The Kiev prince was well aware that he had a rare chance to intermarry with the rulers of Byzantium. But still the greatest development was received by the three dynastic marriages of the three daughters of Yaroslav the Wise. Each of these three marriages obviously had a political side.

The marriage of Harald Sigurdarson and Elizabeth Yaroslavna strengthened Russian-Norwegian ties, which were friendly during the time of Olav Haraldsson - at least since 1022, that is, after the death of Olav Shotköning, Jaroslav's father-in-law, and the assumptions of power in Sweden by Enund-Jakob, who soon entered into an alliance with Olav Haraldsson

against the Great Cnut - and during the time of Great Magnus (1035-1047), who was enthroned to the Norwegian throne not without the participation of Yaroslav the Wise [16].

The matchmaking and wedding of Anna Yaroslavna took place in 1050, when she was 18 years old.

Already at the beginning of her royal journey, Anna Yaroslavna accomplished a civil feat: she persisted and, refusing to swear allegiance to the Latin Bible, took an oath on the Slavic Gospel, which she brought with her. Under the influence of circumstances, Anna then converted to Catholicism. Arriving in Paris, Anna Yaroslavna did not consider it a beautiful city. Although at that time Paris from the modest residence of the Carolingian kings turned into the main city of the country and received the status of the capital. In letters to her father, Anna Yaroslavna wrote that Paris was gloomy and ugly she complained that she was in a village where there were no palaces and cathedrals, which Kiev was rich in.

Anna's life in France coincided with the country's economic recovery. During the reign of Henry I, the old cities were revived: Bordeaux, Toulouse, Lyon, Marseille and Rouen. The process of separating trade from agriculture is accelerating. Cities began to liberate themselves from the power of lords, that is, from feudal dependence. This led to the development of commodity-money relations: city taxes bring income to the state, which contributes to the further strengthening of the state. Anna Yaroslavna was widowed at the age of 28.

Very little is known about the historical literature of the last years of Anna Yaroslavna's life; so all the available information is interesting. Anna was waiting for news from home. The news came in a different way -

sometimes bad, then good. Soon after his departure from Kiev, his mother died. Four years after the death of his wife, at the age of 78, Anna's father, Grand Duke Yaroslav, died. The disease broke Anna. She died in 1082 at the age of 50 [13].

The personality of Anastasia (preserving prudent skepticism, we will not completely rely on the rather late author) Yaroslavna was better imprinted in the Hungarian tradition; cf., for example, a passage from Acts of the Hungarians Anonymous, not devoid of some lyricism: Andrey often spent time in the castle Komarom "for two reasons: firstly, it was convenient for royal hunting, and secondly, his wife loved to live in those places, because they were closer to [her] homeland - and she was a daughter Russian prince and was afraid that the German emperor would appear to avenge the blood of [King] Peter".

Leaving on the conscience of "Anonymous" his weakness in geography (Komarom was on the Danube, near the mouth of the Vag River, that is, noticeably closer to the German border than to the Russian one), let us note the game of fate: when, by the end of Andrey's reign, the one radical change and Andrei was overthrown by the brother of White I (1060-1063), Anastasia with her son Shalmon, married to the sister of the German king Henry IV (1056-1106), found refuge in Germany. And the entire period of Shalmon's reign (1063-1074, died about 1087), he had to defend the throne in the struggle against the sons of Bela - Geza and Laszlo, who were looking for support, including in Russia (they were the nephews of Gertrude, the wife of the Kiev prince Izyaslav Yaroslavich). Anastasia, according to legend, died in the German monastery of Admont, not far from the Hungarian-German border.

You can clarify the political position of Vsevolod, taking into account the marriage of



his son Vladimir Monomakh, which was concluded in the same way as we study. Vladimir Vsevolodovich married Gide, the daughter of the last Anglo-Saxon king Harald, who died in 1066. Information about this marriage has long been used in science, but, trying to determine its political significance historians were forced to limit themselves to general proposals. It seems that here, too, the new data on Svyatoslav's foreign policy bring enough clarity.

The generally accepted scientific dating of the marriage of Vladimir Monomakh and Gid (1074/75) is determined and based solely on the date of birth of Monomakh's eldest son, Mstislav (February 1076). The Danish chronicle Saxon Grammar notes that the marriage was initiated by King Sven Estridsen of Denmark, who was the cousin of the Guides' father and remained in court after he was forced to leave England. A possible reason for Sven's actions is sometimes seen in the fact that her second marriage was allegedly married to Yaroslav the Wise's daughter Elizabeth, who was widowed in 1066 (her first husband, King Harald the Severe of Norway, died in the Battle of Stamford Bridge against Harald, the father of the guides) [14].

This error, which stems from old Scandinavian historiography, is due to a misinterpretation of the message of Adam von Bremen (1970s, 11th century). Kuchkin V.A. "Lessons" by Vladimir Monomakh and Russian-Polish-German relations of the 60s – 70s XI- V. // Soviet Slavic Studies. 1971. [2. 24-25], where in fact we are talking about the wedding of the Swedish king Hakon, and not about Elizaveta Yaroslavna, but about the "mother of Olaf the Younger", ie Norwegian king Olav Tikh, who was not his son, but his stepson Elizabeth. Taking into account the role of Sven Estridsen in choosing a bride for Vsevolodov's son, one can only look

at the close alliance between the Danish king and Henry IV in the 1970s [17].

They meet in Bardovik, near Luneburg, in 1071, and probably again in 1073; in the fall of 1073, Sven even took military action against the Saxons in a war with Henry. Commentators are probably right that they doubt the validity of the opinions of Lampert of Gersfeld (inclined to see everything as anti-Saxon machinations of Henry IV), as if already in 1071 negotiations with Sven concerned joint actions against the Saxons.

Therefore, it would hardly be too bold to assume that, apart from the cases connected with the Hamburg Metropolitan, then a sudden conflict between Germany and Poland was discussed. The simultaneity of the German-Chernigov and German-Danish negotiations suggests that the initiative of the Danish king during the marriage of Vladimir Monomakh and the guides could be associated with these negotiations. Given the above, it seems to us that the marriage of Vsevolodovich with the English exiled princess should be viewed as a manifestation of the coordinated international policy of Svyatoslav and Vsevolod in 1069-1072, aimed at isolating Boleslav II, Izyaslav's main ally. Yaroslavich.

In this case, the marriage of Vladimir Monomakh was to be concluded between 1072 and 1074. Until now, there is no reason for Vsevolod to join the Danish-Chernigov coalition against Poland at a later time, starting from the turn of 1074-1075. The "Polish question" has lost its relevance for the younger Yaroslavich. It was at this time that their relations with Boleslav II were settled, which led not only to the scandalous expulsion of Izyaslav from Poland at the end of 1074 and peace between Poland and Russia after Easter in 1075, as well as a joint action against the Czech Republic with the participation of Oleg Svyatoslavich

and Vladimir Monomakh in autumn - winter 1075/76 [21].

## CONCLUSION

There is no doubt about the importance of political ties in the ancient Russian state. Kievan Rus was a very young state that had to consolidate its position on the stage of the political world in the ninth century.

Dynastic ties largely determined the political and economic course of the country. Each of the worthy rulers wanted to intermarry with another worthy ruler. This ensured stable trade and assistance in military raids against enemies.

The policy was unsustainable not only due to external factors but also due to internal problems. Culture and religion shook the state, and until there was general solidarity, these two factors hindered the development of Kievan Rus.

Political and dynastic relations played a positive role in the formation and development of the Russian state. I think that this important period for our country should be carefully studied, because not all historical events are clearly known.

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## «The Muslim Brotherhood» Religious And Political Organization: Past And Present

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### ABSTRACT

The experts supposed the increase of the religious factor throughout the world in the beginning of the 21st century. According to the various sources the roots of the religious extremism and terrorism date back to the remote past. It is fact that the Kharijites, the religious and political sect which was appeared in 657, have declared themselves as true Muslims while claimed that those who had not agreed with them were apostates and struggled against them. But it is well worth emphasizing that they have never threatened the social stability and progress as much as today. Because, in our days, the religious extremism and terrorism has a global nature and it threatens all countries and regions of the world equally. Especially, it is not secret that “The Arab Spring” conflicts which have occurred in the Middle East countries were carried out in the guise of the religion by the powers and these powers have used the extremist and terrorist group to reach their goals.

The study of the activities of “The Muslim Brotherhood” which was appeared in the city of Ismailia of Egypt, 1928 allows us to understand the true essence of the religious extremism.

The suppositions given in the abstract allow us to conclude that, on the one side, the extremist ideas in the guise of Islam which have developed for a long time were entirely used in the views of Hasan al-Banna, Sayyid Qutb and their followers, on the other, “The Muslim Brotherhood” has developed and systematized the organizing systems and methods of all sects and organizations before them in their own practice. It is fact that the scientific and critical study of the activity methods and ideological bases of this organization is important in the research of the true essence of the modern extremism.

### KEYWORDS

Fanaticism, religious extremism, terrorism, infidel, sin, heresy, idolatry, assassinate, revolutionary struggle, «The Muslim Brotherhood», «Arab Spring», rebellion

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## INTRODUCTION

According to the sources, roots of the religious extremism and terrorism date back to the remote past. But it is worth emphasizing here that the religious extremism and terrorism have never threatened the stability and progress of social life as much as today. Because, at present, the religious extremism and terrorism has a global nature and they are threatening all countries and regions of the world equally. In this case, it is worth mentioning that the struggle against the religious extremism and terrorism has already become a very actual problem concerning the future of mankind. Societies have actual complex tasks on this subject that it is necessary to be solved as soon as possible.

In fact, if we notice the history of these extremist movements disguised under the name of Islam, we can find that their basic roots date back to the activities of the religious and political sect named the Kharijites (from Arabic – the separators and rebels) who was appeared in the period of Ali (may Allah bless him). The Kharijites, finding themselves true Muslims, have called those who had not agreed with them apostates and declared a ruthless war against them.

## RESULTS AND DISCUSSION

The Kharijites have been extreme supporters of the rules of «pure» Islam as they had interpreted [4, p.235]. They were the first sect who has called those who had not accepted their views and taken part in their activities infidels and has developed the idea of «jihad» against them and has started to murder the rulers within the method of terror. Furthermore, according to the Kharijites, loyalty of a pious man to the pillars of Islam must be estimated in accordance with his

actions. The Kharijites have developed the idea that it would be necessary not to submit to the rulers who had not followed the rules of «pure» Islam as they have interpreted and to declare a war against such kind of rulers. These ideas have caused the struggle methods for the power based on terror and violence to be developed as well as thousands of people to be murdered.

Besides, the ruthless and cruel sect in the history of Islam named the Azraqites was found by Nafi' bin al-Azraq (died 685) and had an important and special role in the development of the fanaticism idea and practice.

They have called all Muslims who had committed big sins «infidels» and given a legal permission to declare jihad against those who had not followed their teaching and to murder even women, children and old people.

The extremist movement of the Karmates was appeared at the end of the 9th century in Iraq and they have not accepted the pillars of Islam and declared the action of Hajj of heresy and idolatry. Furthermore, according to their teaching, «the divine worships such as a prayer, fast, zakat and others are not obligations, they are only additional orisons. These are considered as a gratitude for Razzaq (who gives all creatures subsistence). Allah needs no worships of mankind. People may have a choice to perform these obligations or not to perform them at all. They have own choice in performing of these obligations» [1, p.20]. The name of this movement has originated from the word of «Karmat» which was used as the founder's nickname – Hamdaan bin al-Ash'as and means a «short leg» or «red eye» in English.

The Karmates have committed many crimes which were stigmas in the history of Islam. They have attacked caravans during the period of Hajj and committed a robbery. Especially in 930, they invaded Mecca, committed a robbery there, murdered the citizens of Mecca and took them prisoners. They «Hajar al-asvad» (the black stone in Mecca) into two parts and took it away to Bahrain. Only 20 years later they returned it to Mecca in exchange of a huge payment [5, p.27].

The Assassins, the terrorist group named «The Hashishites» (from Arabic – those who accepts narcotics) who was developed at the end of the 11th century in Iran has developed the practice of attempting on the life of rulers who had not agreed with them in the way of seizing of the power. They have threatened a lot of ruler for a long time, as result of it the rulers of some European countries had to pay them for ensuring their own security. The English word «assassinate» means to attempt on one's life and was originated from the term «Hashishites». The name of this group shows that it has threatened the countries' security on a large scale. Furthermore, they have forced people and young men to accept narcotics and to believe in to enter the Paradise after their death. This method is widely used by the modern terrorist groups [3, p.310].

It is worth emphasizing that the activities of such kind of sects which were based on terror and violence and threatened the unity of faith were condemned by the scholars and theologians of that time and persecuted by the rulers. For example, the Umayyad and Abbasid caliphs have carried out policy aimed to destroy the Hashishites.

But it is worth saying that the ideas and forms of the practice mentioned above which were

contradictory to the true essence of Islam at all have developed at a later date. The development of the extremist ideas appeared in the guise of the flag of Islam in a unique way by Ahmad bin Taymiya (1263-1328) may be an evidence of it. Ibn Taymiya who created the teaching of the «revolutionary struggle» in Islam has advanced some views that «if a ruler had not performed all obligations of Islam in the country under his authority, he would be an infidel. An infidel did not have a right to rule Ummah. That is why it was necessary to declare jihad against him and to change a ruler of the country which was not ruled by sharia radically» [6, p.36].

Ibn Taymiya's ideas based on fanaticism laid down a foundation of the terrorist acts which were occurred in Central Arabia in the guise of the idea return Islam «into its fundamental conditions» in the middle of 18th century and have black spots in the history murdering innocent people.

The ideas that aroused hostility among Muslim societies and justified the way of obtaining the political power with violence have caused the radical sects such as «The Muslim Brotherhood» to be developed in the 20th century. It is worthy to emphasize that the study of the activities of «The Muslim Brotherhood» which was found in Egypt, 1928 by Hasan al-Banna is very important to understand the essence of the modern extremism. Indeed, this organization has developed the structure of the organization, ideological and dogmatic views and methods of activities on which the modern religious extremism based in the history. The leaders of the organizations such as Hasan al-Banna and Sayyid Qutb have caused the religious fanaticism groups to be more radical with their propagandas.

Although the Egyptian government allowed «The Muslim Brotherhood» to act openly in the beginning of the 1950th years, this permission was cancelled and lots of active members of the organization were sentenced to prison as a result of a desire of the leaders of the organization for influencing on the activity of the Revolutionary Council of Egypt. Some of members of the organization had to run away to Saudi Arabia, Syria, Jordan and Lebanon. It is worthy emphasizing in this place that we know from the history that the movement of «The Muslim Brotherhood» has threatened the leaders of the country. Particularly, the organization attempted to murder the then President Jamal Abdul Nasir on October 26, 1954. After this attempt, 3000 members of the organization were sent to prison, 6 of them were executed. «The Muslim Brotherhood» organization has acted underground, attempted to organize a revolution and murder Jamal Abdul Nasir several times latterly.

Anwar Sadat came to power on October 15, 1970 after Jamal Abdul Nasir and became famous for his policy of «the open door» not only in Egypt, but in all Arabic World. Anwar Sadat who was hostile towards Jamal Abdul Nasir has not followed his way of ruling at all. During his reign the role of Islam was increased in the country. The new government of Egypt has appreciated the activities of various religious and political highly and tolerated them. Even Anwar Sadat established friendly relations with «The Muslim Brotherhood» and declared that he was proud of the founder of this organization, Hasan al-Banna in summer, 1971 [4, p.253]. He has started to discharge members of the organization who were sent to prison by the government of Jamal Abdul Nasir allowing the movement to act freely. There were future leaders Ma'mun al-Khudaybi, Muhammad Hamid Abu Hasr and others beside

the then leader of the organization, Hasan al-Khudaybi who was sentenced to prison in 1965 among the discharged prisoners.

The President of Egypt, Anwar Sadat had mainly a political conciliatory approach towards the fanaticism sects like «The Muslim Brotherhood» in order to use them against the «radical» powers in the country in his time. As a result of it an acute politicization of Islam, appearance of new extremist groups which had fanatic ideas, reinforcement of the current movements was happened. By the end of 1970, 22 extremist organizations acted in the country [7, p.43]. This increase in quality and compliment for the movement of «The Muslim Brotherhood» reached its logical finish with an attempt on Anwar Sadat's life by the organization of «Al-Jihad» which was formed under the influence of «The Muslim Brotherhood» on October 6, 1981 [2, p.147].

It is worthy emphasizing that the activity of «The Muslim Brotherhood» was enlivened and they requested the government to formalize their movement after Hosni Mubarak was voted as a President. In response to it, the government began to struggle against the opposition powers in the country in a large scale. Almost 300 extremists were sent to prison and 4 of them who were accused of murder of Anwar Sadat were executed.

The extremists have threatened the life of Hosni Mubarak several times. He was adjudged to die in 1982 by the underground extremist group «Al-Aqsaa». He was attempted on his life in New York, 1993, but this attempt was failure. The car of Hosni Mubarak was shot on July 26, 1995, in Addis-Ababa. One of the citizens assaulted Hosni Mubarak and tried to hit him with a knife during election campaigning in

Port Said, 1999, but was shot by the bodyguards.

In the beginning of the 21st century the activity of «The Muslim Brotherhood» which has turned into the common religious movement for all Arabic countries began to deal with an open political activity. They have frequently demonstrated a protest and claimed the government to reform under a slogan of «Islam is a solution for problems» as well as Hosni Mubarak to send in his resignation.

It is worthy emphasizing that «The Muslim Brotherhood» movement did not play the leading part in the protest marches which began on January 25, 2011, in Cairo and finished on February 11 with Hosni Mubarak's resignation [8, p.280-281]. Because they knew well that their traditional slogan («Islam is a solution for problems») was not useful in such kind of extraordinary demonstrations. In spite of it, more than 30 members of «The Muslim Brotherhood» organization were discharged in various cities of the country as a result of the demonstrations. These progresses were for the benefit of the organization.

As a result of it, the leader of the party «Justice and liberty» which was a political arm of «The Muslim Brotherhood» organization, Mohamed Morsi was elected as a President of Egypt on June 30 according to the results of two-stage elections which were held for an election of the President of the country in 2012. Mohamed Morsi emphasized in his statement that he was a president not only for «The Muslim Brotherhood», but for all Egyptians in the country and wanted to leave the organization after he had won the election.

Mohamed Morsi has primarily attempted to expand the president's absolute powers, as well as to subjugate the judicial system during

his activity. It should be noted that the crisis of economic regress during the period of Hosni Mubarak was considered as the main reason for the «Arab Spring». However, members of the new government who came to power also said that they would work on the basis of liberal reforms adopted on July of 2004. This is due to the fact that economic growth has accelerated in recent years because of the new reforms introduced in the country. In turn, it showed that the economic policies carried out by the ousted President Hosni Mubarak were in a right way.

It was stated on November 30, 2012 that Islamic laws were the main source of jurisprudence. Due to it, a new constitution with a fully Islamic content was adopted and a referendum was held in late December. The President Morsi approved it despite of disagreement of the majority. The administration under the influence of the «Muslim Brotherhood» soon failed.

Protests of Egyptian people against Mohamed Morsi's policy have continued unabated since December of 2012. The fact is the citizens of big cities and the military did not vote for Morsi. The military has always been the most united and literate class of people in Egypt. There is an opinion that the military could have retained Morsi saving the government in their hands just on the day he won the election. However, it would be considered as a military coup and the international community would react it negatively.

