INNOVATIONS IN SCIENCE:
THE CHALLENGES OF OUR TIME

Monograph
Volume 2

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- The collective monograph is devoted to the actual issues concerning the modern development of education and science. In particular, the monograph examines the theoretical, applied and practical aspects of various spheres of the science, as a commitment to development in civic society.
- Recommended for scholars, researchers, postgraduates and students of higher education institutions, as well as for all those interested innovative development of various fields of fundamental and applied science.

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INNOVATIONS IN SCIENCE:
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Volume 2

VARNA FREE UNIVERSITY "CHERNORIZETS HRABAR" (BULGARIA)
CHERNIHIV NATIONAL UNIVERSITY OF TECHNOLOGY (UKRAINE)
CENTER FOR STRATEGIC INITIATIVES AND PROGRESSIVE DEVELOPMENT (UKRAINE)

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Welcoming words to the participants in the IV International Scientific and Practical Forum "Innovations in Science: Challenges of our time"

Petur Hristov,
Rector of Varna Free University «Chernorizets Hrabar» (Bulgaria),
Doctor of Science, Professor

The world is passing through a period of irreversible transformation. The fourth industrial revolution, which began ten years ago, erases the boundaries between the digital, industrial and biological spheres.

The opportunities that the digital environment offers for individual choice between many new and different presets and perspectives stimulate the development and expression of each individual person. Expanding the range of self-education increases the diversity and ease of establishing social contacts and the formation of various human communities.

But the coin has two sides, the information environment can also be viewed from the opposite point of view - as a factor that involves the alienation of a person from his inner world, restricts the freedom of self-formation and leads to the segregation of people based on their identity and, ultimately, the polarization of human communities.

Undoubtedly, the world based on digital technologies is also changing the fundamental properties of reality, which were reflected as principles in ontology, ethics, aesthetics, epistemology, etc. This implies not only changes, but also a significant diversification of the possible future structure of the human personality.

Without fundamental changes in the organization of scientific and educational activities, these processes can get out of control. In this sense, innovation in university education is not an alternative. This collection is a successful step in this direction.

Serhiy Shkarlet,
Rector of Chernihiv National
University of Technology,
Honoured Worker of Science and
Technology of Ukraine,
Doctor of Economics, professor

Nowadays we are living in the world that is developing so fast, that it is difficult to predict what it will be like even in five years, not speaking of a longer period. New challenges are arising every minute, while the old ones often acquire new features and context. Therefore, we can hardly overestimate the importance of scientific and academic collaboration of the world community to face the changes.

The intensification of cooperation between the scientific community of different countries, the exchange of best international practices and establishment of interpersonal links between the leading researchers and practitioners can contribute to the development of new ways and methods of dealing with the upcoming issues, using benefits of the interdisciplinary approach with a strong practical focus.

In this regard, the IV International scientific and practical forum "Innovations in science: the challenges of our time" plays a very important role in bringing together the representatives of academic communities from various universities and countries. It represents the importance of communication on questions of joint interest from different perspectives: law, economics, management, technology, ecology, culture etc. I believe this is the key to successful and sustainable development of our societies, based on mutual understanding and support.

On behalf of the entire team of students, PhD students and scientific-educational workers of Chernihiv National University of Technology, I would like to congratulate all participants of the Forum and wish you fruitful work, inspiration in implementing professional interests and outstanding scientific achievements for our common future.

Maryna Dei,
Candidate of Juridical Sciences,
Associate Professor,
Director of the Center for Strategic Initiatives
and Progressive Development

The constant changes in the world are the new normal. Increasing of the population, wars on the planet, the Artificial Intelligence (AI) creation, which is more efficient than the humans' brain, the population have almost used the biopotential of Earth.

Today's world is one of "VUCA" (Volatility, Uncertainty, Complexity, and Ambiguity).
Therefore, all humanity intuitively feels that education must change radically.

The main trend in modern education is increasingly implementing the model of life long learning, which allows a person to adapt and develop the competences and professional skills in line with rapid changes in the economy, technology, and labor markets. Today, consumers of educational services prefer to decide by themselves what, when, and how they want to learn. The motives for personal growth are increasing in education.

The challenges of modern education and science cannot be overcome without going beyond the old educational models, without the development and implementation of innovative forms of education.

The growing diversity of human personal requests, on the one hand, and the dynamics of the labor market driven by the acceleration of socio-economic changes, on the other hand, cannot be satisfied within the existing forms of traditional education. The problem of inconsistency of the formed education system with the new needs of society and people is aggravated. In these circumstances, we need a new perspective on the role and importance of education, that will meet current educational needs thanks to the widespread introduction of educational innovations. Today, for Ukraine it is actual and possible to implement the life-learning educational model, which requires the state to support and develop subsystems of this model: non-formal and informal education, online education, blended learning models. Lifelong learning at the national level should be defined as a full-fledged educational field with due regard for quality control and quality assurance with the recognition of various forms of education. In this context for four years now, representatives of the scientific elite of Ukraine and the EU Member States have been gathering at the Varna Free University to discuss and solve problems of innovation in science and education. The result of this Forum is a collective monograph prepared by representatives from Ukraine, Georgia, Slovakia, Bulgaria, Poland and the United States of America.

In the process of preparing the collective monograph, the scientists conducted a comprehensive analysis of the issues of the education system, lifelong learning, education management, the impact of science and education on various sectors of the economy have been identified and analyzed, the ways of building education and science are determined. For the successful implementation of the process of education reform, it is essential that the experience of innovation activities of universities in different countries of the world.

The proposed collective monograph is a collaborative international effort that will be of benefit to anyone interested in innovation because modern science and education must be the lifeblood of the entire civilized world. And all the knowledge embedded in a person must work to solve the problems that a person faces.

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PART I

EDUCATIONAL, PHILOLOGICAL AND PSYCHOLOGICAL SCIENCES

Innovations in Science: The Challenges of Our Time

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Educational role of cultural management in modern conditions of globalization of informatic literacy

IT globalization has brought many changes and dilemmas to the global market. Although adequate for many segments of work, it is often destructive when it comes to artistic and social value such as the development of national dignity through cultural activities. When it comes to IT globalization, the question often arises whether IT globalization needs to be adapted to society, or whether the entire world population should adapt to the informatics effect. "Globalization is the result of demand for better services and products, and drives participants to be constantly upgraded" (Andersen, 2003, p. 21). If we look for a moment in history, we will say that even the thoughts of Adam Smith's prominent economist in the 18th century ("The Wealth of a Nation," 1776) came when he said that society will experience its maximum economic development when the markets will act independently. Successful cultural management in the process of contemporary globalization is obliged to detect changes and needs in the environment in a timely manner, adjust to the tendencies to which it can (not) influence and at the same time work on the promotion and upgrading of its own values in culture. This approach to management requires greater engagement of the education of resources in culture that will enhance, with their competence, the cultural potential of society. "In the history of cultural reality, the leading 20th century evolutionists, G.Child and L. White, have developed the teaching of universal evolution- the development of culture needs to be seen as a whole, the development of culture as an overlying reality rather than through individual communities" (Kale, 1982, p 147). Such an approach would even be satisfying when the market would not be so saturated with low-quality products, and the state and the small communities would not have lost their originality and distinctiveness. Today, experience shows that culture needs to be linked, but also to emphasize its own cultural identity. For this reason, it is important that the education of staff in culture is multidisciplinary, interdisciplinary and with an accent on contemporary IT and cultural trends of development.

Development of cultural management in a modern IT society

Today, for the sake of mass, cheap production and distribution, culture has become the means of manipulating artistic values. As a means of material interpolation without a true artistic value between the manufacturer (seller) and the customer, it was implemented on the market most often as a commercial "appliance". Cultural management as a synthesis of social, historical and economic functions today is more than ever subject to complete commercialization, informatization and digitalization, which represents a

great danger to the entire cultural identity. Parallel with this, it is necessary to re-examine the plans for the development of cultural management i.e. to harmonize different elements that should function in the direction of cultural progression rather than as commercial trends. Such an example is often seen in tourist destinations when selling artistic "autochthonous" souvenirs, which in the long run affects the quality decline of the entire destination. The bidding often dictates the structure of the buyers (tourists), and as a tourist country the goal is to be recognized in the market and therefore greater attention should be paid to the modernization of the existing laws and regulations on the sale and management of cultural goods and products, including higher education of all participants involved in cultural- education process.

Of the utmost importance of the culture management, there is a question which regards quality and professionalism of the staff (human resources). Although it is difficult to expect managers to have clear knowledge of pedagogy of work, psychology and other professions, it is necessary to engage external associates in the function of educators or in direct operation, and then organize further education or training. This approach is necessary because cultural institutions (cultural goods) are not caught up in sudden changes in the environment that require employee’s knowledge and skills to use, for example, new technologies in work, use of multimedia, digitization, etc.

Modern civilization based on generational experiences and of various artistic turmoil is determined that culture as a significant component of a human development plays an important role in the overall social development, directed globally as well as locally. "The goal of cultural heritage management, therefore, is to preserve a representative piece of material and immaterial heritage for future generations" (Jelinčić, 2010, pp. 27). If the culture is a synthesis of different values and perceptions and a result of historical development tendencies, isn’t it the basis for a teacher to upgrade new developmental and educational strategies that should be the role of receptors of foreign and domestic investors. Culture as a part of social development is a core bearer of market offer, and it meets two requirements:

- mutual acquaintance of members of different nationalities and its mentalities
- the preservation of its own cultural heritage whose ethnological value would be presented to other peoples,
- greater involvement of cultural workers in the field of education and development of cultural management

The interaction between culture and education affects the value of the overall cultural offer, whose results directly apply to the increase of economic impacts. That is why the cultural offer must meet the cultural needs of "consumers" with its quality. In order to raise cultural dignity, special attention should be paid to educating all actors involved in the promotion of

cultural activities and the affirmation of its products. "Education is risky, because it stimulates the feeling of open possibilities. But if the young do not raise so as to acquire the ability to understand, feel, and act in a culture of the world, it does not only mean miserable pedagogic results but to create the risk of alienation, defiance and practical incompetence. And all this undermines the vitality of culture. "(Bruner, 1996, p. 55). In recognition of the influence of world trends, culture and national identity, education should be in the function of seeing art and culture as a part of life and act of expression and creativity. In this regard, the curriculum of the pupils'and teachers' education should be also focused on the development of personal potentials in the domain of creativity (film art, stage, music, computer science, etc.). Therefore, work in culture by its scope and content requires the emphasis on individualism in creativity, as well as teamwork of teachers and students. Under the conditions of contemporary cultural globalization and IT globalization, educational institutions should pay special attention to education for the preservation of national heritage and awareness of the need to foster national identity, including a greater scope of the content of national culture in curricula of elementary, secondary and tertiary education. The development of new competences of teachers and students for a better understanding, evaluation and transfer of cultural content can not only be achieved through lecture / classroom work, but different strategies and forms of extracurricular work such as excursions, tours of cultural sights, using multi-media. This approach also supports the development of new study programs whose basic goal should be education and training of staff for business and operational management in all cultural activities. Students should be able to carry out specific tasks and working queries with an interdisciplinary approach to work. Specific objectives of such a program should be oriented towards performing lectures, seminars, exercises and practical work for the purpose of:

- Getting acquainted with operational processes in business, organizing culture management
- Getting acquainted with human, material and financial resources management
- training in IT and communication technology
- adopting the basis for the development of strategic managerial skills

After graduation, students should be trained to develop and carry out activities such as:

- exploring the needs of cultural consumers
- development of human resources (education and lifelong learning)
- Development of development strategies
- exchange and mediation, information, knowledge of culture

- establishment and development of financial management system
- project management and cultural assets
- Knowledge of e-marketing
- Consulting services
- knowledge of IT skills (software) etc.

In order to accomplish the listed functions and goals, it is important to:

To open the boundaries of communication and cooperation between different sciences and arts, i.e. scientists / artists! Pedagogy should be harmoniously interdisciplinary to connect with other sciences (economics, information sciences, psychology, arts ...) because they are the global, globalization trends of modern education and education (Tatković, Juraković, 2012.)

Without innovative creativity, cultural offerings can be disrupted not only in the aesthetic but also in the economic part. "No matter what form we meet with creativity: written, verbal, cartoon etc., it exists and deserves full attention. By enhancing creativity, we are advancing the world around us" (Juraković, Tatković, 2012.).

Destinations as Cultural Centers?

With years of tradition in Croatia and its cultural resources, it is consistently trying to act in the direction of assimilation of as many "cultural consumers" as possible. At the same time, in the last few years there is a small shift in the redirection of supply and demand from the previous quantitative to the qualitative impact. However, when it comes to co-operation between leaders, organizers of cultural resources and leading tourist and social entities from the highest local instances, it is felt uncoordinated and superficial cooperation. Such a trend of non-synchronized management of cultural institutions does not strengthen the cultural dimension of the general character, but it is turned towards individual interests that most often do not have sufficient numbers of educated personnel. A syndrome occurs where the suitability of something substitutes the ignorance of the very matter of cultural activity.

This approach is extremely applied to the economic market aspect, if we look at our country as a prospective tourist destination. In the foreword of the book authored Juraković and Sinosich (2017), "The Croatian tourist product is among the more complex products. It connects and integrates many activities and contents, not only accommodation and eno-gastronomic experiences, but also rich natural and cultural heritage and so much more. Likewise, tourism is dependent on traffic and all kinds of communications, but also on high ecological standards as well as on various other factors, especially the human potential and the ability to manage such demanding processes. "

As part of our everyday life, art is mostly divided into reed branches of the world's deviant products of the foreign spirit of the people who sell them as part of cultural parity or heritage. According to Aristotle's view (Grgurić, Jakubin, 1996), art transmits the natural and human reality of what is individually but also general, and as such should not be a picture of the objective world, it must already show what is better and truer than the visual reality. IT globalization, when it comes to artistic or other products in culture, should not be literally understood because IT should be solely in function of greater and better promotion of the cultural values of a nation. The function of cultural management in the conditions of modern IT globalization and education should be oriented towards satisfying needs: entertainment, rest, recreation, creativity and creativity development, creation of destination imagery.

The advantages of such an approach would be reflected through a systematic increase and quality assurance, quality service and professionalism.

Why is all this needed? Precisely because of the frequent difficulties and disadvantages in the market such as:

- selling forgeries as original works
- price disproportion between original and industrial works
- lack of knowledge and ignorance of consumers in art recognition
- negligence of traders
- insufficient knowledge of basic IT tools (in the promotion service)
- Excessive liabilities to the State (VAT and other liabilities)
- insufficient connection between urban and municipal departments for art and artists involved in the promotion and production of art exhibits.

Artistic business organization should be in line with market trends, but respecting the national identity, which includes the following elements:

- Greater education of staff management in cultural activities
- Better knowledge of computer literacy as a tool for marketing activities and better promotion
- Development of a plan and program for future cultural activities (Strategy)
- Defining the vision, mission, objectives and tasks of cultural management
- Greater connectivity with mass media.

Depending on that, cultural management as a carrier of the aesthetic but also the utilitarian value of its products (resources) should achieve the following goals:

- explore and meet the quality of the market needs
- Funding cultural programs
- Create a cultural image in its environment

- to integrate into world trends, but to maintain a culture of its own
- educate staff in culture through workshops, courses, higher education institutions
- educate employees in culture in the field of information literacy
- educate children and young people to implement information technology creativity in cultural activities.

In cultural activities, it is important to respect the product's particularities due to its purely aesthetic dimension as well as to account for the combination of marketing mix elements, so that the product ultimately contains all the elements that are so different from many other products - aesthetics, recognizability, figurativity and originality.

Furthermore it should be emphasized that culture and art together with IT globalization have a major impact on the development of society. Although the contribution is difficult to measure accurately, the institutions of culture and art contribute significantly to the economic development and prosperity of society. Culture products are one of the few that are not subject to the fast aging factor. The picture drawn yesterday, is not less valuable today. That is why the approach to artistic creation as well as its organization requires a delicate approach, skilled and educated staff and knowledge of IT tools as a means of modern communication in the function of spreading a national culture.

Informatics education of children and young people in the function of the development of cultural dignity - Pedagogical research on the representation of information-communication technology in the youngest age.

As already mentioned, information communication technology has become increasingly part of our daily life in the last decades. Those who do not know how to handle a personal computer or smart phone of the latest generation are often omitted from numerous activities. Regardless of whether it is used in a working or recreational context, information technology has a significance that you could not have imagined a few years ago. It is important that IT globalization begins to develop from early childhood.

When talking about pre-school institutions, the main assumption is that new technologies are infrequently represented. The main problem is that neither educators nor children in pre-school institutions have the basic prerequisites to use new technologies in their work. Very few groups have a computer, tablet or smartphone available. The authors conducted research in the area of the City of Pula, where three large preschool institutions operate, one in Italian and two in Croatian. The survey was conducted through a survey questionnaire in the first half of May. The questionnaire was filled by 69.27% of the educators. This percentage confirms that the chosen sample is relevant in all aspects of the research in question.

The tasks of research that arise from the subject and the goal are:

- Explore and study the literature on the presence of new technologies in preschool institutions;
- Explore the availability of new technologies for educators;
- Explore the use and frequency of use of new technology in the workplace;
- Explore the availability of new technologies in children;
- Examine the views on the use of new technologies in preschool institutions;
- systematically analyze the results obtained and suggest ways of improving the situation.

The following hypotheses were submitted:

H0: There is a significant correlation between ICT's available to educators in institutions and ICT's that educators actually use it.
There are other auxiliary hypotheses that are:

S.H1: There is a significant correlation between ICT available for children and the use of ICT as a support to work.

S.H2: Computers intended for children are not ergonomically adapted to working with children.

S.H3: There is a significant percentage of educators who think that computers are harmful or partial harmful for working with children.

With the significance of the results, the obtained rhho value (r_s = 0.85729, p> 0.05) is higher than the reference value (r_s = 0.786, p> 0.05) according to the statistical table for critically acclaimed Spearman's values, meaning that significant correlation has been found between ICT available to children in the group and ICT that educators actually use as support for working with children and the auxiliary hypothesis SH1 has been confirmed. In all pre-school institutions of the City of Pula there are 32 computers intended for children. The overwhelming number of 31 proves that only one computer in the whole city is adapted to work with children. This is confirmed by S.H.2. Only 10% of educators think that the computer is harmful to working with children. Most educators, 59,62%, think that use of computer is partially harmful to working with children. A smaller part of the educator thinks that the computer is not harmful . The third auxiliary hypothesis of S.H.3 can not be accepted and it is rejected.

Research has shown that only 32% of educators have access to the computer. Only 36.54% of educators have the possibility to connect to the network, while 55.77% have no access at all. With new technologies that educators use for everyday work, 28.85% of them use a TV and a smartphone. As educators in previous responses have chosen to have no access to a smartphone at work, it is to assume that they are using their private one. Speaking of which it is interesting that two educators responded to be using the Micro Computer. The computer as a support in work uses 63.46% of the educators, and 80.77% of them use a private computer for business purposes.

As far as the availability of new technologies for children is concerned, as many as 34.29% of educators have written that their children have no access to any information communication technology. A percentage of 30.48% has a computer available but the worrying number is that there is only one computer in the city of Pula that is ergonomically adapted to children. This questionnaire also confirmed the hypothesis related to attitudes of educators on the use of new technologies with the youngest. 74.04% of educators believe that the computer is useful in pre-school institutions, most of them would give it to children (up to 6 years or more) but only for educational purposes. Positive results can be seen in response to education where 74.04% of them believe that education related to new technologies would be useful and necessary. Only 9.62% of educators do not want to be educated in the field of new technologies. The city of Pula would have to upgrade pre-school institutions with new technologies in future investments and provide educators with quality and accessible education in this field. By acquiring new knowledge, educators will be trained to improve their own practice and will present children with new knowledge on a creative and completely innovative way, to help young people contribute to the development of IT globalization as early as possible.

Conclusion

Culture and IT as an integral part of our lives determine the time and direction of our overall activity. When talking about culture, the question arises: Is there a phenomenon and "non-culture", or is this same inculturation presented in our offer as our general culture and mentality? The desire to grow culture on the pedestal of contemporary notions is not necessarily if the traditional subculture has shown that our culture needs to be presented to the wider public in its original form. A distancing from the original, cultural identity to western trends of understanding culture and aesthetics, our society can bring more harm than good. Croatia as a small country, promoting cultural values and goods (especially through the use of computer science) should be known world-recognized, and so far, it has not been an example. "Croatia is a country with a small internal market, so the openness of its economy towards the world market is a development imperative" (Restructuring of the Economy of the Republic of Croatia and Globalization, 1998, 45). The question arises whether these specificities and the cultural beauties we observe are more respected by foreign civilizations, or we ought to respect it ourselves in view of the long-standing cultural tradition we possess. Croatian culture represents our traditional evolution and therefore deserves higher and higher marketing placement, additional investment in education and informational literacy of all actors in culture, especially children and young people in elementary and secondary education.

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A senior pupil as a subject of a civil society

In the conditions of Ukrainian democratic transformations, the nature of the relationship between the state and civil society is changing. In the developed democracies, which Ukraine aspires to be, civil society serves as a partner of state power in solving economic, political and social problems of public life. At the same time, civil society is a source of criticism of the authority if it is ineffective or restricts freedoms and violates the people's rights. In a democratic society, the credibility of governance is directly determined by its ability to provide decent conditions for the citizens' life, the ability for real dialogue with civil society as the main source of public opinion. The most important democracy values are the citizen, his/her life and dignity, civil society, freedom, equality, justice. At the individual level, democratic values are a manifestation of a person's value attitude to him/herself as a subject of civil society, provide an appropriate level of self-awareness, act as meaningful guidance for activity, behavior regulator in various spheres of public life. Modern civil society needs citizens who were sensitive to the above-mentioned terminal and instrumental democratic values, independently think, are active and capable of self-realization in conditions of democratic transformations.

Today, in Ukrainian education, the tasks of teenagers' and young people's civic education, devotion to the cause of native state-building, attracting boys and girls to the real public life of the country, shaping the civil actions experience based on democratic values are defined as strategic.

According to I. Bekh, early youth is a period of civil formation, social self-determination, active person's involvement in public life.

Senior pupils feel the need for taking their position in society, realizing themselves as a member of civil society, understanding themselves and their capabilities in this context. So, the problem of educating senior pupils as subjects of civil society is extremely important.

The theoretical foundations of the person's formation as a citizen of the state at different times were developed in the works of K. Ushinsky, S.Rusova, I. Ogienko, G. Vashchenko, B. Grinchenko, A. Makarenko, V. Sukhomlinsky, A. Sukhomlinsky, K. Chernaya and others.

Various aspects of the civil society formation in Ukraine, the subject interaction features of the citizen personality and the state are highlighted in the scientists' revisions: A. Gorban, A. Kosilov, L. Rogatyna, V. Skvorets, Yu.Uzun, R. Chernonog, Yu. Shemshuchenko, G. Shchedrova, M. Yuriy.

The regularities, principles, content, the transformation process of social and civic values into personal wealth are highlighted by Ukrainian scientists, such as I. Bekh, Yu. Zavalevskiy, I. Zyazyun, A. Kirichuk, A.Kononko, A. Sukhomlinsky, K. Chernaya.

Philosophical and cultural ideas of public life humanization and democratization, concepts of the theory of personality and its development in the education process, democratic values interiorization in the sphere of personal achievements, general regulations of axiological, person-centered, results-based and activity orientated personal development approaches form the basis of psychological and pedagogical values theory: A. Bodalev, L.Bozhovich, A. Vishnevsky, D. Elkonin, A. Zdravomyslov, D. Leontyev. The fundamentals of person-centred education, civic education is discussed in academic writings of I. Bekh, A. Sukhomlinskaya, K. Chernaya. The civil society subject's upbringing is also based on the psychological and pedagogical theory of the educational process humanization; it was examined in the scientific works of I. Bekh, V. Belousova, A. Maslow, T. Ponimanskaya and others. A theory of psychological and pedagogical design educational process has been developed in the scholarly writings of V. Kraevsky and M. Krasovitsky, which is one of the essential conditions for the educational space modeling, aimed at the personal qualities forging, civil society subject's qualities.

However, the content and psychological and pedagogical conditions for the senior pupils' education as subjects of civil society, the scientific and methodological support of this process need further development.

The urgency of the problem is exacerbated by the contradictions of public life in Ukraine: governmental authority, on the one hand, encourages citizens to be active, critical and responsible, and on the other, limits citizen participation by voting in elections and passive observation of ideological debates at the level of the political elite. Under these conditions, the senior pupils' civic experience does not go beyond the framework of passive, mediated by peers, parents and the media, involvement in the socio-political processes taking place in the state. This forms the conviction among senior pupils that they are governed, nothing depends on them, they cannot change anything in the society life and the separate community, which, in turn, blocks the need to look for constructive solutions to improve social life.

That is why the aim of this article is to determine the essence and structure of the concept of «senior pupil as a subject of civil society».

The main precondition for the civil society emergence and development A. Kosilov, L. Rogatina, V. Skvorets consider legally enshrined human freedom caused by material well-being, entrepreneurship freedom, the private property availability as the economic basis of society; legislative consolidation of people legal equality based on their rights and freedoms empowerment; establish mechanisms to develop public institutions capable of an equitable dialogue with state authorities, self-regulation and self-development in the powerless relations sphere of free individuals who have the ability and real opportunity for self-realization in the social, economic, political and spiritual spheres of civil society.

The social sphere of civil society life concerns the problems of providing decent living conditions for people as representatives of various socio-demographic, property and professional communities; improving the life quality, the satisfaction level of their social needs.

Scientists associate the civil society *economic basis* with market relations, various forms of ownership, private property, as manifestations of the individual's economic freedom in society. The activities of civil society institutions in this area are aimed at creating a socially responsible owner and efficient production, improving the person's status as a taxpayer, raising the production processes level in accordance with the technological progress, the experience of the world advanced countries, cultivating responsibility for the quality of the final product, the desire to support national manufacturer and the like.

The political sphere of civil society life is associated with the possibility of person's free self-determination according to his worldview socio-political preferences, comprehensive protection of civil and political human rights and freedoms. In a democratic State subject to the rule, every citizen is guaranteed the right and opportunity to participate in state and public affairs.

In the spiritual life, the civil society institutions activities are aimed at developing education, science, art, ensuring the possibility of individual choice of cultural values, facilitating the interiorization of moral values in the person's inner culture, and the realization of diverse people's spiritual interests.

The main structural element of a civil society is a *person-citizen* as a person in all the fullness of his/her civil rights and obligations – the *main civil society subject*.

In philosophy, to define a specific person, distinguishing him/her from a collective, a social group, the concept of «*individual*» (from Latin – «indivisible») is developed, which expresses mainly its physical separation from other people, therefore it is complemented, as a rule, by more specific concept – «*individuality*» as a manifestation of the unique, extraordinary, peculiar in the natural (biological), spiritual and social properties and qualities of the individual, something that is not found in other individuals. *Person* is a dialectical unity of the general (generic, natural), particular (social) and single (individual) existence mode. The person is biosocial in content, but social in essence. For the reflection of the social in the person and for the understanding of the biological in him/her as the carrier of the social in philosophy, there is the concept of «*personality*». *Personality* is a person coupled with his/her social qualities. In their reality, any personality is formed under the decisive influence of the existing system of social relations. The person's learning process of certain social relations, which enables him/her to function as a full member of society, is called socialization by philosophers. *The personality can be both an object and a subject of socialization* [10, 604-609].

The categories «subject» and «object» are interpreted in philosophy in the context of the cognition process as an active creative reflection of reality in human consciousness.

The *cognition subject* is a person who is included in public life, public communication and relations, using social production forms, ways, methods of practical and cognitive activity, both material and spiritual; this is a person who is actively carrying out the transition from ignorance to knowledge, from incomplete knowledge to more complete and accurate, acquiring new socially necessary knowledge of reality. But the *person-cognitive object* is the face, only contemplates the world, perceives it, but does not transform it. Every person realizes him/herself in knowledge as a social being, since all cognitive abilities and possibilities, all cognitive activity is realized only in society and through society. In other words, people are formed as cognitive subjects only in their joint activities, due to a certain system of social relations, a certain level of social production and culture development [2, 217].

Any person's activity is always conscious. From the point of view of social philosophy, the core of consciousness, its essence is the worldview, together with the activity it is an integrated component of the personality essence. The structure of the worldview consists of beliefs – the person's confidence in the correctness of his/her views and ideas. In the person's life, his/her world view is manifested through such forms as:

- self-awareness (personality self-cognition, attitude toward oneself, that is, self-esteem, self-control, managing oneself). In the context of senior pupils' educating, it is important for an individual to understand his/her place in society, the meaning of his/her life, his/her ideals to be consistent with social values, responsibility for his/her actions;
- value orientation. They determine the sequence and direction of the person-subject behaviour, his/her actions and attitude to the principles, life standards and activities in society;
- social attitudes are a value orientations reflection as a socially determined person's propensity for a predetermined attitude regarding things, people, events. In a person-subject, social attitudes are distinguished by the social significance of the goal and aspirations, their correspondence to social needs and values, the goal and means unity to achieve it.

Thus, we come to the conclusion that the subject is a carrier of activity, subject-practical activity, knowledge and transformation of existing reality, while the subject's vigorous action is aimed at transforming not only external existing reality, but also relations with other people, as well as self-changes [2, 219].

In sociology, a social subject is understood as a carrier of activity and a participant in relations in the different areas of social being [1, 5].

From the psychological point of view, the subject is a specific individual or social community, possessing consciousness, will and it is capable of purposefully transforming reality and itself. Scientists in the field of

psychology view the subject as a product of historical development and associate its activity with the peculiarities of human activity. The person's transformation into a cognitive and active subject occurs through interaction with other people [7, 348].

The value of civil society as a special intermediate between the state and the individual is that it contributes to the solution of the problem, is not within the competence of the state, and promotes self-realization of the highest value of civil society – a person as an independent, free, self-governing person. Civil society itself, firstly, is the value of democracy. Secondly, it becomes possible to implement other democratic values – freedom, equality, justice, only under the condition of the civil society existence.

We agree with the Yu. Rozhkov's opinion that the person's freedom in civil society is realized in the forms of a selective «freedom from» (that is, from social exclusion, oppression, enslavement, excessive restrictions, etc.) and «freedom for» (peculiar space for self-realization in all public life spheres). Measure implementation of human freedom in various fields is a key element in the civil society evolution [8, 11]. Human freedom is associated with the qualitative content of the person; it reveals the individual's will to self-realization, the spiritual revelation of the world, and the person's initiative. Freedom of personality in modern conditions is a measure of the place a person occupies in society and is realized in freedom of choice – the fundamental right of all people to live according to their convictions and interests, self-knowledge of the ways an individual chooses him/herself as a subject of political and moral action. The civil society subjects also realize and protect political freedoms, which include: freedom of conscience, speech, thoughts, beliefs, invited thoughts; freedom of peaceful assembly, association; freedom of information, participation in movements, rallies, demonstrations; freedom of free choice of existing institutions of power. Political freedoms are aimed at the realization of a person in civil society and the state; to determine the political behaviour of the person, the ways and directions of his/her action as a civil society subject [5, 594].

Another democratic value of civil society is equality. This is one of the basic principles of the constitutional legal status of a person and a citizen, stipulated by the Constitution and the most countries laws, and international legal acts the Universal Declaration of Human Rights (1948).

Justice is recognized by scientists as one of the fundamental values of social and political life, based on the principle of balance in the social relations of the people's rights and duties, the society and the individual's interests. The essence of this value lays in the correspondence between the practical role of various individuals in the society life and their social position, between deed and reward, work and remuneration, merit and their general recognition. The discrepancy in these ratios is assessed as an injustice. In its essence, justice is a deeply democratic value, it is closely connected with the

life and value ideas of the large segments of the general population. The choice of Ukrainian people's historical future relates to the justice ideals [5, 631].

These terminal values are correlated with instrumental values that are fully realized in a developed civil society: non-interference in the citizen's personal life, the promotion of his/her self-development; the people's sovereignty, the rule of law, the person-citizen's rights and freedoms; freedom of speech, freedom of choice, freedom of self-realization, freedom of conscience; private property, free enterprise, socially useful work (as the realization of freedom in the civil society economic sphere); constitutionalism, confidence in the democratically elected government, control over the government's activities, its compliance with its powers, the citizens' rights and freedoms (in relations with the authorities), self-organization and self-government, solidarity (to solve problems without the authorities' participation); free media [3, 87].

In his behaviour, making decisions, making judgments, a person, as a civil society member, is guided by the terminal and instrumental values mentioned above. The most important person's values determine his/her system of value orientations, from which his/her activity, independence and responsibility as a priority as a civil society subject further depend.

At the personal level, the above-mentioned democratic values are a manifestation of the person's value attitude towards him/herself as a civil society subject, provide an appropriate level of self-awareness, act as meaningful guidance for activity, behaviour regulator in various spheres of public life. They are manifested in the ability to determine their place and role in the civil society life; readiness for self-realization and self-development as a civil society subject, for interaction with authorities and civil society institutions in accordance with social status, ability to protect their rights and freedoms, ability for professional self-determination, desire to become a competitive specialist, readiness for socially useful work and personal qualities – dignity, activity, initiative, independence, responsibility, law-abiding and tolerance [3, 91].

Civil society can fully function only if all groups of values are implemented. We also note that the highest value and the most important component of civil society is a citizen as a sovereign person. The civil society formation is closely connected with the human person's formation, which has a specific system of needs, interests, values, rights and freedoms. The presence of conditions for the realization of interests, rights and freedoms, as well as the readiness of the individual himself for self-realization, turns a person into the main participant in social development, a civil society subject, who thinks independently, acts actively and accepts responsibility for the committed acts and deeds.

Activity is considered by scientists as a person's ability to socially significant changes in the surrounding world, which is manifested in

communication and joint activities with others, in the subject's influence on others; in countering external circumstances and perseverance in achieving the goal. Especially significant in the context of our research is the suprasituational activity, which manifests itself in the subject's ability to rise above the situation requirements, set super-high goals, overcome external and internal barriers to the goal. The activity of a person-subject is the person's ability to systematically and purposefully transform the surrounding reality, manifested in perseverance, integrity, consistency in upholding his/her views and actions, intolerance to weaknesses, energy, initiative and other moral-volitional qualities. This is an active life position, providing for responsibility for ones' actions and deeds, demanding attitude towards themselves and others, creative approach to activities [7, 15].

Political scientists consider the essence of the categories «subject» and «object» in the context of political participation as a form of citizens' active behaviour in the society political life.

Thus, according to M. Getmanchuk, the politics subjects are individuals, organizations or social movements that constantly and relatively independently participate in political life in accordance with their interests, influence the other subjects' political behaviour, cause certain changes in the political system. The policy subject carries out purposeful activities and interaction with other actors. The driving force behind the activity of political actors is the presence of political interest [6, 396].

Understanding by interest the direction of a person or a group of people to a certain object or a certain activity, the scientist notes that people's awareness of their needs and possible ways in which they could be addressed leads to the formation of an interest that motivates the subject to social activities. For the object to which the subject's activity is directed, public interests are divided into economic, political, social and spiritual. In particular, political interests are an incentive to the individual's political activities. In the process of political interest realizing, the person-subject asserts him/herself and demonstrates an attitude towards political power. According to M. Getmanchuk, since politics is a means of regulating public life, other types of interests and needs are met in the process of political activity: economic, social, spiritual. The policy provides an opportunity for a person to communicate with other people, to compare their own interests with the interests of the group, to influence the behaviour of group members. In such communication, the subject becomes aware of him/herself as a member of this society in various spheres of his/her life [6, 399].

The civil society subject is, first of all, a sovereign and free person, responsibly relating to his/her life and the consequences of his/her actions and deeds, an active and independent person, who is capable of conscious self-regulation based on the democratic values of his/her activities in various spheres of public life. The civil society subject respects the democratically elected government, knows how to interact with it in the development of all

spheres of civil society, but at the same time is ready to defend his/her rights and freedoms in a legitimate, civilized way, strengthening the foundations of a democratic rule of law. So, this is a purposeful, active, independent and responsible member of civil society, capable of self-determination and self-realization in the economic, political, social and spiritual spheres of public life based on democratic and humanistic values.

The sensitive period of personality's subjective self-determination, according to psychologists I. Bekh, R. Pavelkov, V. Polishchuk, M. Savchin, V. Tatenko and others, is the period of senior school age (early youth), since it is at this time that the development of subject activity occurs personality. Senior pupils need to take the inner position of an adult, realize their place in society, understand themselves and their capabilities, and a new determinant of self-development appears – self-relation as a subject of activity in society.

As M. Savchin notes, at this age stage, the senior pupils have a formation of the goal creation mechanism, the main manifestations of which are the fact that a person has a definite plan, life plan, life goal, project goal, and general experience of his/her being. This mechanism is associated with the senior pupils' desire and ability to carry out self-projection for the future. It is about his/her desire and ability to set specific goals, transfer him/herself to the future, build his/her real life with a projection to the future [9, 348].

According to R. Pavelkiv, in this age period the transition from dependent childhood to adult's independent and responsible activity takes place with decisive determination on the part of society. Given this, senior pupils have a problem of choice of life values. They seek to form an internal position in relation to themselves («Who am I?», «What should I be?»), in relation to other people and social events and facts. During this period of life, a person decides in what sequence he/she will apply his/her abilities to realize him/herself in work and in public life [4, 462].

It is quite clear that the formation of the senior pupil's personality as a subject of his own life (including the social and political one) occurs primarily in the conditions of family education and in the school's educational process, in particular by means of project activities, pupil autonomy and youth organizations. In addition to communication with adults, a unique specific environment of communication and interaction with peers is formed in the educational institution. But a modern educational institution is an open socio-pedagogical system that also attracts other institutions of civil society to solve educational problems. This creates opportunities for the organization of the senior pupils' activities in almost all spheres of civil society and their acquisition of experience in social interaction. Thus, the school expands the opportunities for senior pupils to enter public life. In this aspect, we describe the characteristics of a senior pupil – a civil society subject.

A senior pupil as a civil society subject is aware of the mechanism of institutions functioning in the social, economic, political and spiritual spheres

of life and their place and role in society; ready and capable of active interaction, manifestations of independence and responsibility.

In relation to the other as to the subject, the senior pupil's behaviour is characterized by the acceptance of the self-value of the other as a free, independent, responsible person, the desire to cooperate, and building parity partnership.

In the social life of civil society, senior pupils appear as carriers of collective rice, of different ethnic origin, gender, cultural characteristics. A senior pupil as a civil society subject recognizes himself as a community subject, actively explores the social environment from the point of view of natural human rights and universal human values, is able to make choices and set goals in social interactions, critically perceives socially oriented information, and is able to establish productive ways to interact with other people, focus on the active transformation of social reality in order to achieve better living conditions both in school and in the local community. In accordance with the possibilities of his/her age, he/she cares about the environment, shows indifference to low-income citizens, can sympathize, deals with the problems of others, is engaged in charitable activities.

In accordance with the Ukrainian legislation, senior pupils cannot participate in political campaigns and voting in elections yet, and their participation in local affairs is rather limited. However, when choosing a pupil autonomy leadership and organizing the daily hard work of a school "parliament", "government" or other form of self-organization, senior pupils actually learn to actively participate in making decisions that are important for school life, in the formation of self-government bodies elections; adhere to clear democratic procedures for the election and change of pupil government; to exercise control over the activities of the chosen leadership to draw conclusions about the compliance of the activities of pupil self-government with the senior pupils' interests. This experience will help senior pupils make a conscious political choice when they reach the age of eighteen.

The senior pupils' activities as subjects of the spiritual sphere of civil society are characterized by respect for the history and culture of their own and other ethnic communities within the national political nation, support for the national idea; the ability to realize and identify their attitude to art, the desire in accordance with personal preferences to carry out creative activities in the artistic field; using art as a means of spiritual formation; perception of the environment as an aesthetic value; awareness of human rights to profess any religion or not to profess it at all; tolerant attitude towards people of different cultures and religions.

Senior pupil's self-determination as a civil society subject occurs as a process of consciously identifying and establishing his/her own position in various spheres of social and political life. In the organization of this activity, such pupils show independence, set a goal, find ways to achieve it and carry out decisions taken by them without assistance, trying to move away from

standard solutions and find new effective ways to solve the entrusted problem.

A senior pupil's important quality as a civil society subject is also responsibility as an internal self-regulation, mediated by value orientations, which is manifested in the awareness of the causes of the committed acts and their consequences. It is the ability to conduct in accordance with the other people and social groups interests, to comply with the accepted norms and fulfill duties. Responsibility is formed in joint activities with other people through the assimilation of social values, moral principles and accepted legal norms [7, 60].

According to the concept's essence of «senior pupil as a civil society subject», we can distinguish its structure, which is represented by cognitive, value-reflexive and activity-practical components.

The cognitive component is a knowledge complex about the democratic and humanistic values essence, the civil society structure, the peculiarities of its institutions and ways of interacting with government bodies; knowledge of a person's and citizen's rights, freedoms and duties, the basic laws and democratic procedures governing the social, economic, political and spiritual spheres of public life and the methods of their application in accordance with the senior school age.

The value-reflexive component is characterized by the awareness of a senior pupil him/herself as an active, independent, responsible and law-abiding person and citizen with a sense of personal and civic dignity; by convincing one's ability to actively, independently and responsibly build one's own life and influence the society and the state life; awareness of the need to introduce democratic values in all spheres of civil society life.

The activity-practical component is the senior pupil's ability to determine his/her place and role in the civil society life; the ability to critically evaluate the country social and political life, to express his/her opinions and defend his/her position; it is the willingness to self-realization and self-development as a civil society subject, the ability to protect his/her rights and freedoms, to fulfil duties; it is a willingness to dialogue, the ability to build relationships with other people on the tolerance basis, the principles of freedom, equality and solidarity, the ability to constructively resolve conflicts; the ability to professional self-determination, the desire to become a competitive specialist; willingness to interact with civil society institutions and state authorities in accordance with the public status; active and independent participation in socially useful work, volunteering, pupil autonomy and youth (junior) organizations' activities.

To sum up, we should note that the definition of the essence and structure of the concepts «senior pupil as a civil society subject» will contribute to the development of a diagnosing methodology of this phenomenon and a functionally informative model of senior pupils' educating in this aspect.

A general education school faces the task of ensuring the functioning of the system of extracurricular educational activities and methods which ensure the effectiveness of pupils' civic education; development and implementation of person-centred technologies for the formation of senior pupils' civil orientation; enhancing the formation of the senior pupils' civil orientation; education of the person, who respects and complies with the norms and rules of social fellowship, adopted in our society, the traditions of their compatriots, that is, a certain type of social conditional behaviour.

Theoretical pedagogical studies enumerated above and the presented experience of senior pupils' educating as Ukrainian citizens in the midst of the emergence of democracy is undoubtedly useful for educating a growing personality as a civil society subject. However, it should be noted that, both in pedagogical science and in the practice of educational activities, insufficient attention has been paid to the role of the individual-subject of the senior pupil in democratic transformations in Ukraine. Important questions of the students' formation as active citizens are most often covered only theoretically and not supported by pedagogical practice. The developed concepts and programs practically do not cover specific methods of individual-subject's interaction with government bodies and civil society institutions, do not provide senior pupils' teaching how to control the activities of government structures and the government individual representatives; methodologies on potentiality of electronic control for interaction with government authorities is not clearly addressed and implemented.

These contradictions will be subject to modelling the educating process of senior pupils as civil society subjects in extracurricular activities.

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Electronic textbook design technique on the disciplines of professional training of students in higher educational establishment

In the modernization era of the country's economy, educational process requires significant changes. It should always keep up to date. The use of innovative technologies in the educational process is considered an engine of social development and economic growth. Recently, the term of e-learning, which combines training based on a personal computer, web-technologies, online learning, using information and telecommunication technologies [1] is becoming more and more widespread. The means of e-learning are e-textbooks, educational services and technologies. E-learning allows choosing a convenient place and time for studying, the way of qualitative knowledge acquisition, the possibility of constant contact with the teacher, individual study schedule, the ways of time and costs economy. Potential of new technologies has been realized inadequately yet, as few teachers use computers and other means of communication and information in full. The implementation of a computer into educational process gives the opportunity to create a lot of reference and illustrative material, presented in the form of text information, graphs, animation, audio and video fragments.

Educational and methodological support, or, as it is called, electronic educational resources [2], plays a decisive role in solving of didactic e-learning problems These are electronic copies of usual printed textbooks, electronic interactive textbooks, multimedia presentation of training materials, systems of computer testing, audio and video lectures on electronic media, computer simulators and virtual laboratories, educational packages of application programs, educational multimedia complexes.

Using of educational multimedia complexes supports independent students' learning at all stages of cognitive activity - from the initial acquaintance with the educational material to the solution of nontypical professionally oriented tasks.

Today's multimedia technology can be considered as learning tools, and as a new learning method.

Complex methodological support simultaneously combines different sources of knowledge (word, sound, visual object, practical work), includes all kinds of activity (word, sound, demonstration, instruction, etc.) and is able to organize all kinds of activity (listening, comprehension, response, observation, practical work).

In order to ensure the maximum effect of learning, it is necessary to present educational information in different forms.

The basis of the multimedia program and methodology complex is its interactive part, which can be realized only on a computer. It includes e-textbook, electronic reference book, computer models, simulators, electronic laboratory course, computer system for testing.

Video-lectures, multimedia textbooks, educational films are used for study of theoretical material.

According to the European standards of the credit-module system of education (ECTS) the volume of independent work of students has increased. That's why it has to be specially planned. It is necessary to create special forms, methods and means of training for this work. This requires the reorganization of the learning process and the extensive use of innovative learning tools, one of which is an electronic textbook.

The purpose of electronic textbooks is to help teachers and students in solving practical problems with the help of IT, developing of learning motivation and critical thinking.

According to the Order of the Ministry of Education and Science dated February 05.2018. №440 "On Approval of Provision on Electronic Textbook" [3] it was determined that the electronic textbook is an electronic educational publication with a systematic presentation of the educational material that corresponds to the educational program, contains digital objects of different formats, and provides conversational interaction.

We will formulate the basic principles for creating an electronic textbook that will enhance their quality and effectiveness.

1. Distribution of the educational material.

2. Multimedia presentation of educational information that allows simultaneous reproduction of text, graphics, animation and video.

3. Ensuring the virtual reality of the represented objects, by showing them in the form of 2D or 3D-models and in the dynamics of processes and objects.

4. Interactivity of the educational material, allowing to establish the feedback of a student with a teacher.

5. Adaptability to the students' individual characteristics.

An electronic textbook has some advantages over traditional types of books.

1. Automation of data storage, nearly unlimited amount of information.

2. Flexibility and adaptability, the ability to work at a convenient time in a convenient place and at a convenient pace.

3. Structuredness, convenience and visibility of the material in the e-book are realized using hyperlinks.

4. Objective knowledge evaluation [4].

All this makes the training process in higher educational institutions fascinating and bright, and, as a result, more productive.

The main criterion for granting the status of an electronic textbook should not be only an electronic media of educational material. Its content

and design must correspond to number of methodological requirements, providing new opportunities and solving new methodological and pedagogical tasks.

Designing of an e-textbook is a creative process, during which it is necessary to fallow relevant methodological requirements.

• It must have a clear logical structure and contain the base material.

• Each module must contain illustrations, audio and video materials.

• Text should be accompanied by cross-references, which allow to shorten the time of searching of necessary information;

• The main material of the unit should be combined with the help of hyperlinks;

• There should be a scroll bar that allows you to repeat lectures from any place.

Scientific and Methodological Center "Agroosvita" has developed electronic textbooks on different disciplines [5]. for the last few years. Authoring teams consisted of teachers of specialized educational institutions of Ukraine were formed to create e-textbooks of new generation.

The working group creating an electronic textbook “Operation of Machines and Equipment” consists of the teachers of SS of NULES of Ukraine “Nizhyn Agrotechnical College”. You can access the e-book "Operation of Machines and Equipment" and make suggestions at this link: https://github.com/evgivanov/expl_html_book.

Let us consider the step-by-step instructions for designing an e-textbook.

The first stage is to select topics and analyze already existed e-textbooks. At this stage it is possible to join an existing working group and continue to create a textbook that is currently in the drafting stage.

At the second stage, we collect and analyze available and accessible materials in accordance with the curriculum of the discipline. The theoretical information should include the title of the topic, an extended numbering plan, text materials, tables, drawings (photographs), video films, video graphics, animations, questions for self-control. Pay attention to the maximum visualization of the theoretical information. It should have enough videos, animation elements, video clips, 3D drawings, 3D video graphics, color pictures and photos, etc. Necessary software for editing text, graphic and video materials should be installed on computers.

The next stage is devoted to the formation of the holistic optimized text material, control questions and tests for each topic of the textbook.

The fourth stage is the development of a template in HTML format. It contains navigation elements in different parts of the textbook (theoretical material, laboratory work, test assignments), links to the next or previous topic. When creating the electronic textbook “Operation of Machines and Equipment”, the template developed and proposed by the Scientific and Methodological Center "Agroosvita" was used. The text of the electronic

version of the training course is inserted directly into the template and designed according to the respective formatting. The words to which hyperlinks will be created to an external resource (Wikipedia or official websites of machine manufacturers) are underlined. The links to a source of information are indicated in the parentheses. We do not insert the video into the theoretical information but make a note with its title. The video is stored in the "Video" folder. You should create a separate "Video Link" file with links to the Internet resources, if they are used. The materials for each section of the course are stored in a separate folder. Formatting and layout of text components of the e-textbook is better done in Notepad text editor or similar ones.

Educational resources of technical courses are usually accompanied by formulas. There are several ways to insert formulas into an HTML textbook: in the form of images, a manual typing (using TeX syntax), creating formulas and converting them into the required format by online services or Equation editor on your computer. The formulas in the e-textbook "Operation of Machines and Equipment" are displayed on the page by means of TeX. MathJax service allows to include mathematical formulas on web pages using LaTeX, MathML, or AsciiMath markup. Then the formulas will be processed by the Javascript library and converted into HTML, SVG or MathML for display in any modern browser.

The fifth stage includes creating, processing, editing and converting graphic materials. into the required format. For this purpose, we use GIMP, Inkscape, ImageMagick. We convert video into a format that a browser can display. Then we edit, cut out the necessary fragments, record a new voiceover.

We prepare interactive tests for self-control, for example, using the service http://test.fromgomel.com.

At the last stage, hyperlinks to various Internet sources (articles, videos) are added to the text for advanced study of the material on the topic. The links between topics are created for easy navigation.

A completed e-textbook after reviewing and editing by the editorial board is placed into the media repository of the Scientific-methodical center "Agroosvita" and is available for free use by students and teachers of all educational institutions.

The electronic textbook "Operation of Machines and Equipment" is designed according to a curriculum and to the number and content of the modules (ECTS). The e-textbook consists of theoretical material and control questions to it; different variants of laboratory and practical works; reference source in appendixes; a report, and the tests that allow evaluate the received knowledge and access to the next module (Figure 1).

Figure 1 - The structure of the electronic textbook "Operation of Machines and Equipment"

The surfing from one module to another is possible in two ways: during the passing of the level test after completing the study of the previous module or by the menu. For this purpose, there is a navigation system, which is displayed on the so-called navigation bars. Hyperlinks are inserted in the text for the sake of convenience.

Conclusions: An electronic textbook is not an analogue of the printed one but serves as a kind of educational environment. The main advantages of the e-book are visual aids. Besides text information, it has a large amount of multimedia material, which allows you to work with remote resources and quickly surf to various parts of the book. It is possible to work with this e-book on any device with the Internet access by the browser. Electronic textbooks are easy to be modified and added with new materials. Implementation of electronic textbooks in the educational process helps to organize it at the appropriate methodological level and significantly influence the effectiveness of the lessons. It increases the students' interest in learning and perception of educational material.

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Clever gadgets in our life

Thanks to the efforts of companies such as NTS, Oculus and Sony, virtual reality is becoming more widespread. However, in any, even the super-realistic VR world there is one problem: the brain can be fooled, showing it a beautiful picture, but it is extremely difficult to convey tactile feelings of presence, because we control the character with the help of very specific (albeit convenient) controllers. But everything can be changed with the invention of the glove [1] and Feelreal – masks [3], which allows you to feel physical contact in virtual reality. In real life, the creators of smart gadgets have become young Ukrainian specialists with technical education.