On June 30, 2013, one year after Mohamed Morsi was elected as a president, he wanted to celebrate this date. In fact, protests against him had reached its peak and an organization of youth people called «Tamarrud» (Rebellion) demanded Morsi's resignation and collected



22,5 million signatures in four days [9]. Millions of people in Cairo, Alexandria and other cities demanded Morsi's resignation and launched attacks on the local offices of the «Muslim Brotherhood» on June 30.

The minister of the defense, Abdel Fattah el-Sisi, on behalf of the military leadership, demanded the President to restore peace in the country within two days on July 1, 2013. However, the President Morsi failed to comply this demand. The army seized power and ousted members of the «Muslim Brotherhood» from the government on July 3 [10].

How it can be appreciated Morsi's one-year activity? The previous events in Turkey and Algeria were only repeated in a different way. The «Muslim Brotherhood» has established its monopoly while Morsi has failed to solve acute social and economic problems. His opponents have accused him of failing to carry out his election promises and to rule the country.

The Egyptian government declared the «Muslim Brotherhood» organization as an official terrorist organization on December, 2013. Later the same decision was issued in Saudi Arabia on March 7, 2014 [11]. As a result, many supporters of the «Muslim Brotherhood» were arrested. Such actions are often considered as military coups. The process that began in Egypt on July 3, 2013 should be seen as a strengthening of the opposition of people against Morsi's authoritarianism by the army. In fact, the military has prevented a bloody civil war that would be occurred in Egypt.

The Minister of the Defense, Abdel Fattah el-Sisi was elected as the President of Egypt in the elections held on May, 2014. During the past period of instability, Egypt has suffered both economically and morally.

In general, it should be stated that it was clear that the «Muslim Brotherhood» organization's period at the helm of the government was short. This is evidenced by the events in Turkey, Algeria or the Taliban's attempts to establish a theocratic state in Afghanistan.

The main focus of the new government was aimed at the fight against local reactionary and international terrorist groups in Egypt. As a result of the «Arab Spring», the ongoing conflicts in Iraq, Syria and Yemen have been a great lesson for the Egyptians. The Egyptian governments strong position towards fanatical groups has been supported by the majority of the population.

## CONCLUSION

The analysis given above enables to conclude that the activity which has been carried out by «The Muslim Brotherhood» for a long time caused ideologically the periodical social and political instability to be developed in Egypt as well as radical religious and political organizations to be appeared in other Arabic countries.

In this case, the study of the history, activity methods and ideological foundations of organizations such as «The Muslim Brotherhood» from the point of scientific and critical view has a scientific, theoretical and practical importance in understanding of the real essence and face of the modern extremism. To carry out a ruthless struggle against these sects and give proofs that the fanatic powers which conduct terrorist acts are absolute strange for Islam is one of the actual tasks.

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## Foundation Properties Of Zarafshan District: Historical And Source Analysis Of The Procedure Documents

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### ABSTRACT

The article explains the importance of archival materials of the second half of the 19th and the beginning of the 20th centuries as archival materials, in particular, issues of foundations kept in the fifth store named as “Head department of Zarafshan region” of CSA RUz (Central State Archive of the Republic of Uzbekistan) that are the main sources of the history of our country. The source value of official correspondence, notices, information and records, selected from thousands of records, is scientifically grounded in the study of the Zarafshan foundation property, status, income and activities of the Russian administration.

### KEYWORDS

Foundation properties, foundations, charters, official correspondence, Bukhara institutions;

### INTRODUCTION

Official documents, which were the main written sources of the history of Turkestan in the second half of the 19th and beginning of the 20th century, including the documents of the chancellery of Zarafshan district, are an important historical sources in studying the

history of foundation property in the region, especially in Zarafshan district.

There is very little historical knowledge on the subject of foundations in scientific works, and they have accumulated with difficulty and contradictions [1:19]. In historiography, the

coverage of issues related to the of foundation properties is often carried out with the help of documents that are directly related to them - endowments, wills, labels, decrees of khans, emirs and other officials [1,2,3,5,8].

In addition to the above-mentioned documents, the chancellery documents of the head of Zarafshan district, which were the main written sources for the establishment of Russian colonial rule in the upper and middle Zarafshan valleys in the second half of the 19th century, contain important informations on the status and management of the foundation's properties.

At a time when the study of our historical and cultural heritage has reached a new level, the urgency of the article determines the need for scientific circulation of chancellery documents related to the foundation property, stored in the 5th fund of the CSA RUz.

### THE MAIN FINDINGS AND RESULTS

In the study cases of the foundation properties in Zarafshan district, of the 5th Fund, such as "On increasing the income of the city of Samarkand and the organization of city administration", "Extracts from the book of income of foundations in Bukhara (1870) in the Kattakurgan division", "Draft receipts from the income of foundations in Bukhara institutions", "On foundations belonging to various institutions in Samarkand", "On collection of general fees from foundations in Kattakurgan division", "Case on foundations of mountainous counties", "On informing the chancellery of the Governor-General of Turkestan about the foundations in Zarafshan district", "On the foundations of the Samarkand division" and "Correspondence on the lands of foundations. Information on the leased land of the Samarkand division", has an important sources.

In particular, in the case "On increasing the income of the city of Samarkand and the organization of city administration" there is a report No.2964 of July 21th, 1871 by L.Sobolev, an employee of the chancellery of the head of the district. By studying this report, you can get informations about the types and amounts of market fees in Samarkand as for 1870, caravanserais, markets, teams, number of shops, madrasas and mosques in the city.

Another source of information is the explanation of which bazaars, caravanserais, stores, groceries and shops in Samarkand are the foundations of madrasas and mosques. According to the report, Davlat kushbegi, Gandum caravanserais and Kavush Bazaar team in the city were the foundations of Hazratshakh (Shah-e Zindah) Madrasa, Caravansera of Orifjonboy and Team were the foundations of Orifjonboy Madrasa, caravanserais of Burunduk and Zagir quaters, attors, chitkars and kavushdoz shops and Chorsu were the foundations of Mirzo (Ulugbek) madrasa, sarroj's shops were the foundations of Shaibanikhan madrasa, reed-bazaar was the foundation of Khanim (Bibikhanim) madrasa and porcelain bazaar was the foundation of Hovuzi baland mosque [10:14-57]. Of course, the information provided in Sobolev's report does not provide a complete picture of the foundation's properties belonging to madrassas and mosques in Samarkand.

It is necessary to involve in the research process the works stored in other funds of the CSA RUz, in order to obtain more detailed information on the subject. However, this paperwork is important in studying the general condition and income items of the property belonging to madrassas and mosques in Samarkand in the early years after the Russian invasion. For example, one of the most famous

caravanserais in the city, the Davlat Kushbegi Palace, has an annual income of 430 rubles 80 cop. It had 30 rooms and on the top floor there were 13 rooms for foreign guests [10:14]. Or outside the Chorsu dome, which was the foundation of Ulugbek madrasa, there are 12 stores and 18 bases, inside there are 10 stores, 34 bases and 6 shops [10: 33-34]. Such information provides more information about some of the foundation properties in Samarkand.

From the works "Extracts from the income book of foundations of Bukhara institutions in the Kattakurgan branch" and "Draft receipts and expenditures on the income of foundations of Bukhara institutions" in the Kattakurgan branch of the Zarafshan district, data can be obtained. According to the case file, the foundation's property belonging to religious institutions in Bukhara is located mainly in Kattakurgan and Payshanba districts of the department [11:6-13].

An important source is the work "On foundations belonging to various institutions in the city of Samarkand" on the management of income from the property of foundations located in the territory of Zarafshan district. The case contains information No.4355 written by the head of the Samarkand branch on December 28th, 1872 to the head of the district annual income of Sherdor and Tillakori rent was 49 thousand kukan (currency of the Kokand khaganate) or 9 thousand 800 roubles. 27.7 % (2715 r. 34 ½ cop.) of the rent money was transferred to the income of the district, and 17.7 % (1740 r.) to the income of the madrassas [13:1]. However, the information does not provide any information about the rest of the money (54.6% - 5345 r.).

We can see a different situation in the distribution of income of the foundations of Ulugbek madrasah. According to the

information of the head of the Samarkand branch No.292, written on January 20th, 1873 to the head of the district, the annual income from the rent of the foundations of the Ulugbek madrasah amounted to 564 rubles. 563.4 rubles or 99.8 % of the annual income from the foundations was spent for the annual expenses of the madrasah [13:4]. In the work we can see cases where the income from the property of a foundation belonging to a particular religious-enlightenment institution is not included in the income of that institution at all. For example, on January 8, 1873, the head of the Samarkand branch wrote to the head of the province No. 81 that the annual income of the Safed (Hodja Ahror) madrasah in the city was 799 roubles and 20 tiyins, all of which was transferred to the city's casual income [13:8].

It is clear from the case file that the proceeds from the foundation's property belonging to religious and enlightenment institutions in Samarkand were fully managed by the Russian administration, and the institutions themselves were fully or partially funded or not funded at all.

There have been cases of complete deprivation and even closure of some religious and enlightenment institutions by the Russian administration. This is stated in the "Correspondence on the lands of the foundation. Information on leased foundation lands in the Samarkand department" provides valuable information. According to official correspondence, the waqf property of the Muhammad Yusufboy mosque-madrasah in Samarkand brought him an annual income of about 300 tenge (or 302 r.26 ½ kop.).

This institution was built by Muhammad Yusufboy oglu of Samarkand and his children Nurmuhhammad and Olimboyar, and his madrasah consisted of 22 rooms [10:71; 18:38]. However, by order of the head of the



Samarkand department, the institution was deprived of its foundation, and even served as a city hospital for some time [18:38].

In 1876, a special foundation commission was set up to account for all the waqf property in the province and the income from it. As a result of the measures taken, by 1878 the management of all the foundations of the Zarafshan province and the collection of general fees from them passed into the hands of the Russian administration [1:28-29]. Detailed information on the number of foundation properties in Zarafshan province and the amount of total fees collected from them can be found in the official correspondence and information contained in the work "On the collection of general fees from foundations in the Kattakurgan branch".

In particular, the information of the head of Zarafshan province No. 2405 addressed to the head of the province on June 20, 1878 shows the amount of total fees levied on the property of the foundation located in the provinces and we can see that they were approved by the head of the province [14:1]. The analysis shows that the largest share (80.52%) of the fees collected from the property of the foundation in Zarafshan province fell to the Samarkand branch.

The information also provides information on the total number of waqf properties in the Kattakurgan branch, which in 1878 amounted to 126 [14:18-25]. For comparison, in 1873, the correspondence of the head of the Samarkand branch on waqfs stated that the number of waqf properties in the department was 71 [19:19]. The relatively large number of waqf properties in the Kattakurgan branch and the relatively low income (17.66% of the total collection) can be explained by the fact that, as noted above, part of the waqf property in the branch belongs to Bukhara institutions and a

number of religious and educational institutions in Samarkand.

This situation is also typical for the administration of mountainous districts, where the bulk of the foundation's property belonged to religious and educational institutions in Samarkand [15:1].

The work of the 5th Fund "On informing the Chancellery of the Governor-General of Turkestan about the foundations in the province of Zarafshan" is important from the point of view of sources. It contains information about the property of the foundation in the province, to which religious and educational institution they belong, the name of the volost and village where the foundation property is located, their land area (in tanob) and annual income (in rubles and coins).

This information was prepared on the basis of a letter No. 6931 sent to the head of the province on August 23, 1882 by the court of the Governor-General of Turkestan, which asked the head of the province to provide detailed and accurate information about the foundation's property.

An analysis of the information provided by the head of the province shows that the foundation property in the province consists of several types, in particular, markets and palaces, rasta and shops, irrigated and arable lands, fruit trees, meadows, vineyards, and mills.

The main document of a waqf property is a waqf, a will or a will, which defines its legal status and formalizes its income. They indicate to which religious-enlightenment institution the property of the waqf has been bestowed or bequeathed, the time of waqf and the name and surname of the person who bequeathed



the grace or bequest, and in most cases confirmed by the judge or alam, in some cases by the khan or amir. The document also specifies the procedure for using the income of the foundation property and in practice this instruction was strictly followed [1: 8]. However, the policy of the Russian administration in Turkestan to reduce administrative costs has turned the income of the foundation property into one of the treasury and state revenue items. As early as 1869, A.I. Gomzin, the head of the Turkestan Governor-General's Chancellery, suggested that only endowments bearing the seals of khans and amirs should be considered valid [1:37].

Although the proposal was approved by the head of state, fon Kaufmann's views on not interfering deeply in the internal affairs of the local settlers also ensured the partial inviolability of the foundation's property. After his death, the documents of the foundation's property began to be taken from the institutions to which they belonged. According to the official correspondence in the case "On the foundations of the Samarkand branch", the documents of all the foundations of the Samarkand branch were confiscated by the court of the head of the Zarafshan province [17:1]. This measure completely deprived the religious and enlightenment institutions of the province of the right to control the property of the foundation, which had belonged to them for centuries, and to dispose of the income from them.

In accordance with the "Regulations on the management of the Turkestan region" approved on June 12, 1886, Zarafshan province was transformed into Samarkand region, and the order established by the Russian administration on foundation property in 1869 at the suggestion of A.I. Gomzin was

preserved. According to Senator K.K. Palen, who inspected the Turkestan region in 1908-1909, by 1887 in the Samarkand region there were 107 endowments with the seal of the khan and amir, and 1651 without them [7:68].

## CONCLUSION

As a result of the analysis of the administrative documents of the court of the head of the Zarafshan province on the property of the foundation, the following conclusions can be made:

Along with special historical literature and published written sources, the court records of the head of the Zarafshan province are also one of the main written sources on the status and maintenance of the foundation's property in the province;

An analysis of the information provided in the records showed that the waqf property in the province consisted of several types, in particular, markets and palaces, rasta and shops, irrigated and arable lands, orchards, meadows, vineyards, mills;

It is clear from the procedural documents involved in the research process that the proceeds from the property of the foundation, which belonged to religious and enlightenment institutions in the city of Samarkand, were fully managed by the Russian administration;

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## The National Intelligentsia Of The Late XIX - Early XX Centuries: On The Work Of Is'hakhon Ibrat "Historical Culture"

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### ABSTRACT

The study and compilation of written sources are important when studying the problems of the socio-political, economic, spiritual and cultural life of our people in the past and enriching the research power. Today, the study of sources in many collections of manuscripts is the centre of attention of historians and researchers. The manuscript "Historical Culture" by Is'hakhon Junaidullohhoja oglu Ibrat (1862-1937), reflecting the requirements of historical development, as important as the spiritual heritage of the first 30s of the twentieth century [1]. The performance touches on the problems of culture, analyses its future development and reflects the real situation in Turkestan in this area. During this period, priority will be given to the most relevant issues of science, education and education, education and new schools, schools for girls, higher education institutions and their benefits for the country.

### KEYWORDS

Compulsory education, Culture, Development, Economics, Education, Expression, Illiteracy, Language, Light Industry, Manuscript, Material, medicinal plants, Paper, primary education, school, Science, Source, Spiritual.

### INTRODUCTION

In particular, the work of the Jadids of the late XIX - early XX centuries in this area, his writings,

the ideas of the desire to develop the culture of the East and West while preserving national

identity. Jadids at one time take seriously the problems of science, school, education, cultural development, develop these problems for the development of the nation in accordance with the requirements of the times, try to solve them. Throughout his career, Is'hakhon considered science and education a primary need for the development, growth and development of the country. In Jadid writings and articles, the word "culture" is often used to mean "progress." This feature is also characteristic of the work of Ibrat, which is divided into three parts: the note, the main part and the conclusion. In the introductory part, the author recognizes that the purpose of writing the brochure, apologizing to the reader, is to expand people's views on cultural progress and decline, to explain the essence of progress.

The peculiarity of literature written in the second half of the 1920s is that, although these works retain national features, they are not surrounded by a chain of dominant ideologies, but its influence is reflected in the comments made to the facts. Doctor of Historical Sciences, Professor D.A. Alimova notes that the study of the history of the culture of this period is "the most difficult and controversial period in the history of cultural development, and this feature was reflected in the historical literature on this issue" [2]. He also periodically divides the study of cultural problems up to 30 years into two stages. Firstly, the period from the beginning of the twentieth century to the October Revolution. Secondly, the period from 1917 to the mid-30s. In particular, it is concluded that the study of cultural problems went in the scientific and journalistic direction.

## **MATERIALS AND METHODS**

At the turn of the century, the Jadids worked to create the material and spiritual basis of an independent state. Such ideas and views were

put forward in scientific articles [3, 4, 5, 6, 7, 8, 9] by Is'hakhon of this period and in his works [10, 11, 12, 1], in which science, education, the school will pay special attention to education issues and will analyse ways to improve it. In the pamphlet, "Historical Culture," Is'hakhon comments on the material and spiritual basis of an independent state. In this case, his long stay in foreign countries, his close acquaintance with science, technology, social life, language and religion of this country brings great benefits. The brochure has not yet been used as a source of research, including two copies in the manuscript fund of the Beruni Institute of Oriental Studies, which are not yet known to the general public. Both copies are on the same cover as Ibrat's "History of Ferghana". The first work is Q-inv. Stored at 611616, hardcover, 20 sheets, 40 pages. At the end of the manuscript, the date of writing is indicated as 1344 AH and 1926 AD. At the end of the treatise, Ibrat writes: "I completed it in 1344 AH, January 10, 1926 AD" [1, p. 139]. The second copy of the brochure handwritten fund inv. Stored under number No. 10117. The cover is hard, 18 sheets, 36 pages, 2 pages left blank. On the last page of the work, it is indicated that it was completed in 1925 and 1344 according to the hijra. On the last page of the work, it is indicated that it was completed in 1925 and 1344 according to the hijra. In this copy, the words "1344 AH, 1925 A.D., completed," written by Ibrat, were written at the end of the second part of the work, the Attention section. [1, p. 106] Based on the comparison of the letter of the treatise, we can say that it was copied by the calligrapher Inoyathan Turakurgani, who copied Ibrat's work "The History of Ferghana." The copy we are studying in the 2nd copy, on the last page of which there are also inscriptions "1374 hijra and 1955 AD." From these records, we can conclude that this copy was copied in 1955 by calligrapher Said

Naimhan Tora Turakurgani, who copied the "History of Ferghana" by Ibrat [1, p. 138]. Both works are written in Arabic graphics, in alphabetic type. Initially, the brochure was completed before the October Revolution of 1917, but since it was lost in print, Ibrat returned it to his generation in 1925 as memories of Islam [1, p.114]. In the introduction to the main part of the work, he defines the word "culture" and focuses on the language problem, which is still the subject of numerous disputes and disputes. Concerned that at the beginning of the century phrases turned into a mixed language, the author was dissatisfied with the fact that his parents were Turks, the city was Turkish, the population spoke Persian, and Russian, Turkish and Arabic were mixed. It is said that this culture came to Turkestan from Iran. [1, p. 109]

This problem, posed by Ibrat in his work, is one of the main tasks facing scientists, terminology scholars and lexicographers today to restore the charm of the Uzbek language.