For the development of engineers from the Federal Polytechnic School of Lausanne and the Swiss Higher Technical School in Zurich. "Carcass" of the device, oddly enough, an ordinary glove, only here, it`s fingers on the back of the hand are placed with special electrostatic brakes [4].

Each such bracket represents 2 strips of metal, located one above another. Both strips in the normal state do not complicate movements. However, when applying the voltage to one of them there is a gravity between the sheets of metal, which prevents bending. In addition, on the glove fixed sensors, which allow you to monitor the position of the hand and correlate it with movement in the virtual space [2].

By developing such a technology, scientists only had to calibrate the software and start testing. During the tests, volunteers were offered to interact with virtual objects of various forms and move them [4].

In addition to the fact that the glove conveys a sense of touch to objects and allows you to distinguish between shape and density, it turned out that its application also increases the accuracy of manipulations compared with standard controllers, and the cargo that can withstand electrostatic brakes is about 2 kilograms [1].

Feelreal – a mask attached to VR glasses, allows you to feel virtual reality in the literal sense of the word. There is a set of sensors on the mask, which depending on the situation in the game or the film can transmit odors, heat, wind, vibration and fog. With such a mask of immersion in the virtual world should be more complete. The fragrance corresponds to a special block of 9 fragrances, which in total will be able to produce 255 different flavors [3].

In addition to the smells FeelReal ads and other sensations of virtual reality. For example, if the weather is cold and the wind is blowing in the game, then the gadget will launch a built-in fan. If it is hot or the player approaches the fire, then the heater and the fan will work. From time to time, the effect of presence in a game or movie adds the installed vibrator motor [3].

Miracle gloves are able to translate gestures into plain language. The QuadSquad group of Donetsk students, within the framework of the Microsoft's Imagine Cup project, created Enable Talk gloves that allow deaf people to translate gestures into speech [5].

Gloves are equipped with a solar battery, pressure sensors, gyroscopes and accelerometers, which with the help of special software can translate the language of gestures into the text, and then into the language, using the text-to-speech engine. The system connects to a smartphone via Bluetooth, writes Habrahabr with a link to Enable Talk site [5].

The team created several prototypes and tested them with the help of people who know the sign language. According to one of the team members, the idea came to them when communicating with athletes who suffer from hearing impairments. Another feature of the device is that users will be able to add new gestures to the recognition system, thus teaching it [5].

A miracle gadget that will help the blind grasp, and dumb talk, is now tested by two Muscovites. This invention was sponsored by Russian businessman Fedor Belomoyev.

Blind can read the computer or phone written on screen. The mechanism of the device is as follows: the wireless glove is connected to the gadget. The program analyzes the text on the screen and translates it into a familiar for blind people six-point Braille font. It is transmitted to the glove tactilely, that is, there is a vibration signal [6].

The device for deaf and deaf-headed will replace hearing, voice, and vision – all that they lack so much. All that you need is to install an application (fit the simplest android) on the smartphone and connect the glove. A headset with a microphone will also be needed [6].

The glove itself is made of beeflex, a pleasant elastic material. It can be stretched on any hand and calmly worn during the day. The charge of the battery is enough for six hours. The standard color is black. On the wrist is a control unit that is not bigger than a normal watch. The glove can be washed [6].

Fedor Belomoyev explained the work of the invention so: you approach a blind or deaf person and speak the microphone. The program recognizes the language and passes it on the glove. A blind man can answer. There are contacts on the palm – the fingers touch them, place the dots. It's something like a keyboard. Signals are converted into letters, and letters – in words that reproduce the synthesizer language. Of course, a synthesized voice is a voice of a robot, but a businessman hopes that any actor or actress will help us with voice acting [6].

The invention of the electronic guide for the blind by Ivan Seleznev, a 16-year-old prodigy from Nikolaev is a real extraordinary event among inventors around the world. Thanks to Ivan, our country was among the top three at the World Science and Technology Contest in the United States.

Ukrainian pupil was not only awarded a cash prize, but he was also offered a collaboration [7].

The echo sounder of Ivan Seleznev is in fact a technical embodiment of the phenomenon that exists in nature, because it is precisely so that the bats are oriented in solid darkness. The invention works on the principle of orientation of the night bird: it sends into the space ultrasonic waves, and if there is some kind of obstacle, then the waves reflect from it and turn back. Some of them have the sound signal memory – the closer the barrier, the louder sound, and others works like a vibrator. His mother helped the young inventor with the original design. At first, he wanted to arrange his echo sounder as a glove, but it turned out not to be very comfortable in operation. Then the idea of replacing a glove on the kneepads for the rollers was born – and it turned out to be a much more promising idea [7].

Ukrainian developer Vitally Potapchuk has created the Bewarned Dance application. Due to which people who do not hear can "feel" music. This addition is the part of a startup that works on creating programs for hearing impaired people. The idea of the project was born since his wife had no opportunity to hear music, and he himself almost completely had lost hearing when he was 2 years old [8].

When trying to solve his or her own problems, Vitally realized that he could help millions of other people (according to the WHO, there are around 400 million people in the world with hearing loss of varying degrees). A team of like-minded people decided to create BW Dance so that all people could equally enjoy the music, its rhythm, vibrations. Vitally knows how many friends and familiar people lack small joy in life. BW Dance will give deaf people an opportunity to spend New Year and Christmas, a wedding or a birthday party with celebratory melodies of famous songs.

The program of the Ukrainian developer allows you to dance and "feel" music, turning it into vibrations, flashes and visual equalizer. Bewarned Dance can be downloaded for iOS and for Android. The developers tested the app on children who first experienced the rhythms of music and made the video of their reaction. Deaf people worked in the startup team. The apps that developers created and are still creating now are thoroughly checked and listened to feedback of users [8].

It was five years ago in the evening, when the future founder of BeWarned Sergey Malyukov walked down the street and suddenly heard a signaling car behind his back. He quickly bounced aside, but the couple walking around did not move. Then Sergei noticed that they were talking in the sign language and could not hear the signal of the car [8]. After this case, Malyukov began to look for a solution on the market that would help protect the deaf from tragic situations, but no suitable one was found.

Then he appealed to one programmer Ivan Verenich with the proposal to create an application that is able to respond to dangerous sounds and signal them to owners who have hearing impairments. At the end of 2014,

they released the first prototype of the BeWarned application with the Sound Monitor function, which allows you to recognize the dangerous sounds in real time. Based on feedback from users, the team decided to create a BeWarned platform with several features that would help them with communications, security and entertainment [8].

Subsequently Vitaliy Potapchuk came to the team. He told about his wishes and tested the previous application on his smartphone. The result of their collaboration was the BeWarned platform, which united 4 technical assistants for the deaf: Sound Monitor, Connect, Emergency Call and Dance [8]:

1. Sound Monitor solves the security problem by distinguishing and identifying threatening sounds (cry, car clap sound, dog barking, and siren). In case of danger, the application warns the user of the vibration and flash of flash;
2. Connect helps people with hearing problems in communicating with others – he converts text to speech and vice versa;
3. Dance – helps to feel musical tracks, due to their conversion into vibration, light signals and pulsation of the visual equalizer;
4. Emergency Call allows the user to call relatives or doctors or patrols.

In the summer of 2016, the team conducted a beta testing platform in the United States. As a result, 88.9% of users reported that they would recommend the app to their friends [8]. It is this supplement that can make life easier and save deaf and hard of hearing people from tragic cases.

The Ukrainian Mevics product has been designed for people to have a right posture and go to KICKSTARTER.

Mevics is a gadget that helps you to control your posture while working. The miniature device is secured under the garment with a magnet or velcro and vibrates every time when a person slouchs or sits in a wrong position. The developers themselves described their product [9]: “Mevics is a good posture, improved blood circulation, proper breathing and the absence of clogged nerves. Mevics forms a habit of sitting exactly”.

The device also needs a smartphone with which it synchronizes. The Mevics Arr program monitors and displays the current position of the spine, collects and analyzes human activity data, and allows you to control the device. Developers have also added fitness training to the device, a mode for those who are constantly seated in the office [9], and he can customize and make the right posture for children.

“Intelligent” sneakers. The 18-year-old student Roman Lanovoy from Vinnitsa became the author of Ukrainian “smart” sneakers. He fitted a massager, heated and navigator to normal sneakers. In addition, they themselves lace up [10]. Over his invention, Roman worked for three years.

Lanovyh embedded electric motors in the shoes, which can make a massage, have temperature sensors and heating elements. Near the laces are sewn air chambers and a compressor that fix the foot in the shoes. All devices

– on lithium accumulators located in the sole. Sneakers are recharged while walking. When the sole touches the ground, a small lever is pushed [10]. The more a person moves the better and longer the shoes work.

You can also control sneakers from your phone: a special program displays the temperature in the shoes on the phone screen. It can be changed or set for Conclusions: Thanks to the development of virtual reality and related technologies, we can quite simulate staying in the virtual space, touching, feeling the volume and weight of virtual objects, smell, heat, and so on. However, some inventors have managed to teach deaf people to hear and speak, and the blind – to read the monitor or touch screen a comfortable temperature range for a person. One can pull laces and turn a vibrator as well. In addition, sneakers can "lead" their owner to the right place – the boy has equipped the shoes with a navigation system and barrier sensor. To do this, you have to speak the address on the phone, and the sneakers will "bring" to your destination [10]. This feature will be useful to forgetful people or people with bad memory.

A device that restores motility. Ukrainian Alexander Shumsky created a medical device that helps people restore the small motility of a paralyzed hand after brain injuries. With it`s help a person can independently dress, serve himself and perform other routine tasks. In addition, the invention promotes the restoration of brain ligaments with a paralyzed hand so that rehab takes place faster and more effectively [10]. Conclusions: Thanks to the development of virtual reality and related technologies, we can quite simulate staying in the virtual space, touching, feeling the volume and weight of virtual objects, smell, heat, and so on. However, some inventors have managed to teach deaf people to hear and speak, and the blind – to read the monitor or touch screen.

The device allows you to move symmetrically with two hands or use a working arm as a joystick to control the other hand. On a healthy hand wear a glove with a sensor that reads the movements of the index finger – and when it bends, it sends a Bluetooth signal to the sleeve of the sick hand. Such exercises help the brain to recover the connection with the paralyzed hand so that the function of the dead cells is taken by others [10].

Conclusions: Thanks to the development of virtual reality and related technologies, we can quite simulate staying in the virtual space, touching, feeling the volume and weight of virtual objects, smell, heat, and so on. However, some inventors have managed to teach deaf people to hear and speak, and the blind – to read the monitor or touch screen. Miracle gloves are capable of translating gestures into ordinary language, the touch glove replaces a person a voice, hearing and vision. The echo glider gloves for blind are important devices that are very relevant in our time. So smart gadgets are applied not only virtually, but also practically facilitate and provide comfort in human life.

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Psychology of management decision making

There is no area of human activity that would not be carried out by joint efforts of people. These efforts need to be streamlined, organized, i.e. manage them. Management forms a particular specific activity and acts as an independent social. It has already been said that social studies study management as a social phenomenon. "The psychology of management", being a branch of general psychology - a science that studies the inner world and spiritual development of a person, tries to define the boundaries of its subject of study. Monosyllabic indicate the boundaries of this discipline is impossible. Modern psychology is characterized by a process of differentiation, which generates the division of this science into separate branches, for example:
- The psychology of labor, studying the psychological characteristics and the development of human labor;
- Engineering psychology - is devoted to the study of the laws of the process of human exposure and modern technology;
- Military psychology - studies human behavior in combat conditions;
-Legal psychology - studies the peculiarities of behavior of participants in criminal proceedings;
- And, finally, the psychology of management.

These branches differ from each other, but at the same time they retain the general subject of research - the laws and mechanism of human mental processes. The special role of management psychology is related to the fact that at the turn of the 19th – 20th centuries, deep-seated transformations of society and its various aspects, such as production, economics, management, shifted the focus of attention from purely economic and production issues to social psychological problems: interactions of society and personality, leader and subordinate, individual and group. During the study of new problems, it turned out that, in addition to the formal relationship between the manager and the subordinate, informal, so-called interpersonal relations emerge, which are colored by psychological characteristics, personality traits of the manager and the employee, and which largely determine the effectiveness of management.

Under the influence of personality factors, there is a redistribution of management functions, rights, duties and responsibilities. From here it is necessary to consider the management of individual characteristics of the employee.

The study of these problems and called scientific discipline - the psychology of management. In everyday life, each person makes this or that decision. The whole world of solutions can be divided into solutions "for oneself" and decisions "for others." A managerial decision is such a decision “for others” that has the power of power in relation to its performers. Such a decision has a subject (leader or group of persons) that relies on its official legal status and has leverage (sanctions). The management decision is one of

the central places in the management system. If you describe the full management cycle, management activities through functions (planning, control, organization, etc.), then in any of these functions there are two elements: the preparation and implementation of the solution.

The management decision is characterized by four main points:

- Variability, presence of choice, i.e. the decision maker should have several options solutions;
- Awareness, i.e. meditation must precede the decision, the choice of one option must be conscious;
- Focus, choice should be focused on one or more goals;
- The presence of an action, the choice of a solution must end with an action

The management decision is the answer to the emergence of a problem situation. A problem situation is a kind of contradiction between the real, the possible and the proper. The decision is intended to remove these contradictions. Sources of controversy can be both external conditions of the organization and the internal environment.

A decision is made during a process called the "decision process". Several successive stages of this process are highlighted: diagnosis and problem formulation; identification, evaluation and analysis of alternatives; choice of alternatives; its implementation and correction. Thus, any management decision is reduced to the choice of one of several options. Management researchers have directly linked the effectiveness of the organization with the preparation, adoption and implementation of management decisions. The interest of psychologists to this problem is because the decisions fix the whole set of social and psychological relations that arise in the organization. Through them, organizational goals, interests, and psychological features of the personality are refracted. The decision-making process acts as the most complex and rich psychological content type of professional decisions. The difference in the psychological approach to the study of management decisions is because the decision-making process is considered in the form in which it proceeds. More attention is paid to the person making the decision and his behavior in the group. Socio-psychological studies of the decision-making process are mainly aimed at identifying how people make choices. The data show that one or another choice made by an individual as a subject of decision making is a consequence of the interaction of external and internal factors that determine decision making. The external factors include the conditions of the physical and social environment of the manager's activities: the nature of the tasks, the volume and quality of information, technical equipment, and staff competence. These factors can create stereotype (stereotyped) actions of the leader: for example, in choosing the source of information, in the choice of performers, etc. The internal factors include the properties and qualities of the personality of the leader: the individual characteristics of higher nervous activity, the system of

skills, habits and knowledge, experience of the activity. There are a number of personality traits that influence the decision-making process. First of all, it is the creative abilities of the individual, her emotional stability, propensity for risk. Or the imperfection of the personal qualities of the leader: poor memory, undeveloped imagination, not mastering the logic of thinking, lack of experience, etc. Thus, the managerial decision is an instrument of the subject of management, by means of which a goal is set before the subordinates, the ways and terms of its implementation are indicated. And the decision-making process, firstly, occupies a central, hierarchically important place in the management structure; secondly, it is widely represented in management activities and is included in all stages of its implementation, in all situations and at all levels. Thirdly, the decision-making process has a high degree of complexity, maximum deployment, specific measures and forms of responsibility; and also exists in individual and group form.

Psychological features of the decision-making process

The decision-making process in management is considered in psychology as a stage of a volitional act, the result of which is the formation of a goal and the means to achieve it. This process is implemented based on traditionally allocated mental processes (cognitive, emotional, volitional, motivational), but at the same time it is not reduced to them. It performs a regulative function in the structure of the psyche (as well as the processes of goal formation, forecasting, planning, etc.). When making a decision, the manager consistently goes through psychological operations: thinking through alternative solutions, writing the decision in writing, communicating the decision to the performers. The following psychological aspects of a management decision can be mentioned:

- Decision as a process from ignorance to knowledge;
- Personal profile solutions: a set of individual characteristics of the head;
- The interaction of people involved in the decision-making process (those who prepare a decision, whose interests it affects and who performs it);
- Perception of decisions by the performer: it must be psychologically sound and understandable;
- Program of the performer.

Any management decision not only organizes people, but also forms the psychology of its performers. In the decision-making process manifest business and personal qualities of the head. The procedure for making a management decision reflects the strengths and weaknesses of his personality, but not only must one have all the qualities, one must possess the process of execution of the decision. Researchers identify psychological conditions that contribute to the development of the art of execution of the decision. First of all, it is a condition of forecasting the way to solve problems and their correlation with real conditions of implementation. Further, the compilation of an informational description of the "terms" necessary for

making a decision; as well as the ability to operate with knowledge using professional experience and intuition. The next condition is to connect specialists to the development of the solution; as well as the presence of volitional training to overcome the "struggle of motives" in favor of the decision. Distinguish the leader with external and internal decision-making strategy. The basis of this division is the nature of the self-assessment of the head of their data. A manager with an internal strategy believes that the quality of the decision depends on his competence, intelligence, abilities and will. He is very active in the search for information, constructively acts in extreme situations, and is resistant to the pressure of another's opinion. Persons with an external strategy are convinced that their success or failure depends on external circumstances. They are passive, believe that the search for additional information on the solution is only a waste of time; as well as under pressure from outside, abandon their position, trying to avoid risk and responsibility. In psychological preparation for decision making, the manager must avoid extremes to which both strategies may be subject. The decision-making process can be accompanied by various kinds of errors: both objective and psychological. The first are oversaturation of decisions made, duplication of decisions, inconsistency of new decisions by the former, unrealistic deadlines, etc. Psychological errors are primarily associated with the characteristics of the leader:

- Overestimate the success of the solution;
- The habit of deciding on a pattern, inertness of thinking;
- Appeal to your own experience;
- Underestimation of risks;
- The desire to prove their case;
- Decision making based on subjective desire;
- Pressure of failures.

The transfer of a management decision for execution involves the use of five basic methods by which employees execute a decision or not. These are methods:

1. “Promptings” based on trust, respect, the psychology of stimulation;
2. “Convictions”, based on clarification, explanation of the assignment, goodwill;
3. “Exhortations” based on request, persuasion, promise;
4. “Compulsion” based on official recommendations and instructions;
5. "Coercion" based on the unconditional demand, order, power order.

The choice of one or another method depends on how the trust and the demands of the manager are combined in relation to the subordinate. The more demanding, the more categorical appeal of the head. Conversely, the more trust there is, the less categorical in form the appeal may be.

Conclusion

Thus, the decision-making process, being an important element in the control system, has a psychological content that is difficult from a

psychological point of view. The specifics of a management decision depends on the use of a manager's strategy. The decision-making process can be managed if the organizational-psychological mechanism for "launching" and executing a decision is thought out in advance.

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Zero tolerance to violation of academic integrity

A developed society begins with discipline and order throughout, a sense of disorder and permissiveness creates the basis for more serious violations. An atmosphere of intolerance to violations of academic integrity is an important step in strengthening the academic culture and combating academic dishonesty. Overcoming academic dishonesty is directly related to morality, the upbringing of spiritual virtues behind which the entire civilized world lives. The main one is self-esteem, when violation of one or another moral norm will be perceived by a person as a crime, first of all, to oneself, one's own authority, self-respect, and then - before the authority of parents, teachers, colleagues and friends. Such things should become the norm of social life. The basic principle of this idea should be the consolidation of the whole society and the formation in it of "zero tolerance or tolerance" to any kind of violation of academic integrity. Academic virtue is at the heart of academic life. Trust in education and science exists precisely through such honesty, and the breach of that trust threatens the very existence of educational and scientific institutions.

Zero tolerance is the order in which the smallest offense is followed by the maximum punishment prescribed by law. Zero tolerance is a tactic of law enforcement's biased attitude towards members of potentially criminal groups, implying the imposition of maximum legal restrictions and sanctions, even for minor offenses or misconduct. According to the Online Etymology Dictionary, the first recorded use of the term "zero tolerance" occurred in 1972. This term was used exclusively in United States policy.

Today zero tolerance in the world is perceived as a policy that implies the imposition of the maximum possible legal restrictions and sanctions, even for minor offenses or misconduct in order to eliminate unwanted behavior. Zero tolerance policy prohibits law enforcement officials from punishing or changing their discretion. They are required to impose a penalty, regardless of the individual nature of an offense and/or mitigating circumstances.

The goal of zero tolerance policies is to eliminate unwanted behavior. Zero tolerance policy is being investigated in forensics and is widespread in formal and informal law enforcement systems around the world.

Zero tolerance policies confirm the claimed effectiveness. The idea of zero-tolerance policy is reflected in the Safe and Clean Neighborhoods Act, which was approved in New Jersey in 1973. Under this program, the state allocated money to set up foot patrols to reduce crime at nighttime. This idea gained popularity in 1982 when James K. Wilson and George L. Kelling published an article on the theory of broken windows in The Atlantic Monthly. According to this theory, if the broken windows in the house are not replaced, soon the vandals will not leave any whole window. Moreover, they

can even break into the building and if it is empty or abandoned, they may occupy premises illegally. Or imagine a sidewalk. Garbage accumulates. Soon, garbage is accumulating even more. Eventually, people start leaving trash bags and takeaway food.

In order to eliminate unlawful acts and prevent harassment, zero tolerance policy is implemented in army, schools, and workplaces. Such policies are promoted as prevention of drug addiction, violence and deviant behavior in educational institutions. Zero-tolerance schools are in violation of academic integrity. Employees of educational institutions are prohibited from using their position, personal relationships to reduce punishment or to provide mitigating circumstances.

Researchers are concerned about the high rate of violations of academic integrity in education and science. Thus, in education a fraud can be manifested: at admission to educational institution, during study (writing tasks), border control (tests and examinations), final certification; within the framework of interaction "student-student", "student-lecturer", "lecturer-lecturer" outside the educational institution.

The problem of academic dishonesty exists all over the world, accordingly, various programs are being created to improve the education quality, regulations, laws that would prevent plagiarism and such things. For example, due to plagiarism in theses and research papers in 2011, Carl-Theodor zu Guttenberg, German Defense Minister, a very popular German politician, resigned, in 2012, P. Schmidt, Hungarian President resigned, and in 2013, Annette Schawan, the Minister of Education of Germany, was forced to resign. In the latter case, the Special Committee voted by twelve votes against two that Ms. Shawan's dissertation, which was written back in 1980, is illegitimate and deprived her of her Doctorate.

In some cases, zero tolerance for academic dishonesty can act as ruthless management and a means of punishment. Recently, major educational scandal erupted in the United States. Influential parents bought their children places at prestigious universities. Today, rich and famous persons repent and pay enormous amounts of money to law enforcement, so as not to wait for the end of the investigation in custody. According to mid-March 2019, the FBI has already accused 30 wealthy and influential American parents (Hollywood stars, bankers, partners of large investment companies) of bribing, and another 20 people in the education sector have bribed and corrupted.

According to the US Department of Justice, it is the largest corruption education scandal in American history. The bill goes to tens of millions of dollars (the organizer of scheme has already admitted that he received 25 million for all years of “work”), and 8 universities appeared in this case, including Yale, Stanford, Georgetown, University of California, Los Angeles and other eminent educational institutions.

The prosecutor leading the case has already stated that no one will receive a favor for his star status, since there is no separate entry system for the rich in the United States. All those involved in the investigation were taken into custody and had to pay considerable bail to await the investigation end. Universities have launched their own investigations and have already dismissed anyone whose names were listed as being involved in corruption schemes.

In recent years, mass actions to combat the dishonest passing of exams have begun abroad. For example, in 2006 in the UK, the Qualifications and Curriculum Authority (QCA) released data that recorded write-offs amounting to 0.06% of the total number of exams, up 27% from 2005 [7]. In 2004, the Ministry of Education of South Korea canceled the results of several hundred tests that were solved, as it turned out, through secret SMS communication.

A comparative analysis of the 2006 and 2010 student surveys conducted by academic fraud experts in America - Donald McCabe and Linda Trevino - shows that copying multiple online suggestions when writing is the norm for 40% of students (of 14,000 respondents). During that period, the number of those who believe that copying from the Internet is a "serious fraud" decreased from 34% in the beginning of the decade to 29% in 2010.

There is a real epidemic of plagiarism in American colleges: according to the data in the book "My Word!: Plagiarism and College Culture" - more than 75% of students admit to being deceived in the learning process; 68% acknowledge copying materials from the Internet and using them in their works without proper reference to the source.

In many European and American universities, students sign a guarantee that there is no plagiarism in their academic work. For example, in Germany, students apply for a diploma of Eideserklärung (statement of scientific work originality), and if someone finds a wrong loan in their work, a student agrees to disqualification without the right of renewal. At University College London, punishment for academic dishonesty is practiced by reducing the total number of points earned per module, re-listening the course, or deducting it. College students are prohibited from taking any of the following activities (which are classified as academic fraud): copying information from electronic journals, websites, or other sources to form part of the work; using someone else's work as your own; processing of essays or practical work of other authors, as well as your own (self-plagiarism); using the services of employees of professional firm, as well as individuals who are ready to prepare work for a student; preparation of part of work based on other people's ideas without correct references to them. University students are also clearly informed of the citation rules.

Carolina Institute also clearly stipulates sanctions for plagiarism. It is explained to students that since this is your work, it will be considered from a position prepared by you personally and therefore unauthorized copying of

sections of another's text and submission of them as your own work is not allowed. All students' work is checked for originality through the Urkund plagiarism detection program. Particular attention will be given to the procedure at Carolina Institute in the event of fraud detection: responsible persons are obliged to inform administration about fraud suspected persons. The case may be dismissed without sanction or referred to Disciplinary Council for review. At Carolina Institute, Disciplinary Council consists of Vice-Chancellor, legally competent representatives, representatives of teaching staff and two representatives of student body. The Board decides whether to evaluate the work submitted or reject it as not complying with the academic honesty rules of. In the second case, certain sanctions are applied to a student, depending on the offense gravity.

UK scientists have developed a system of national rates of fines for plagiarism in student work. The development of fine system is caused by the inconsistency of punishments that follow plagiarism in various UK universities. This practice is expected to be worldwide in punishment for academic fraud. The introduction of such a unified system is expected to lead to greater consistency in the regulation of academic fraud. The penalty system is intended as a guide rather than a set of rules; as a guideline, not a directive. It is proposed to introduce a system of rigid sanctions appropriate to significance and severity of plagiarism: minimum punishment (80 points) should be for plagiarism of 5% of a text and less than two sentences; borrowing over 50% of a text -160 points. The level of work is also considered: verification, control work or final project (diploma, dissertation). An additional fine of 40 points is punishable by a student who began an attempt to intentionally conceal the fact of plagiarism by rearranging words, replacing them with synonyms, etc. The student is subjected to specific types of punishment for academic dishonesty - "accumulated" student penalty points are translated into a certain type of punishment. A student who has scored more than 560 points is deducted from the institution.

Statutes of Harvard provide for a higher degree of punishment for students who have admitted plagiarism in their works - exclusion from school. Minimum punishment is suspension of study for one year. Swedish National Agency for Higher Education reports in an annual report on increase in the number of disciplinary actions taken against plagiarism. An increasing number of educational institutions are adhering to principle of preventing and preventing academic fraud. On the foreign institutes' sites there are monuments with methodical instructions, which explain to a student the writing work's requirement, procedure of its execution and correct citation of sources.

A person's desire to get an unfair advantage in getting an education and his/her relatives testifies to academic dishonesty. The difference between Ukraine and European countries and the US is not only the low level of academic culture of the participants in Ukrainian educational process, but the

fact that in these countries there is a great chance of being punished for violations of academic integrity.

Lawful conduct in the field of education and observance of standards of academic integrity will undoubtedly have a positive impact on the state of law of Ukraine as a whole. On September 28, 2017, the Law of Ukraine "On Education" came into force, which introduced and formalized uniform types of violations of academic integrity (academic plagiarism, self-plagiarism, fabrication, fraud, forgiveness, fraud, bribery, biased evaluation). In addition, Article 42 of the Law of Ukraine "On Education" defines the peculiarities of observance of academic virtue by scientific-pedagogical and scientific workers and recipients of education; types of academic responsibility of scientific-pedagogical and scientific workers and educators; rights of persons in respect of whom the issue of academic virtue has been raised, etc.

An active role of society plays a significant role in the formation of “zero tolerance” for violation of academic integrity norms, especially at the initial stage. That is, every citizen, having noticed any violation of academic integrity standards, must report it to the authorized services, which are called to establish rules to prevent violations of academic integrity and monitor their compliance. To such services in the field of higher education the Ministry of Education and Science of Ukraine, National Agency for Quality Assurance in Higher Education (NAME), rectors, editors-in-chief of scientific publications, collegial bodies - specialized scientific councils, scientists of higher education institutions. It is impossible to exclude from this list the departments’ staffs, every lecturer, who bear not only reputational, but also legal responsibility for deliberately falsified expert opinion, signature under scientific work.

Ukraine is not unique in the context of plagiarism. But the country is probably unique in its tolerance for plagiarism. Most scientific and educational institutions around the world promote zero tolerance for plagiarism, meaning that incorrect work borrowing should be completely absent. Otherwise, the perpetrator of copyright infringement will suffer academic punishment: from loss of credit, to deduction. Experts note that "academic standards of intellectual honesty are often more stringent than government copyright laws". That is why it is fundamentally unacceptable to reduce the level of originality of work and compromise in the field of authorship.

Plagiarism in students' work may be associated with schooling defects. In European countries, USA children are already taught at school that it is impossible to write off and express their thoughts for others. For Ukrainian schools, the habit of writing down homework or module test is considered normal. In European, and especially in American educational institutions, this phenomenon is recognized as shameful. And if someone has noticed its manifestation somewhere, then immediately inform a lecturer. The reaction can be extremely harsh - up to expulsion from school. In Ukraine, such a shameful school habit is transferred to university. An econometric study,

Tolerance of Cheating: An Analysis across Countries, identified factors affecting write-off tolerance, which is influenced by the country of study (Ukrainian students are more tolerant of write-off than Dutch, American, and Israeli) and educational attainment (direction of influence is different for students from different countries).

Recently, several Ukrainian organizations have conducted a number of sociological studies among students and found that almost every one of them resorted to at least one form of plagiarism during their studies. Thus, according to the project results "Academic Culture of the Ukrainian Studenthood: Basic Factors of Formation and Development", "90% of students use plagiarism in their educational activities", that is, they attribute the results of other people's work, passing them off as their own to receive an assessment, and then - a scholarship and diploma. As a result - low level of professional skills, chronic shortage of professionals, replacement and displacement of qualified specialists of pseudo-specialists, labor market stagnation, funding gap of science. 90% of Ukrainian medical students admitted to being exams. Such sociological survey data is manifestation of distorted culture. Pseudoscientific results are published in the dissertations - this is a tolerance for mediocrity, for pseudoscientific results.

Plagiarism is not only a problem because it is a form of academic dishonesty, but because it hinders the university's learning process. Academic dishonesty can lead to disciplinary action, which in some cases may even require expulsion from the university for students or deprivation of academic degrees for academics. However, there are no clear legal mechanisms today to regulate the practice of student plagiarism. These rules are rather vaguely spelled out. That is, student plagiarism has no institutional restrictions and sanctions, even at the university level and cannot be punished. The only sanctions that threaten modern student's academic dishonesty are low or no lecturer scores, and no admission to the session.

Sanctions and control are not the only effective method of dealing with plagiarism. Clear and transparent norms and rules that are an element of scientific culture must be established, and the practice of academic culture emphasized on creativity and autonomy.

Systemic plagiarism leads to the loss of the ability to know the world, because the search model of behavior is replaced by its imitation. Plagiarism propagation and rooting undermines society's creative potential - its capacity for positive change. By and large, the fight against plagiarism is one of the conditions for preserving intellectual and public capital, ensuring the modernization of Ukraine.

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PART II

ECONOMY AND FINANCES: FUNDAMENTAL TOOLS AND INNOVATIVE TECHNIQUES

Innovative in Science: The Challenges of Our Time

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Social security of tourism as a factor for the hospitality industry development

Socialization has become an important trend of global economic development at the beginning of the 21st century and a particularly significant factor in hospitality industry development. Socialization of tourism is manifested through the role of social factors, as well as through transforming tourism into an important lifestyle component of the world population. At the same time, tourism as an object of economic research has affected socialization very superficially. Scientific works on social aspects of tourism development are confined mainly to the socio-psychological trend. Considering the important social role of tourism, as well as the significant influence of social factors on tourism activity, confirmed by many studies (Porter, 1988), we can state that the social factors of tourism development should be the research subject and require additional substantiation. Given the importance to the social component in tourism systems and the existence of a complex of social risks and threats, in our opinion, a scientific analysis of the tourism socialization processes should be carried out, first of all, from the security positions, that is, as the social security of tourism. Some authors consider social security as a state of vital activity characterized by a well-established, stable social system ensuring social conditions of an individual's activities, their social safety, and the sustainability of factors that increase social risk (Skurativs'kyy & Lyndyuk, 2011). By another definition, social security is the security of man, society, and the state from internal and external threats (Porokhnyavyy, Davydyuk & Il'chuk, 2010). These definitions represent a broad approach to understanding social security, covering the various components of the social sphere. At the same time, social security is treated much more narrowly - as a system of social protection, focusing on pension provision and state social assistance (Bohn, 1999). According to the analysis of the modern economic discourse (Peltier, 2001), the available general approaches to the interpretation of social security are not suitable for determining such security of tourism. At the same time, the term "public security" is used, which is interpreted as a function of the authorities in guaranteeing the protection of citizens, organizations and institutions from threats to their well-being and ensuring the progressive development of communities (The Human Right to Freedom of Religion, 2011). It is this term that most fully reveals the essence of tourists' social security in the destination (Leiper, 1979; Mansfeld & Pizam, 2005).
It is worth noting that the issues of tourists' public safety were also at the center of some scientists' attention. G. Michalko based on his empirical studies, proves the existence of a significant direct relationship between the level of crime and the intensity of tourist flows on the example of Hungary (Michalko, 2012).

The purpose of the paper is to substantiate the theoretical and methodological foundations of the social security of tourism analysis as one of

the hospitality industry development factors. It is necessary to formulate definitions of tourism social security, to develop its classification, and to justify approaches to evaluation. Hospitality enterprises are closest to interact with tourists within the limits of destination, and therefore are particularly sensitive to the problems of tourism social security. Identifying the main areas of such influence is also one of the objectives of the paper.

Findings. It is proposed to consider social security of tourism as a condition of tourism system functioning characterized by the protection of all its subsystems from external and internal threats of a social nature, as well as the ability to respond adequately to the challenges and to provide the formation of tourism development potential in conditions of economic socialization (Holod, 2017).

It is necessary to highlight cultural, demographic, and public security in the structure of tourism social security (Table 1). Each of these types of tourism social security is characterized by various forms of manifestation for certain components of tourism security (security of tourists, tourism enterprises, and destinations).

Table 1

The structure of tourism social security

Types of tourism social security	Components of tourism security		
	Security of tourists	Security of tourism enterprises	Security of destinations
Cultural security	Social adaptation of tourists	Perception of tourist activity by the population	Tourist acculturation
Demographic security	Demographic structure of the consumer market	Demographic features of the tourism enterprises personnel	Features of reproduction and structure of the population in destinations
Public security	Safety of life, health, and property of tourists from third parties encroachments	Safety of personnel and property of tourism enterprises from encroachment of tourists or other persons	The safety of destinations and their population from social threats caused by the temporary stay of tourists on their territory.

Cultural security of tourism is the tourism system protection from the threats associated with intercultural interaction that occurs in the process of tourism activities. On the one hand, such interaction takes place at the level of tourists and residents in the destinations, on the other hand - also hospitality industries in their activities face a certain degree of perception (rejection) in terms of prevailing socio-cultural values in the region of their location (Holod, 2017).

Thus, the guarantee of cultural tourism security connected with the solution of problems concerning the tourists' social adaptation, the tourism

acculturation of the destination population, the nature of tourist activity perception by society.

The essence of tourism demographic security is the tourism system protection from the threats of demosocial origin. The most significant threats to tourism development are related to the deformation of age and social structure of the population. For example, it is known that working young people are the most active travelers, and on the other hand - a large proportion of young people belonging to the category of unemployed in the region increases the risk of tourism security as well as a tourist activity in general. The availability and constant updating of the relevant qualification human resources are important for the qualitative personnel formation in the hospitality industry enterprises. Thus, the main components of tourism demographic security are the structure of the population (both consumers of tourism services and labor resources for the enterprises of the hospitality industry), as well as features of its reproduction.

Public security is the most important and most obvious component of tourism social security. Indeed, in a foreign socio-cultural environment, tourists experience not only psychological discomfort and cultural shock but also face different criminal encroachments on their lives, health, and property. Considerable attention to the public security of tourists is due to the poor protection of this category of people, often their lack of familiarity with local customs, traditions, household and communicative features of communities. On the other hand, the presence of tourists in the territory of a certain destination can also threaten its social sphere. That is not only about tourism acculturation, but also about certain aspects of criminal tourism, any forms of social behavior, which are planted by tourists in the destination communities. Employees of the hospitality industry also suffer from public security threats, and the source of such threats can be both tourists and other categories of citizens.

After classification, an important and logically consistent task is to develop an optimal approach to assessing tourism social security and its components. The proposed system of indicators selection is based on a distinct structure of tourism social security and the principle of multidimensionality, which consists in the complete display of various aspects of the phenomenon under study by individual indicators (Table 2).

The most extensive and difficult to assess is the cultural security of tourism. On the one hand, the criteria for the selection of indicators are relatively clear, and on the other hand, their choice is rather limited due to an incomplete reflection of the phenomena under investigation in statistical reporting. Indicators of demographic and public security of tourism are sufficiently differentiated and accessible, although some of them only indirectly describe the relevant components of tourism social security.

Table 2

Criteria for selection of indicators to assess the level of tourism social security

Types of tourism social security	Criteria
Cultural security	The intellectual level of the tourism environment and the quality of hospitality industry human resources
	Ethnonational homogeneity of the region and its representativeness in terms of national tourism branding
	The prevalence of deviant manifestations in the socio-economic sphere
	Favorable socio-cultural environment for foreign tourists, which is expressed through the processes of tourism acculturation
Demographic security	Social mobility of the population and quality of consumer demand for tourism services
	Quality of staffing for the hospitality industry development
	The life quality in the destination as an important part of its image
Public security	Employment rate of the population of working age
	The safety of tourist destinations for a tourist
	The safety of tourist destinations for the property of tourists and hospitality industry enterprises
	The safety of transport and traffic, in general, for tourists and businesses.

Indicators aggregated in this way can be the basis for further statistical analysis. To this end, we suggest using an index method that will both normalize the input data and calculate the overall index of social security of tourism. The mapping of the calculated index will make it possible to carry out inter-regional comparisons and to identify the spatial patterns of tourism social security as a factor for the hospitality industry development.

Conclusion. Thus, the social security of tourists, tourism enterprises, and destinations is a significant factor in the hospitality industry development at both the national and regional levels. In the context of globalization, social threats to tourism are gaining cross-border importance and spreading through information channels. While tourism acculturation is a significant issue for some regions, for others, public rejection of tourism, especially international, poses a significant threat to the functioning of the hospitality industry.

Because of this, the question of the objective assessment of tourism social security is particularly relevant. Only scientifically grounded approaches to classification and selection of indicators will provide reliable results. The prospect of further research in this direction may consist in the direct implementation of selected indicators statistical analysis based on the proposed methodology and the use of mapping method to identify the regularity of the calculated indices regional distribution.

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Competitiveness of EU in context of 4th industrial revolution

The proposal of concept Industry 4.0 was first officially presented at the Hannover fair in 2011 as a program of the German government to promote digitization, robotics and other innovations in the manufacturing industry to stop declining competitiveness to compare with the rapidly developing world economies. The program also pursued the objective of avoiding a decline in industrial production as a result of shifting production capacity to countries with cheaper workforce. In the following year, the German government presented a comprehensive concept - Industrie 4.0, in which leading German corporations, such as Siemens, Bosch, and Volkswagen took part in with an aim to introduce cutting-edge technologies capable of competing with even the cheapest workforce. Later, the German Ministry of Economy and Energy, the Ministry of Education and Research, representatives of businesses, unions, trade unions, science, and politics joined the concept as well. It is worth noting that the issues of tourists' public safety were also at the center of some scientists' attention. G. Michalko based on his empirical studies, proves the existence of a significant direct relationship between the level of crime and the intensity of tourist flows on the example of Hungary (Michalko, 2012).

The term 4th industrial revolution was introduced by the President of the World Economic Forum in Davos, German economist Klaus Schwab, who explains in his eponymous book (Schwab, 2015) why the current transformation of industry is no longer a continuation of the 3rd industrial revolution but an independent phenomenon. He points out that the new industrial revolution is due to the speed with which changes occur, the growth due to their changes and the impact on existing systems. The technological breakthrough rate has not had a similar precedent in the past. Compared to previous industrial revolutions, it is right to note that the fourth is exponential and not linear. The most important thing is the transformation of virtually all industries in all countries. The extent of these changes predetermines the transformation of entire production, management and organization systems. In line with Klaus Schwab's vision, this is the concept that stands on the threshold of a new era where the virtual world relates to the physical by the use of modern technology.

The subsequent publications (e.g. Schlaepfer, R., Koch, M., Merkofer, P., 2015; Smit, J. et al., 2016; Cooper, S. et al., 2017) pointed out that the 4th industrial revolution is characterized by the use of new technologies in production, advanced digitization, automation and robotics to increase business efficiency and include some breakthrough innovations such as 3D printing, artificial intelligence, cloud computing, the internet of things, big data, nanotechnologies, biotechnologies, self-driving vehicles, energy storage

systems, and much more. Although the Industry 4.0 program was initially targeted only at the German manufacturing industry, it was soon extended to other sectors, states and regions, and is now understood as a synonym for the 4th industrial revolution.

Following the initial German initiative, the new industrial revolution resonates in EU countries. In the United States Smart Manufacturing Leadership Coalition was created. The program Chinese initiative MIC 2025 (Made in China 2025) is directly based on the German Industrie 4.0. The MIC 2025 was announced by the Chinese State Council in May 2015. It is an ambitious national strategy, the main objective of which is the comprehensive modernization and streamlining of the Chinese manufacturing industry so that China becomes one of the leading industrial powers and moves within the global value chains into the industry and higher value-added activities generating further economic growth (CBBC, 2016).

The common feature of these initiatives is that they have been prompted by the same effort to maintain and strengthen these countries' global competitiveness and technological leadership. As stated in the program of Czech national initiative Industry 4.0, "this effort is also pursuing greater control over the entire value chain, which is very difficult to realize in the current state of the labour force and its availability in developed world economies. Finally, it also seeks to address the growing socio-economic problems and face the new demographic and geopolitical risks. This leads many global companies to review the current concepts of geographic allocation of production capacity and to systematically build a modern industrial production model." (MAŘÍK, V. et al., 2016).

In relative media silence, the Ministry of Economy of Slovakia published the state concept on Industry 4.0, which it called Smart Industry for Slovakia. However, on the occasion of the official presentation of the concept was prepared a pompous conference called Smart Industry, which was also supported by the Minister of Economy and was a prerequisite for increasing the competitive advantage of businesses. This transformation is "based on the creation of added value from product and process innovation, creating an intelligent industry for the future, as one of the pillars of the development of Slovakia's economy with significant impact on society" (Bložon, B., 2016).

While global technology innovation races are led by US high-tech giants who have invested billions of dollars in key technologies of Industry 4.0, in recent years Chinese companies have invested in high-tech development worldwide and as a result, according to the International Robotics Federation, since 2013 the Chinese industrial robots market has become the largest in the world. By 2020, there will be an average of 150 robots per 10,000 jobs in industry in China, three times more than in 2015. (CISION PR Newswire, 2018).

For developed EU countries it can be very difficult to overtake the United States and China, but the struggle for primacy continues. Industry

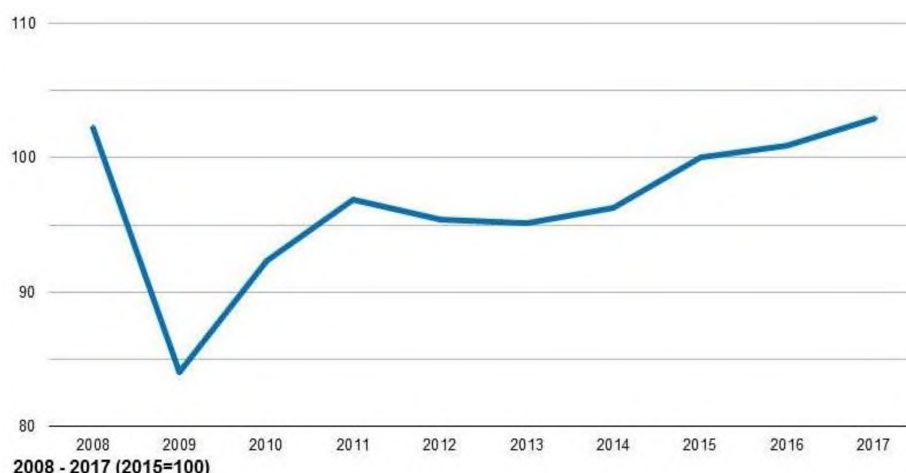
transformation caused by industry 4.0 means that business processes, such as production, delivery, customer service, etc. will be interconnected through the internet of things industrial systems. However, these extremely flexible networks will require the new forms of collaboration between companies, whether at national or global level.

Industry in developed EU countries

Industry remains the main sector of the EU economy. During the first and second industrial revolution, new manufacturing processes and methods were introduced into the manufacturing industry, which led to increased productivity and the entire industry. Already at the beginning of the 20th century, Europe was the world economy leader as it accounted for up to 50% of global GDP.

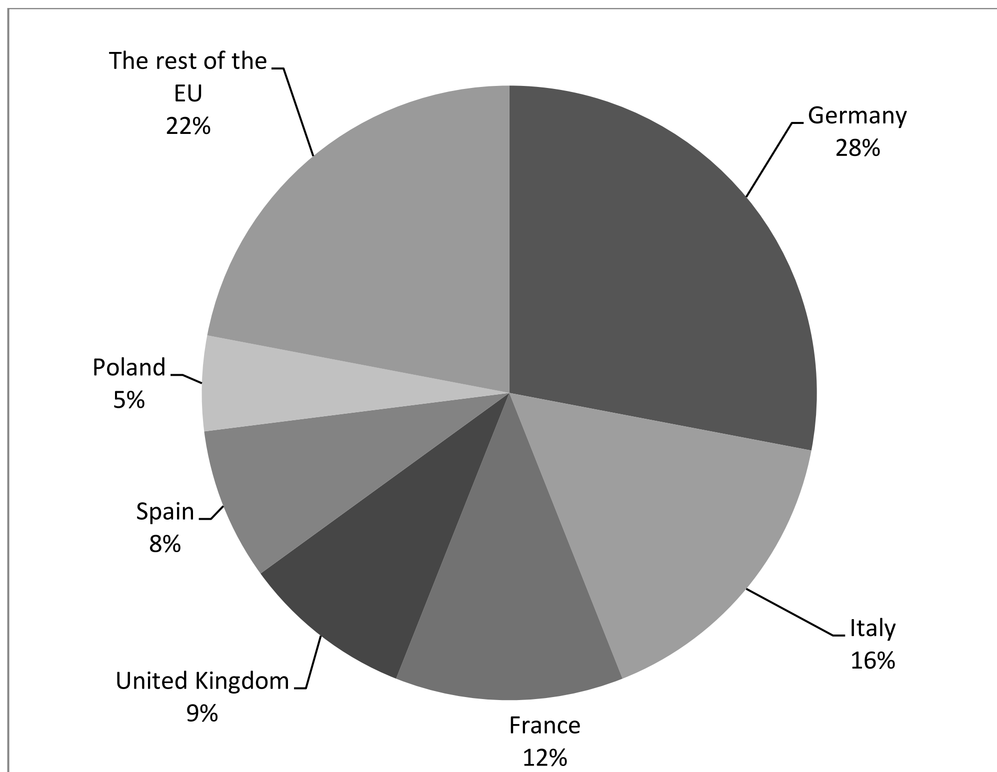
But the present situation is different. The EU's total industry accounts for 15% of GDP, generates over € 5000 billion in turnover and thus generates around 33 million jobs overall. Despite the above findings, industry is slowly ceasing to be the main source of the EU's comparative advantages. The main reason is the fact that the competitiveness of other emerging economies in the world is growing rapidly. That is why new strategies and goals are being adopted in the EU to move the industry to the level of the early 20th century (EU-MERCI, 2018).

In 2017, EU's industrial production amounted to € 5180 billion. Graph 1 shows the development of industrial production of EU member countries from 2008 to 2017. In 2009 and 2011 industrial production increased by 15%. It remained relatively stable over the next 3 years. 2017 highlighted the consolidation of production growth after a full recovery. Part of the recovery in industrial production was and still is the Industry 4.0 program. This upward trend was mainly due to increased production and demand from the automotive and engineering industries (Eurostat, 2019).



Graph 1. Industrial production of the EU in 2008-2017 (Source: Eurostat, 2019)

Graph 2 shows the overall share of industrial production from the perspective of EU member states. We can say that six member states accounted for more than three quarters of the EU's total industrial production share. Germany recorded the highest share of production in the range of € 1160 billion, corresponding to 28% of the total industrial production. Italy followed with industrial production of 16% share, France with 12%, the UK with 9%, Spain with 8% and Poland with 5% of the total industrial production share. The remaining 22 member states accounted for 22%. (Eurostat, 2019).



Graph 2. Industrial production from the perspective of developed EU countries in 2017 (Source: Eurostat, 2019).

Today, Europe is at the beginning of the new industrial revolution 4.0, which means a comprehensive transformation of the entire industrial production sector through the interconnection of digital technologies and robotics with the conventional industry (suppliers, factories, distributors, even the product itself) into a highly integrated value chain. It is a completely new philosophy bringing a social change and covering a wide range of areas from industry, through technical standardization, security, education system, legal framework, science and research to the labour market and social system.

The transition from an isolated computer and robotic support to production or administrative tasks is technologically enabled by rapid development in the following areas:

- in the field of communication technologies,
- in the field of information and computer technologies,

- in the field of methods and techniques of cybernetics and artificial intelligence,
- in the field of new materials and biotechnologies,
- in the field of nanotechnologies.

Systemically it consists of 3 key visions (MPO, 2015):

1) the vision of horizontal integration of all subsystems - from systems ensuring acceptance and confirmation of the order through the production section to the dispatch of the product and ensuring the warranty and post-warranty service, respectively to the end of the product lifecycle;

2) the vision of vertical integration of all subsystems - from the lowest level of automatic physical process control (with tens of millisecond response time) through production management to enterprise resource planning systems (in hours to days);

3) the vision of complete computer integration of all engineering processes - from rough procurement through design, development, implementation, testing and verification to product lifecycle planning.

Industry 4.0 therefore depends on the development of a whole range of new and innovative technologies:

- ICT applications in the process of digitizing information and integrating systems at all levels of product creation and use (including logistics and supply relationships) both internally and externally;
- cyber-physical systems that use information and communication technologies to monitor and control physical processes and systems; these may include built-in sensors, intelligent robots that can not only configure their own settings to fit the product they are creating, or even additional production equipment, such as 3D printing;
- network communications involving wireless and internet technologies to connect machines, systems and people both within the factory and with suppliers and distributors;
- simulation, modelling and virtualization of product design and manufacturing processes;
- collecting and analysing and using large amounts of data, either at the factory or by analysing large data sets and cloud computing;
- greater support for the workforce through information and communication technologies, including robots, augmented reality or smart tools.

Digitization of industrial production will result in far-reaching changes in production processes, their outputs and business models. Smart factories will increase production flexibility. The ability to quickly configure machines will allow small samples to be produced, allowing production to be tailored to the customer's needs to the maximum. At the same time, such flexibility stimulates innovation as prototypes or new products can be produced quickly and without the need for complex tool changes or new production lines. The time needed to produce individual goods will also decrease. Digital design and

virtual production process modelling can reduce the time from product design to delivery. For example, some authors estimate that data-supported supply chains can accelerate the production process to 120% and decrease market product delivery time to 70% (European Commission, 2015).