Ibrat's trips abroad influenced him, and during this time his worldview changed dramatically, realizing the difference between the West and the East. During this time, he will get acquainted with developing facilities of developed countries and cities, intends to introduce them in the country, to facilitate the lifestyle of his people. For this, first of all, science understands the need for technology, shows the way forward. In particular, he lists the objects that he saw in foreign cities, from mosques and madrasas, benefits for military service, savings banks, round-the-clock shops, schools, penitentiaries, and ending with the small social conditions necessary for the population. He describes a city that has achieved culture as follows: "The word culture is governed by law and order, and if people know the science and profession and live

happily in their profession, then the land is called a city, and its inhabitants are civilized" [1, p. 109]. Among the culturally developed cities, the author includes Petrograd, Moscow, Odessa from Russia, Berlin, Madrid, London from Europe, Rome, Washington, Tokyo, Istanbul and other large and small cities from the east. To identify the reasons for the development of model cities, he asked himself how did these developed cities achieve culture? After studying science, he concluded that his people had achieved culture only by making the pen a tool for themselves. There is no farming without a hoe, there is no harvest without a sickle, there is no weaving without a shop, they need tools. Since science is a tool that finds and drives culture, it is necessary to master it [1, p. 112-113].

With these thoughts, Ibrat points to illiteracy and ignorance as to the main cause of underdevelopment, social and colonial oppression in Turkestan. To prevent this, it is first necessary to develop the socio-economic life of the country and create a unique concept in this regard.

In the pamphlet, Ibrat understands the relationship between the village and the city as one of the material foundations of an independent state, considers it necessary to narrow the gap between them and recognizes that the situation of villages in the country is difficult. To show that the city and the village are inseparable, that they can achieve interdependent development, he approaches the problem, on the other hand, saying that the affairs of the village related to the city, the affairs of the city to the village, they are inseparable. He stressed that the needs of the city should be met at the expense of the village, the needs of the village should be met at the expense of the city, and this should meet the needs of each other based on public life. The



need to pay attention to this is emphasized. [1, p. 115-116]

In the pamphlet, Ibrat is interested not only in the social problems of the village but also in the economic problems of the country. He said that for the development of the economy, first of all, it is necessary to solve the water problem, adding that the crops grown in villages are not enough for the population, there is land for harvesting, but a problem with water. He argues that it is impossible to create a farm without water, and that water can lead these farms to development if possible.

Therefore, for Fergana, nothing is more important than the need for water, because we have a lot of lands, we have little water, this region is the land that drinks water from the mountains, and not from the river. If it is possible to bring water to the northern part of Namangan, it will be possible to grow different crops here. [1, p. 116-117] With these thoughts, Ibrat recognizes that the construction of water bodies, the issue of water supply is an important issue in the daily life of the country.

Another problem worrying about the village, he considers the increase in unemployment. He referred to illiteracy in rural areas, the low literacy rate in rural areas and the ignorance of peasants who live in terrible conditions as a result of subsistence farming. causes. At least he criticizes them for not being interested in studying in their free time from agriculture, for spending their lives idle, and for losing themselves to make more money from science. Thus, Ibrat implies that the situation of farmers is getting worse and worse and that they need to further strengthen their entrepreneurship through science. Ibrat considers the creation of the food industry as another economic problem and proposes to build sugar and tea plants here. Therefore, given the special role of paper production in the development of the

country's industry, Is'hakhon said that in our cities there is a great need for paperwork, everything is ready, it would be good to have a paper mill suitable for large-scale production. Also, it is possible to use and build a factory throughout the year, given that such a factory was in Kokand and has now ceased to operate.

The brochure also addresses the production of light industry as a developing industry in the country. He noted that during this period, light industry goods were produced in the country, but these industrial goods, including shoes, carpets, mats and shawls, were expensive because they were made manually, and that people would buy more imported factory goods. explains that it is necessary to establish the development of factory products and that there are all possibilities for this. He repeatedly mentions that the first step is to gain knowledge. [1, p. 117]

Ibrat also expressed its opinion on the need to establish a mining industry in the country. In particular, it is proposed to ensure the country's economy with the production and sale of products in accordance with foreign requirements by developing these fields, as well as to present the country to the world. The abundance of deposits of gold, silver, copper, iron, cast iron and lead, non-ferrous metals in our mountains admits that if these deposits are not processed, the state will suffer greatly. For example, he writes about medicinal plants in the country, and Afghan and Indian doctors always take us from the mountains. We need to dig more drugs. [1, p. 128] With the introduction of the above-mentioned industries, if we produce them, our cities will join and be among the big cities. These were cultural samples familiar with these objects in other cities. He emphasizes that this is what needs to be done, that it is time to try them.



Ibrat also drew attention to the spiritual foundations of the country's development, emphasizing the need for scientific, educational and cultural work in the socio-economic, spiritual and cultural life of the country, and created a unique concept in this regard. The model brochure focuses on primary education as the primary source of knowledge, and as long as science finds culture, science remains with the school. Without school, the whole world would be horrified, everything would be destroyed, work would be lost. [1, p. 129]

He will support the expansion of schools in the country, the introduction of compulsory education. He concludes that Turkestanis can participate widely in school only through compulsory education. Ibrat summarized his opinion, concluding that without a school there would be no culture in the world. [1, p. 114]

His thoughts are valuable today. Ibrat believes that it is necessary to try evening agriculture in the summer, open evening schools for farmers who are free in winter, appoint teachers and ensure their literacy during the three-month winter season. In the village, this can be done in two ways - strengthening neighbouring schools and opening evening schools instead of classrooms, reforming the old school, instructing the teacher who teaches in letters and pens, or imam, his own local expenses, food, house - the place could be taken in absentia and taken to different courses. According to him, under this pretext literacy will increase.

Also, there is the idea that culture can flourish only if there are at least ten schools in the village instead of ten, given evening teachers instead of evening meetings, which contributes to the benefits of disseminating

knowledge among people in such ways. [1, p. 133-134]

It should also be noted that at the same time there were heated discussions in the country about the prevention of illiteracy, schools, and education. The writing of this work by Ibrat shows his attitude to these debates and discussions. Evening schools organized according to his idea lasted until the last days. In the brochure, given the establishment of a girls' school based on national customs and traditions in villages, this may be a little more difficult and then explain the reasons for this. it takes at least fifty years for that regret to disappear. [1, p. 135]

For example, he hoped that in order to attract more women and girls to school for girls as soon as possible, it was necessary to use literate rural nurses in order to "in five to ten years... in each village five to ten teachers were ready. " Noting that more female teachers should be involved, she considered it the most convenient way to educate girls. It is clear that Is'hakhon was a supporter of the active participation of women, who form the basis of the nation, in public life. In the brochure, Ibrat puts forward the idea of creating vocational schools as a necessary scientific institution for introducing products in factories and factories. Why were professional schools needed during this period? He needs personnel at small industries, small enterprises, factories and factories in the country. Therefore, Ibrat believes that they need a vocational school and a chemical, medical, engineering, business. [1, page 136]

Is'hakhon believes that the country's need for personnel in the industrial sector can be met through the creation of vocational schools. Therefore, Ibrat's thoughts on industrial production, which is one of the sectors of the economy, implying that in order to carry out

this work, it is necessary to first create local higher education institutions. Because at that time only in Tashkent in Central Asia Semenov A.A. The organization was the Central Asian State University, founded in the fall of 1920 [13]. We see the implementation of this idea of higher education on the example of creating higher educational institutions in Ferghana, Andijan, Namangan, Samarkand, Jizak, Karshi and Urgench. The play also says about higher education institutions: "There is hope that more students will enter if higher education courses are opened in our cities. Studying abroad is more difficult. He reads in front of his parents instead, and this will happen, inshallah "[1, p. 118]

This indicates that Is'hakhon cares about the training necessary for the development of the country. The only way to solve this problem is to educate students and then place them on the spot. To do this, he says, the government needs to keep pace with education, send students to courses, replace those who came from them and then develop culture. It is clear from these ideas that Ibrat believes that for the development of the country, first of all, it is necessary to eradicate illiteracy and ignorance. He argues that the development of a nation-state can be achieved only when among our people there are educated national intellectuals who know the basics of science and technology.

The author also puts forward the idea of the need for research institutes, believing that if master chemists extract ore, gold, silver, copper, iron, cast iron, lead, medicines and paints from stones, then our culture will be improved. experts believe that this can only be done based on the results of joint scientific discoveries [1, p. 118-119] The author not only explains the need for schools and universities, education is the first problem to be solved, but

also measures to create these schools, the problem of financing, as well as the equipment necessary for schools. research institutes emphasize that the state should be the main reformer in organizing this work in evening schools. Therefore, all people now know what science is, and the actions of our government must take good steps. But you should continue, the unemployed child will not be a scientist. If our education department and schools had followed this path, we would have entered the culture in ten years - [1, p. 134-135]

The brochure also mentions the opening of adult schools in rural areas, and Ibrat calls for the rejection of the method of waiting for funding from the government. This would help school and education, even if the efforts of those wishing to study in organizing these events themselves, he writes. The questions raised in the brochure formed the spiritual basis of the young state, which at one time declared independence, and are closely related to today's reforms.

Ibrat also addresses the problem of state supplies to the brochure and recognizes that it learns from the experience of foreign countries when creating them. In this case, referring to the experience of foreign engineering firms, in the cities they saw, the government had a construction court in which engineers built the building in accordance with the application filed by people and paid the costs in accordance with the rules. Engineers calculate the costs of the application and inform the landlord, who then, with his consent, pays the rent for several years only after the three-room houses are built within a month and even running water will be on the top floor. This justification assumes that the government receives money from buildings and that the state budget is large within the city through which its finances are paid [1, p. 132] At the

same time, Ibrat calls on our country to learn from the experience of businessmen and entrepreneurs of foreign companies in doing business. In his work, the author emphasizes the need to pay attention to publishing. "Given Ferghana's abundance of superstitions," he writes, "we had to print and distribute three or four books a year." But none. The weekly school required at least one magazine and brochure. This would serve to spread science by criticizing things that do not fit into the scale of the same mind. It was useful to progressive elders and teachers as a model of culture, and advertisements were published there. We will have a way, there are works useful to the people that will leave to those who come after us "[1, p. 138] He believes that these ideas cannot make progress unless the world's scientific and technological advances are mastered, fully understood and acted upon.

Ibrat's work in the field of culture and development was reflected in the press movement, and, like many progressive Jadids, he praised the role of the newspaper in the rapid dissemination of educational and cultural news, and in 1913 asked the government to publish "Altijoral-Namangan" under the leadership of "Matbai Is'haki". This was reported by the newspaper "Vaqt" which is published in Ufa in Central Asia and in the Turkic world as a whole: "Namangan. Judge Is'hakhon filed an application for publication of the newspaper "Altijoral-Namangan". We sincerely wish you success. "[14] In conclusion, he lists a number of his works on science, education and culture, development. In particular:... " the benefits of new works for the people and school, such as: "Tarihi Farg'onai umroni", a poem, "Tarihi hurriyat", "Mezon ul-zamon", "Lug'ati sitta-al-sina", "Jome ul-hutut", "Qo'rboshilar zamoni", "Tarihi madaniat". These are all national books. Nevertheless, "Devoni Ibrat" is a collection of

historical poems that have been collected for more than thirty years, most of which are historical, national poems and moral criticism.

These are all national books. However, the "Devoni Ibrat" gazelle is a collection of historical poems that have been collected over thirty years, most of which are historical, national poems and moral criticism, a collection of gazelles about our events that have not yet been published or published. I am currently interested in the translation of the book of Arabic medicine "Tazkirai Suvaiddo" into Turkish. The work of "Tarjimai holim" was ready. This is a good historical story about travelling to Afghanistan, India, Arabia. [1, p. 139]

In addition, the pamphlet tells about the work "Jome ul hutut", published in 1912 by "Matbaai ishaqiya". ... "This behaviour was the history of the ancients. Two thousand copies were printed and remained in the printing house. [12] Now we have less. They ask a lot of people, but we say no. "

The "Mezon ul-zamon" Is'hakhon is also mentioned in the "Historical Culture" of Ibrat, which does not indicate the time of its writing, but is listed among other works, such as "Benefits for the People and School" [1, p. 139] These works of Ibrat have scientific value as a historical heritage. Ibrat also briefly talks about his work "The History of Freedom", which is not yet in the work. According to him, this work was poetic and was written before the overthrow of the old government and the formation of a new government. For example, its content is propaganda about culture. In the author's work, instead of gaining freedom at that time, the rich Namangan quarrelled with each other, and when there was a serious and long-standing conflict, they did not work for autonomy. This work takes 45 pages and gives good information to everyone who wants to

know the events that took place before the revolution. From this opinion of the author, some information can be obtained about the work "Tarixi hurriyat" and its content. In his "History and Culture", Ibrat briefly describes the bloody clashes between the independence movement and the government in the Ferghana Valley since 1918. He first describes his attitude to history as follows: "History tells the story every time." [1, p. 123-124]

When considering works written in the 1920s, it is necessary to recognize that the dominant communist ideology, although not completely rooted in the literature of that period, in a sense had a serious influence. The country's intelligentsia believed in the original promises and slogans of the Soviets. Therefore, although Is'hakhon admits in the play that the independence movement began a year after the revolution, he does not give any information about the bloodshed of Kokand autonomy. [1, p. 124-125]

Is'hakhon, in turn, dwells in detail on the war waged by the government against independence fighters. From his thoughts, it is clear that Ibrat believed in the promises that he made in the slogans of the Soviets, which in some sense seriously influenced his worldview. This was reflected in his later activities in Soviet schools. The author admits that he detailed these facts in the work "Frog Age" and writes that "let them read our work, of course, they will remain satisfied" [1, p. 126-127] From this, it can be seen that this work contains events related to the history of independence of the Ferghana Valley in 1918-1924, and these two books have not survived to this day.

## CONCLUSION

In conclusion, Ibrat's work "Historical Culture" is devoted to the problem of creating both the material and spiritual basis of an independent

state. In the brochure, Ibrat states that the material basis of state development is the development of local industry, the construction of irrigation facilities, agriculture in the country, domestic and foreign trade, minerals in the country, the organization of their processing, the production of finished products instead of raw materials. mentions problems. The question is raised of the creation of schools, including women's, evening, multidisciplinary vocational schools, universities, research institutes, publishing houses, firms of various specialties, including engineering, as the spiritual basis for the development of the state. In particular, he urges our people to adopt the experience of businessmen and entrepreneurs of foreign companies.

In February 1926, the first congress of education and culture workers of the republic was held in Samarkand, to which Is'hakhon Ibrat from Namangan was sent as a deputy. This congress aims at educators and cultural figures to open new schools and involve women in public, public and educational work. Since the issue of education is the most important issue on the agenda, Is'hakhon draws attention to this in his book "Historical Culture", written this year. In the brochure, Ibrat discusses science, technology, women's problems, attitudes to science and ways to implement them in the country [1, p. 136-137] The difference between the book and other historical works is that the author does not use works or any documents written before him as a historical source, but sets out his point of view based on what he saw and knew as a person of that period. His approach to problems was based on a comparison of the lives of the peoples of the West and the East. Thus, the author's foreign travel plays an important role in his social life, his efforts to raise the standard of living and the appearance



of his works. Since the brochure was devoted to the problems of creating the foundations of a national state as the first attempt to introduce it in the country, the pursuit of nationalism was condemned as nationalism and could not get out of the control of the Soviet regime for 20 years. The fact that since the 1920s, "indifference to the intelligentsia of indigenous peoples, restriction of them from various social occupations, placing ideological labels as non-intellectual, harmful" and the repression of Ibrat under the label of the enemy of the people - all this reveals the essence of Soviet politics [15].

Today is preparing for the publication of Is'hakhan's Historical Culture. No wonder it'll be sold out soon.

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## About Debye Temperature In Crystals At $T = 0$ K

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### ABSTRACT

Based on the analysis of the Debye function, which relates the Debye temperature  $\theta_D$  and the measured temperature of the object  $T$ , it is shown that the Debye temperature of crystals decreases with temperature decreasing from room temperature to absolute zero.

It is shown that the Debye temperature at temperature  $T = 0$  K does not depend on the Debye function, but depends only on the mass of the atom and the amplitude of the zero-point oscillations. Based on the analysis of the thermal crystal lattice oscillations Debye theory basic assumptions and experimental data accumulated for recent years, a formula is proposed that relates the Debye temperature at moderate temperatures  $\theta_D$  and at absolute zero temperature ( $T = 0$  K)  $\theta_0$ . It is shown that the calculated Debye temperature  $\theta_0$  at the absolute zero temperature according to the proposed formula in the range from  $\sim 2$  to  $\sim 13$  % coincides with the experimental data taken from literature for a number of substances of different classes.

### KEYWORDS

Thermal crystal lattice oscillations, Debye temperature, Debye theory, moderate temperatures, absolute zero temperature.

### INTRODUCTION

The Debye temperature  $\theta_D$  is one of the important characteristics of a crystal characterizing its thermo-physical and

strength properties. To successfully use these characteristics in practice and manage them based on the scientifically justified methods, it

is important to know the nature and thermal vibrations mechanisms of atoms. In the theory of thermal vibrations of atoms in crystals, the Debye temperature  $\theta_D$  is assumed to be almost constant (in the limit  $\sim 10\%$  for a given substance) at temperatures 300-0 K ( $T < \theta_D$ ) [1,2,3]. Apparently, at that period of time this was probably due to lacking relevant experimental data on low-temperature dependence of the Debye temperature. Recent experimental data show that the Debye temperature decreases from 22% to 40% for various compounds, such as TiC [4]  $Zr_2Nb_{1-x}C_xN_y$  [5] and gallium monochalcogenides [6] in the temperature range 300-0 K. In some recent publications,  $\theta_0$  is given a value greater than  $\theta_D$  [7]. Thus, the question if Debye temperature either decreases or increases or remains constant with decrease in the temperature of the matter to absolute zero is still open. Is it possible to find an unambiguous answer to this question? Is it possible to find an expression connecting the Debye temperatures at high  $\theta_D$  and at cryogenic temperature  $\theta_0$ ? The purpose of this paper is to analyze the nature of the change in the Debye temperature in the temperature range 300-0 K and find an expression relating the Debye temperature at room temperature

$\theta_D$  ( $T=300$  K) and at absolute zero temperature ( $T=0$  K)  $\theta_0$ .

## THEORETICAL ANALYSIS

According to Debye's theory of atoms thermal oscillations in a crystal lattice, the thermal oscillations of atoms in crystals are considered to be similar to the thermal excitation of quasiparticles – phonons, like to thermal excitation of photons. In this model, vibration energy of the crystal lattice, that is, the phonon energy should be considered a quantized quantity. In experiment, energy quantization of elastic waves in lattice is indeed manifested when these waves interact with X-rays and neutrons. At these interaction, the energy and impulse of X-rays and neutrons change so that these changes correspond exactly to the occurrence or absorption of one or more phonons [8, 9].

According to the X-ray and neutron scattering theory, the relationship between the amplitude of thermal oscillations of atoms in a crystal and the Debye temperature is determined by the following transcendental equation [8, 9]:

$$\theta_D = \frac{9h^2}{4\pi^2 \cdot k \cdot m \cdot u^2} \cdot \left[ \frac{\Phi(x)}{x} + \frac{1}{4} \right], \quad (1)$$

where  $\theta_D$  is the Debye temperature,  $u$  is the mean square amplitude of the thermal oscillations of atoms in the element (or atomic complex in alloys) conditioned by thermal oscillations of atoms,  $h$  is the Planck constant,  $k$  is the Boltzmann constant,  $m$  is the average atomic mass in the element (or atomic

complex in the alloys),  $x = \theta_D/T$  is the ratio of the Debye temperature to the measured temperature  $T$  (in K), and  $\Phi(x)$  is the tabulated Debye function, which is known from the specific heat theory and is defined as follows:

$$\Phi(x) = \frac{1}{x} \int_0^x \frac{\xi d\xi}{\lambda^\xi - 1}, \quad (2)$$

where  $\xi = \frac{h\omega}{kT}$ ,  $\omega$ -cyclic frequency of thermal oscillations. Let us analyze formula (1) in the absence of phase transformations at cryogenic temperatures. (In the case of phase transformations, the thermo physical characteristics of the matter may undergo an abnormal transformation). Equation (1) includes two variables that depend on the temperature: the Debye function and the mean square amplitude of the thermal

vibrations of atoms  $\overline{u^2}$ . According to the properties of the Debye function  $\Phi(x)$  [9], the ratio  $\Phi(x)/x$  in the expression (1) decreases with decreasing temperature  $T$  (with

increasing  $x = \theta_D/T$ ), and as  $T$  approaches absolute zero ( $T \rightarrow 0$  K), the ratio  $\Phi(x)/x$  highly rapidly (exponentially) approaches zero (Fig.1). This should lead to a decrease in the Debye temperature  $\theta_D$  at  $T \rightarrow 0$  K. Although,

as the temperature decreases  $\overline{u^2}$  also decreases, which, according to (1), should lead to an increase in  $\theta_D$ . However,  $\overline{u^2}$  decreases much slower than the Debye function. If the amplitude of thermal oscillations of atoms is usually 5-7% of the mean atomic distance at room temperature, then at  $T = 0$  K, the amplitude of zero-point oscillations is 2-3% of the average atomic distance.

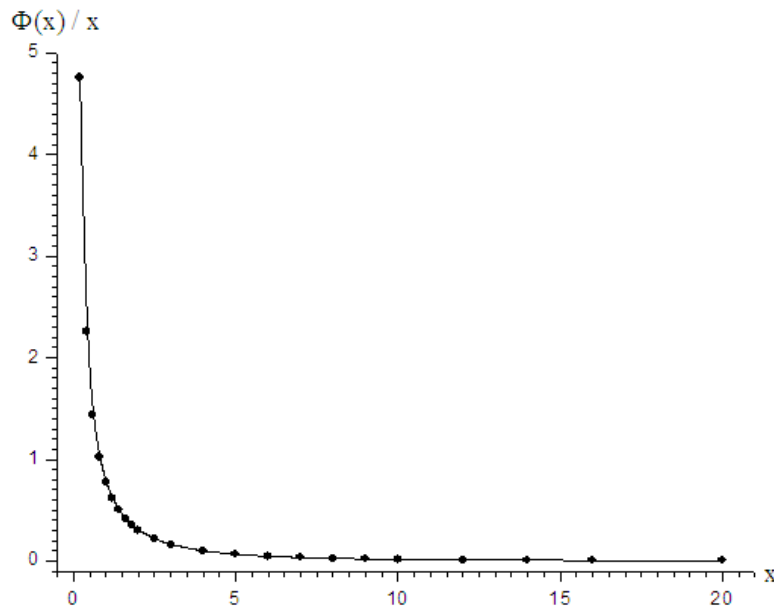


Fig. 1. Dependence of  $\Phi(x)/x$  function on  $x$  (according to the data from [9]).

Therefore, one can see that decrease of in the temperature interval 300 - 0 K is not as big as the decrease in the expression for  $\Phi(x)/x$ , which decreases several times sharply with decreasing temperature in the interval 300 - 0

K. Thus, analysis of formula (1), which relates the Debye temperatures and the mean square amplitude of the thermal oscillations of atoms through the Debye function, makes it possible to state that at cryogenic temperature with

the Debye temperature changing from  $\theta_0$  to  $\theta$ , a strong decrease in the Debye function plays determining role leading to decrease in the temperature.

On the other hand, this conclusion can be also drawn by analyzing formulas (1) and (2). Let's

calculate  $\Phi(x)$  function at the temperature  $T = 0$  K. At  $T = 0$  K, the integral in expression (2) has the following form:

$$\Phi(x) = \frac{1}{x} \int_0^\infty \frac{\xi d\xi}{\lambda^\xi - 1}, \quad (3)$$

By taking into account that the integral (3) is [10]

$$\int_0^\infty \frac{\xi d\xi}{\lambda^\xi - 1} = \frac{\pi^2}{6}.$$

Then from (3) and from the condition  $T = 0$  K one can obtain the following expression:

$$\Phi(x) = \frac{1}{x} \int_0^\infty \frac{\xi d\xi}{\lambda^\xi - 1} = \frac{T}{\theta} \times \frac{\pi^2}{6} = 0 \quad (4)$$

According to the condition (4) and expression (1), at  $T = 0$  K for the Debye temperature one can obtain the following expression:

$$\theta_0 = \frac{9h^2}{4\pi^2 \cdot k \cdot m \cdot \overline{u_0^2}} \cdot \left( \frac{\Phi(x)}{x} + \frac{1}{4} \right)_{T=0} = \frac{9h^2}{4\pi^2 \cdot k \cdot m \cdot \overline{u_0^2}} \cdot \frac{1}{4} = \frac{9h^2}{16\pi^2 \cdot k \cdot m \cdot \overline{u_0^2}}. \quad (5)$$

It is seen from expression (5) that at the temperature  $T = 0$  K, the Debye temperature will be determined by the mean square displacement of the atom and the mass of the atom. This means that at the temperature  $T = 0$  K, the Debye temperature  $\theta_0$  does not depend on the Debye function, that is, on the

phonon spectrum, but depends only on the mass of the atom and the mean square amplitude of zero-point oscillations of atoms (on the energy of zero-point oscillations).

Thus, theoretical analysis shows that the Debye temperature decreases with decreasing temperature below room temperature, and at temperature  $T = 0$  K does not depend on the Debye function (thermal vibration spectrum), but depends only on the mass of the atom and the amplitude of zero-point oscillations (zero-point energy). Of course, this assertion is correct if there are no phase transitions in the crystal with decreasing temperature. Let's now proceed to find the connection between the Debye temperatures at room temperature and at absolute zero.

## RESULTS AND DISCUSSION

According to the theory of crystal lattice oscillations, the energy of a normal lattice oscillation is equal to the energy of a quantum oscillator with a mass equal to the mass of vibrating atoms, and its frequency is equal to the frequency of the normal oscillations [1]. If the crystal consists of  $N$  atoms making bound oscillations, the total energy of the crystal will be equal to the sum of the energy of  $3N$  independent normal linear harmonic oscillators. The lattice thermal oscillations energy quantum or a quantum oscillator is called phonon.

It is known that the energy of one quantum oscillator or a phonon is quantized and described by the following formula [1]:

$$\varepsilon_n = (n + 1/2)h\nu_0, \quad (6)$$

where  $\nu_0$  is zero oscillations frequency of oscillator,  $n$  – is quantum number that takes integer values ( $n = 0, 1, 2, \dots$ ) and characterizes degree of thermal excitation of oscillator. The energy corresponding to the value  $n = 0$  is

called the zero-point energy  $\varepsilon_0 = (1/2)h\nu_0$ , which is not thermal energy. It is appropriate to note here that according to some educational literature (for example, in [11]), the zero-vibration energy of one phonon is determined by the expression

$$\varepsilon_0 = \frac{9\eta}{8}\omega_{\max} = \frac{9h}{8}\nu_{\max},$$

where  $\omega_{\max}$  is the maximum frequency (Debye frequency) of thermal oscillations excited at a temperature called the Debye temperature  $T = \theta$ . However, this expression is incorrect. The incorrectness of this expression is that the energy of zero-point oscillations cannot be determined by the maximum frequency  $\omega_D = \omega_{\max}$ . It should be determined by the frequency of zero-point oscillations  $\omega_0$ , which lies between the frequencies 0 and  $\omega_{\max}$ . Zero oscillation does not carry and does not transmit energy. It is not an elastic vibration, and is determined by the quantum nature of the atoms. The energy of zero-point oscillations of a crystal is constant and must be additively added to the thermal energy of the lattice. The fallacy of expression (2) follows from the fact that, first, when determining the total crystal energy as an integral sum of the thermal oscillations of individual oscillators, the expression of zero-point oscillations  $h\omega_0/2$  also contribute to the integral [1-3, 11] as a variable. This cannot be done, since it does not depend on temperature on temperature and is a constant value for a given crystal. Secondly, for the lower boundary of integration, which determines the total energy of thermal oscillations of oscillators, they take not the frequency of zero oscillations  $\omega_0$ , but the frequency 0, which is also not correct.

Zero-point energy corresponds to zero-point oscillations, which do not depend on the temperature of the crystal and do not decay even at  $T = 0$  K. These oscillations do not carry and do not transmit thermal energy.

The existence of zero-point vibrations is related to the uncertainty relation of quantum mechanics, according to which,  $\Delta x \times \Delta p_x \geq \hbar/2$ . From this relation it follows that an exact definition of coordinate of an oscillating atom in the space ( $x \rightarrow 0$ ) causes a large uncertainty in its momentum, and, accordingly, in its kinetic energy. On the other hand, an increase in the particle

coordinate  $\frac{k\Delta x^2}{2}$  determination region

would lead to an increase in the potential energy, which is also not energetically favorable. Consequently, the zero-point oscillations energy is the minimum value of energy that an atom can have. Thus, atoms in a crystal at a temperature  $T = 0$  K oscillate with zero frequency corresponding to zero energy.

According to the existing thermal lattice vibrations theory, at certain temperature  $T = \theta_D$ , called the Debye

temperature, all possible oscillations in a crystal with frequencies from  $\nu_0$  to  $\nu_{max}$  are excited [1, 2]. This temperature is called the Debye temperature. The energy quantum of one quantum oscillator corresponding to a given temperature and frequency  $\nu_{max}$  can be defined as  $\varepsilon_{max} = h\nu_{max}$ .  $\nu_{max}$  is the frequency that corresponds to the imaginary wavelength  $\lambda_{min} = 2a$  ( $a$  – is lattice period) and creates standing waves in the lattice. At frequencies  $\nu < \nu_{max}$ , it is difficult for standing waves to appear. They are weakly excited and rapidly damped. Waves with wavelength  $\lambda > \lambda_{min} = 2a$  become stable after excitation at the frequency  $\nu_{max}$  [2]. Consequently, at the temperature  $T = \theta_D$ , at the first energy level ( $n = 1$ ), the energy of one phonon with frequency  $\nu = \nu_{max}$  will be determined according to the expression (6), as follows [12]:

$$\varepsilon_{max} = h\nu_{max} = (1 + 1/2)h\nu_0 = \frac{3}{2} h\nu_0. \quad (7)$$

The frequency  $\nu_{max}$  can be determined through the Debye temperature from the following condition [1]:

$$k\theta_D = \hbar\omega_{max} = h\nu_{max}. \quad (8)$$

It follows that

$$\nu_{max} = \frac{k}{h} \theta_D. \quad (9)$$



Similarly to expression (9), for zero-point oscillations frequency one can write that

$$\nu_0 = \frac{k}{h} \theta_0. \quad (10)$$

where  $\theta_0$  is the Debye temperature corresponding to the zero-point oscillations frequency of the atoms. From the expressions (7), (9) and (10) it follows that

$$\theta_0 = \frac{2}{3} \theta_D. \quad (11)$$

Indeed, such relation can be supported by experimental data described in recent Table 1 presents published data on determination of the Debye temperature at room and cryogenic temperatures  $T_1$  and  $T_2$  ( $T_1=0$  K and  $T_2=78$  K), respectively. Because of the proximity of  $T_1$  and  $T_2$ , it is observed that  $\theta_0(T_1) \approx \theta_0(T_2)$  for compounds of different classes (for semiconductors, refractory binary and multicomponent interstitial alloys) and tin and data obtained by formula (11).

## CONCLUSION

Formula that relates the Debye temperature and the mean-square amplitude of thermal oscillations of atoms through the Debye function is analyzed. It is shown that when the temperature drops below room temperature, despite the decrease in the amplitude of thermal oscillations of atoms in a lattice, which is inversely proportional to the Debye temperature, a strong decrease in the Debye function plays determining role, which in turn leads to a decrease in temperature.

publications.

Based on the analysis the main principles of the Debye theory of thermal lattice oscillations and of the theory of X-ray and thermal neutron scattering by real crystals and the recently accumulated experimental data, the formula is proposed that relates Debye temperatures at moderate temperatures (2D) and at temperature  $T = 0$  K (20). Note that this reasoning is valid only when there are no phase transitions at cryogenic temperatures. It is shown that the value  $\theta_0(\text{calc})$  calculated via the proposed formula (11) in the range from 2 to 13 % coincide with the experimental data for a number of substances of different classes.

It is shown that the Debye temperature of a crystal at the absolute zero temperature does not depend on the Debye function (the frequency spectrum of thermal oscillations) but depends only on an atomic mass and root-mean-square amplitude of zero oscillations of atoms in a lattice.

**Table 1. Debye temperature  $\theta_D$  at room and cryogenic temperatures  $\theta_0$  ( $\theta_0(\text{exp})$ ) and  $\theta_0(\text{calc})$  – experimental and calculated data, respectively, temperature in K).**

№	Substance	$\theta_D$ , $T = 300$ K	$\theta_0$ (exp.)		$\theta_0$ (calc.)	$\Delta\theta$ o	$\Delta\theta_0/\theta_{0ca}$ lc., %
			$T = 0$ K	$T = 78$ K			
1	GaS	454 [6]*	263 [6]*		302	39	12.9
2	GaTe	267 [6]*	165 [6]*		177	12	6.7
3	TiC <sub>0.97</sub>	860 [4] **		520 [4] **	573	53	9.2
4	TiC <sub>0.88</sub>	700 [4] **		480 [4] **	467	13	2.8
5	TiC <sub>0.70</sub>	590 [4] **		440 [4] **	393	47	11.9
6	Zr <sub>z</sub> Nb <sub>1-z</sub> C <sub>x</sub> N <sub>y</sub>	710 [5]*	462 [5]*		473	11	2.3
7	$\alpha$ -Sn (gray)	230 [13]***	148 [13]***		153	5	3.3

Note.  $\theta_0$  (exp.) is experimentally;  $\theta_0$  (calc.) is calculated by expression (6);  $\Delta\theta_0 = \theta_0(\text{exp.}) - \theta_0(\text{calc.})$ . The Debye temperatures are determined by: \* - calculations from the heat capacity data, \*\* - neutron diffraction, \*\*\* - calculations of the Mossbauer spectrum thermal factor, given in [13].

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## Lithographs Of Alisher Nava'i's Works Kept In The Museum Of Literature

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Journal Website:  
<http://usajournalshub.com/index.php/tajir>

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### ABSTRACT

Fund of manuscripts of the State Museum of Literature. Alisher Nava'i of the Academy of Sciences of the Republic of Uzbekistan contains many ancient sources and lithographs. Today, a number of our scientists are working on the creation of an electronic catalog of lithographs kept in the museum, and preparation for publication. Most of the lithographs are works of Nava'i. The article scientifically describes 8 lithographs of works by Alisher Nava'i, stored in the State Museum of Literature of the Academy of Sciences of the Republic of Uzbekistan. This article was written within the framework of the grant "Creation and preparation for publication of an electronic catalog of lithographs stored in the State Museum of Literature named after Alisher Nava'i". The descriptions of the grant participants M. Rashidova and O. Alimov were used.

### KEYWORDS

Alisher Nava'i, lithograph, publisher, copy, scientific description, text, table, typography, Diwan, cover.

### INTRODUCTION

Thousands of ancient written monuments that replenish the treasures of the world reflect the past culture of each nation. They contain a lot of information about the rich spiritual and cultural heritage of the people, ancient traditions and beliefs. The study of the rich

cultural heritage left by our ancestors, its transfer to future generations remains an important problem not only in our country, but also in the eyes of scientists around the world. The President's decree "On measures to further improve the system of preservation,

research and popularization of ancient written sources” forms a new stage in the study of our written monuments. [1. 1] According to the resolution, “monitoring the state of preservation and repair of manuscripts, lithographs and historical documents in Arabic script stored in various organizations of the Republic of Uzbekistan and the creation of their electronic database” is one of the urgent tasks today.

## MATERIALS & METHODS

The manuscript collection of the State Literary Museum named after Alisher Nava'i of the Academy of Sciences of the Republic of Uzbekistan also contains many ancient sources and lithographic works. Currently, the museum is working on a scientific project PD-20170920167 “Creation and preparation for publication of an electronic catalog of lithographs stored in the State Literary Museum named after Alisher Nava'i” for 2018-2020. This research will be prepared in Uzbek and will be available to the general scientific community through the museum's website. It includes descriptions of 500 lithographic works in Arabic, Persian and Turkish, divided into languages and themes. The main task of the article is to give a scientific description of the lithographic editions of Alisher Nava'i's works. This serves as a source for source scholars, textologists, literary critics, orientalis and the general public interested in the written monuments preserved in the manuscript collections of our country. Descriptive, comparative-historical, systematic and statistical methods were widely used to cover the topic of the article.

## RESULTS & DISCUSSION

The museum has kept about 1,500 lithographs. Among them, the works of Hazrat Alisher Nava'i occupy a significant place. Out of a total of 72 lithographs of Nava'i's works kept in the fund, 21 are photocopies from rare

manuscripts.

The lithograph number 769 consists of the work “Muhokamat ul-lug'atayn”. Written by the publisher himself. A work of discussion of Persian with Turkish language. In it, the richness of the Turkic language proves that while a word is used in the Persian language to express different levels of meaning compared to the Persian language, there is a separate word in the Turkish language to express each level.

Beginning (after printing): الله الحمد

و شرف المذلوقات ساز علی میز الان سان

The end: اندینگ روحوم نمئی و ق یلغای لار یاد  
ق سدلغای لار شاد ب یله

A preface is given before starting work. 3 pages. It contains information about the life and work of Alisher Nava'i from “Qomusi A'lam”.

The text is printed in black ink, without a table, on the sketch, 20 lines per page, in the average Nasta'liq letter. Pages are numbered. The book is the second edition and was published in Kokand by Il Voynir Porovoy. 1916y. December 20.

Cardboard cover glued to plain unadorned paper with a dark brown tint.

Disadvantage: The text is copied from the cover, pasted on a newspaper sheet. The last pages have inked areas. 41 pages. Size: 13x20.5 cm.

Among the lithographs of the works of Hazrat Nava'i, his devons are very common. Several of them are on display.

The copy on display No. 111 is called “Diwani Mavloni Amir Nava'i”. A collection of poems by Alisher Nava'i “G'aroyib us-sig'ar”.

The text is written in two columns in the form of a Nasta'liq letter (1324 AH).

Beginning (after printing):

صدا چ یق تی دی م جام دیب ک و ر دامی عکسین یار  
الهدا انوار ال کاس شمس عکس من اشرق ت

The end:

ک یم ساقی ای عذاب لار ای تسه اند کلامی تا  
ساقی ای خراب اول سه مست د شردا

The title page and the last page are “Jubilee Library”. Committee Nava’i № 316 ”, “Institute of Manuscripts Printed Books № 111 ” and “Manuscript Fund of Nava’i Museum of Literature - inv. 111 ” are sealed.

Cardboard cover glued to paper with a picture of simple patterns. On the cover there are papers with the inscription “111” G’aroyib us-sig’ar “Diwani 316” in Arabic script.

Book محمد بن ظفر ملا Printed by Mullo Zafar bin Bek Muhammad at the “V.M.Ilin” printing house in Tashkent.

Pink colored cardboard cover. 144 pages (1-144). Size: 14x23 cm.

Another national cabinet on display is stored under inventory number 47. The collection of poems by Alisher Nava’i was published in 1900 in Tashkent. 166 pages.

The text is written in two columns in the form of a Nasta’liq letter.