Experts estimate impact of the implementation of Industry 4.0. will result in annual production efficiency gains ranging from 6 to 8%. The Boston Consulting Group predicts that only in Germany it will contribute to a 1% increase in GDP over a ten-year period and create up to 390,000 jobs (BCG, 2015).

Already in its 2014 Communication "Renewing European Industry", the European Commission said that digital technologies (including cloud computing, large datasets, new industrial internet applications, smart factories, robotics, 3D printing and design) are essential to boosting productivity of European industry because they enable creation of new business models and the production of new goods and services (European Commission, 2014).

When considering the need for adjusting the current industrial policy to meet the objectives of the Industry 4.0 initiative, it is necessary to start from the expected changes. In the context of Industry 4.0, some authors consider three dimensions of change: technological, social, and business paradigm change (Carlberg, M. et al, 2016). In terms of technological change, digitization can be seen as a major driver of change in value exchange. Most businesses have recognized the need to adapt, so they are ready for digitization. In particular, the protection of intellectual property, personal data and privacy; design and operability of systems; environmental protection, health and safety are major challenges for businesses in this area. In several countries, public institutions have been set up to increase cyber security.

There is still low knowledge among stakeholders about what changes are expected in the social area in relation to the fulfilment of Industry 4.0 objectives. Larger businesses are more positive towards change whilst the rest of them are more cautious and reserved. While there is a "skills" gap (as well as a gap in willingness) that hampers adaptation to the Single Digital Market, the skills requirements needed to meet the challenges of Industry 4.0 will be much greater. To overcome this, new forms of work need to be put in place, which not only have a positive but also a negative impact on employees; and the gap between demand and domestic supply (both nationally and at EU level) of qualifications and skills is currently addressed by sophisticated immigration strategies. Support for the skills required by Industry 4.0 is uneven across the EU, resulting in increased concentration of labour in existing centres and increased competition between them.

With regard to business models and business paradigm changes, the challenges of the supply chain (costs, risk, reduced flexibility and less strategic independence) arise for SMEs in particular in meeting the objectives

of Industry 4.0. The public sector can play a role in creating an ecosystem that will help SMEs adapt to Industry 4.0 requirements, but research in this area is still insufficient. The main challenge for the large-scale implementation of Industry 4.0 is standardization. In this regard, it seems absolutely necessary to subordinate all standards, including those to in-house to requirements and international standards created together with major global players in international platforms such as industrial internet consortium.

Beyond all, the answer to the questions whether Industry 4.0 will provide the EU with a leading role in competitive competition on the world markets, or whether its implementation is no longer a necessary requirement for the EU to maintain its current position, or in the worst case whether international technology diffusion through multinational corporations will not result in industrial leadership shifting to emerging economies such as China.

Assessment of competitiveness of EU countries according to GCI 4.0

The Global Competitiveness Index 4.0 integrates well-established aspects with new and emerging levers that drive productivity and growth. It emphasizes the role of human capital, innovation, resilience and agility, as not only drivers but also defining features of economic success in the 4th industrial revolution. It calls for better use of technology for economic leapfrogging - but also cautions that this is only possible as part of a holistic approach with other factors of competitiveness. Finally, it offers objective, data-driven analysis for dispassionate, future-oriented, and rational policy-making. It covers 140 economies and measures national competitiveness which is defined as the set of institutions, policies and factors that determine the level of productivity.

The structure of Global Competitiveness Index 4.0 consists of 12 pillars within four areas:

1) Enabling environment: institutions, infrastructure, ICT adoption, macroeconomic stability;

2) Human capital: health, skills;

3) Markets: product market, labour market, financial system, market size;

4) Innovation ecosystem: business dynamism, innovation capability.

EU countries' competitiveness assessment shows that five most developed EU economies ranked among the top ten countries in GCI 4.0: Germany (3), Netherlands (6), United Kingdom (8), Sweden (9), and Denmark (10) along with US (1), Singapore (2), Switzerland (4), Japan (5) and Hong Kong (7). In the second ten countries are Finland (11), France (17) and Luxembourg (19). Austria (22), Ireland (23), Spain (26) and Czech Republic (29) were ranked together with China (28) in the third ten of the 140 countries. Unsatisfactory GCI 4.0 global competition results are sometimes

achieved by strong economies such as Italy (31), Portugal (34), Malta (36), Cyprus (44), and Greece (57). Most of the new member states still have low potential to compete in the world: Poland (37), Lithuania (40), Slovak Republic (41), Latvia (42), Hungary (48), Bulgaria (51), Romania (52) and Croatia (68).

Tab. 1: The Global Competitiveness Index 4.0 2018 Rankings – EU member states

Rank / 140	**Economy**	**Overall score**
3	Germany	82.8
6	Netherlands	82.4
8	United Kingdom	82.0
9	Sweden	81.7
10	Denmark	80.6
11	Finland	80.3
17	France	78.0
19	Luxemburg	76.6
21	Belgium	76.6
22	Austria	76.3
23	Ireland	75.7
26	Spain	74.2
29	Czech Republic	71.2
31	Italy	70.8
32	Estonia	70.8
34	Portugal	70.2
35	Slovenia	69.6
36	Malta	68.8
37	Poland	68.2
40	Lithuania	67.1
41	Slovak Republic	66.8
42	Latvia	66.2
44	Cyprus	65.6
48	Hungary	64.3
51	Bulgaria	63.6
52	Romania	63.5
57	Greece	62.1
68	Croatia	60.1

(Source: The Global Competitiveness Report, 2018)

From the following applies that 4th industrial revolution has not made progress in approximating the level of competitiveness of the EU member states. On the contrary, differences in competitiveness between EU members still persist. While the northern and western part of the EU is at the top of the list of the most competitive countries - Germany, the Netherlands, Sweden, Denmark, even in the top ten, the southern and eastern parts of the EU are lagging behind predatory economies.

Conclusions - consequences and risks of the 4th industrial revolution

The contribution presented the initiative of the German government Industrie 4.0 which is currently associated with the concept of the 4th industrial revolution. From the above definitions apply that most authors understand the 4th industrial revolution as a process of digitizing the manufacturing sector using the new technologies and innovations in order to collect, analyse and share data in real time. At the same time, published studies indicate that there have already been race-to-industry applications in the EU, US and China.

This new industrial revolution has brought within the effects as well the risks. In particular, Klaus Schwab (2016) identifies the following effects: increasing customer expectations, improving product quality, joint innovation and new forms of organization, freeing people from hard and routine work.

At the same time, Klaus Schwab (2016) points out that full production independence from people will lead to massive job losses that can now be observed in countries where large-scale automation and robotics are being carried out. Developing technology can also lead to increasing gap between capital and labour income and, consequently, increase in inequality. Conversely, demand for low-skilled and lower-skilled workers will decrease. Therefore, experts are calling on states to address this issue now and prepare for a new industrial revolution. Countries with low-paying jobs may lose their advantage over developed countries and fall further behind them.

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Art market study: theoretical approaches

The outstanding money records for art in auction houses or private sales excite not only professionals and collectors but general public as well, the scientific interest is also very high. Art market is an outstanding phenomenon, and as object of study it requires comprehensive coverage and critical approach. On the one hand it is one of many different types of markets in economics, but on the other hand art market operates in an economic model that considers much more than supply and demand. At first this term meant economic transactions with objects of artistic value (works-of-art), but later it was also used to identify wider inner mechanisms based on buyers and sellers trading in the commodities or other cultural services (along with institutional ones). We define the art market in general as a system of commodity circulation of artistic products and include both cultural and economic factors in its field. The art market is understood as the relationship between the artists who produce the works-of-art and the consumers who buy them (supply and demand), but this does not limit the space of the art market. There are other participants whose role is to ensure communication and exchange. Among them curators, art critics, art magazines and other specialized periodicals in art, journalists who introduce the public to cultural events through the media; institutions to exhibit and preserve works-of-art i.e. galleries, international exhibitions, museums; private and institutional sales agents i.e. art dealers, auction houses, galleries. Patrons are also included here, as long as casual buyers who decorate the interior with works-of-art, and more. The whole structure of art market is complex and diverse and has peculiarities depending on local formal, social and cultural circumstances.

The art market is an important component of culture; its inner mechanisms influence the development and dissemination of fine arts, the quality of life of the artists, and their interconnection with society. Nevertheless, there are no clear methodological guidelines for studying the typology of the art market and its functioning, so the development of methods of analysis and criteria for its evaluation is a topical task.

It should be noted that the majority of recent publications concerning the issues of the historical past and present state of the art market are characterized by the lack of a holistic and clear idea of it as a complex system of socio-cultural and economic relations. In addition, the cultivation of mythological "non-commercial" art and contrasting it with "commercial" can still be found in professional literature, since the art market is mistakenly perceived only as a simple mechanism of sale. This leads to the unwarranted exclusion of many pages from the history of art market related to other mechanisms of material remuneration of artists. One more thing is that though the primary and secondary markets have some differences, it is wrong

to consider work-of-art alienated from the author and to drawn all the attention to mechanisms of its sale.

Another common misconception in the scientific literature is the unjustified union of the terms "art market" and "antique market". Although these phenomena exist in the same field, they have different histories and have diverse mechanisms, and therefore require separate study. Let us also point to the common feature of most publications dealing with the current state of the art market: they are dominated by a journalistic approach that has little to do with scientific analysis, because no attempt is made to reconcile contemporary and historical facts and traditions.

The theoretical understanding of the art market starts from an economic point of view of it as part of the world market. In *The Value of Art: Money, Power, Beauty* American art dealer Michael Findley points out that: "The price of works of art, whether sold in the primary or secondary market, is governed by supply, demand and marketing" (Findley 2014, 21). The macroeconomic defines art market is an integral part of the commodity market and world market relations. The term "market" is now a central category in economic science, and its theoretical interpretations in the relevant literature are extremely broad. In economic theory the market is the sphere of economic relations between people about the purchase and sale of goods or services, which is based on the principles of voluntariness and equality in the process of this exchange. Such an exchange is based on the price, which is determined by the relation between the demand generated by the buyer and the supply, that is, the goods or services offered by the seller. For the art market these categories have a specific embodiment: the artist is a producer of a unique commodity, a work-of-art that has an economic weight expressed in money. And there is a special consumer of such goods – the collector.

British researcher Iain Robertson in his work *Understanding International Art Markets and Management* basing on the study of his predecessor William Baumol *Unnatural Value: Or Art Investment as Floating Crap Game* (1989) outlines six main features that distinguish the art market among other economic markets (Robertson 2005, 6–7). First difference is that on financial markets stocks and shares are mostly homogeneous and substitutable, but every artistic product is unique. The second is that the owner of an artwork is monopolist, while a stock is owned by a number of investors. The next difference regards transactions, as long as stocks or shares are bought and sold almost continuously, whereas a work of art may be on sale very seldom or even once in a lifetime of the owner. The fourth difference is that fundamental value of a financial asset is predictable (it is the present value of the expected flow of income), but work of art has no long-term equilibrium price. Next is that costs of holding and transacting of works-of-art are high (commission, transportation, insurance, restoration etc), while stocks and shares may be owned, bought and sold quickly and

easily. Although in some countries the taxes may be lowered due to buying artworks, this feature is not fundamental for world art market. The last difference is that unlike stocks and shares art does not provide positive monetary dividends, however, for collectors psychological dividends in the form of cultural consumption and services are more valuable, despite negative dividends in the form of insurance and restoration costs. Thus, the art market among other markets of the classical economy is distinguished by several main features, among which are: unique goods, i.e. works-of-arts; original additional agents; exceptional pricing processes.

One of the most respected researchers in the economics of the arts Dutch scientist Olav Velthuis, in monograph *Talking Prices: Symbolic Meanings of Prices on the Market for Contemporary Art* (2007) describes three popular views of the art market. The theory of neoclassical economics considers the subjects of the market as ones that pursue their self-interest ruthlessly. Socio-cultural motives for owning objects of art in the neoclassical economy are considered to be secondary and not affecting the market. According to this theory, there are all the hallmarks of other commodity markets, such as supply and demand, the price mechanism and the "invisible hand of the market". The second theory is a theory of social economy which claims that market exchange should be understood in network terms. The social network not only allows to sell goods (i.e. an art dealer does), but also have a decisive and measurable effect on prices, on profit rates, etc. The last theory, which continues the scientific work of Karl Marx and Georg Simmel, claims that markets are the antithesis of social and cultural life. "When it comes to art, the market alienates artists from their work, their labor, and their public, while failing to recognize artistic values; moreover, through the price mechanism, which supposedly reduces all qualities to quantities, the market commensurates what is considered to be incommensurable" (Velthuis 2007, 11). So thanks to the art market humanity has made a conscious transition from priceless art to appreciated one. Olav Velthuis offers alternative understanding that art markets are cultural constellations. He writes: "Like any other type of social interaction, market exchange is highly ritualized; it involves a wide variety of symbols that transfer rich meanings between people who exchange goods with each other" (Velthuis 2007, 11). That also involves complex social settings. In another monograph written in collaboration with the Italian professor Stefano Baia Curioni *Cosmopolitan Canvases* (2015) Olav Velthuis emphasizes the process of globalization of the art market, which is formed at the intersection of four paths of humanity: economic, cultural, informational and sacral. The main difference between the art market and other economic markets is that the researchers consider the "heterogeneous essence of art", meaning that each individual work is unique among others.

Despite the named differences in the process of developing of capitalist relations in the West (though now it is possible to speak not only about the US and Europe, but also about the UAE, China, etc.), financiers have included

works of art in a number of capital assets on a par with bank metals, securities and other tangible and intangible assets. Today, in the world economic market, a work of art has an investment appeal, a measure of risk and profitability. It should also be emphasized that the artwork by all its economic characteristics is not a commodity of everyday demand. As noted by New York art economist James Heilbrun: "Paintings, in general, can be considered luxury goods" (Heilbrun 2001, 178). Therefore, in this paper we consider the work-of-arts as a commodity in the sense of macroeconomics, which is included in the general system of market relations in connection with the producer-product-supply, but shows unique characteristics in social perception and pricing.

In this vein, one should refer to the opinion of another American researcher Jonathan Harris, who defines art as a process of production. This allows to analyze it as part of market relations. Thus, he writes: "Both a descriptive term and an evaluative concept, art refers to artifacts, processes, skills, and effects entailed in the production of visual representations within a wide variety of media and materials" (Harris 2006, 20). Therefore, the artist from this position acquires the characteristics of the manufacturer as one is understood by classical economic science. J. Harris continues: "...the evolution of the idea and self presentation of the artist as a special kind of creative producer (individual genius) is a key aspect to the history of the concept of art" (Harris 2006, 20). Thus starting from Renaissance and especially during Romanticism artists acquired a special position among other producers, separating from a regular craftsman. Characterizing the *The Market of Symbolic Goods* philosopher Pierre Bourdieu also observes "methodical attempt to distinguish the artist and the intellectual from other commoners by positing the unique products of 'creative genius' against interchangeable products, utterly and completely reducible to their commodity value" (Bourdieu 1984, 4). Well-known Russian researcher Boris Groys gives a similar opinion: "There is no sense in producing art if it is not exhibited and not sold: in this case internal contemplation and meditation would be enough. Art has always been focused on the creation of values and their sale" (Groys 1993, 326). So, like any produced product, work-of-art has value embodied in the space of the art market as a price. Boris Groys while exploring the apology of the art market notes: "It is impossible to file a case that the production of art and its entry into the market in the soul of the artist must be separated by an impenetrable wall, such as the former Berlin, and that any passage in this wall corrupts artistic practice from the beginning. On the contrary, it is worth considering from the outset what mechanisms provide value to the work of art, including commercial one" (Groys 1993, 326). It takes us to basic principle of pricing: the artist initiates the process of production and results it in work-of-art, creates a product that has value. The buyer creates demand, and the value of the goods is expressed in price, that is, money. Michael Findley also states: "There is a basic symbiosis between the

commercial value of art and the social value of art in our lives. After all, people like to talk about how much things cost. Owning big-price-tag art compels the interest of others in ourselves" (Findley 2014, 194).

We should clarify term "value", which in space of art market primarily refers to the symbolic category. From the history of art we know precedent when objects did not have socially recognized value until the artist with his gesture gave them a value of a work-of-art, including monetary one. That required a certain artistic act. We may refer to famous Duchamp's *Fountain* as an example. Torn out from the banal space and placed in the space of culture, such a trivial object as pissoir has not only gained new status, but there has been a sharp increase in its symbolic value, although it had not changed in any way. Dutch researcher Antoon Van den Braembussche in the monograph *Thinking Art* notes: "To many of us, the value of art depends on its emotional appeal and capacity to arouse feelings of enthusiasm or even ecstasy, rather than on the technical mastery of the artist, the faithfulness of its representation, or the perfection of its form" (Braembussche 2009, 38). It is the artist in the contemporary art system that has the ability to impart the object with artistic and therefore commercial value. In fact, we return to the idea that every artist performs an act of creation, so his work is endowed with an aura of uniqueness, and therefore arouses more interest from a buyer. From the history of art, there are situations known when the value of paintings by recently unknown artists reached millions of US dollars. Vincent Van Gogh, Claude Monet, Amadeo Modigliani, Paul Cezanne were once impoverished and unknown, now these artists are world famous, their canvases are breaking all sales records. Financial success is explained by the high profitability and internal diversification of the art market, as well as the low dependence of prices on works-of-art from the economy. Although the art market is governed by the laws of economics, as practice shows, it has its own internal processes that are not inherent in other markets.

According to Pierre Bourdieu, art market refers to "the field of production", a system of objective relations among different instances, functionally defined by their role in the division of labor of production. It has its own structure and features, creates its own norms and criteria for evaluating its products, and also contains the internal division / opposition of "field of restricted production" (destined for a public of producers of cultural goods) and "field of large-scale cultural production" (where cultural goods destined for non-producers of cultural goods). The history of intellectual and artistic life and art market as well can be understood as a history of changes in the functions of the institutions for the production of symbolic goods and the very structure of these products, which correlates with the gradual development of the intellectual and artistic field that is in fact a history of autonomisation of cultural relations of production, circulation and consumption (Bourdieu 1984). When we speak about the art market, the production of symbolic goods means not a work-of-art itself (i.e. paintings,

sculptures or other), but its cultural significance or symbolic value, such as the author's reputation, a certain style, etc.

When it comes to the art market space, field of restricted production means how artists perceive each other (both as clients and competitors at the same time). The main object of consumption is not a work that can be alienated and sold, but a creative imagination that has no analogue and price. In essence, this is the only possible place for the existence of "pure art" and the construction of a field of restricted production as such correlates with its closure. This field is characterized by a position of constant distance from the "general public" and even confrontation with it. The field of large-scale cultural production is a space of production, distribution and consumption, oriented to the "general public", which can belong to different classes and obey the laws of competition for the conquest of the market, and the structure of its socially insignificant product is derived from the economic and social conditions of production. This means developing an "average product", focusing on expanding the social and cultural composition of the "general public", as well as increasing the number and diversifying institutions of recognition and intermediary institutions for the distribution of artistic products.

Along with other researchers P. Bourdieu points out that since medieval times artistic life, through the external instances of cultural legitimacy (those which may claim legislative power in the sphere of culture on the basis of power or authority), has gradually been liberated economically and socially. The development of this process was accompanied, first, by the formation of a layer of potential consumers who were able to provide producers of symbolic products not only the minimum conditions of economic independence, but also the competing principle of legitimacy; secondly, the development of a correspondingly larger and more diversified corpus of manufacturers and sellers of symbolic goods, which recognize no other restrictions than the technical requirements and norms that determine the conditions of access to the profession; and, finally, third, by increasing the number and diversification of institutions of recognition that are in competition for cultural legitimacy, such as academies or salons, whose selection procedures were based purely on intellectual and artistic legitimacy, even if the institutions themselves were under social and economic pressure. We observe this process in pricing for works-of-art, which depend not on material but on symbolic categories that are legitimized by cultural institutions and do not have a direct dependence on economic factors. Olga Dubova also notes: "As soon as artists begin to realize themselves as representatives of a particular, largely elitist profession [which is connected with the emergence and development of the Academies of Fine Arts in the 17 th century – Author's note], the process of formation and special professional criteria for the evaluation of artworks begins" (Dubova 2009, 237). That is, the special

pricing of fine arts in the space of art market has its history and circumstances, which can be defined for each period and region.

Thus, the art market is a space where the production and purchase and sale of a symbolic product, which we name work-of-art, are carried out, and therefore we consider a work-of-art as a category of supply. Consumers of art are in the category of demand based on the above. These are natural or legal persons who, in the space of the art market, carry out purchasing operations. And again we speak about special kind of consumer, a collector.

In order to understand how to sell a work-of-art one also need to be aware of who wants to buy it. The world of collectors throughout the history of mankind has been a unique social and cultural phenomenon, often symptomatic of its era.

As long as work-of-art is mostly attributed as luxury goods, art collecting is considered to be privilege for oof-birds. German critic and curator Piroschka Dossi notes that the great collections of the past were driven by private collectors for a rather banal reason: "Art is about money. ... The growing wealth of buyers drives up prices. Because the most significant factor in pricing in the art market is customer revenue. ... The art market is the so-called deep-pocket-market. Anyone who wants to participate in the game must have deep pockets" (Dossi 2011, 57–58). But as role of artist changed in time from a craftsman to creator, a collector changed as well.

In 1932, one of the most influential philosophers of the 20th century Walter Benjamin, whose works underpin a modern understanding of modernism, prophesied the end of collecting as being out of time, and the collector himself dying out. As practice shows, this idea was generally wrong, but philosopher was also talking about the very principle of collecting and the figure of the collector. For the art lover, it is enough to simply observe the beauty, but for the collector the desire for appropriation of the beautiful comes to the fore. This is a fundamental difference. W. Benjamin was positive that for the collector, possession gives the deepest connection with things of all possible: they are not filled with life because of owner, but owner lives in them (Benjamin 2018). This is an object that is endowed with a certain power that seems to transfer to the owner and satisfy some basic need.

According to the American psychoanalyst Werner Muensterberger, "there is much more than the simple experience of pleasure. If that was the case, one butterfly, or the painting, would be enough. Instead, repetition is mandatory. Repeated acquisitions serve as a vehicle to cope with inner uncertainty, a way of dealing with the dread of renewed anxiety, with confusing problems of need and longing" (Muensterberger 2011, 11). In his book *Collecting: An Unruly Passion: Psychological Perspectives* W. Muensterberger describes compulsive collecting as one caused by feelings of loneliness, experience of powerlessness, the need for exclusivity, the desire to be involved are certain states of the soul, which keeps coming back and always require a certain object to overcome. So the first assumption is that all

collecting is based on the transfer of emotions to an inanimate object. This love is also associated with mythological consciousness, including the use of magical items endowed with "mana" in primitive societies, and "emotional branding" nowadays. The modern consumer is not buying Vertu or Channel, but the very quality of life that symbolically goes with it.

Some specifics of an artist as the producer were already described. As for work-of-art as collector's interest we may specify what benefits amplify their status as the most expensive commodity of modern culture. First of all, the work of art is unique. It is a touch of genius, an ideal born of the Renaissance and entwined with Modernism. Man becomes the center and rules the world, inspiring himself. In the work of art, modern society glorifies faith in its own power. In every culture, there are differences between the ideal and the real, and this is correlated with the individual experience of each. Therefore, the collection is always a mirror image of the collector and a resonator for his "I". However, most contemporary collectors are just waiting not of internal transformation due to art but of external transformation. With the purchase of an art product, a businessman turns into a kind of "little Medici". And in such trophy collections personal history is not to be searched, it is about status.

Another feature important for understanding intentions for collecting is the evocative power of things. That is, a work of art can evoke in memory some triggers that enhance its emotional perception, and therefore the desire to possess. Many researchers point at emotional consumption of works-of-art.

Collecting involves creating a single entity of disparate elements. That is a kind of human behavior: to assign, arrange and supplement. Therefore, each collection is a search for balance between the part and the whole, the individual object and the gathering, between similar and different. Each intervention as a whole entails further interventions related to the desire for consistency. Collecting, like consumption, is a story that has no end, because every contented whim calls for the next.

The need to have something new is another driving force behind collecting and modern consumption in general. For many collectors a new painting is a favorite. It is placed in a place of honor, shown to all, and admired. These are pure emotions, but when they go out, what would be better than go hunting for a new favorite? This pursuit of the "new" has another manifestation to collect only contemporary artists, because new art reflects the personal worldview and speaks of the time in which we live. Famous ethnographer and sociologist of culture Sarah Thornton points out that in the 1980s, when the word "avant-garde" went out of style, they adopted the euphemism "cutting-edge". Now, with the endorsement of new art, the prediction of the market potential of the works that a collector purchases is more important than avant-garde experimentation. That kind of new art S. Thornton names "emergent art" (Thornton 2009). For the participants of the contemporary art market there is no more pleasure than to

be the first visitors of the workshop, the first buyers of artworks, and the first to exhibit the artist. Many collectors, however, still go by the names that have already become a "trademark".

Collectors are "betting" on young artists, and the winning strategy is simple: the dominant tendency in art will pay off. So for the prosperity of the art market, an ideal collector is one that buys what everyone buys, because that's how they maintain prices and drive the market. The later the collector becomes involved, the more expensive he will have to pay for maintaining internal contact with leading line.

Senior Director at Sotheby's Philip Hook believes that a collector buys a work of art mainly out of love and for the sake of perceiving this object in the context of other paintings and sculptures that are already in his possession. In addition, any collector perceives the purchased work-of-art as a trophy and will obviously be proud of showing it to anyone (Hook 2014). Therefore, this is an endless play in the space of art market between an artist, who is constantly searching for a way to escape from the material into the sphere of pure art, and a collector, who hunts for the finest works and seeks to capture at least a part of the moment of this divine creation.

Not only the economic factors and the roles of the artist and the collector described above determine the art market. English art critic Brandon Taylor describing the path of contemporary art development in all its possible forms in his famous monograph *Art today* (2005) notes the importance of the human factor in the context of the functioning of the contemporary art market. The increased role of theoretical reflection in the development of contemporary art not only influences the creativity of artists (because they have to follow the "fashion", otherwise they will lose demand), but also generates speculative enough criticism. Thus, a whole "culture of experts" is born, which is the third force in the art market and provides communication between the buyer and those who offer the art product. Thus the third component of the art market is the intermediaries that provide economic and symbolic exchange between the artist and the consumer, as well as communication within the whole system.