Beginning (after printing):

صدا چي قتي ديم جام ديب ك وردا مي عكس دين يار  
الهدا انوار ال كاس شمس عكس من اشرقت

The end:

ك يم ساقی ای عذاب لاری ت سه اند کلامی تا  
ساقی ای خراب اول سه مست حشر دا

The title page has the stamps “Library Jubilee Committee Nava’i - 125 k” and “Manuscript Fund of the Nava’i Museum of Literature - inv 47”. Printed in 1900 by the Turkestan Military District Printing House in Tashkent. Modern faux leather cover in black. Dimensions: 14.5x23 cm.

Nava’i Diwan No. 116 is also on display. This lithograph begins with the verse, “O navbahor orazing subhiga janparvar havo.”

The text is copied into the table in 2 columns in the sample of the Nasta’liq letter.

Beginning:

مړنك بړلابړك پوزتاپ پېب ل بل و كل اندين  
جان صديغه عارضديك نوپهار اي نوا  
هوا بړور

The end:

كرم هوت عالي الله ب هون ت مت

The title page has the stamps “Library Jubilee Committee Nava’i” and “Manuscript Fund of the Nava’i Museum of Literature - inv 116”. Printed by Turkestanskiy Kuryer printing house in Tashkent. Cardboard cover glued to paper with a picture of simple patterns. On the cover there is an Arabic spelling “116 Diwani Amir Alisher Nava’i 336” and “EU. 19 2 - inv № 2 ”. Inside the cover are two pages of another printed book. Disadvantage: the book is separated from the cover. 167 pages. Size: 17x27 cm.

Diwan No. 46 consists of ghazals, tarjiband, muqatta’at, mufradots of Nava’i. Diwan begins with the following ghazal of “Badoyi ul-vasat” (Middle Ages).

Beginning (after printing):

مړنك بړلابړك پوزتاپ پېب ل بل و كل اندين  
پړور جان صديغه عارضديك نوپهار اي نوا  
هوا  
طوبی هوا سووتاپ ار هودم آهيدن واشك عشاق  
ن يگاك يم گ ياهی ك ويونك دور سدره شاخ

The end:

ت كلف ل يغ آسوده جاذ غادور تركی اي تيك  
ل يغ سوده غاف رتن اي رور  
ع ي بی ك يشی زنهار ع ي ب يذ كنی اوز اي لات امل  
اظهار ق يلمای وزی كا

The text is written in 2 columns in the example of the Nasta’liq letter.

At the end of the book, in the “Hatimat ut-tab” section, the name of the secretary, the date and place of copying are mentioned. Kotib - Shah Murad اوغلی نهعت شاه ملا مراد شاه - Kotib Mullo Shah Ne’mat oglu, Time and place of relocation - 29th day of Ramadan, 1304 AH, Tashkent.

The title page and the last page contain “Institute of Manuscripts - Printed Books 46” and “Manuscript Fund of Nava’i Museum of Literature inv. № 46 ” are available. Rahimhoja eshan ibn Alikhoja eshan was probably published in Lakhtin printing house in Tashkent in 1304 AH in the month of Rabi ‘al-Awwal. Pumpkin-colored three-letter



cardboard cover.

Disadvantage: The cover is damaged, the cover is detached from the book, the pages are scattered, torn. 288 pages. Dimensions: 17x26.5 cm.

Another copy of Hazrat Nava'i's office is kept under number 164. The secretary is the son of Shohmurod Mullo Shohne'mat.

Publisher: ای شان علی یخواجه ابن ای شان رحیمخواجه Rahimhoja eshan ibn Alihoja eshan.

Diwan is composed of ghazals, masnavi, rubai and fards.

Beginning:

پ رور صدی فالجان عارضه دینک نوید هار ای هوا

The end:

اوغلی شاهنمعت ملا شاهراد تاشد کندلیک  
الحمد لله تابی سرانجام ای لان قلمی

The text is written in black ink in 15 rows, two columns into a table. Pages are numbered.

The book was published by Loxtin in 1884. 1334 h. printed in the month of "Robe 'ul-Awwal".

Black leather coated cardboard cover.

Disadvantage: The book is separated from the cover, page 1 is separate. The edges of the pages are broken. 277 pages. Dimensions: 16.5x26.5 cm.

Alisher Nava'i's "G'aroyib us-sig'ar" office was published in lithography number 97. The text is written into a table in the form of two columns in the sample of the Nasta'liq letter.

Beginning (after printing):

ذره دین قویاش کیم اندینکدیک اندین قویاش  
ی ناپیدا  
پیدا صد فاندورویوز عالمداکوزک و سیدین زونک  
دوا بولمیش غا خسته کران فاسدین مسیخ  
و سالدی اوزین نسیم یغاک ویدونک سینی پیدا  
تاب تیان

The end:

مطلق فانی کل مقصدام دیدوق توراند کا  
سالك اولماي ين  
ت فراقغه قرا کل آچماق یوق امکانی اندین  
قطره سینمایین

1329 سنة فى الولهب الملك بعون الملك تاب تمت  
25 رمضان شهر فى  
ناظراً يا شعر لكاتبه واستغفر ولد لناظم  
مرحمة يا لله سئل فيه

In the upper right corner of the Kokand silk adventure is a small piece of paper with the Arabic spelling "97 "G'aroyib us-sig'ar"256".

On pages 3 and 128, "Manuscript Fund of the Nava'i Museum of Literature inv. № 97 ", "Institute of Manuscripts - Printed Books 97 "and" Jubilee Library. Committee Nava'i № 256 ".

Black artificial leather coated cardboard cover. Disadvantage: the book has no beginning. 126 pages. Dimensions: 17.5x26.5 cm.

Another 22-volume collection of poems "G'aroyib us-sig'ar" is on display.

Among the lithographs of Alisher Nava'i's works, in addition to the diwans, there are 3 copies of Abdurahmon Jami and Alisher Nava'i's "Chihil Hadith" in Persian and Turkish languages. These copies are kept under numbers 59, 227 and 837.

Copy No. 59 Mawlawi جامی الرحمن عبد  
Abdurahman Jami's "Chihil Hadith" is a Persian and Alisher Nava'i's Turkish translation. It quotes four hadith-based quatrains side by side in Persian and Turkish.

The text is copied into the table in 2 columns in the sample of the Nasta'liq letter. In the first half of the column there is Jami, in the second half there is Nava'i's interpretation.

Beginning (after printing):

انك كاكيم حمدار سال سول يدين رايب لكاق يلدی  
مال خيرك لام  
اول صدیح حدیث هم پ تگوردی ای لکا  
ف صدیح کلام هم ری ول یکه

The end:

جامی نواذی  
در هوکه قچان دورور مؤمن کیم که  
مسلمانای حطه  
آچ بول غای قونشی وتوق اوزه کیم

ک رانمایه ندقدین از باشد  
ن صیب ی تور سه ک راک داغی اندکا  
سیر خ ف ند خویش پ سنددکه نه  
اوماچ وک رک ولاچ اک رخواند ید  
ه سایه سده ک رب نشدند

Title and last page "Institute of Manuscripts - Printed Books 59", "Manuscript Fund of Nava'i Museum of Literature inv. № 59 "are available. Surat al-Fatihah of the Holy Quran is attached to the end of the book. Then page 23 was added again.

The publisher and editor of the newspaper "Tarjimon" غصه پرید سکی بک اسماعیل Ismailbek Gaspirinsky in the Garden Palace (Turkey) from 1309 to 1907 m. printed in.

## CONCLUSION

During these years, not only the works of poets and writers, but also manuscripts and lithographs on history, Islamic philosophy,

mysticism, medicine, geography, astronomy, linguistics and other fields of science occupy a worthy place in the museum fund. They are periodically displayed in the exhibition halls of the museum, arousing the audience's sense of pride in the spiritual wealth created by our people, as well as attracting the attention of domestic and foreign scholars.

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Journal Website:  
<http://usajournalshub.com/index.php/tajir>

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## Systems Of Differential Square Equation Of Volter's Model On Simplex

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### ABSTRACT

Continuous model of Lotka-Volter's on simplex  $S_{m-1}$  is studied in the article. There was determined a relationship between tournament and the system of differential square equation, that describes evolution of genetic systems in Lotka-Volter's model.

### KEYWORDS

System of differential square equation, alternate matrix, transversality, spurs.

### INTRODUCTION

System of differential equation model

$$\dot{x}_k(t) = x_k(t) \left( \sum_{i=1}^m a_{ki} x_i(t) \right), \quad k = \overline{1, m} \quad (1)$$

is named differential equation of Volter's model, where  $|a_{ki}| \leq 1$  and  $a_{ki} = -a_{ik}$ , but  $x_i(t)$  – unknown functions.

Let  $A_m = (a_{ki})_{k,i=1}^m$ ,  $|a_{ki}| \leq 1$ ,  $\forall k, i = \overline{1, m}$  alternate matrix, i.e.  $A_m^T = -A_m$ .

**Definition.** Alternate matrix  $A_m$  is called *transversal*, if all main minors of even order differs from zero.

Obviously that if  $A_m$  – transversal, then  $a_{ki} \neq 0$  on different  $k$  and  $i$ .

Hereinafter we shall consider only transversal alternate matrix, not mentioning word "transversality".

To each alternate matrix

$$A_m = (a_{ki})_{k,i=1}^m$$

We shall match the tournament  $T_m$  like, that there is corresponding matrix of adjacency to it  $signA_m = (sign(a_{ki}))_{k,i=1}^m$  i.e. tops  $k$  and  $i$  connected with arrow coming from  $i$  and  $k$ , if  $a_{ki} > 0$ .

Since  $A_m$  – transversal alternate matrix, Definition is considered to be correct.

**Definition.** Alternate matrix is identified as *transitive (strong)*, if corresponding tournament is *transitive strong* as well. (see No.1).

Alternate matrixes  $A_m^{(1)}$  and  $A_m^{(2)}$  are identified isomorphic, if corresponding tournaments  $T_m^{(1)}$  и  $T_m^{(2)}$  are isomorphic as well.

## THE MAIN FINDINGS AND RESULTS

**The offer 1** [2]. The tournament which corresponds to alternate matrix  $A$  is not strong then and only then, when it accurate to isomorphism has the following model:

$$\begin{pmatrix} A_r & A_{r \times s}^+ \\ A_{s \times r}^- & A_s \end{pmatrix}$$

where  $A_r$  and  $A_s$  alternate matrix, all the elements of the matrix  $A_{r \times s}^+$  positive,  $-(A_{r \times s}^+)^T$ , moreover  $r + s = m$ .

We shall look through the problem of Koshi for the equation (1) with initial condition

$$x(t_0) = (x_1(t_0), x_2(t_0), \dots, x_m(t_0)) \in S^{m-1} \quad (2)$$

Since simplex  $S^{m-1}$  compacted, then decision of the problem of Koshi exists and single in gap  $(-\infty; +\infty)$ . In order to demonstrate that

$$x(t) \in S^{m-1} \text{ when } t \in (-\infty; +\infty)$$

where  $x(t) = (x_1(t), x_2(t), \dots, x_m(t))$  solution of the problem of Koshi, we shall look through the following function  $f: R^m \rightarrow R$ , for any  $x = (x_1, x_2, \dots, x_m) \in R^m$

$$f(x) = \sum_{k=1}^m x_k. \quad (3)$$

This function is named *spur*.

By means of this function it is possible to study several characteristics of solution of differential equation (1).

( i ). Let  $x(t)$  the solution of differential equation (1). Then the following will be fair:

$$f(\dot{x}(t)) = 0$$

In the reality,

$$f(\dot{x}(t)) = \sum_{k=1}^m \left( x_k(t) \left( \sum_{i=1}^m a_{ki} x_i(t) \right) \right) = \sum_{k=1}^m \sum_{i=1}^m a_{ki} x_j(t) x_i(t) = 0$$

So as  $a_{ij} = -a_{ji}$ .

( ii ). Let  $x(t)$  the solution of differential equation (1) with initial condition (2), then

$$f(x(t)) = 1 \text{ for any } t \in (-\infty; +\infty).$$

In the reality, according to ( i ), we'll get

$$\dot{f}(x(t)) = \sum_{k=1}^m \dot{x}_k(t) = f(\dot{x}(t)) = 0.$$

Fromhere

$$f(x(t)) = f(x(t_0)) = \sum_{k=1}^m x_k(t_0) = 1 \quad \text{for any } t \in (-\infty; +\infty).$$

( iii ). Let  $x(t)$  the solution of differential equation (1) with initial condition

$$x(t_0) = (0, x_2(t_0), \dots, x_m(t_0)). \quad (4)$$

Then  $x(t) = (0, x_2(t), \dots, x_m(t))$  for any  $t \in (-\infty; +\infty)$ .

In the reality, we'll look through the solution of the problem of Koshi only comparatively to

unknown function  $x_1(t)$ , considering  $x_i(t)$  – given functions, where  $i = \overline{2, m}$ :

$$\dot{x}_1(t) = x_1(t) \left( \sum_{i=1}^m a_{1i} x_i(t) \right), \quad (5)$$

with initial conditions

$$x_1(t_0) = 0 \quad (6)$$

Since the right part of differential equation (5) satisfies the condition of Lipchitz, then  $x_1(t)$  the solution of the problem of Koshi for differential equation (5) with initial condition (6) exists and single, i.e.  $x_1(t) = 0$  for any  $t \in (-\infty; +\infty)$ .

**Effect 1.** Let  $x(t)$  the solution of differential equation (1) with initial condition (2), then  $x(t) = (x_1(t), x_2(t), \dots, x_m(t)) \in S^{m-1}$  for any  $t \in (-\infty; +\infty)$ .

**Effect 2.** Let  $x(t)$  the solution of differential equation (1) with initial condition  $x(t_0) = (x_1(t_0), x_2(t_0), \dots, x_m(t_0)) \in \text{int } S^{m-1}$ . (7)

Then

$$x(t) = (x_1(t), x_2(t), \dots, x_m(t)) \in \text{int } S^{m-1} \text{ for any } t \in (-\infty; +\infty).$$

Let the matrix be  $A_m = (a_{ki})_{k,i=1}^m$  is not strong and let  $T_m$  – be a tournament, corresponding to a matrix  $A_m$ .

According to the Offer No. 1 we consider, that the matrix  $A_m$  has

$$\begin{pmatrix} A_r & A_{r \times s}^+ \\ A_{s \times r}^- & A_s \end{pmatrix}$$

where  $A_r$  and  $A_s$  – alternate matrixes, all elements of the matrix  $A_{r \times s}^+$  positive and  $A_{s \times r}^- = -(A_{r \times s}^+)^T$ , here  $r + s = m$ . Besides, let's imagine, that  $T_r$  – sub tournament and  $T_s$  – sub tournament  $T_m$  – tournament are considered the tournaments according to alternate matrixes  $A_r$  and  $A_s$ .

**Theorem 1.** Let  $x(t)$  the solution of differential equation (1) with initial condition (7). Then for the free top  $i$  of the tournament  $T_s$  the equation is executed as following  $\lim_{t \rightarrow -\infty} x_i(t) = 0$  and for the free top  $j$  of the tournament  $T_r$  is executed as following  $\lim_{t \rightarrow +\infty} x_j(t) = 0$ .

**Proof.** According to the effect No. 2, we have  $x(t) \in \text{int } S^{m-1}$  for any  $t \in (-\infty; +\infty)$ . Since the matrixes  $A_r$  и  $A_s$  – alternate, then majority solutions of inequality  $A_r x \leq 0$  и  $A_s x \geq 0$ , accordingly in the simplexes  $S^{r-1}$  and  $S^{s-1}$ , is not empty [3].

( i ). Let's consider, that the point  $q = (q_1, q_2, \dots, q_r) \in S^{r-1}$  is considered as a solution of inequity  $A_r x < 0$ . Then the point  $\tilde{q} = (q_1, q_2, \dots, q_r, \underbrace{0, 0, \dots, 0}_s)$  belongs to the simplex  $S^{m-1}$ , here  $r + s = m$ .

It is clear, that the point  $\tilde{q} \in S^{m-1}$  is considered to be the solution of inequity for  $A_m x \leq 0$  besides

$$A_m \tilde{q} = (a_1, a_2, \dots, a_r, a_{r+1}, \dots, a_m),$$

where  $a_i \leq 0$  for any  $i = \overline{1, r}$  and  $a_{r+i} < 0$  for any  $i = \overline{1, s}$ , here  $r + s = m$ .

from the equation (1) we have the following

$$\begin{aligned} \dot{\ln}(x_k(t)) &= \sum_{i=1}^m a_{ki} x_i(t) = (A_m x(t))_k, \\ k &= \overline{1, m} \quad (8) \end{aligned}$$

Let's enter the indication

$$Ln(t) = (\ln(x_1(t)), \ln(x_2(t)), \dots, \ln(x_m(t)))$$

We'll look through interproduct vectors  $\dot{Ln}(t)$  и  $\tilde{q}$ :

$$\begin{aligned} (\dot{Ln}(t), \tilde{q}) &= (A_m x(t), \tilde{q}) = (x(t), A_m^T \tilde{q}) = -(x(t), A_m \tilde{q}) = -\sum_{i=1}^m a_i x_i(t) = \\ &= -(a_1 x_1(t) + a_2 x_2(t) + \dots + a_m x_m(t)) \end{aligned}$$

Since  $x(t) \in \text{int } S^{m-1}$  for any  $t \in (-\infty; +\infty)$  and  $a_i \leq 0$  for any  $i = \overline{1, r}$  and  $a_{r+i} < 0$  for any  $i = \overline{1, s}$ , to

$$-\sum_{i=1}^m a_i x_i(t) > 0$$

for any  $t \in (-\infty; +\infty)$ .

From other side, interproduct vectors  $\dot{Ln}(t)$  and  $\tilde{q}$ :



$$\left( \dot{\ln}(x(t)), \tilde{q} \right) = q_1 \dot{\ln}(x_1(t)) + q_2 \dot{\ln}(x_2(t)) + \dots + q_r \dot{\ln}(x_r(t)) = \dot{\ln} \left( \prod_{i=1}^r x_i^{q_i}(t) \right)$$

This means, the following equation is executed

$$\dot{\ln} \left( \prod_{i=1}^r x_i^{q_i}(t) \right) = - \sum_{i=1}^m a_i x_i(t). \quad (9)$$

Thereby, the function  $\varphi(t) = \prod_{i=1}^r x_i^{q_i}(t)$  increases and  $0 < \varphi(t) < 1$  for any  $t \in (-\infty; +\infty)$ . That is why it exists as following

$$\lim_{t \rightarrow +\infty} \varphi(t) = \lim_{t \rightarrow +\infty} \prod_{i=1}^r x_i^{q_i}(t) = C.$$

Then it is clear that

$$\omega(x_0) \subset \left\{ \prod_{i=1}^r x_i^{q_i} = C \right\},$$

where  $\omega(x_0)$  set of limited points of paths.

Let's take the free point  $M \in \omega(x_0)$ . We'll look through the path

$$M(t) = (M_1(t), M_2(t), \dots, M_m(t)) \subset \omega(x_0)$$

points  $M$ . Then from (9) we have

$$0 = \dot{\ln} \left( \prod_{i=1}^r M_i^{q_i}(t) \right) = - \sum_{i=1}^m a_i M_i(t) = -(a_1 M_1(t) + a_2 M_2(t) + \dots + a_m M_m(t)).$$

Since  $a_{r+i} < 0$  for any  $i = \overline{1, s}$ , for the fair of the last equation must be executed as following

$$M_{r+1}(t) = M_{r+2}(t) = \dots = M_m(t) = 0 \quad \text{for any } t \in (-\infty; +\infty).$$

Thereby

$$\omega(x_0) \subset \left\{ \prod_{i=1}^r x_i^{q_i} = C \right\} \cap \{x_{r+1} = x_{r+2} = \dots = x_m = 0\}$$

As the digits  $r+1, r+2, \dots, m$  are considered to be the tops of the tournament  $T_s$ , then for the free top  $i$  of the tournament  $T_s$  the following is executed:

$$\lim_{t \rightarrow +\infty} x_i(t) = 0.$$

It is looked through the case similarly, when  $p = (p_1, p_2, \dots, p_s) \in S^{s-1}$  is considered the solution of inequity  $A_s p \geq 0$ . In this case we get

$$\lim_{t \rightarrow +\infty} x_j(t) = 0.$$

Biological sense of the theorem 1.

## CONCLUSION

If the tournament of the evolution is not strong, then all biological models can be divided into two classes thereby that models from first class during the process of evolution step by step (monotonously) disappear (collections which are indicated in the theorem 1 through  $T_s$ ), initial evolution starts in the vicinity of some balanced condition in which are present only the models from first class.

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## Theme: Forecasts And Results Of The Negative Impact Of The Covid-19 (Coronavirus) Pandemic On The World Economy And The Economy Of Uzbekistan

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### ABSTRACT

This article describes in detail the forecasts of the negative impact of the COVID-19 (coronavirus) pandemic on the world economy and the economy of Uzbekistan. The negative impact of the pandemic of the COVID-19 (coronavirus) on the world economy and the economy of Uzbekistan is also directly reflected in the results of forecasts. Also, the results of the direct impact of the COVID-19 pandemic on the world economy, in particular the economy of Uzbekistan, were analyzed, the results of the economies of the countries were compared.

### KEYWORDS

COVID-19, gross demand (AD) and gross supply (AS), economy of world countries, national economy of Uzbekistan, partner countries, attractive consumers, general movement "Saxovat and support", international rating agency "Moody's", project "listening to the citizens of Uzbekistan", Center for World Bank and development strategy, living standards of the population.

### INTRODUCTION

Our analysis shows that the development of small countries, including the economy of Uzbekistan, will cover economic losses in 5 or 6 months, the growth rate of this year's GDP will increase by 1.2 – 1.5 percent and next year by 7.0-7.2 percent, says professor Tursin Shodiyev.

As a result of the global spread of the coronavirus pandemic, which appeared at the end of 2019 year in the people's Republic of China's City of Uwan, a global crisis arose. This is different from the world crises in different aspects, and its negative impact on the economy is becoming very strong. Speaking in the economic language, this pandemic is an external "shock" to gross demand (AD) and

gross supply (AS), macroeconomic stability (external shock), which differs greatly in terms of scale and damage from previous economic crises.

This crisis occurred suddenly in 185 country of the world. It showed a simultaneous impact on gross supply and gross demand. The emerging open global economy and national economies have been in a closed form for several months. Little experience has been accumulated in the World Economic Literature on the identification and mitigation of the negative impact of the coronavirus pandemic on the world and regional economies, and the topic has not been systematically studied. The purpose of this article was to partially study the consequences of the spread of the coronavirus pandemic to global and regional qualifications and to predict the effectiveness of measures aimed at mitigating its consequences in our republic<sup>1</sup>.

Economy in the period until the coronavirus pandemic

The result of the research shows that until the onset of the coronavirus pandemic, positive silences were observed in the world economy and national economies, signs of sustainable development. Its high rates have been observed in China, Tajikistan, Armenia and Uzbekistan, low rates in the US, UK, Russian Federation, when the pace of economic growth in the world economy in recent years is around 3 percent on average. Gross revenues of the world economy in 2019 amounted to 84.5 trillion US dollars, including 20.6 US dollars (share 24.4 percent), 13.1 (share 15.6%) of the people's Republic of China, 3.9 (4.6%) of Germany, 2.8 (3.3%) of Great Britain, 1.5 (1.9%) of Russia and South Korea.

#### (Table 1)

**1-table. The state of the world economy and economic cooperation with Uzbekistan in 2018**

Countries	Area,thousand sq.km	Population the number (mln. man)	GNP (bln.fertilized)	Population per capita income (fertilized )
Usa	9831,6	327,2	20636,3	63080
Great British	243,6	68,5	2777,4	41770
Germany	357,6	82,9	3905,3	47090
Russia	17098,3	144,5	1501,7	10230
China XR	9562,9	1392,7	13181,4	9460
South Korea	100,3	51,6	1580,1	30600
Kazakhstan	2724,9	18,3	147,6	8070
Uzbekistan	447,4	33,0	66,5	2020
Kyrgyzstan	200,0	6,3	7,7	1220
Tajikistan	141,4	9,1	9,2	1010
Turkmenistan	488,1	5,9	39,4	6740
Belarus	207,6	9,5	53,8	5670
Armenia	29,7	3,0	12,5	4230
Turkey	785,4	82,3	858,1	10420
World on	132025,2	7594,3	84478,9	11124

President Shavkat Mirziyoyev's address to the Parliament of the Republic of Uzbekistan in 2020 year 24 January, as well as the so – called “Year of development of Science, Education and digital economy”, which is aimed at fulfilling the tasks defined in the strategy of action to implement the five priority directions

of further development of our country in 2017-2021, will serve as an

**The negative impact of the coronavirus pandemic on the global economy and the major economic partner countries of Uzbekistan**

In order to mitigate the negative effects of the Global crisis on the socio – economic development of the Republic of Uzbekistan,

decrees of the president of the Republic of Uzbekistan “on measures in the first place to mitigate the negative impact of the Coronavirus pandemic and the global crisis situations on the economic sectors” and “on additional measures to support the population, economic sectors.

As indicated in the decree, in the fight against the spread of coronavirus infection on a global scale, unprecedented measures are being taken in our republic by restricting the movement of people and stopping the activities of enterprises. The economy of Uzbekistan, which is part of the Global economic system, is also affected by these factors, which in turn requires effective preventive measures to mitigate the negative effects of this situation. It is necessary to pay special attention to the support and stability

of dynamically developing sectors of the Republic's economy, such as tourism, transport, pharmaceutical and textile industries.

The figures and their analysis show that countries that have suffered so much from globalisation and integration, bilateral and multilateral economic ties, to the crisis, suffer so much from the coronavirus pandemic. The analysis suggests that while there is a correlation between the share of countries in the world economy and the share of those affected by coronavirus ( $R = 0,75$ ), the economic losses of countries from the coronavirus pandemic also depend on the share of epidemics. The table below shows how countries' economic losses and per capita incomes are projected to decline in the negative impact of the coronavirus pandemic.

## 2-table. The forecast of economic losses in the negative impact of the coronavirus pandemic



Countries	Total economic loss,bln.\$	Each the losses of the month, billion. .\$	Each to the loss of population, \$
Usa	619,09	51,59075	1892,08
Great British	83,32	6,9435	1216,38
Germany	117,16	9,76325	1413,26
Russia	45,05	3,75425	311,77
China XR	395,44	32,9535	283,94
South Korea	47,40	3,95025	918,66
Kazakhstan	4,43	0,369	241,97
Uzbekistan	2,00	0,16625	60,45
Kyrgyzstan	0,23	0,01925	36,67
Belarus	1,61	0,1345	169,89
Armenia	0,38	0,03125	125,00
Turkey	25,74	2,14525	312,79
The world	2610,00	217,5	343,68

If we look at the table data, the per capita decline in population incomes is projected in the US (1892 dol), followed by Germany (1413), Great Britain (1216), South Korea (918dol), Russia (311) and China (284dol). Total loss in the Republic of Uzbekistan amounted to 2.1 billion. It will be in US dollars and about 60 dollars per capita. To compensate for the losses in the incomes of the population, some countries are distributing money. However, the government of the Republic of Uzbekistan makes an alternative decision and through the general movement "support and assistance" enterprises and public organizations conduct charitable events for low-income families.

Participation of enterprises in the general movement of "support and assistance" is not an attempt by the state to reduce the losses of the crisis to entrepreneurs, but an attempt to rectify the situation in which the same gross demand is falling. Because in the period when the gross offer declined, increasing the gross offer by distributing money to the population increases inflation and the population may not see any benefit from it. Participation of enterprises in the general activity brings them profit.

First, the enterprise would have to make advertising costs for the sale of goods or

services (in the period when the demand for previously collected reserves fell;

\* Secondly, the participation of the enterprise in the overall movement of "Saxovat and support " increases the reputation and image of buyers, its population;

\* Thirdly, participation in the general movement revitalizes the previously formed chain economic ties between enterprises. Doing business will save money and the costs of marketing from the four, because they will form a group of attractive (consumer loyalty) consumers in the future, etc.the G.

### **Economic recovery and development after the end of the coronavirus pandemic**

During the ongoing crisis, the primary tasks of the national economy are to restore market confidence, reduce the disruptive sector, primarily the affected area of rent relations and develop competitiveness. The effectiveness of the transfer of the national economy from the energy-raw material road to the innovative direction is determined by the level of trust of relations between various social groups of the population, authorities and business. Also, in order to mitigate the effects of the coronavirus pandemic on the competitiveness of enterprises and their economic situation, measures were recommended to reduce production costs, cheapen the cost of products, save transactional costs.

Measures are set out to grant preferential credits to enterprises with financial impairments, to create incentives to repay loans received from the bank, to encourage the reduction in the capacity of energy and other raw materials of products, to introduce local producers into localization programs, to increase the domestic demand for their products. On account of the expansion of production with new products and activities, measures are being implemented to diversify, increase the assortment and quality of

products and services, increase the value – added capacity in them, expand sales channels and markets, ensure employment, self – employment.

These circumstances will serve to the transition of our country to a stable development Troy in the future, restoring the state of our country from the crisis impact at a rapid opportunity to the crisis. In this regard, the scenarios of post-crisis development among other scientists are controversial. Some scientists and specialists predict that the development of future economies will be in Latin L - form ( L - shape), U - form ( U – shape) or V –form (V-shape). The appearance of these letters represents the shape of the gross proposal curve. In other words, it is said that national economies and the world economy will enter the stage of development into its previous form. Our analysis shows that the development of small countries, including the economy of Uzbekistan, covering economic losses in 5 or 6 months, the growth rate of this year's GDP will be around 1.2-1.5 percent and next year will be up to 7.0 - 7.2 percent. The world economy and the economies of developed countries (the United States, Germany, Turkey, China, Russia) develop in a U – shaped way, in other words, it takes more time (one and a half years) for these economies to recover and develop.

To compensate for the economic losses caused by the coronavirus pandemic for our republic, we think that this year it will take 5 or 6 months, and economic growth in the current year will be around 1,2 – 1,4 percent, and in the next year the growth rate as the product of the anti-crisis measures will be around 7,0 and

"The coronavirus pandemic is turning into a"black-and - white" and is coming up with even more obvious consequences than the Great Recession of 2008-2009, "said John Lonski, economist at Moody's international rating agency.

“In contrast to the ongoing crisis, this time the opportunities of the states in the direction of balancing the situation have been limited,” he warned.

The Chinese economy has become much sluggish even without the virus. Last year, its economy grew by 6.1 per cent, which is more than that.

In addition, the transition of the country's economy to a new system, the entry into a trade war with the United States, and the situation in Hong Kong also caused a deepening of the crisis.

The Virus was the first to cause damage to transport, trade, restaurant and hotel business. The fact is that the country stood on the eve of the most boiling season of the year – the celebration of the Chinese New Year.

Production was also in crisis: most of the enterprises and factories were closed, the workers were sitting at home, in quarantine, according to the government decree, it was difficult to deliver the goods to the buyers because the transport was almost not walking.

Toyota and Volkswagen stopped their Chinese conveyors, Starbucks and McDonalds' offices were also closed.

China-one of the most basic countries for the supply of bolts for the production of industrial and consumer goods. Especially on electronics .

Vietnam, South Korea, Cambodia, Singapore and Japan have all suffered losses as a result of the banning them from leaving overseas as a group. Because they were separated from Chinese tourists, which flowed on winter holidays.

The interruption of work in industrial enterprises was a huge loss for the countries of Australia and Brazil, which were the main suppliers.

And Europe and the United States were separated from many Chinese tourists and buyers of flashy goods.

The nightmare of the crisis has frightened especially investors. They began to buy shares, oil, metals, began to buy bonds and gold from developed countries.

Oil prices fell sharply, as China-the largest buyer, buying 14 million barrels of oil per day, reduced its consumption by twenty percent<sup>3</sup>.

Metal products used in industry prices for copper, nickel, aluminum also fell 7 percent due to the virus<sup>3</sup>.

The Center for Economic Research and reform, together with the World Bank and the Center for development strategy, conducted a study on the socio-economic consequences of COVID-19 .

On the results of the study of the socio-economic consequences of the COVID-19 conducted within the framework of the project "listening to the citizens of Uzbekistan".

The Center for Economic Research and reforms together with the World Bank and the Center for development strategy conducted a study on the impact of the COVID-19 pandemic on the socio-economic life of citizens of the Republic of Uzbekistan. This study was carried out within the framework of the project "listening to the citizens of Uzbekistan", which aims to assess the welfare of citizens and to study public opinion on the reforms carried out by the Government of Uzbekistan.

For information: the project "listening to the citizens of Uzbekistan" of the World Bank (L2CU) annually studies the socio-economic situation of 1500 households of the Republic of Uzbekistan. Starting in 2019, 21 questionnaires were conducted within the framework of the project. The last survey was conducted on May 21, 2020.

According to the results of the study, the following were identified:

#### **In the field of social welfare:**

- Slightly increased employment. The proportion of households with at least one working member decreased by more than 40 percent in April compared to March. In the period from April to May the p. increased (from 43% to 58%).
- householdonlarda the number of respondents reported that someone had "lost or failed to work" increased from 1% in March to 19% in April. The number of those who lost their jobs in April-May decreased from 19% to 12% as a result of the implementation of the program of large-scale measures taken against the crisis. However, almost all respondents believed that the suspension of their activities was temporary.
- The level of poverty can deteriorate. Since the outbreak of the COVID-19 pandemic in April, the proportion of people living below the poverty line has reached 10% (7,4% in March). This again means that 448 thousand people will be able to get out of the poverty line as a result of a decrease in the standard of living.
- Food consumption is improving. The share of households, which reported a decrease in food consumption, fell from 26% in April to 23% in May.
- Receive immediate public assistance. Since the appearance of COVID-19, 9% of the population has been reported to have received direct government assistance. The largest part of the help (89%) is given in the form of natural (commodity).

#### **In the field of Education:**

- Despite the fact that all schools were closed in May, almost all school-age children participated in certain educational and educational activities

(97%). Most of the respondents (69%) were satisfied with this exercise and 8% were dissatisfied.

- 87% of the students determined that the bulk of the training was carried out through educational television programs. For 6% of the students, mobile learning aids are the basic learning method, while 5% of the students have learned through assignments given by the tutor or teacher.
- Householdonlarda high availability of television and television programmes (more than 91%) through this system partially understand that training is on a large scale. 70 % of households have smartphones and about half of them are connected to the mobile internet. 17,5% of respondents have a personal computer or laptop, 8% are connected to the apartment's wired internet.

#### **Services and household expenses:**

- Since the outbreak of the COVID-19 epidemic began, 6% of households have reported that citizens need medical care.
- Household expenses are different. 55% of respondents reported a change in costs. According to these changes, near 60% of respondents reported an increase in costs (on average and significantly) compared to the previous 30 days, as well as they had higher costs than the average earnings. Approximately 40% reported a reduction in costs (23% reported an "average" reduction and 77% reported "significant"). Most of those who reported a reduction in costs were low-income respondents.
- Improved product shortage problems. Approximately 6% of respondents in May reported that certain goods were not sold in their territories, 16% in April. These products include food products, especially bread and flour. In May, the

situation significantly improved, so that the number of disruptions in food supply decreased by about 6%. Those who reported that the drugs and masks were not on sale fell for a while in May, when they accounted for 5% in April.

#### **In the field of living standards:**

- 79% of those surveyed reported a change in lifestyle with the prevalence of COVID-19. The most common changes in people's behavior are: wearing a mask (95 %), shortening of family and friends ' visits (84 %), frequent washing of hands (83 %), handshake / hugging / greeting (82%), social distance (72 %), exit from out-of-work homes (51 %), isolation / quarantine (19 %). The number of respondents who reported that they had recently participated in mass events in May is zero.

#### **Social attitude towards the effectiveness of reforms:**

- The period of the spread of the COVID-19 infection coincided with the period when the percentage of respondents who "fully agree" that the country is in the right place of political, social and economic development. In addition, almost none of the respondents "disagree" with this opinion.
- The government agreed to participate in an open dialogue with citizens and the percentage of respondents who confirmed this was about 95%.
- Almost all respondents are concerned about the possible economic consequences of the COVID-19 pandemic for their families, but they take a good look at the future economic situation of the country .

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## Structural Transformations Of The Economies Of The Regions Of Uzbekistan

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### ABSTRACT

This article describes the current structural changes in the regional economy and their impact on the formation of a stable economic growth of the gross regional product, as well as the quality of economic growth. Based on the results of the analysis, measures are proposed to achieve effective structural transformations of the economies of the regions.

### KEYWORDS

Regions, economic growth, structural shifts, the quality of economic growth, the gross regional product.

### INTRODUCTION

The state of the structure of the economy plays an irreplaceable role in ensuring the balance of the region's economy, in the formation of sustainable rates of economic growth, in stimulating the diversification and localization of production, which in turn determines the prerequisites for the growth of the competitiveness of the economy. These targets were declared in several regulatory legal acts adopted by the President of the Republic of Uzbekistan Sh. Mirziyoyev over the past years, which include the Decrees of the President of the Republic of Uzbekistan

dated February 7, 2017 No.4947 "On the strategy of actions for the further development of the Republic of Uzbekistan" [1], dated September 8, 2017 No.5185 "The concept of administrative reform in the Republic of Uzbekistan" [2], Resolution of the President of the Republic of Uzbekistan dated August 8, 2017 No.3182 "On priority measures to ensure accelerated socio-economic development of regions" etc.

The very definition of the structure of the economy can be considered as a



multidimensional phenomenon and it can be studied from different conceptual positions, showing the relationship between various elements of the economic process [4].

The characteristic of structural changes in the economic development of regions is reflected in the changes of the qualitative indicators of the economy, where the results of structural changes are manifested in structural shifts.

Structural shifts or changes are determined in the process of observing the structure of the economy in a certain period (in dynamics) [5].

Structural shifts in the economy represent a complex system of changes in interrelated proportions that occur under the influence of the existing technological base, social mechanisms of production, distribution and exchange under regional needs, available resources and the achieved level of labor productivity.

Literature review. The analysis of structural changes in the regional economy first of all helps to determine the state of the regional economy and the determinants of its economic growth. Moreover, by analyzing the structure of the regional economy, one can determine their competitive advantages in interregional comparison and the specialization of the regional economy [6].

Based on the study of the literature on structural changes, it can be concluded that the concept of the structure of the regional economy is a set of system elements, complex relationships and relationships between the economic processes of enterprises, industries and types of economic activities in the economy of the region, between reproduction, investment, resource, financial, innovative and other processes that determine the integrity of the region's economy and the preservation of its basic properties and key functions under the influence of internal and external factors. The specificity, high-quality functioning and

positive dynamics of the structure of the regional economy depend both on macroeconomic processes and the determination of strategic directions for the development of the region's economy, ensuring its balance and sustainable development.