Therefore, the art market corresponds to all characteristics of the general economic markets, but has unique features. Art market is a mechanism of interaction between the producer of the art product (the primary market) or the owner of the work (the secondary market) and the consumer (collector or institution), which occurs through intermediaries under the economic laws of supply and demand, that is, pricing, and competition in the space of a certain art segment. The art market is characterized by the uniqueness of the created products, the influence on the pricing process and the seller and buyer relationship from the social and cultural background and the environment. The study of the art market requires a scientist to capture a broad perspective and to take all its components into account.

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The application of Aarhus Convention on access to information, public participation in the decisions on the environment and the law on legal protection in environmental questions in the Republic of Serbia

The Aarhus Convention is an international treaty, adopted in 1998 in the city of Aarhus (Denmark), within the framework of the UN Economic Commission for Europe, at the fourth ministerial conference "Environment for Europe". The fact that adequate environmental protection is essential for the well-being of people and the enjoyment of basic human rights, including the right to life, is the starting point for the adoption of this international act. The Convention regulates and guarantees access to information, public participation in decision-making and the right to legal protection in environmental matters. Each State Party undertakes, by this Convention, that officials and public administrations provide the information requested, facilitate public participation in the decision-making process and seeking access to justice. For the purposes of the provisions of this Act, public administration implies administration at the national, regional and other levels, natural and legal persons who perform administrative functions in accordance with national legislation. These functions also include specific environmental activities, duties and services. Therefore, the signatory countries of this Convention have committed themselves to working to improve accountability and transparency in decision-making, as well as to enhance public support for decisions affecting the environment. The basic assumption of the Convention is that procedural rights in relation to environmental issues should "contribute to the protection of the right of every person of present and future generations to live in an environment that suits his or her health and well-being".

The purpose of the Convention is to achieve the protection of human rights in a healthy environment in order to improve the quality of life, health and well-being of the population through access to information in the domain of the environment, public participation in decision-making and access to justice in environmental matters.

The participating States of the Aarhus Convention are Albania, Armenia, Austria, Belarus, Belgium, Bulgaria, Georgia, Germany, Greece, Denmark, Italy, Iceland, Ireland, Kazakhstan, Kyrgyzstan, Cyprus, Latvia, Liechtenstein, Lithuania, Malta, Monaco, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Slovakia, Slovenia, Serbia, Romania, Tajikistan, Turkmenistan, Ukraine, Finland, France, Estonia, Croatia, Czech Republic, Sweden, Switzerland, Montenegro, United Kingdom of Great

Britain and Northern Ireland (Jovanović et al, 2015). By 2018, the number of signatories to the Aarhus Convention has increased to 53.

In relation to the Aarhus Convention, the Protocol on Pollutant Release and Transfer of Pollutants and the Pollutant Register (2003) was adopted, which came into force in October 2009. The Protocol on Genetically Modified Organisms (2005) entered into force after it was received by three-quarters of the members of the Convention at the time of the adoption of the Amendment.

The National Assembly of the Republic of Serbia adopted in 2009 the Law on the Confirmation of the Aarhus Convention on Access to Information, Public Participation in Decision-Making and Right to Access to Justice, or the Right to Legal Protection in Environmental Matters, (Official Gazette of the Republic of Serbia, International Agreements No. 38/09). Activities planned in the field of implementation of the Aarhus Convention in the Republic of Serbia are contained in the Strategy for its implementation((Jovanović et al. 2014 a) Each State Party to the Aarhus Convention is obliged to undertake the necessary legislative, regulatory measures for the creation and maintenance of a clear, transparent and consistent framework for the implementation of the provisions of the Convention in the course of the interconnected but in the stages of separate processes under the jurisdiction of the competent authorities (Jovanović et al.,2014 b).

The three groups of rules that make the pillars of the Aarhus Convention:

1. Citizens' right to information availability;

2. The right of citizens to participate in decision making on the environment;

3. The right to legal protection where the previous two rights have been violated.

1. THE FIRST PILLAR OF AARHUS CONVENTION

Within the first pillar, the process of accessing information takes place. Freedom of access means that the competent authorities have the obligation to provide the necessary information without a special request and a justification of the request. In the absence of information from government agencies, seeking information is provided through agencies that can satisfy the request. Public information is in case of imminent danger to human health and / or the environment. Public information is made through the Internet and publishing reports on the state of the environment through the media.

Reasons for refusing competent authorities to provide environmental information relate only to cases where this information will affect:

- secrecy of the procedure of the authorities;
- international relations, national defense or public security;

- the implementation of justice and the realization of the right of a person to receive a fair trial;
- the authority of the authorities to conduct an investigation into a criminal or disciplinary procedure;
- secrecy of commercial or industrial information;
- intellectual property rights;
- confidentiality of personal data;
- the interests of third parties in seeking information;
- the environment to which the data relate (protected areas, rare species reserves, etc.).

2. THE SECOND PILLAR OF AARHUS CONVENTION

The second pillar of the Aarhus Convention refers to the right to timely inform the public of all environmental decisions in an understandable form and at a very early stage of decision-making.

The public has the right to inform about the following issues of social interest:

- Proposed activities and project documentation according to which a decision will be made regarding possible environmental threats;
- the nature of possible decisions or draft decisions;
- public authorities responsible for making a decision;
- The procedure envisaged: the beginning and the stages of the procedure, the possible way of public participation, the time and place of the planned public hearings, the name of the public agency where the public can obtain information, the availability of information on environmental threats, and the environmental impact assessment.

The participating States will endeavor to simplify procedures for public participation in decision-making, through access to all information on the activities envisaged, including the manner and time when this information can be provided.

Public participation in environmental decision-making appears as one of the more important mechanisms for the protection of the environment. Every human activity affects an environment that can not represent itself, therefore through the cooperation of the public of all governmental non-governmental structures we can defend the environment. Public participation is useful for each of the groups involved in decision-making - public authorities, the private sector and the broader strata of the public. Benefits for bodies of public authorities may derive from the fact that citizens have direct knowledge of the state of the environment at the local level. Spreading knowledge about negative ecological phenomena with government authorities can lead to better decisions and reduce the potential for environmental damage due to the consequences of proposed activities. Public relations can also be used by the private sector to help identify critical points in the

production process, the use of raw materials, energy consumption, which can result in reduced production costs, productivity growth and energy efficiency.

3. THE THIRD PILLAR OF AARHUS CONVENTION

The third pillar is responsible for the implementation of the Convention through the non-judicial oversight of the Advisory Committee on Compliance with the provisions of the Aarhus Convention, established in accordance with Article 15 of the Convention.

In cases of violation of the Aarhus Convention, the decisions of the competent court or arbitrator are relevant.

The provisions of the Aarhus Convention are closely linked to the principles of the Rio Declaration on Environment and Development - the main document conceived at the Rio de Janeiro Summit in 1992. The Rio Declaration on Environment and Development (1992), in its 3rd Principle, establishes sustainable development as a right. It then specified procedural rights to a healthy environment in Principle 10. Principle 10 contains the following: citizen participation in decision-making, access to environmental information, and the ability to seek effective judicial and administrative procedures, including the right to remedy and compensation. The three pillars of the Aarhus Convention are based on the principles of Principle 10: access to information, public participation and access to the judiciary in the domain of the environment.

In the European Union legislation under Article 37 of the EU Charter of Fundamental Rights, "a high level of environmental protection and the improvement of the quality of the environment must be integrated in the policies of the countries of the Union and ensured in accordance with the principles of sustainable development".

The concept of sustainable development is repeated in the Treaty on the European Union and the Treaty on the Functioning of the European Union. For example, Article 11 states that the European Union "must integrate environmental protection requirements into the creation and implementation of Union policies and activities, in particular in order to promote sustainable development". In this way, the Aarhus Convention follows the primary documents of the European Union and complements the principles of sustainable development with a set of legal instruments.

4. AARHUS CONVENTION IN THE REPUBLIC OF SERBIA

By passing the Law on the Confirmation of the Convention on the Availability of Information, Public Participation in Decision-making and the Right to Environmental Protection in Environmental Matters (Official Gazette of the Republic of Serbia, International Agreements No. 38/09), the Assembly of the Republic of Serbia ratified this Convention and become a State party to the Convention. In this way, the Convention entered into the domestic legal system.

Analyzing the right to legal protection and regulations from the area in the Republic of Serbia, it can be said that there is no special law on access to environmental information in our country. This area is recognized as the right to access information of public importance which is regulated first of the Law on Free Access to Information of Public Importance. Although this law is not a topic of work, in order to understand the Convention as a whole, it is necessary to briefly look at this regulation. Namely, this Law regulates the right to access information of public importance available to public authorities, in order to achieve and protect the interests of the public; it is defined what information is of public importance; it is determined who the public authorities are; who is entitled to the availability of information of a public nature; the Commissioner for Information of Public Importance is established as an independent state body; the procedure is established before the authority, supervision, penal provisions, etc.

Bearing in mind that the environmental protection frameworks in Serbia are regulated by a number of laws and bylaws, it is necessary to emphasize that the process of obtaining environmental information and public participation in making environmental decisions is divided according to two groups of laws: those laws that regulate special public participation procedure and those that do not standardize a special public participation procedure.

In this connection, the group of regulations that regulate a special procedure for public participation include: Law on Environmental Protection, Law on Integrated Pollution Prevention and Control, Law on Strategic Environmental Assessment, Law on Environmental Impact Assessment, Law on nature protection, the Law on Waters (Jovanović L. et al, 2014a).

These laws incorporated international standards on information and participation of the public in procedures of importance for the environment, as well as significant protection of these rights before state bodies - administrative and judicial ones. Through a series of laws, public participation is appropriately incorporated into a legal framework that can be applied, although it is necessary to strengthen their monitoring.

The second group consists of a number of ecological laws that do not regulate the matter of public participation in environmental procedures, as well as laws that do not stipulate a special procedure for public participation in making environmental decisions (Jovanović L. et al, 2014b). These regulations include: Law on Waste Management, Law on Air Protection, Law on Chemicals, Law on Protection against Noise. These laws can not be enough to answer the question of the role and the possibility for the public or the public concerned to take part in the matter as a party to the matter in the matter regulated by these laws.

As a type of legal protection, most of the laws regulating the availability of environmental information include economically violent and misdemeanor protection, and the Criminal Code (Chapter XVIV envisages 18 criminal acts

against the environment) and criminal protection. For example, Article 38 of the Law on Packaging and Packaging Waste prescribes the obligation of the public to inform the public about the management of packaging and packaging waste, and a fine is prescribed for the violation of this provision for a misdemeanor committed by a legal entity or entrepreneur. In the same way, the Law on Environmental Noise Protection, Articles 27 and 28, as well as Article 36, paragraph 1st point 8, prescribes, first of all, the obligation of reporting to the public, and then the violation of the responsible person in the state administration body, if it does not provide the requested information to interested parties without justified reason. In the same way, other laws in this area prescribe the responsibility of the state body, that is, the responsible person in that body, for failing to report to the public and the interested public.

When the previous two rights, ie the right to information availability and the right of citizens to participate in environmental decision making have been violated, each person has the opportunity to initiate proceedings before a competent court. Namely, in case the request of an interested person is unjustifiably rejected, in whole or in part, the state is obliged to provide the possibility of initiating a free procedure for re-consideration by the public administration or an independent impartial body.

In the domestic legal system, the Law on Free Access to Information of Public Importance, the role of an impartial body was achieved through the Commissioner. Members of the public can challenge the decisions of the public administration related to participation in decision-making, in cases when administrative procedural law requires it as a prerequisite, a legal remedy. This procedure implies submission of a complaint to the Commissioner, whose decision depends on whether the person concerned will continue the procedure by filing a complaint with the Administrative Court. In this case, an administrative dispute arises. For remarks, administrative dispute decides on the legality of final administrative acts, or final individual acts, which decide on the law, obligation or law-based interest in respect of which, in a particular case, the law does not provide for different judicial protection.

The judicial protection of the right to access information of public importance before the Administrative Court is provided with regard to the legality of the Commissioner's decisions and decisions of six bodies against whom the complainant is not allowed to appeal and who are exempted from the protection of the Commissioner (the National Assembly, the President of the Republic of Serbia, the Government of the Republic Serbia, Supreme Court of Cassation of Serbia, Constitutional Court and Republic Public Prosecutor). Otherwise, the party who is dissatisfied with the decision and the Republic Public Prosecutor, when the decision violates the public interest, is entitled to file a lawsuit (Jovanović et al.,2014c).

5. THE GOALS OF THE STRATEGY FOR THE IMPLEMENTATION OF THE AARHUS CONVENTION

The RS Government adopted the Strategy for the Implementation of the Convention on the Access to Information, Public Participation in Decision-Making and the Right to Legal Protection in Environmental Matters - Aarhus Convention (Official Gazette of the Republic of Serbia, No. 103/2011).

The strategy for the implementation of the Aarhus Convention aims to provide a process that will enable the feasible, effective and gradual fulfillment of the requirements of the Archeological Convention, and is designed in view of the specificities of the conditions in the Republic of Serbia. The strategy contains the principles of implementation that need to be adhered to, and are related to the EU legislation. The implementation plan specifies the activities that should then be followed to meet EU-related requirements ("Official Gazette of the Republic of Serbia", No. 103/2011).

The goals of the Strategy in the domain of implementation of the Aarhus Convention in the Republic of Serbia are ("Official Gazette of RS", No. 103/2011):

- Providing a precise overview of the situation in the areas most important for the application of the provisions of the Convention;
- Identification of discrepancies and inconsistencies between the system of implementation and the law of the Republic of Serbia;
- Proposing activities to align the law with the obligations established by the Aarhus Convention and eliminate existing discrepancies and inconsistencies concerning institutional and legal norms in the Republic of Serbia;
- Creation of basic conditions for further improvement and introduction of examples of good practice in relation to the Aarhus Convention and other conventions with touch points with it;
- Encouraging other policy activities, ensuring compliance and applying the principles that determine the direction of movement on an improved path towards sustainable development;
- Establishing links and improving the process of accession to the European Union;
- Establish the basis for the implementation of monitoring mechanisms.

6. INSTITUTIONS RESPONSIBLE FOR THE IMPLEMENTATION OF THE AARHUS CONVENTION IN THE REPUBLIC OF SERBIA

Institutions responsible for the implementation of the Aarhus Convention in the Republic of Serbia at the national, regional and local level (Official Gazette of the Republic of Serbia, No. 103/2011) are:

- National authorities;
- National agencies, institutions and other organizations;

- Bodies and organizations of the Autonomous Province of Vojvodina;
- Independent national authorities and independent bodies;
- Capital, cities and municipalities;
- Public Health Institutes;
- state enterprises and other legal entities with public authorities or majority state ownership;
- public enterprises, institutions and public services of the Autonomous Province of Vojvodina;
- Chamber of Commerce;
- Scientific institutes;
- Educational institutions;
- competent and authorized institutions and organizations for protection against ionizing radiation, monitoring of the level of non-ionizing radiation in the environment, measurement of emissions and immission, measurement of noise levels in the environment and processing and disposal of waste;
- judiciary;
- Bar associations and
- Regional Aarhus Centers.

The competence of the Republic of Serbia is defined by the relevant constitutional provisions (Article 97), while the competence of the National Assembly (Article 99), the Government (Article 123), autonomous provinces (Article 183) and municipalities (Article 190). In addition, the Constitution of the Republic of Serbia defines the right to legal aid (Article 67, paragraph 2 - Legal assistance provides a lawyer, as an independent and independent service, and legal aid services established in local self-government units, in accordance with the law), the jurisdiction of the Constitutional Court court (Article 127), etc.

7. SWOT ANALYSES

Based on the SWOT Analysis it is possible to look at the current situation in the context of the advantages, weaknesses, opportunities and dangers of implementing the Action Plan for implementation of the Strategy for the implementation of the Aarhus Convention in the Republic of Serbia, which is presented below:

Weaknesses identified for the implementation of the Strategy for Implementation of the Aarhus Convention in the Republic of Serbia:

- Administrative capacity is insufficient (especially with regard to the implementation of laws and regulations in the area of environmental protection), and there is a shortage of staff in institutions responsible for environmental protection. It is necessary to strengthen capacities for the implementation and imposition of law enforcement.

- Lack of political support.
- Low level of awareness of representatives of all stakeholders, from the general public, to the competent authorities.
- Social and economic problems have priority in relation to environmental issues and priorities of the Aarhus Convention.
- The associations are poor, they do not have enough employees, and those who work there are not trained enough.
- The information system is not sufficiently developed and missing data (relating, for example, to transport, operational monitoring or climate change).
- There are also some sectoral laws and sub-legal acts that are necessary for the operational implementation of existing laws, and the existing structure is too weak to ensure the proper functioning of the system (for example, the competencies of the institutions and procedural methodology are not sufficiently defined), which makes the system be expensive and inefficient.
- The Environmental Protection Agency is not an independent institution. The status of the agency is regulated in accordance with the Law on Environmental Protection ("Official Gazette of RS", No. 135/04).
- Economy lacking capacity in the field of environmental protection.

8. OPPORTUNITIES AND DANGERS FOR STRATEGY OF IMPLEMENTATION OF AARHUS CONVENTION IN THE REPUBLIC OF SERBIA

Opportunities and dangers for implementation of the Strategy for Implementation of the Aarhus Convention in the Republic of Serbia, to be used in the future:

- EU accession and transposition of laws.
- Develop an action plan (already developed to a large extent in certain areas) and move to the implementation phase of the plans by applying the following principles: identify priority activities in order to first remove the biggest obstacles to the efficient functioning of the system (ie defining terms, aligning existing provisions, passing the necessary by-laws акта); at the same time, take into account EU requirements in the field of legislation;
- When analyzing the compatibility of legislation with the Aarhus Convention and formulating legislative solutions, it is necessary to take into account the need to comply with the provisions of Directive 2003/4 / EC on public access to environmental information and Directive 2003/35 / EC on public participation in drawing up plans and programs environmental areas and legal protection.
- Better exploitation of cooperation with EEA / EIONET to take good practice and implement efficient and inexpensive solutions;

participation in other international activities such as INSPIRE and GMES initiatives.
- Linking implementation of the Aarhus Convention with other international agreements.
- Linking the implementation of the Aarhus Convention with efforts in democratization.
- Strengthening the role of associations, in particular through regional Aarhus centers, in order to support the effective process of accession and implementation of the Aarhus Convention.
- Deciding in which areas related to the Aarhus Convention should apply an active and innovative approach and take the lead role.
- Utilizing cooperation in the process of EU accession through audit and further improvement of relevant legal solutions, with their application and enforcement.
- The Action Plan allows better use and access to European and international financial resources.
- Strengthening the judicial system and ensuring adequate right to legal protection.

Dangers for the implementation of the Strategy for the implementation of the Aarhus Convention in the Republic of Serbia, which may occur in the future:

- The process of EU accession can be slowed down.
- The complexity of the solution can sometimes delay the implementation. A transparent action plan should be drawn up that provides step-by-step application to avoid the rejection of broadly defined, complex and demanding tasks.
- Developing awareness is a basic requirement, and awareness of the public and those who make political decisions is low.
- The judicial system should be regulated to contribute to the effective implementation of the provisions of the Aarhus Convention.
- In times of economic crisis, state institutions can not function at full capacity.
- Lack of valid and quality environmental information can make it difficult to exercise the right to access information; if there is no quality system in the data domain, requests by the public and the interested public may be misinterpreted.
- At the given moment, there is no political will to improve the relevant legal solutions.

The Aarhus Convention, with its three solid pillars, significantly contributes to the awareness of citizens more and better focus on environmental protection, thus balancing the rapid development of the economy and the interest of individuals in gaining profit with the general interest of a healthy environment.

By ratifying the Aarhus Convention, the Republic of Serbia has entered a large European family of states that take care of environmental protection. That is why, in 2009, the National Legislation passed a set of ecological laws that firmly rely on Aarhus Convention [8; 9; 13;14;15;16;17;18;20;21].
In most of the laws, public information on the state of the environment is sanctioned. In this way, most of the provisions of the Convention have been implemented in our legal system governing this area. However, when it comes to the implementation of valid environmental regulations, especially in the area of legal protection and access to the judiciary, on the basis of the above considerations, satisfactory results are not present.

9. THE COMPLIANCE OF THE LAWS IN THE REPUBLIC OF SERBIA

The compliance of the laws in the Republic of Serbia with the requirements of the Aarhus Convention has been analyzed in seventeen environmental laws, two of which have been amended versions of previously adopted laws. Four other laws closely related to this area were analyzed ("Official Gazette of RS", No. 103/2011).

Table 1. List of analyzed laws in the field of environment ("Official Gazette of the Republic of Serbia", No. 103/2011).

No	Title	Official publication	Abbreviation
Laws in the field of environment			
1	Law on Environmental Protection	"Official Gazette of RS", No 135/2004 and 36/2009	ZZŽS
2	Law on Environmental Impact Assessment	"Official Gazette of RS", No 135/04 and 36/2009	ZPUŽS
3	Law on Strategic Assessment of Environmental Impact	"Official Gazette of RS", No 135/04 and 88/2010	ZSPUŽS
4	Law on Integrated Prevention and Control of Environmental Pollution	"Official Gazette of RS", No 135/04 and 25/2015	ZISKZŽS
5	Law on Radiation and Nuclear Safety and Security	"Official Gazette of RS", No 95/2018 and 10/2019	ZRNSB
6	Law on Chemicals	"Official Gazette of RS", No 36/09	ZH
7	Law on Biocidal Products	"Official Gazette of RS", No 36/09	ZBP
8	Law on Amendments to the Law on Environmental Impact Assessment	"Official Gazette of RS", No 36/09	ZIDZPUŽS
9	Law on Air Protection	"Official Gazette of RS", No 36/09 and 10/2013	ZZV
10	Law on Nature Protection	"Official Gazette of RS", No 36/09 and 88/2010 and 14/2016	ZZP
11	Law on Protection against Noise in the Environment	"Official Gazette of RS", No 36/09 and 88/2010	ZZBŽS

12	Law on Protection and Sustainable Use of Fish Fund	"Official Gazette of RS", No 128/2014 and 95/2018 - another law	ZZOKRF
13	Law on Waste Management	"Official Gazette of RS", No 36/09	ZUO
14	Law on Packaging and Packaging Waste	"Službeni glasnik RS", 36/2009 and 95/2018 - another law	ZAAO
15	Law on Amendments to the Law on Environmental Protection	"Official Gazette of RS", No 76/2018	ZIDZZŽS
16	Water law	"Official Gazette of RS", No 30/2010, 93/2012, 101/2016, 95/2018 and 95/2018 - another law	ZV
	Other laws		
18	Law on Free Access to Information of Public Importance	"Official Gazette of RS", No 120/04, 54/07, 104/09 and 36/10	ZSPIJZ
19	Law on Administrative Procedure	"Official Gazette of RS", No 18/2016 and 95/2018 - authentic interpretation	ZUP
20	Law on the Organization of Courts	"Official Gazette of RS", No 116/2008, 104/2009, 101/2010, 31/2011 - another law, 78/2011 - another law, 101/2011, 101/2013, 106/2015, 40/2015 - another law, 13/2016, 108/2016, 113/2017, 65/2018 - decision CC, 87/2018 and 88/2018 – decision CC)	ZUS
21	Law on Administrative Disputes	"Official Gazette of RS", No 111/09	ZUS

Analyzing the concepts mentioned in the aforementioned laws, the notion of "environmental information" as required by the Aarhus Convention, has yet to be introduced into the legal system of the Republic of Serbia. The provisions of the law analyzed on this occasion clearly different contexts, which results in the fact that many provisions regarding the availability of information and the right to legal protection, that is, the information exempted from publication is difficult to interpret and apply. It is therefore necessary to establish in the Serbian legal system a comprehensive legal definition of "environmental information" that is fully in line with the definition given in the Aarhus Convention.

The definitions of "public" and "interested public" as given in the convention have been transposed into some of the laws of the Republic of Serbia related to the field of the environment (not in everything analyzed here), and therefore the use of terms should be adapted.

Other terms related to EU directives are not sufficiently defined. One significant example of this type is "emission". This leads to significant regulatory discrepancies between different laws. Similar inconsistencies exist when it comes to definitions of PRTR and genetically modified organisms (GMOs). These terms will be in the following chapters, but they require a subsequent analysis.

Table 2 shows a brief overview of the compliance of the laws of the Republic of Serbia with the requirements contained in the articles of the Aarhus Convention.

Table 2. Comparison of definitions of key terms in the Aarhus Convention and the laws of the Republic of Serbia ("Official Gazette of RS", No. 103/2011).