Another important direction in the analysis of structural shifts in the sectors of the regional economy is to determine the effectiveness of the economic policy developed both at the national level and the level of local government bodies, its impact on the quality of economic growth by changing social conditions or improving the priorities of socially oriented policy in the region.

In the studies of L. Walras the problems of economic equilibrium were considered in conjunction with structural transformations while in D. Ricardo's, the dynamic processes of the structure of the economy were considered in conjunction with the problems of labor and profit. Moreover, the studies of M. Friedman and A. Marshall are devoted to the structure and dynamics of economic development. Studies conducted by S. Yu. Glazyev, A. G. Granberg, R.S. Grinberg, Yu. V. Yakovts and E. G. Yasin reveal the characteristics of structural processes, mechanisms of structural transformation of the economy and methodological problems of predicting structural dynamics in modern conditions. ...

According to the above studies, it can be concluded that, depending on the choice of structure-forming elements, one can talk about different typologies of the structure of the economy. The typology of the structure of the economy, based on their classification features, include reproductive, organizational and economic, technological, sectoral, socio-economic and regional.

The reproduction structure acts as the ratio of the processes of production, distribution,

exchange and consumption. The organizational and economic structure is characterized by the system of proportions between the parts of the social product created by the economic units, grouped by the level of specialization or concentration of production. The technological structure is revealed through the concept of "technological order". The sectoral structure implies the distribution of the shares of the gross product, national income, fixed assets between the spheres of production and sectors of the economy. The socio-economic structure is determined by the differentiation of incomes of various strata and groups of the population and the contribution of enterprises of various forms of ownership to the production of a social product. The regional structure of the economy is associated, first of all, with the solution of the following tasks of forming full-fledged economic complexes and business entities in all regions of the country, leveling the living conditions in the constituent entities.

Based on the above types of economic structures, it is necessary to single out the most effective and relevant ones which have the most significant impact on the qualitative dynamics of macroeconomic situation and, above all, on ensuring the competitiveness of the country's economy in the world, economic stability, energy efficiency and resource efficiency. Consequently, the sectoral structure is one of the most important components of the national economy and, above all, the sectoral structure is one of the key in the study of structural changes in the economy.

The sectoral structure of production reflects the existing system of distribution of production resources for key activities, as well as the share of individual sectors in the total volume of national production. The sectoral structure characterizes the composition, quantitative relations and forms of

interconnection of industries and industries, the degree of differentiation and specialization of these industries and the features of economic interconnections and relations between them.

Analysis and results. Today it becomes obvious that the country's exit from the crisis, the implementation of effective structural changes in the national economy at all levels of the economic vertical, and the acceleration of scientific and technological progress depend on the quality of developments in the regions. The restructuring of the national economy vertically should be accompanied by the creation of an effective institutional management system, the formation of tools that stimulate the growth of the competitiveness of the national and regional economies, the improvement of the regulatory and legislative framework in the field of structural changes and investments, budget policy, and protection of property rights.

Improvement of management mechanisms, further integration of the national economy into the globalization processes of the world economy, as well as the large-scale reforms carried out during the years of independence to a certain extent influenced the structure of both the national economy and the regional economy. This is due to shifts in the structures of the regional economy over these years.

A purposeful regional policy has been pursued in Uzbekistan since the first days of independence. Deep institutional changes have been carried out, measures have been taken for the integrated development of the regions, and targeted comprehensive regional programs are being implemented. They make it possible to "improve the regional component of the economy, effectively use the available economic opportunities and unused resources, eliminate the existing regional imbalances, as well as the main

problem of today - an effective fight against unemployment."

These measures are aimed at modernizing and diversifying the regional economies, increasing the level of competitiveness of the regional economies in world economic processes, ensuring stable economic growth, and, most importantly, achieving a high level of well-being of the population.

During this period, a number of measures were implemented that were enshrined in regulatory legal acts by the government of the country, in particular, the Decree of the President of the Republic of Uzbekistan dated December 15, 2010 No.1442 "On the priorities of industrial development of the Republic of Uzbekistan in 2010-2015" [7], Decree Of the President of the Republic of Uzbekistan dated March 4, 2015 No.4707 "On the program of measures to ensure structural changes, modernization and diversification of production for 2015-2019" [8], Resolution of the President of the Republic of Uzbekistan dated May 5, 2015 No.2343 "On The Program of Measures to Reduce Energy Intensity, Implementation of Energy-Saving Technologies in the Sectors of the Economy and Social Sphere for 2015-2019" [9], Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated January 5, 2016 No.3 "On measures to further improve the procedure for the development of urban planning documentation for the development and development of territories of cities and

urban settlements"[10]. These measures significantly improved the economic situation in the regions by influencing the structures of the regional economies with an emphasis on more efficient production sectors.

The regulatory legal acts adopted by the government of the country served as the basis for economic diversification and led to structural changes in the sectors of the regional economy (see Picture 1).

Analysis, changes in the sectoral structure of the economy of the regions of Uzbekistan for 2000 - 2016 showed that over the entire analyzed period, in almost all regions of the country, the share of the industry in the formation of the GRP has significantly increased.

The analysis of the structure of the regional economy was carried out by applying the following formula:

$$S_i^r = \frac{VA_i^r}{GRP^r} * 100, \quad (1)$$

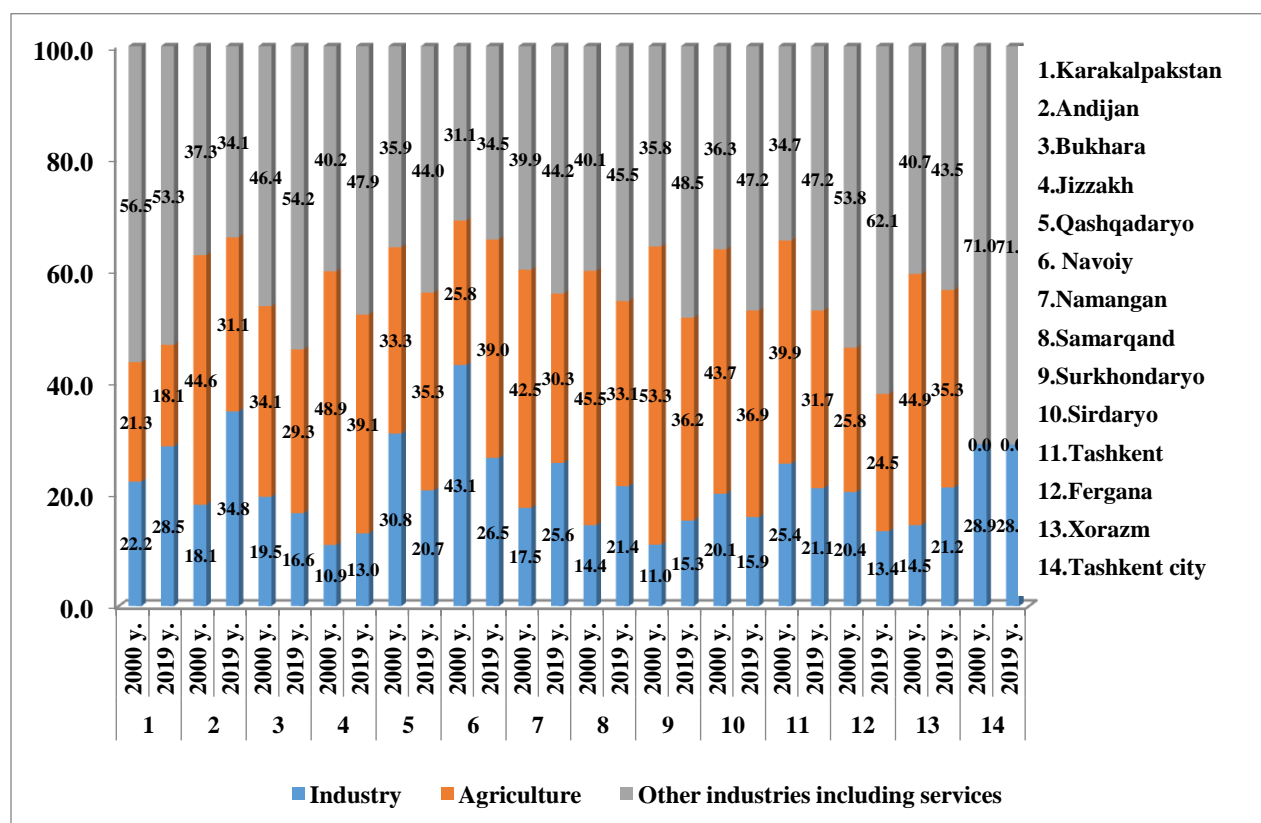
Where,

$S_i^r$  - the share of gross value added (GVA) of the i-industry of the r-region in the formation of the GRP of the r-region;

$VA_i^r$  - gross value added (GVA) of the i-industry of the r-region;

$GRP^r$  - GRP of r-region.

**Picture 1. Structural changes in the sectoral structure of the formation of the GRP of the regions of Uzbekistan for 2000 -2019 (in%)**



Source: Author's calculations based on data from the State Statistics Committee of the Republic of Uzbekistan. Data for 2000-2019 retrieved from the Statistical Yearbook.

Based on the results obtained by analyzing the sectoral structure of the regional economy, it can be concluded that the most positive structural changes have been achieved in such regions as Tashkent, Navoiy, Republic of Karakalpakstan, Andijan regions, and the city of Tashkent. Changes in the sectoral structures of the economies of other regions have deteriorated significantly compared to the existing structure of their economies in 2000.

However, the ongoing processes in the global economy, in light of the coronavirus pandemic and the associated instability of the price levels in world markets, as well as political

disagreements between the leading states, the application of various restrictions in the form of economic sanctions by interstate unions and dominant countries to the main trade partners of Uzbekistan (Russian Federation) inevitable might bring the adverse effects to the economic potential of our country in the near future. This, in turn, indicates the possibility of the negative impacts and external threats to our economy in the future in the form of a decrease in external demand for export products of Uzbekistan.

Considering these challenges and threats, the President noted that "the most important priority is to further strengthen macroeconomic stability and maintain high rates of economic growth, including the balance of the State budget at all levels, the

stability of the national currency, and the price level in the domestic market" [11].

In addition, to further transform the economic realities of our country and radically change the effectiveness of the economic policy being implemented, the Decree of the President of the Republic of Uzbekistan was adopted, a strategy of actions for the further development of the Republic of Uzbekistan was adopted, where one of the main priority areas where marked "Comprehensive and balanced socio-economic development of regions, districts, and cities, optimal and effective use of their potential"[1].

Naturally, these measures are aimed at improving the quality of economic growth, a stable and favorable improvement in the conditions for the private sector, the development of the institutional environment, the improvement of infrastructure and access to it, as well as the growth of the well-being of the population of our country, which in general will result from the level of local government, starting from districts and

regions to the macro level as a whole for the national economy.

This provision will largely be positively reflected in the specifics of the economic situations of the regions, that is, in the technological structure of the production process of the regions and, as a result, influencing the production and reproduction cycles, contributing to a change in the structure of the economy of a particular region, leading to structural shifts in the sectors of the economy of the regions of the country.

The existing structural changes in the sectoral structures of the regional economies affect the socio-economic situation of the regions and, accordingly, the heat of real GRP growth through the contribution of industries to the GRP growth.

The contribution of the sectors of the regional economy to the growth of the region's GRP is estimated by applying the following formula:

$$V_{i,r}^t = \frac{\Delta VA_i^r}{\Delta GRP^r} * 100 = \frac{(VA_i^{t-1} * VAGR_i^t - VA_i^{t-1})}{(GRP_r^{t-1} * GRPGR_r^t - GRP_r^{t-1})} * 100, (2)$$

where,

$V_{i,r}^t$  - is the contribution of the  $i$ -industry of the  $r$ -region to the growth of the GRP of the  $r$ -region in the  $t$ -time period;

$VA_i^{t-1}$  - GVA of the  $i$ -industry of the  $r$ -region in the time period  $t-1$ , in current prices;

$VAGR_i^t$  - Real growth rate of GVA of the  $i$ -industry of the  $r$ -region in the  $t$ -time period;

$GRP_r^{t-1}$  - GRP of the  $r$ -region in the time period  $t-1$ , in current prices;

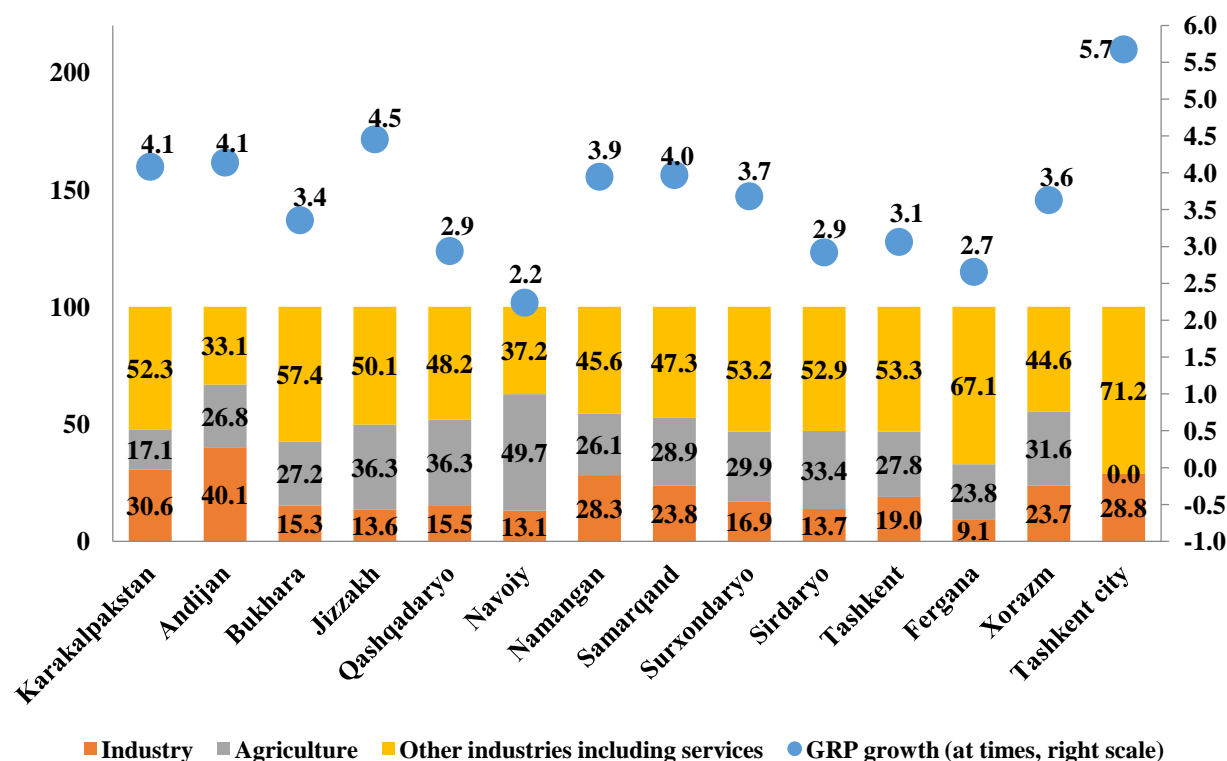
$GRPGR_r^t$  - Real growth rate of GRP of the  $r$ -region in the  $t$ -time period.

The results of the analysis show (see Picture 2) that among regions that achieved the highest GRP growth rates for 2000-2019 (Tashkent city 5.7 times, Jizzakh region 4.5 times, Andijan region 4.1 times, Republic Karakalpakstan 4.1 times, Samarkand 4.0 times, Namangan 3.9 times, and Surxondaryo regions 3.7 times), the main determinants of its economic growth were the industries and services.

Of the group of regions that have achieved the highest GRP growth rates, namely in the Jizzakh, Samarkand and Surkhondaryo regions, one of the main determinants of economic growth is the agricultural sector, which has a downward trend. The service industries dominate the formation of economic growth in these regions.



Picture-2. The contribution of industries to the growth of regional GRP for 2000-2019 (in%)



Source: Author's calculations based on data from the State Statistics Committee of the Republic of Uzbekistan. Data for 2000-2019 retrieved from the Statistical Yearbook.

The group of regions that have achieved moderate and low rates of economic growth of GRP, compared to the accumulated growth of the country's GDP (3.6 times) for the analyzed period, includes Khorezm (3.6 times), Bukhara (3.4 times), Kashkadarya (2.9 times), Tashkent (3.1 times), Syrdarya (2.9 times), Fergana (2.7 times) and Navoi (2.2 times) regions.

The regions where the main determinant of economic growth was the agricultural sector had the lowest or moderate rates of economic growth of GRP over the analyzed period. The lowest GRP growth rate for the analyzed period is in the Navoi region (2.2 times), where

the contribution of the agricultural sector to the GRP growth is more than 49.7%.

Conclusion. Summarizing the results obtained on the analysis of structural transformations and the contribution of industries to the increase in the GRP of the regions of Uzbekistan, we can conclude that for the regions that fall into the groups with moderate and low rates of economic growth, it is advisable to significantly increase the contributions of industries and services in the short term to a counterbalance to the contribution of the agricultural sector. To achieve these goals, the regions need to develop effective measures through the adoption of medium-term strategies for the development of the economies of these regions, with an emphasis on stimulating the development of industries and services.



A special place in the formation of the strategy should be given to short-term investment programs, where the main characteristics of projects should be the performance indicators of new and modernized production facilities, as well as ensuring broad participation of the private sector and small business in the implementation of these projects, which will entail a significant increase in the competitiveness of the products or services provided. which ultimately will serve as the foundation for the growth of the competitiveness of the region's economy and, as a result, will ensure high growth rates of the regions' GRP.

## CONCLUSION

Another important result obtained from the analysis of the sectoral structure of the GRP of the administrative-territorial divisions of Uzbekistan and the contribution of industries to the growth of GRP for 2000-2019. the following specific phenomenon is observed. Some regions are lagging behind the regions in terms of economic growth, despite unambiguous structural shifts in the sectoral structure of GRP. For example, the situation in the Navoiy region can be cited. During the analyzed period, the Navoiy region is included in the group of regions that have achieved the most profound structural changes, however, in terms of the accumulated growth of GRP for the same period, it has the lowest values compared to other regions of Uzbekistan. The reasons for such conflicting results may lie in the transformation of the achieved structural changes into qualitative indicators of the economic growth of the regions. This provision, in turn, serves as a prerequisite for analyzing the quality of economic growth or the achieved qualitative changes in the economic development of the regions of Uzbekistan.

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## Economic Diagnosis Of Higher Education Institution

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### ABSTRACT

The article describes the role of economic diagnostics in ensuring the effectiveness of the higher education institution and the importance of diagnostic principles in management. Scientific conclusions and practical recommendations related to the economic evaluation of higher education activities are given.

### KEYWORDS

Higher education institution, diagnostic principles, economic diagnostics, educational services, management decisions.

### INTRODUCTION

The result of the activity of a higher education institution is, first of all, the personnel being trained and their quality. At the same time, along with the professional qualities of the staff, the humanitarian qualities are also important for the society, and these two sides are inseparable. However, in the context of market relations, the professional quality of personnel (the ability to create value) objectively comes to the fore. At the same time, the rating and evaluation of the activities of higher education institutions requires an economic approach.