Term	Definition from the Aarhus Convention	Definition in the laws of the Republic of Serbia	Compliance of definitions in the laws of the Republic of Serbia with the requirements of the Aarhus Convention
"Public Authorities"	State bodies or natural or legal persons who perform public functions. It may also refer to regional organizations for economic integration, such as the European Community, but does not explicitly refer to bodies that act in a judicial or legislative capacity.	The public authority is: state authority, territorial autonomy authority, local self-government body or organization entrusted with the exercise of public authority (Article 3 of ZSPIJZ). When public functions are delegated or transferred to other bodies, they must provide access to information.	**Yes -** The definition exists in three laws in the field of the environment. There is no specific definition of "public authority", but responsibilities and competencies are defined.
"Environmental Information"	A broad definition covering not only environmental information or information available to the ministry responsible for the environment, but also information on environmental quality and emissions, factors affecting the quality of the environment and health, and information on decision-making and analysis .	There is no definition, although this issue is partially regulated: for example, the public may have access to environmental data (Article 9 of the ZZŽS).	**No** - There is no definition in the laws of the Republic of Serbia. In addition, the reasons for rejecting requests for access to environmental information have not been regulated in accordance with Article 4 of the Aarhus Convention.
"Information"	See sections B.1 and B.2, detailing the implementation of definitions in EU regulations.	Documented information for which the public can be legally interested, disposed of by a public authority, created in the work or in connection with the work of the public authority (see ZSPIJZ).	**Partially -** In some legal acts, the term "document" is often used instead of "information", which in many cases narrows the interpretation of the right to access information, since the term mentioned refers only to tangible documents and published

			material.
"Information of public importance"	It represents any information in a written, visual, audio, electronic or other material form. Any material forms not mentioned here, whether they exist at this time, or will exist in the future, fall under this definition.	According to Article 2 of the ZSPIJZ, this refers to information held by the public authority, contained in the out-of-order document, which refers to all that the public has a legitimate interest in being informed of; the source of information is a public authority or other entity, and the information carrier on which the document is located is not relevant.	**Partially -** The basic definition is valid only in the context of certain laws and there is no obligation of strict compliance with Aarhus's definition; The context of the definition given in the Aarhus Convention is actually much wider.
"The public"	Natural or legal persons, as well as organizations or groups of citizens.	The public is made up of one or more natural or legal persons, their associations or groups of citizens (ZZŽS, ZLJS, ZSPUŽS, ZISKZŽS and ZUP). In the General Administrative Procedure Act, this term refers to any natural or legal person, as well as groups of citizens who do not have the status of a legal entity, when in the administrative procedure it is solved about their rights, obligations or legal interests.	**Yes -** The term is in accordance with the Aarhus Convention, although only in several environmental laws and in the Law on General Administrative Procedure. **No -** The Law on Waters uses the term "wider public". **No -** The Constitution uses the term "everyone".
"Interested public"	A public that is endangered or likely to be endangered or has an interest in making decisions concerning the environment. Associations should only promote environmental protection and meet the requirements laid down by national legislation so that they can be covered by the definition of "interested public".	It is a public that is endangered or likely to be threatened by a project, including associations registered with a competent authority.This also includes the public interested in decisions concerning the protection of the environment, including associations registered with the competent authority.	**Partially -** The definition exists in four laws in the field of environmental protection, but it is not mentioned in other laws that are analyzed here.

Article 2 of the Aarhus Convention defines the terms "foreign", "public authority", "environmental information", "public" and "interested public". The terminology of the EU Directives relating to GMOs and PRTRs is analyzed in the chapters devoted to these areas.

Aarhus definitions of "public" and "interested public" have been transposed into some, but not all environmental laws of the Republic of Serbia that are analyzed here. The word "anyone" in Article 74 of the Constitution should either be replaced or explained in more detail, as it does not allow the necessary distinction between the "public" and "interested public". The proper interpretation (that is, in accordance with the Constitution) would enable the two terms to be properly regulated in the laws of the Republic of Serbia concerning the environment. Other laws of the Republic of Serbia do not distinguish between these two terms, although this difference is necessary, as can be seen in the Laws on EWS, SEPA and ISKZŽS. In addition, the legal definitions of "public" and "interested public", which are in accordance with the Aarhus Convention, have been applied only in several laws of the Republic of Serbia. There is no correct definition applied consistently throughout the legal system.

The term "environmental information" has yet to be established in the legal system of the Republic of Serbia in accordance with the Aarhus Convention. The definition of environmental data is crucial to determining the scope of the Convention, and the existence of a definition is a minimum to be met, although the Parties may apply a broader definition. The scope of the provisions of the Republic of Serbia laws that are analyzed here is different. It is necessary to establish in the Republic of Serbia a comprehensive legal definition of "environmental information" that would be in accordance with the Aarhus Convention and uniformly applied throughout the legal system. The inconsistency in the laws relating to the area of access to information results in the potentially limited right of access to information as defined in Article 4 of the Convention, as well as the limited effectiveness of the mechanisms providing for the right to legal protection.

At the very beginning of the analysis of the application of the right to legal protection and access to the judiciary under the Aarhus Convention, it is necessary to consider this process and the course of its process. The procedure for accessing information begins with a written or oral request for receiving information from the interested party. If this is justifiable, it can be satisfied by sending a notice of possession of information, inspecting the documentation for the requested information, issuing a copy of the document with the requested information or submitting a copy of the document by mail or in some other way. In the event of unjustified, the request shall be rejected by the Decision on the refusal of a request or "silence of administration". This decision may be appealed to the Commissioner who issues the second Decision which may be the adoption of an appeal or the rejection of the appeal. A lawsuit and an administrative dispute before a competent court may be instituted against this Commissioner's decision.

Based on this procedure in a three-pillar process, the three groups of rules, when it comes to the implementation of the third pillar of the Convention, which is the right of access and protection from administrative

bodies and judicial authorities, can be said that in Serbia it is partially implemented . A sufficient number of laws have been adopted to guarantee broad protection in this area. However, by analyzing the current practice, it is concluded that the problem arises when it comes to the adoption of the adopted regulations. Criminal law, commercial preterm and misdemeanor processing of the perpetrators of punishable labor is insufficiently used.

According to the available reports of judicial authorities and their analysis, what is noticeable is that there is a very small number of applications for economic offenses and violations when it comes to environmental protection. Similar is the situation in the treatment of public prosecutors by the type of criminal offense in pre-criminal and criminal proceedings. There is a great disproportion in the quality of prosecution of criminal offenses against the environment.

The number of criminal charges for these crimes and the indictment in relation to other crimes is still negligible. The urgency of treatment, in this type of procedure prescribed, as defined by the Convention, is not respected in our country. The reason is probably in an insufficiently developed awareness of the importance of environmental protection.

Analyzing is a very important aspect, a need is emphasized in relation to court annual reports on achieved work results and their guidance, which are available to the public in the form of an informer or bulletin. It is necessary to harmonize to date the methodology of collecting and making environmental data by the Public Prosecutor's and Judicial Authorities, in accordance with the methodology in the administrative bodies, in order to create one of the essential elements based on such reliable data. is particularly important for monitoring the state of the environment in this territory. This is significant because the current situation in this area can not boast of the existence of special, extracted data in relation to cases whose procedure, under various legal bases, is conducted or terminated before the competent courts. These data are likely to exist, but are not contained in court reports that are available to the public.

By introducing a unified methodology for collecting and producing data, the database for solving disputes in the field of environmental protection would be first established in the judicial and public prosecutorial bodies, and the binding provisions of the Aarhus Convention on the Right to Legal Protection and Access to Justice would be respected, which so far it was a case.

Furthermore, the analysis found that the Court Info Keepers contain chapters referring to information of public importance, but only in the form of a mere definition or listing of the provisions of the Law on Free Access to Information of Public Importance, without any information whether they were guided court proceedings in this matter.

In 2018, the Commissioner for Information of Public Importance and Personal Data Protection received a total of 28 complaints related to a

violation of the right to a healthy environment. These complaints account for 0.70% of the total number of all complaints received in that period. The content of the complaints most often refers to protection against noise in urban areas, air pollution, soil and water due to harmful emissions of commercial plants, environmental pollution due to improper and improper storage of waste and hazardous substances, proximity to transformers and transmitters to residential buildings, etc. Complaints are often submitted to groups of citizens or associations that achieve their goals of association in the field of environmental protection. (Report on the implementation of information of public importance and the law on personal data protection, for 2018, 2019).

Concerning data related to the subject legal protection and their analysis, the conclusion on the current situation is as follows: in the Annual Reports of the Commissioner on the Implementation of the Law on Free Access to Information of Public Importance, data on his handling of complaints on the violation of the right to free access to information. Within the report, the types of information requested in relation to which appeals have been lodged are also statistically statistically shown. Thus, data are also presented in relation to environmental information (Report on the Implementation of Information of Public Importance and Law on Personal Data Protection, 2012, 2013).

The fate of further decision-making on this basis (unfortunately) is not available to the public, based on the available, listed as administrative, as well as court annual reports. In particular, data on the number of filed lawsuits before the Administrative Court are shown by the Commissioner's report, but the results of the initiated administrative disputes for environmental threats in the area of legal protection before the judicial authorities do not exist.

In order to analyze the implementation of the Aarhus Convention, regional centers in the Republic of Serbia have been significantly mentioned: Aarhus centers in Subotica, Novi Sad, Kragujevac and the center of eastern and southern Serbia in Niš. The work of these centers is currently reflected in the promotion of the interested public in the decision-making processes at the local level, as well as the commitment to actively engage civil society in environmental protection activities, as well as to improve the dialogue between decision-makers and civil society. One of the important activities is the establishment of the "Network of Aarhus Centers", which will serve as a platform for coordination of cooperation between these centers. Data relating to the subject of legal protection, or the third pillar of the Aarhus Convention, are still not subject to processing and reporting. One of the Aarhus Centers (in Kragujevac) issued in the part of the implementation of the Aarhus Convention in the Republic of Serbia "Models of legal acts for the units of local self-government for the purpose of applying the Aarhus Convention" which can be of great benefit to local self-governments (Models of legal acts

for local units For the implementation of the Aarhus Convention, Aarhus Center Kragujevac, 2010).

The introduction of a modern long-term policy that leads to sustainable development, the democratization of policy-making and the facilitation of the EU accession process are sufficient reasons for implementing the Strategy for the implementation of the Aarhus Convention, which will in the short term benefit the Republic of Serbia.(Jovanović et all. 2015)

"The lack of mechanisms for activation or the implementation of regulations adopted in this area is especially reflected in the lack of systematic monitoring of the state of the environment, lack of standards of operation, methods and procedures for public participation in decision making in the field of environmental protection and sustainable development and the lack of systematic monitoring the state and education of the bodies or bodies, especially at the level of local self-government, which would operate operatively ("Environmental Assessment in the Republic of Serbia", 2007).This assessment from 2007 could be presented to the greatest extent even today because in this area (regardless of what has been done) the situation is unsatisfactory.

Systematic information on monitoring of air quality has began by Serbian environment protection Agency (SEPA) in 2019 (using the internet of things).

The Ministry of Environment and Spatial Planning has initiated the process of drafting the II national report on the implementation of the Convention on the availability of information, public participation in decision-making and the right to legal protection in environmental matters (http://www.merz.gov.rs/cir/dokumenti / proposal-second-national-report-of-implementation-archus-convention). "The contribution of the Convention could be viewed from a standpoint of strengthening the position of citizens and associations dealing with issues of importance to the environment, the introduction of certain systematics into rules concerning the protection of certain environmental and environmental rights, as well as internationalization procedural aspects of the protection of the right to a healthy environment under Article 74 of the Constitution of the Republic of Serbia" (Constitution of the Republic of Serbia, Official Gazette of the Republic of Serbia, No. 98/2006).

In the Republic of Serbia the implementation of Aarhus Cconvention has been very slow so far. Only a small number of organizations are involved in the implementation and realization of the rights pursuant to the Aarhus Convention. These are the "Civic Initiatives", "Belgrade Open School", Aarhus Centres and Green Ombudsman in Vojvodina and also many NGOs that focus their activities on the popularization of science of the environment and environmental protection in the Republic of Serbia.

Now Serbia has a network of five Aarhus Centres (Kragujevac, Novi Sad, Subotica, Niš, Belgrade). Aarhus Centres of the Republic of Serbia focus on

building and facilitating local governance processes and activities on promoting environmental protection by implementation of the Aarhus Convention. The Aarhus Centres are working also on disaster risk reduction (flood and earthquake risk reduction).

In a time of major environmental disasters, global climate change and turbulence in all areas of the economy and society at large, it is important for the general public to have access to environmental information, measures, decisions and all kinds of activities that can endanger the environment and most importantly, they can influence these decisions with the assistance of the judicial authorities (Jolđić et al.,2016).

It is necessary to periodically check the level of public awareness of different educational profiles and professions about the importance and content of conventions, treaties and other forms of environmental regulation. All this requires the participation of a large number of researchers in projects promoting ecological sciences in order to develop the environmental awareness of the population of the Republic of Serbia.

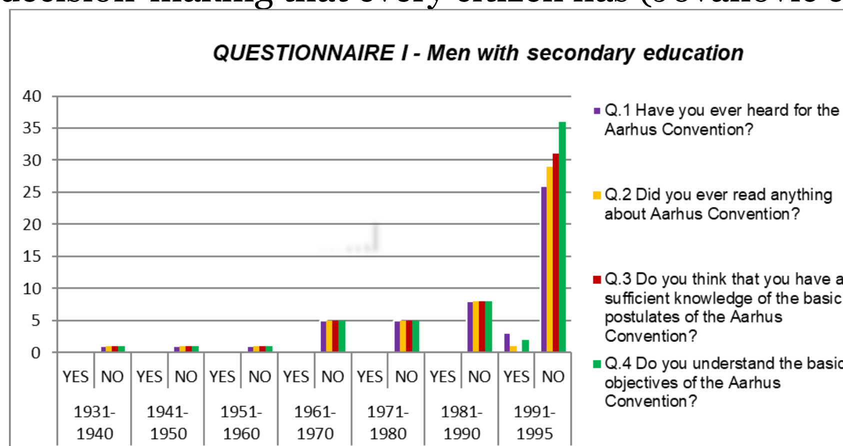
The shortcomings of educational programs in the field of environmental protection and sustainable development are evident in formal and non-formal education in the Republic of Serbia.

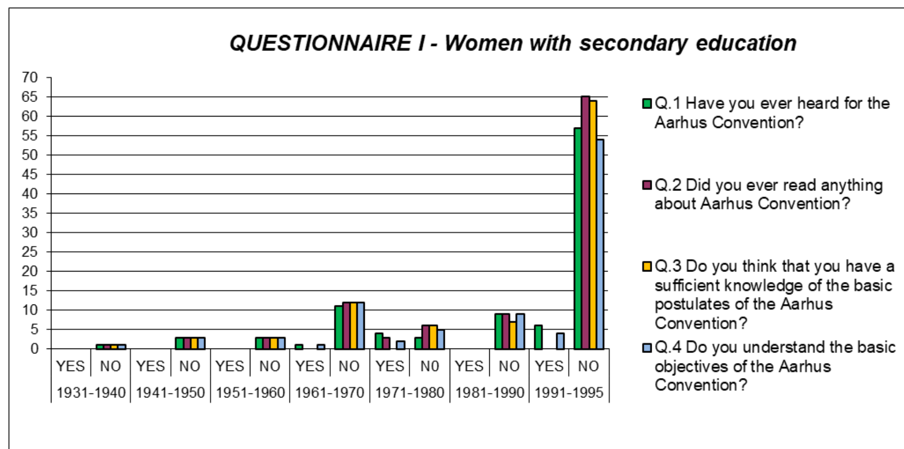
There is a wide scope for opening new directions and programs at different educational levels.

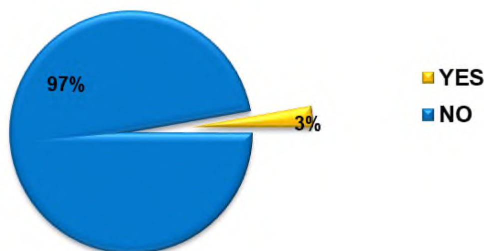
The diagrams on Figure 1 show the results of a survey of residents of Belgrade, Novi Sad and Pancevo with secondary education. 97% of men and 95% of women answered negative questions from Questionnaire I.

The very low level of awareness among the population of various educational qualifications and the year of birth testifies to the need for more frequent holding of thematic meetings, workshops, round tables, conferences and other forms of activities to promote the postulates of the Aarhus Convention.

Of particular importance are brochures and books that fully inform the interested public from different target groups about the implementation of the Aarhus Convention and the rights to access information and influence on environmental decision-making that every citizen has (Jovanović et al.,2015).







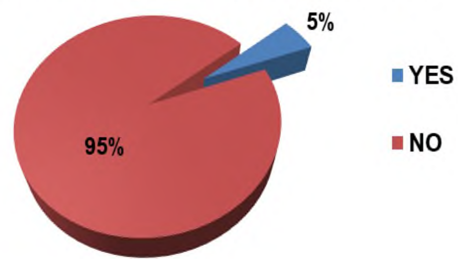


Figure 1. Responses of the survey participants with secondary education to the questions from Questionnaire I (sorted by gender and age groups).

CONCLUSION

The adoption of the Aarhus Convention is of great iimportance for the Republic of Serbia in the process of EU integration.

The strategy of sustainable development adopted in Serbia recognizes this as the values pursued. Thus, the environment and the relation to it, becomes one of the fundamental values, both at its widest and personal level, as it is in most developed countries for decades. The attitude towards the environment, as part of an overall system of values, is only one aspect of the changes that Serbia must fulfill on the road to the EU.

The legislation harmonized with the EU legislation, Strategy of Sustainable Development, Strategy of the CSR and other strategies and international agreements signed by Serbia, more active role of educational institutions and the media, NGOs, will have a synergistic effect and a positive impact on the change of value system, both to the environment, but also to all aspects of community life that guarantee the prosperity of the nation.

Based on the concept of "sustainable development" and its practical application in the world and in our country, the Aarhus Convention and its application contributes to the protection of rights of all people, of the present and future generations, to live in the environment that is appropriate to their

health and well-being. The Aarhus Convention is a crucial document for developing countries because of the possibility of strengthening of the capacity for the promotion of rights of the people in the field of environmental protection.

Advantages identified for the implementation of the Strategy for Implementation of the Aarhus Convention in the Republic of Serbia:

- In some areas, the implementation of the Action Plan for the Implementation of the Strategy for Implementation of the Aarhus Convention (Action Plan) started somewhat prior to the confirmation of the Aarhus Convention; it is a priority to continue with the application of good practice that yields results and to extend it to all levels in the country.
- Many of the goals relevant to the Aarhus Convention have already been incorporated into existing strategic policy documents
- The existing laws and regulations in the area of environmental protection and GMOs provide a good basis for further harmonization with the requirements of the Aarhus Convention.
- An Environmental Protection Agency was established, through which regular cooperation with EIONET and EEA prior to accession to the European Union is realized, which provides opportunities to learn EU practices and meet the requirements of the EU.
- There is a group of well-educated environmental experts dedicated to their call.
- A Commissioner for Information of Public Importance and Personal Data Protection was appointed, his office is becoming more and more efficient in his work.
- A court system has been established and an adequate procedure for exercising the right to legal protection has been enabled.

In the Republic of Serbia, a relatively low level of awareness of environmental knowledge and information of citizens on the right to access information, participation in decision making on environmental issues and legal protection was observed. As a consequence, this has the disadvantage of citizens' appeal regarding the overall nature of environmental issues in relation to the development of society and the improvement of quality of life, and as a general goal, the importance for development based on the paradigme of Sustainable Development.

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The role and the importance of public relations in forming a positive image of government authorities

The current state of development of Ukrainian society is not yet fully in line with democratic principles - the reasons for this are the low standard of living of population, significant corruption and politicization of the society, which entail the distrust and indifference of citizens to participate in state affairs. Building a new Ukrainian civil society involves close interaction and coordination of public authorities with citizens and their associations, taking into account public opinion. Therefore, the issue of establishing effective public relations is extremely important in forming a positive image of government institutions, ensuring transparency and openness in their activities and effective feedback.

In science so far there is no consensus on the definition of the term "public relations" (PR), communication with public, public communications, community affairs, publicity. The definition is given by each specialist, based on the specific field of activity and the peculiarities of each institution, organization or country, which leads to the existence of a large number of options. It is a science that contains certain laws, and methodology, and principles, and art as well. As science public relations began to develop in the United States. Issues of the development of this science were addressed by E. Bernays, S. Black, D. Grunig, T. Jefferson, D. Doty, S. Katlip, T. Hunt, D. Hartley, C. Fourier, and others [3]. Among the Ukrainian specialists it is worth mentioning: V. Bebyk, V. Korolko, Ye. Tykhomyrova, V. Buhrym, Ye. Romat, V. Moiseyev, O. Yanovskyi and others. In the sphere of public administration, public relations have been studied by V. Malynovskyi, A. Serant, I. Tolkachov, I. Panteleichuk and others. H. Pocheptsov, A. Sanayev, V. Komarovskyi consider the issues of public relations in terms of propaganda theory, political management, ideological influence and mass communication [3, 7, 11, 26, 28]. At the same time, some scholars consider the role of PR in image formation. Thus, R. Voitovych, Yu. Pedafet focused on forming the image in the sphere of activity of government authorities. H. Pocheptsov discusses the issues of political image and technologies of election campaigning using PR tools [11]. In general, the issues of corporate image and the role of the leader in the formation of the image are revealed in the works of V. Bilous, V. Bebyk, S. Kolosko, N. Barna, E. Tykhomyrova, etc. [1, 2, 25, 28].

The purpose of the article. Defining the role and importance of public relations functions in forming a positive image of government authorities.

Presentation of the main material. Public relations, as a developing institution, require normative determination and regulation by the state. Since there is no law of Ukraine that would consolidate the concept and coordinate relations arising in the sphere of public relations, these processes are governed by the laws relating to the sphere of information and civil society, so in the implementation of public relations in government authorities regulatory acts that determine the content and conditions of implementation of mechanisms of public relations should be taken into account. In particular, these social relations are defined and regulated by the laws of Ukraine: “On Information” [20], “On Appeals of Citizens” [18], “On the Procedure for Coverage of the Activity of State and Local Self-Government Bodies in Ukraine by the Mass Media” [23], “On News Agencies” [19], “On Scientific and Technical Information” [21], “On Printed Mass Media (Press) in Ukraine” [16], “On Television and Radio Broadcasting” [24], “On Basic Principles of Development Information Society in Ukraine for 2007-2015” [22], “On Access to Public Information” [15] “On Personal Data Protection” [17] and so on. The public relations system is an instrument of implementation of the principle of publicity, stated in Article 4 of the Law of Ukraine “On the Antimonopoly Committee of Ukraine” [13].

The public is understood as a community of people formed under certain circumstances who are aware of the problem of the situation and respond to it in the same way [3]. The public can be external - citizens, non-governmental organizations, trade unions and other industry associations, enterprises, financial organizations, state institutions, parties, etc., and internal - employees of public authority, united by official relations, duties, responsibilities, discipline.

We consider public relations as a science of public opinion management [11, p. 16]. Accordingly, the main tasks of public relations are to: study, analyze and manage public opinion; analysis and regulation of public relations by informative methods; coverage of power-management relations, ensuring bilateral communication on the basis of true, complete awareness; study, analysis, explanation and use in the interests of the subject of management (administration) and the public of a certain state institution, organization of power, management, financial, international relations; consumer relations research, advertising of goods and services; creating a positive image of the organization, institution and its management; identification of possible trends, cases and foresight, scientific prediction of their consequences.

The purpose of activity of specialists (services, departments) in public relations of public authorities is to establish bilateral communication between citizens and public authorities, to establish a common, joint communication space, to achieve mutual understanding based on authenticity, competence and completeness of information [28, p. 42-57].

The way to achieve this goal is a conscious, planned and long-term impact on the creation of external and internal socio-psychological environment, which would be favorable for a positive image of public authorities, as well as ensuring the desired behavior of this environment in relation to the public authority through the information system and feedback.

Today, priorities in the activity of information services of public authorities are given to the complex of press-intermediary functions of informing the public of a responsive nature, designed for a one-time effect. The long-term programs of scientific research and analysis of the state of public opinion under the conditions of systematic transformation of all spheres of life of Ukrainian society, the study of the needs of the public in modern conditions, and the state of educational and pedagogical work among various target groups of the public are unsatisfactory.

Lack of dialogue, freedom of expression can lead to the destruction of interaction, to indifference or even aggression by the public to public authorities. The reasons that cause the distrust of citizens to the state authorities are divided into: technical (lack of specialists or press services in the state authorities), cultural-historical (citizens' distrust of the state apparatus); organizational (incompetence of civil servants, inability to establish effective work of public relations services, unwillingness to change the stable work style characterized by secrecy, lack of transparency, bureaucracy), social (in some cases, the public service works to meet their own interests and needs, ignoring the real needs of society and implementing policy decisions that are not in the interests of the citizens) [8, p. 174], material (insufficient financing, lack of material and technical base) [28, p.145].

Therefore, one of the priority tasks of public relations is to create an attractive positive image of public authorities, which provides emotional-psychological impact on the public for the purpose of promotion and advertising.

Image - (from English image – "image") – is an artificial image, which is formed in the public or individual consciousness by means of mass communication and psychological influence in order to form a certain relation to the object. It can combine both the real qualities of the object and the imaginary, non-existent [2, p. 18]. Image is a very capacious concept and has many components (Fig. 1).

The key element of working with public relations is to influence public opinion. The majority of public relations actions are conducted in order to: form public opinion if it is not present; persuade people to change their minds; to strengthen (increase) existing public opinion.

In addition, public relations science performs several major functions that reflect the specifics of its subject and place in the system of sciences [2, p. 57-58]. Let us analyze the public relations functions by the example of the

Khmelnytskyi Regional Territorial Branch of the Antimonopoly Committee of Ukraine (hereinafter the Branch).

The communicative function is that public relations are the channels through which information is exchanged. Without the implementation of this function, the content of other components of the activity of the state authority is lost.

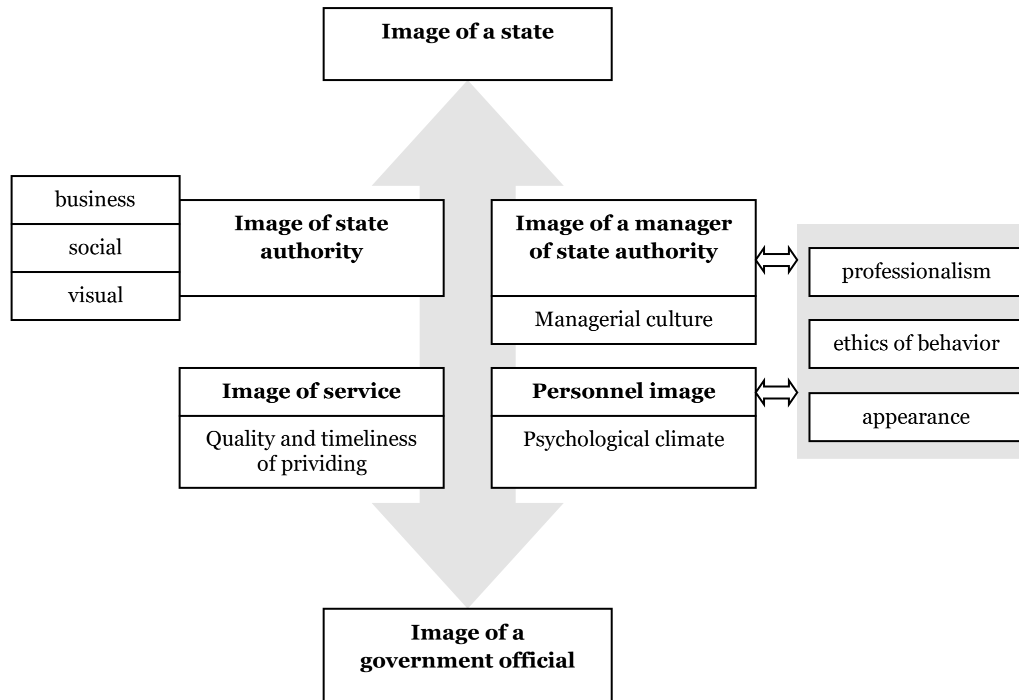

Fig. 1. Components of image and their interrelations

The analytical-forecasting function is the development of information policy, its strategies and tactics that determine events in dynamics. This function provides a thorough study of partners and the public, the analysis of specific situations in the formation of directions of activity, the assessment of public opinion, the preparation of an array of analytical data for making and implementing effective management decisions. It is also revealed in predicting trends in the relationship between the organization and the public, changes in the orientation of the public, its attitudes and desires. After all, public relations play the role of a special social barometer, the fluctuations of which reflect changes in public sentiment.