Economic diagnostics is an important element of the organizational and economic management processes in each university and is part of the information-analytical support. It is well known that management, in its content, is aimed at ensuring the sustainability of the higher education institution as a system and a pre-planned goal. Adaptation to a changing environment is also required while maintaining the primary target feature of the management system. The content of management is to process information, maintain an acceptable diversity of system

elements, adhere to constraints, regulate and modify the interdependence of elements. Through decision-making, the developed information is turned into action. In this regard, the successful implementation of management will depend on the collection and processing of information as required. Diagnostics plays an important role in the range of information collection and processing processes and management decision-making, and the quality of the decisions made depends directly on how well the diagnostics are performed. In the general approach, diagnostics can be interpreted as a doctrine of methods and principles for detecting inconsistencies that occur or may occur in the functions specific to the object under study. From an economic point of view, the diagnosis of the object under study is carried out in order to increase its efficiency, strengthen its viability in conditions of free competition and market relations.

Diagnosis of the activity of the higher education institution is carried out in 4 directions: 1) diagnostics of educational process (pedagogical diagnostics); 2) diagnostics of its activity as a socio-economic structure, 3) diagnostics of the external environment; 4) diagnostics of strategic development of the institution. It is obvious that even though the above-mentioned four areas of diagnostics in higher education institutions are covered, it is necessary to take into account the economic interests in the study of all aspects. Hence, achieving the quality of higher education requires the implementation of economic diagnostics.

The activity of a higher education institution also includes economic processes, in which pedagogical and scientific processes also take place inseparably from economic relations. There is also a specific reproduction in higher education, which is expressed in certain indicators and dynamics of indicators. The economic diagnostics of the university clarifies

the causes and nature of changes in other processes by focusing on changes in its economic activity.

## MATERIAL AND METHODS

Economic diagnostics of higher education institutions is based on information processing. At the same time, the methods used to process information should not negate the various qualitative features of the processes expressed in terms of economic indicators at the object, but should identify problems related to these aspects. It should be noted that the qualitative aspects of the economic processes taking place in higher education institutions serve as a description of the extent to which they correspond to the purpose of the educational process. In general, the purpose of diagnostics is to provide information and justify business decisions (management, financial, organizational), as a result of which it is aimed at achieving the required quality of education.

Of course, it is not advisable to consider the diagnostic process of management decision-making in a higher education institution separately from the general chain. In fact, many principles have to be followed in providing information to the management process, in the processing of information, and in the development of management decisions, while the diagnostic content.

Typically, the target function of a higher education institution is to train highly qualified personnel in specific areas and to conduct related research. The difference between the desired results and the results obtained in achieving the results arising from this function is considered a "problem". Therefore, identifying management problems related to the learning process is a key task of economic diagnostics.

Appropriate analytical principles are required at all stages of data collection and processing. Therefore, information-analytical work is

carried out in the development of management decisions. Specialized units or services may also be involved in the preparation and analysis of the information. It is also observed that individuals are involved in management decision-making and analysis.

Diagnosis is made in the form of analysis of collected and processed information. Accordingly, the following 3 areas of analysis are important:

1. Assess the status (effectiveness) of activities for the provision of educational services and the creation of educational products, identify changes in them in terms of space and time;
2. To study the main factors that led to changes in the educational potential of the higher education institution and to assess their impact;
3. Identification of reserves to increase the efficiency of higher education institutions.

In the implementation of economic analysis in practice, a number of tasks can be highlighted: monitoring the implementation of planned activities and activities; rational use of labor, material and financial resources and their economic efficiency; search and quantification of internal reserves; Demonstration of forms of interdependence of economic indicators of higher education institutions; strengthening the scientific basis of business plans, if necessary; Elimination of factors that negatively affect the activities of the higher education institution.

It should be noted that while it is very difficult to distinguish between processes and concepts such as diagnostics, control, analysis, evaluation, the task of diagnostics can also be seen as to determine the truth and show the cause. In this sense, diagnostics is, in the narrow sense, the problem-solving, and in the broad sense, the assessment of the problem, to distinguish it from other

problems, to learn, to create a logical basis for decisions by clarifying the situation.

Factors and causes that prevent a higher education institution from achieving its overall goal are identified as a result of the diagnosis. To do this, diagnostics relies on numbers, compares numbers, and seeks to express in numbers the factors that caused changes in the numbers. However, in each case, the diagnosis is based on a clear idea that the object belongs to any category, knowing in advance certain important features of that category.

An important aspect of diagnostics is that the object must be studied as a system. Such an approach requires the study of the system without isolating it from the existing environment. The environment is therefore considered to be one of the important characteristics of an object as a system. The system has a significant effect on the object, but the object cannot control its effect on the environment. Therefore, the collection and processing of environmental data are diagnostic results. For example, an accountant serves as a source for obtaining information about the financial performance of a higher education institution, and the accuracy of the data depends on the rules and methods used by the accountant.

At the heart of diagnostics should be models that allow visual representation of economic information, as it facilitates diagnostics at all stages of higher education institution management. Diagnostic models should serve as basic models for the information-analytical support system of management. Diagnostic models should be taken as a starting point in assessing the quality of education and other target outcomes, as well as in identifying problems and justifying decisions accordingly.

It should be noted that in most cases, the specific question for which the researcher is seeking an answer remains the starting point



of the general question. Because the initial answer raises new questions. They, in turn, form an interconnected whole and reflect an important part of reality. The economic diagnostics of a higher education institution faces similar situations in its search for answers to problems. Because higher education is emerging in the XXI century as the only mechanism of change of human nature and social development.

Therefore, when considering the activities of a higher education institution, we believe that it is necessary to distinguish three aspects of education: economic, humanitarian and socio-political. In an economic approach, the learner will need to acquire professional knowledge and skills to the extent that they can meet the demands of the labor market. From a humanitarian point of view, the educational process should shape a person as a person who realistically seeks to build relationships with other people on the basis of humane principles through knowledge of society and nature. In the socio-political approach, the higher education institution also fulfills the task of forming its student as a patriotic, politically and socially active person who can understand his place in social life.

It should be noted that the activities of a higher education institution are considered to be an economic service, and the direct consumer of these services is the student. However, in the broadest sense, the consumer of educational services is society as a whole. Because, first of all, the whole society is interested in educational services and the quality of education. Second, education is mainly done in a collective organized (shared consumption). Third, the organization of the educational process completely loses its meaning outside of society. Fourth, participation in the consumption of educational services has a very strong impact on everyone's status in society.

In addition, appropriate resources should be allocated and spent to provide educational services. In the case of specialist training, these costs should be reimbursed by the employer, and higher education institutions should train staff in the areas in which employers need staff. Even in conditions of strong state intervention in the economy, the state emerges as a consumer of personnel and determines the quantity and quality of training in all areas. In a free market economy, the cost of education remains the employer, and the higher education institution must strive to fully adapt its services to the requirements of the labor market.

At present, there is a sharp increase in society's need for the scope and quality of higher education services, which is reflected in the knowledge economy. As a result of the acceleration of scientific and technological progress, information and communication technologies, microprocessor technologies occupy a central place in the economy in the structure of production resources. On the other hand, due to the creation of knowledge by science and education, the direct application of this knowledge, it is also difficult to imagine higher education separately from the real sectors of the economy.

It is known that the knowledge economy is explained by the investment in human capital and intellectual capital, the availability of intangible assets in all sectors of the economy, the growth of innovation, the integration of science and education into the elements of innovation.

At the same time, higher education is interpreted as a basic element in social policy. In this regard, the development of higher education is emerging as a priority of social policy. Because in the economy of the XXI century, scientific research and higher education are an important element in the development of industries. This creates equal



opportunities for improving the welfare of the population and the use of human capital. That is why developed countries are trying to cover all young people with higher education.

It is clear that the utilitarian and humanitarian functions of higher education are closely intertwined and none of them can be secondary. In this regard, it would be expedient for the state, business entities and parents to participate in the payment of higher education expenses in optimal proportions at the level of their capabilities. Accordingly, each of them should have a decisive influence on the quality control of education. Hence, the diagnosis of the quality of higher education should adequately represent the interests of all three consumers.

## RESULTS

Therefore, the processes in the higher education institution and its structural units are regularly monitored and controlled, that is, monitored. The information collected as a result also serves to diagnose the quality of education. In fact, while monitoring can be included in the diagnostic component, on the other hand, diagnostics can also be considered as an integral part of monitoring. Both serve as a basis for the development of management decisions. These processes use data from officially approved statistical and accounting reports in addition to fast, mostly single-use data. If necessary, surveys and statistical observations are conducted. Carrying out diagnostics in such conditions is complicated and requires the following principles:

- The similarity of the monitoring system with the observed object. The system of indicators used in diagnostics is a true reflection of the main features of the object under study;
- Ability to generalize the procedures performed at the lower stages of diagnostics in the later stages;

- A systematic approach to diagnostics is necessary and should be implemented comprehensively. In diagnostics it is necessary to study separate departments of higher education, as well as individual aspects, as a whole system.

## CONCLUSION

In summary, the system of indicators recognized by official statistics is insufficient in determining the ranking of higher education institutions. This negatively affects the reliability and efficiency of economic diagnostics. In our opinion, the system of indicators used in diagnostics should meet the following requirements:

1. Correlation and interdependence of indicators used in the certification and accreditation of higher education institutions;
2. The indicators used in the diagnostic analysis should be consistent with the system of state statistical indicators, have sufficient dimensions and be interpreted in the same way;
3. The ability to examine the system of indicators and the results of the analysis based on them in terms that do not contradict the objective reality;
4. The indicators used should be synchronized in terms of the time of data acquisition and other necessary features, reflecting the essence of the current state of the object.

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## Traditional Beliefs And Representations Of The Karakalpaks Associated With The Yurt

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### ABSTRACT

Over the centuries, the Karakalpaks have created a type of decoration that looks amazingly harmonious, perfectly suited to the design of the lawn, taking into account the living conditions, climate and characteristics of the materials used. In working on the article, the works of ethnographers and archaeologists were analyzed, which were used as the main sources. According to ethnographers and art critics, the Karakalpak yurt has its own characteristics in terms of decoration and artistic solution and silhouette. The article deals with the customs and traditions associated with the yurt. It reveals the role and significance of the yurt in the life of the Karakalpak people, its educational component.

### KEYWORDS

Karakalpaks, Uzbeks, yurt, Turkic peoples, ethnogenesis, art, dwelling, clothes, traditions, Central Asia.

### INTRODUCTION

S.P. Tolstov notes that “the history of the Sogdians, Bactrians, Khorezmians, Massagets, Saks, Usuns, Hephtalites, Turks of ancient Central Asia is the history of the direct ancestors of the peoples of the flourishing

republics of the East, peoples who showed in practice that their face has decent descendants of Central Asian antiquity” [1].

In T.A. Zhdanko's scientific research on ethnogenesis and ethnic history of the Karakalpaks, ornament and objects of decorative and applied art are used as one of the main objects [2]. The main types of arts and crafts associated with housing, clothing, jewelry, etc. are indicated, drawings and photographs of some samples are given.

The works of I.V Savitsky, A.Allamuratov, H.Esbergenov on some types or general issues of Karakalpak folk art are of great importance. [3].

Now, the ways of formation and development of the Kara-Kalpak folk art, including yurts, are traced against the background of the historical fate of the people themselves. These contacts and relationships formed the ethnic appearance of the Karakalpaks and the Karakalpak arts and crafts, combining original ethnic characteristics and, at the same time, features of similarity with the art of other peoples.

Like a number of other peoples, the houses of the Karakalpaks served not only as a place of residence, but also as a place for ceremonies and rituals, ceremonies and folk customs. Among the Karakalpaks, large cattle breeders, or bai, up to the 1920s, arranging weddings (toi) when a son marries or a daughter's marriage, without fail, set up a separate yurt (otau, kara uy) for them, and gave them a parental blessing.

### THE MAIN FINDINGS AND RESULTS

Since ancient times, there are various customs and traditions associated with the yurt. These traditions are performed mainly at the stage of assembling the yurt. For nine generations, craftsmen have lived in the lower reaches of the Amu Darya, making the components of the yurt. [4. 30] This unique art is passed down

from father to son, etc. Mentoring lasted 3-4 years, after which, with the blessing of the usto (mentor), the shakird (disciple) began independent work. At the end of the training period, sometimes the mentor, and often the student, gave the fellow villagers, the foremen a treat. According to some reports, Ibrahim Khalil (Ali) was the patron (feast) of the yurt makers.

The location of the yurt was determined in advance by the aksakals and foremen on a clean, spotless site, where relatives and neighbors were invited the day before the event.

Similar traditions are often found among the neighboring Turkmen people. Especially at the Teke and Yavmuts, on the occasion of the arrangement, various fascinating folk games were organized, for example, "get a scarf" or "gallop into a yurt." Beautiful shawls or scraps of cloth were tied to the circle of the top of the yurt-dome. The horsemen had to get them through a dexterous and high jump. [5. 148]

The ceremony of setting up the yurt was solemn, festive, and on this occasion, the cattle were slaughtered and the people gathered for a treat. Each guest presented the hosts with money or cloth and wished a happy housewarming. After the end of the celebration, the guests also returned with gifts from the hosts. If the new settlers were often ill, suffered from infertility, frequent deaths of relatives, then the place of dwelling was considered fatal, bringing disaster. [6. 40] Here you can draw analogies with the ancient Turks, who measured happiness and prosperity in the same way (kut-bereket).Where kut-bereket reigns and the family lives happily [7. 11-12].

According to the beliefs of the Karakalpaks, kut had no physical properties. He possessed people, lakes and pets. When selling domestic

animals, the owner cut off and left a tuft of wool, since in his opinion, together with the animal, the house could leave the kut.

They linked the kut with numerous offspring. Altaians, until relatively recently - the 20s of the last century, with the long childlessness of the spouses, moved to another place, and the old house was demolished. [9. 20]

The signs and traditions of ancestors associated with entering a yurt, or crossing the threshold (bosaga), dates back to ancient times. The cult of the entrance is especially manifested during donations, celebrations, the birth of a child. For example, during an event of sacrifice - sadaqa, on the occasion of the construction of a yurt (otau), cattle are slaughtered at the place where the threshold (bosaga) of the yurt will be located in the future. Separate signs say that in the name of avoiding the untimely death of the owner of the family and the orphanhood of children, one should not step on the boss. Striking a bosaga with your hands is tantamount to inflicting a curse. If a person entering the yurt stumbles, then he is presented with various tasty treats, since, according to legend, luck and wealth equal to his weight burst into the house, but if he falls upon leaving, it is believed that the family will suffer material losses.

The daughter-in-law entering the groom's house for the first time, as well as all the daughters-in-law after the birth of their first child, had to put their foreheads on the barefoot and enter from the right foot. When stepping over the bosagi (threshold), ysyryk (adiraspan, harmala) was fumigated, and the groom's parents were given a robe, dresses and other gifts.

There were also signs when the deceased was taken out of the house. Wishing that the deceased, or death, forgot the way here, the

head of his body was applied three times to the bossage. Bosaga has always been considered sacred. One of the ways to exalt her was the name "altyn bosaga" ("golden threshold"). People did not greet each other, standing on the doorstep, because they believed: if a person has one leg in a yurt, then the other is in the grave. [6. 2]

The behavior of the daughter-in-law, when she crosses the threshold of the future husband, three times applying the forehead symbolized the request from the spirits of the ancestors of the owners of the family to be accepted into it.

One of the manifestations of parental worship is the burying of the newborn's afterbirth at the threshold of the yurt. This was done out of the desire to see subsequent children healthy. Together with the placenta, they buried the heel bone of a sheep, called "asyk", used in folk games. If a girl was born, millet was buried along with the afterbirth.

Such traditions were observed among all peoples of Kazakhstan and Central Asia. According to G.P. Snesev, Khorezm Uzbeks buried the afterbirth of a child at the doorstep of their homes. [10. 91]

All this is based on the ancient customs and signs of the peoples of Central Asia. This is also evidenced by archaeological data. In particular, during the excavations of the Toprak Kala fortresses dating back to the early Middle Ages and antiquity (IV-V centuries), Asyks were also found. [11. 106] At the Korgansha fortress (VII-VIII centuries) in the Takhtakupyr region, Karakalpakstan archaeologists found Asyks under the rapids. In 1953, the Karakalpak ethnographic group of the Khorezm expedition found a jug filled with asyks in the northwestern part of the Machtak-ata fortress of the Republic of Karakalpakstan. The

settlement belongs to the XII-XIII centuries. [12. 27]

After the main frame of the yurt was installed, the “bakan” (props) and the dome on the top of the yurt “shanarak” were raised. Meanwhile, in the middle of the yurt, they were gathering wheat in sacks, stones and other items of weight and value. This symbolized the wish of the fortress of the yurt, prosperity and happiness to the family. The neighbors, relatives invited to the construction of the yurt, first of all, the sons-in-law, the nephews of the owners hung scarves and cloth on the yurt, brought sweets, fruits and other gifts inside. This ceremony was popularly called “shanyrak kade”, and the hostess of the house scattered “shashyu” - jide, dried apricots, boursaks, coins from the yurt.

Before covering the yurt with a felt mat, a swing was built on the shanarak for the youth. This implied the reliable location of the shanarak (hearth) on the uuyks (the poles that make up the dome) and the strength of the kerege (lattice folding walls). As a result, uuyk and kerege mutually strengthened each other. On the swing, a guy and a girl were located in pairs, while one of the guy's legs was between the girl's legs, and the other accelerated the movement of the swing, moving the swing from the entrance to the back wall of the yurt.

The “shashyu” tradition (scattering sweets, fruits and coins from the “tunglik” - hole at the top of the dome) also dates back to antiquity. Foods and coins collected by the guests are considered “teberik” (like a sacred gift). Shashyu is produced both at weddings and celebrations on the occasion of the birth of children (besik toi). When the deceased is taken out of the hut, small coins are scattered. All these “shashyu” were perceived as “teberik”, that is, people wished themselves and their loved ones joyful celebrations, or

long years of life. They especially tried to collect “Teberik coins” at the funeral of a person who has lived a long life.

The interior of the yurt was also divided into parts. Guests were accommodated in ritual places, and household utensils and dishes were placed in other parts.

The men were located on the right side of the front door (zhapsar). Here a man hung his clothes, equestrian equipment. According to custom, “shymlydyk” (a canopy for the daughter-in-law) was also in this part, her friends were sitting there. On the same part women gave birth, the deceased was laid to rest before burial. In a word, birth, life, family creation and death took place on this part of the yurt. If, within a certain time, the family does not escape misfortunes and hardships, then the entire household is transferred to another part.

On the Murghab lowland, among the teke and yavmuts, there were cases of exchange of the female and male halves. [4. 148-149] This was explained by such a concept as “yrym” (like a sign) to prevent future misfortunes.

## CONCLUSION

To the left of the entrance (kazan ayak) was the female half, where there were sand and dishes. Here, dishes, leather bags (shanash) for flour, rice, millet, special dishes for oil and water were hung on the clay walls on carpets.

This scheme can be seen among some Turkic-speaking peoples, in particular, Kazakhs and Nogays. [13. 32]

On the right side, a 2.5-3 meters long pole was kept in the form of a slingshot at the end, which symbolized rich offspring and abundance. This pole was used to lift the tunglik from the felt to air the yurt.



Since ancient times, the pole (bakan) was considered sacred and it was not allowed to step over it, as it could bring a threat to health. During the marriage, the groom, the groom's friends, to receive gifts, were stopped with the help of bakans. After receiving gifts (kade) when seeing off the bride, they were allowed to continue their journey. [14. 130]

In a word, the traditional beliefs and beliefs of the Karakalpaks associated with the yurt stems from the very way of life of the people, their customs, according to which the ritual of wishing well-being, prosperity, peace and happiness took place. Individual manifestations of these traditions can be found in our days.

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