Analysis of public opinion, control over the processes in it, observation of the dynamics of public sentiment highlights the most problematic areas of life of society, signals about the problems and weaknesses, gives the opportunity to formulate and predict directions of development and solving problems. Timely forecasting of changes in the mood and interests of certain groups of the public can ensure the successful reorientation of government authorities to the new sphere of influence and dissemination of relevant information. According to the experience of the Branch, issues related to disturbances in the markets of foodstuffs, medicines, housing and communal services as well as fuel and lubricants are most concerned with the public.

Information function is revealed in the process of social communication in the society - information about objects, their properties, phenomena, actions and processes is transmitted. Thanks to this function, citizens are acquainted not only with the activities of government authorities, but also learn about their rights in various spheres of life, including competition.

It is recognized that competition is a driving force for economic development, a component of the market environment, a prerequisite for the development of entrepreneurial activity, which contributes to scientific-technological progress, constantly forcing the manufacturer to introduce the latest technologies, rational use of resources, reduce the cost, improve the quality of goods and services. At the same time, there are natural monopolies in areas where there is no competition - in the commodity markets of water, heat, gas and sanitation - that is, in the most important areas of life support. Problems of monopolization of economic activity, competition at commodity markets are attracting close attention and affecting the interests of the general population. State control over the observance by market participants of rules of fair conduct and lawfulness with regard to consumers and competitors is exercised by the Antimonopoly Committee of Ukraine, so informing about the rights and tasks of the Committee - on the one hand, and receiving information on issues of public concern - on the other, is an integral part of the implementation of information function of public relations.

The information function is closely linked to the security function, which is expressed in protection of the interests of both the organization and the public. The interests of both parties are protected by the information obtained from the results of the study of public opinion and the interests and needs of the public. As government authorities hope to support their activities in the exercise of state functions, the public interest must be an upstream element of this activity.

Expressive function provides the transfer of evaluation information about objects or phenomena. The dissemination of reports in the mass media that the Branch has terminated the activity of a particular business entity or public authority implies condemnation of misconduct. At the same time, the notification of termination of the violation or compensation of the damages caused by the wrongdoing indicates the awareness of the wrongfulness of the committed action and repentance.

Pragmatic function means that social communication is a means of stimulating a person to act and react. This function pushes citizens to exercise the right to protect themselves against monopolists and entities that promote malicious advertising. For example, the promotion of misleading consumer goods or services is intended to encourage consumers to refuse to receive such goods or services, or at least be cautious / skeptical about such advertising. The information about anti-competitive concerted action (collusion) should encourage other entities to refrain from such behavior - that is, to see others as a real responsibility, especially since July 2011, when

the penalties for violations of the competition laws imposed by the Branch have increased 4 times [14].

Managerial function of public relations is central, integrating. Combining all other functions, it ensures the formation of public opinion, regulation and management of it in the interests of government authorities and the public. The most difficult task of this function is to reach a consensus in defining and understanding the interests of the government authority and the public and compromise in their implementation, i.e. ensuring harmony, understanding between the organization and the public in order to achieve the best possible results [7, p.342].

In order to carry out the above mentioned functions, the public relations departments (services) must perform another - intermediary function, providing communication to the public and the leadership of a specific authority, institution or organization. In institutions that care for their positive image, high-quality professionals in the field of public relations are intermediaries between management and the public. However, due to the lack of appropriate services in the structure of most government authorities, often the most important part of the mediating function of public relations is performed by managers.

Therefore, the importance and role of a personal positive image of a manager in shaping the overall image of a government authority is of particular importance and is determined by two groups of factors that are conditioned by the functioning of the government in the social environment (the need to organize and manage it; objectively existing public relations; the need for harmonization of individual, group and public interests) and personal qualities of the manager.

One of the important functions of public relations in a society, which will be facilitated by all the other functions mentioned above, is the implementation of the function of harmonization of social relations [25, p. 58]. Since the interests of the public and government authorities do not fully coincide, it is important to minimize differences. But it is possible only in the society where the individual is guaranteed a complete system of civil rights and freedoms, where behavior can only be influenced by persuasion, not coercion. Therefore, there is an objective historical need to create the new atmosphere of state-citizen relations and to develop the professional public relations institute in Ukraine.

Every government authority, every manager who cares about their positive image in the eyes of the public, should make optimal use of different models and methods of PR - the set of ways and techniques, means, tools by which a management entity interacts with the public. Table 1 lists the communication models and public relations techniques that allow them to be fully implemented.

Table 1.
Models of communication and public relations techniques

Models of communication	Techniques
Immediate	- personal reception of citizens; - holding the Open Day; - analysis of citizens' appeals; - systematic study of public opinion; - specifically sociological research; - publishing brochures, posting reference materials for visitors, posting leaflets, etc .; - own publications (manuals, booklets, digests)
By means of communication	- telephone conversations; - hotlines; - various forms of correspondence; - own Web site, including online polls and Q&A mode;
Mediated (via mass media)	- issue and dissemination of information messages, press releases, reviews, information collections, photos, videos, express information via television and radio broadcasts; - organizing exhibitions, holding press conferences, briefings, television debates, round tables, press clubs; arranging interviews with heads of government authorities for mass media workers

It should be noted that the formation of a positive image through public relations, its integrity depends not only on the creation of a certain artificial image, but also on how this image is perceived by the public, other government bodies. Therefore, positive image must be constantly supported, promoted, forwarded in a certain direction, used in a variety of relationships and interactions.

How to evaluate the image of the individual government authority, institution or organization by what criteria or characteristics? O. Shevtsov proposes to evaluate the image through the main channels of communication (Fig. 2) [11, p.140-145].

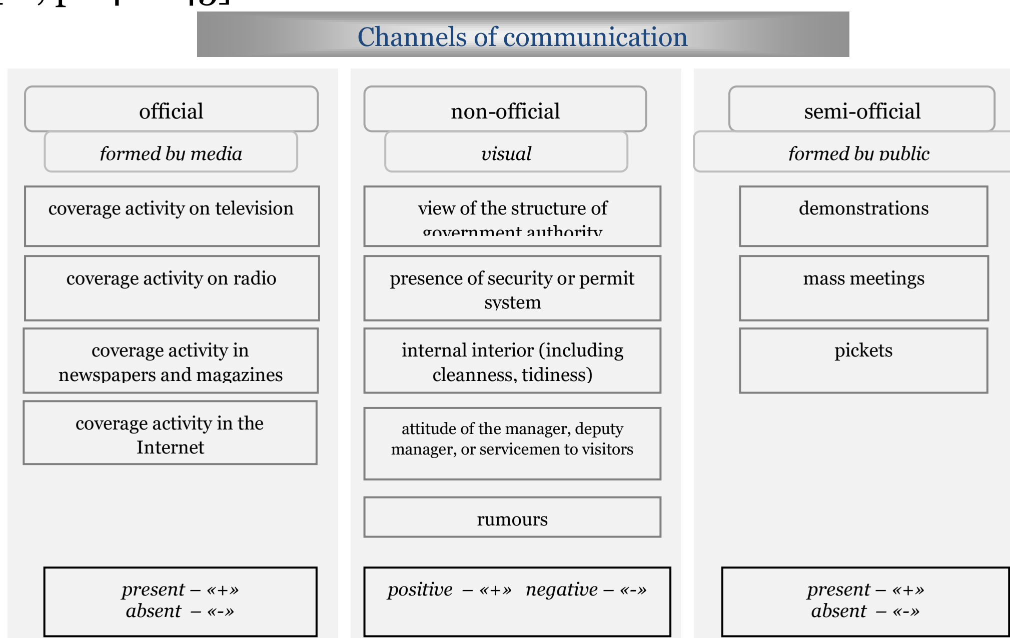

Fig. 2. Evaluation of image by signs

Thus, the image can be evaluated by a very simple system: "+" means 1 point, the highest score for the overall image of the authority is 12. The image is negative if less than 6 points are scored. Positions that contain "-" need processing. If for all positions get "+" - the image is positive, but work on its support and further formation should be continued, because it is not a constant value.

The work of the public relations authority will be effective if carried out adequately, flexibly and systematically, when specific measures coincide with specific economic, legal, political, moral and technological factors [8, p. 179-180].

Considering the role and importance of public relations in shaping a positive image of government authorities, a number of measures need to be taken to improve their work. We propose directions of formation of positive image of government authorities by means of public relations by the example of Khmelnytskyi Regional Territorial Branch of the Antimonopoly Committee of Ukraine:

- introduce the full-time position of a PR or Spokesperson. The requirements for the person who will hold the above mentioned position are very high - they must have a higher profile education, be free to have basic concepts and problems of the government authority in which they work; always be ready to actively defend the interests, goals and values of the government authority before the public and journalists; be a mediator between the Branch and the public;
- regularly use various models of public relations (both personal and media) for harmonization, mutual understanding and effective feedback;
- develop a Public Relations Program, which will include the strategy and tactics for working with specific directions and priorities;
- create own web page, the main requirement of which is systematic updating of information and absence in the materials of stamps that are not clear for the average citizen;
- intensify the involvement of members of the public in the open meetings of the Administrative Board of the Branch;
- establish personal contacts with journalists, using informal means of communication (congratulations on professional holidays, birthdays, celebrations of the most active in cooperation with the Branch, awarding, etc.);
- intensify work on creating a positive image of each of the components of the image of a government authority;
- form corporate culture - for example, to approve the Rules of Ethical Conduct of the Branch employees;
- continuous training - for the proper performance of official duties and for responding appropriately to changes in society.

Therefore, public relations is an extremely important and responsible area of activity of the government authority, which envisages various

technologies and ways of realization of information interaction. Without honest, open, friendly relations between the administrative body and the population, the work becomes counterproductive. In addition, public relations is an integral part of the activity of a governmental body and, above all, aimed at creating and maintaining its own positive image and the entire system of government.

Our next researches will deal with the analysis of the main processes of public relations, the algorithm of the process of developing public relations programs.

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PART III

JURISPRUDENCE, PUBLIC MANAGEMENT AND POLITICAL SCIENCES

Innovative in Science: The Challenges of Our Time

Accent Graphics Communications & Publishing
2019

Information security on the Internet and cyberbullying

Today, a huge amount of information is processed using personal or work computers, so attacks on computer systems have become more prevalent. Every year the number of active Internet users is growing exponentially, hence the problem of security when working on the network is becoming more and more relevant. Unfortunately, users' knowledge of the basics of computer security when using the Internet lags behind the pace of network development and the avalanche-like growth of security threats [1]. Meanwhile, the Internet has a number of properties that make it difficult to ensure information security [2]:

- Internet is a public open network with non-centralized topology and routing;
- malicious activity may occur in one part of the Internet and then spread rapidly throughout the World Wide Web;
- Internet traffic is mainly controlled by incoming traffic, but not outgoing;
- there is practically no user identification in the World Wide Web;
- the jurisdiction of the country in which the crime occurred often does not extend to the cybercriminal.

The Internet is the environment in which the information security of enterprises is exposed to the greatest threats, and at the same time it is an important means of conducting business processes.

The most relevant threats to information security on the Internet are:

– directed at a specific enterprise or industry (targeted) hacker and virus attacks;
– theft of corporate data as a result of attacks on mobile devices;
– malware infection and disclosure of confidential information in social networks;
– imperceptible infection of computers and other devices when visiting websites that are safe at first glance (Drive-by attacks);
– the use of insufficiently secure cloud-based web services and SaaS technology (Software as a Service, “software as a service”).

The main sources of corporate Internet threats is presents in fig. 1.

In order to protect yourself from the threats that exist on the Internet, you should pay special attention to the following things [3]:

– do not follow any links that can be displayed in an e-mail, and it is even better to immediately delete letters that are in doubt and sent from unauthorized persons; o not follow any links that can be displayed in an e-mail, and it is even better to immediately delete letters that are in doubt and sent from unauthorized persons;

- try not to pay attention to the information in which it is a question of quick and easy earnings, because free cheese is only in a mousetrap;
- not to show, and especially not to send, your passwords to third parties and resources, reliable structures and organizations will never ask about this;
- do not navigate through dubious links that can be on various sites, even the most reliable and proven;
- monitor traffic, and, if it increased significantly, it means that, most likely, a virus attack is currently taking place.

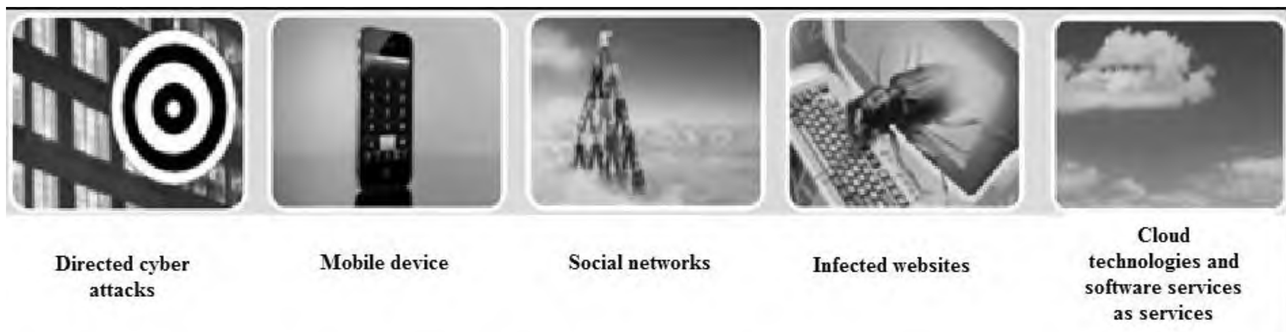

Fig. 1. The main sources of corporate Internet threats

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Virtually all users use social networks to communicate, display photos, post news, get certain information, read news, etc. That is why attackers often use them to commit unlawful acts. To protect against fraudsters on these resources, you must adhere to certain rules:

- not to share with anyone your personal information (date of birth, place of residence, marital status, card numbers, etc.), as well as family members;
- not to publish and discuss confidential information and gossip with the names, surnames and other attributes by which you can find out the identity of the person;

All this can be used to commit unlawful acts against you and your loved ones. For example, by publishing data on departure for rest and making available information about your place of residence, unwillingly, you can bring thieves to your own home.

Equally important is the security of payments and online purchases. Nowadays, making transactions and purchases on the Internet is very popular, as a result, fraudsters invent sophisticated ways of appropriating your money. To avoid this, pay close attention to the following things:

- do not give the numbers of cards and bills, in order to pay for the order, this information is not needed for the transaction, you just need to pay for the goods using payment systems or bank transfers, without providing this data;
- it is better not to use a credit card for payment, but to get another debit one;
- never respond to requests for PIN codes, passwords, financial institutions will never ask about it;
- set limits on the card for making transactions, and conducting transactions must be accomplished by confirming the payment with a combination of characters that come in an SMS message to your own number, using an electronic signature, or keys;
- do not use the services of online stores that have been opened recently, they may be fraudulent (if there was a desire to purchase goods from them, before making a purchase, it is better to read reviews about this organization, call them by the provided contact numbers, etc.) .

When working on the Internet, you can accidentally get to unsafe sites. The creation of such sites are engaged scammers. Hazardous sites are used to spread malware, to collect email addresses, cell phone numbers, and account information. The scam site can be determined by the following characteristics:

- logging on to this site, you can notice the strange behavior of the browser. For example, the user clicked on some link, after that the page of the site opened, and after that, new pages of the site opened in a new browser window. In such a situation, you need to immediately close suspicious pages;
- when you go to the scam site, you may be asked to install or download any application. For example, a user may see a message

stating that this computer is infected with a dangerous virus. In the same message, it will be said that in order to cure the virus, a new antivirus must be installed. Also, the text of the message may indicate that the user's browser is outdated and you need to download the updateIn such cases, the user should not download or install applications if he is not sure of the reliability of the site on which these applications are located. Installing such applications can lead to significant problems;

– web-design of the site, which is familiar to the user, may be slightly changed. Degradation of image quality, changing the appearance of buttons and input fields is acceptable. Site text may contain errors. Also slightly changed the address of the site, it is done in such a way that it can be overlooked with the naked eye. These factors indicate that the user is not on the site where he wanted to go. For example, if a user enters a website address with an error in one character into the address bar, then a scam website will open instead of the desired website. This site can very clearly copy the Web-design and actions of another site. When in doubt about the reliability of the site, the user needs to close this site and try to open the desired site again. In addition, you must use the way that the user regularly uses. For example, when opening a site, use the saved tab of the site, or, accurately enter the address of the site, while carefully checking the exact spelling of the address. It is possible that when you re-open the site, its authenticity is not confirmed. This means that the user's computer is infected with a virus that replaces pages;
– when you open the site, a window pops up asking you to enter your data (full name, email address). Most often this is done under a very plausible excuse. When you enter your email on a suspicious site, the user exposes his mailbox to danger, for example, sending unsolicited advertising.
– when you go to the scam site, the user may be required to send an SMS to any number to confirm the account or to log in to the account. This method is used by attackers to steal users' funds. In such cases, scam sites may have the look and feel of popular websites, for example, login pages for social networking accounts. If you suspect, the user should try to close the browser tabs on which his page is open. The user should take into account that in case of suspicions about the authenticity of the site, which requires entering a username and password, you should not enter any data.

Modern adolescents can no longer imagine life without a global network, but they are the main object of fraudsters, because in most cases, they unconditionally trust interlocutors and bots. Therefore, in this case, all responsibility should be placed on parents, who regularly have to explain to

their children that at the other end there may not be a friendly teenager, but an adult who may have bad intentions. It should also be clarified that you never need to communicate your data, place of residence to unfamiliar people and those users with whom he is not personally acquainted.

Therefore, a new challenge has emerged - to ensure the safety of children on the Internet. It is quite difficult, since the World Wide Web initially develops completely out of control [4].

It has a lot of information, access to which children should not be. On top of that, they need to be taught how not to catch viruses and trojans. Information security on the Internet is also very important, since children are completely inexperienced users. They can easily fall for the bait of an experienced cheater or intruder.

The very first piece of advice is that the child should conduct the first online sessions with any adult. It is advisable to use programs such as "Parental Control" to monitor all the actions of children on the Internet.

It is necessary to limit the independent use of mail and chat rooms, because it can even be dangerous.

Highlight the basic safety rules for children on the Internet:

- should visit the network with children, encourage them to share their experience in using the Internet;
- you need to teach children to trust their intuition - if they are worried about something on the Internet;
- should help the child to register with programs that require a name to be registered and fill out a form without using personal information;
- insist that children never give their address, telephone number or other personal information;
- it is necessary to explain that on the Internet and in real life the difference between right and wrong is the same;
- should not meet with friends from the Internet, as these people may not be who they say they are;
- it is necessary to emphasize that far from everything that they read or see on the Internet is true;
- children should be monitored with the help of modern programs that filter out harmful content, help find out what the child is visiting and what he is doing there.

It is especially important to focus parents on what resources a son or daughter visits. Not so long ago, many were shocked by the “groups of death”, in which teens were offered to commit suicide or injure themselves, thus completing some kind of quest. If suspicious changes were noticed in the child’s character, you shouldn’t unconditionally write this off as a transitional age, but check the resources on which he can talk to children, as well as on the

circle of his real-life communication and keep track of the sites where he most often is .

In addition to these problems that teenagers may experience working with the Internet, a new kind has emerged, like cyberbullying - humiliation or harassment with the help of mobile phones and other electronic devices. Sometimes it turns out to be more painful for teenagers than beatings after lessons, say experts in the field of child protection Marina Egorova and Marina Akulova [5].

Through social networks and communities on the Internet, the dissemination of any information occurs at lightning speed. One click - and degrading and defamatory photos, videos, parody images, rumors reach a huge number of recipients. Using cell phones, the Internet, cyberagressors round the clock can intimidate their victims, creating the illusion of complete control of their lives and behavior. Internet technologies make it possible to preserve their anonymity, so children, in conditions where they cannot determine who is the source of their torment, are afraid of revenge for attracting adults to the problem. Children are often afraid to talk about the cybernasia applied to them, because they are afraid that they will be punished for "denunciation." Anonymity and the impunity associated with this lead to the “disinhibition” of the aggressor: the process carries away the adolescent, and his methods become more violent and cause more and more damage to the victim.

For a cyberagressor, it is not necessary to have physical strength, authority and influence on peers in order to feel superior. Through the Internet, the ability to humiliate, insult, terrorize is realized only with the help of a computer or mobile phone. Once on the Web, the information remains there for a long time, circulating and appearing in various informational Internet resources. This fact causes a long-term traumatic effect on the psyche of the child, who is the object of ridicule and humiliation, forms his low self-esteem, often leads to depressive states, not excluding suicidal consequences.
Cyberbullying can go beyond the boundaries of the Internet to real life in the form of other manifestations of harassment, when the aggressor and the object of harassment are in the same institute, in the same area or city. Children and teenagers, without assessing the consequences of their actions, spread a large amount of personal information on the Internet on their pages on social networks, which can be used by the aggressor in order to intimidate their object. Adults, as a rule, in rare cases have a notion about cyberbullying and methods of protection against it, from other Internet threats, about computer technologies that ensure the online security of their child. Less than 25% of adults impose at least some restrictions on using the Internet for their child, while 70% of children access the Internet daily (about a third have their own profiles), and 10% of children suffer from pronounced Internet addiction.

Unfortunately, cyberbulling seems to be as ineradicable as the meanness of some people. An attempt to stop the aggressor's discrediting the victim's information, be it through a social network post, a web site or a video, is no less an issue, since in order for the resource manager to delete this content, it is necessary to go through an incredibly complicated procedure.

Even if it succeeds, most likely copies of published materials already exist, which makes it almost impossible to completely and permanently remove them from the network.

If a teenager has already encountered an Internet threat, it is recommended to follow these steps:

- if a child is faced with cyberbullying, then you may notice a change in his mood during and after communication on the Internet. Make contact with the child, try to arrange it to talk about what happened. He should trust you and understand that you want to understand the situation and help him, but in no case be punished$
- if a child is upset about something he has seen (for example, someone has hacked his profile on a social network) or he has got into an unpleasant situation (spent money as a result of Internet fraud, etc.), try to calm him down. Find out what led to this result - directly the actions of the child himself, your lack of control, or the child's ignorance of the rules of safe behavior on the Internet;
- if the situation is connected with violence on the Internet against a child, then it is necessary to find out information about the offender, the history of their relationship, find out whether there is an agreement about a meeting in real life and whether such meetings have happened before, find out what the offender knows about the child (real name, surname, address, telephone number, school number, etc.). Offer your help – discuss how you can neutralize, block the aggressor. Explain the dangers a child may encounter when meeting strangers, especially without witnesses. If cyber-aggression is serious and there is a risk to the health of the child, then there may be grounds for engaging law enforcement agencies;
- collect the most complete information about the incident from the child's words as well as through technical means. Go to the pages of the site where he was, see the list of his friends, read the messages. Copy and save this information if necessary;
- if you are not sure of your assessment of how serious the child has happened, or if the child is not frank enough with you and is not ready to make contact, contact a specialist (helpline, hotline, etc.) for advice. and tell you where and in what form to contact on this issue. If the incoming threats are serious enough, concern the life or health of the child, as well as your family members, then you have the right to protection from law enforcement agencies.

In order to prevent cyberbulling, you can take the following actions:

- block the accounts of the aggressors that they use to spread their hatred;
- report cyberbullying facts to service providers like Facebook or Twitter;
- protect your passwords, including those used on mobile devices.

The following technologies and services are used for cyberbullying:

Mobile connection. The phone can be used to capture both photo and video images in order to discredit the victim, as well as to deliver text and multimedia messages to the target.

Instant messaging services. Popular services like ICQ can also be used to send messages to the victim. In addition, the victim's own account can be hacked and used to send defamatory messages to friends and relatives.

Chats and forums. Can be used to send aggressive messages, as well as to disclose the anonymity of the owner of one of the accounts - the selected victim. Confidential, personal information can be posted on the pages of the forum for general discussion.

Cyberbullying email is used to send intimidating messages to the victim, including those containing photos and videos, as well as emails containing viruses. Personal letters of the victim, not intended for wide publicity, may also be published.

Webcams. Used for video calling with provoking the victim, with the subsequent publication of the video.

Social networks. Used to accommodate intimidating and mocking comments, photos and videos. The victim's account can be blocked by a group of people, mass complaints can be sent to it. It can be hacked to send defaming messages on behalf of the victim. An account on behalf of the victim can also be created and used for defamatory activity.

Video hosting services are used to post bullying or intimidating videos.

Gaming sites and virtual gaming worlds. In addition to the broad communication capabilities that allow posting messages in the same way as it is done on social networks, a group of people can purposefully harm the game character of the victim or even methodically kill this character, which also puts serious psychological pressure.

There are the following types of bulling [6]:

1. Skirmishes, or flaming - the exchange of short emotional remarks between two or more people, usually takes place in public places of the Network. At first glance, flaming is a struggle between equals, but under certain conditions it can turn into an unequal psychological terror. An unexpected lunge can cause a strong emotional experience for the victim.
2. Attacks, constant debilitating attacks - repeated offensive messages aimed at the victim (for example, hundreds of sms to a mobile

phone, constant calls), with overload of personal communication channels. They are also found in chat rooms and forums; in online games, this technology is most often used by gnomers - a group of players whose goal is not to win, but to destroy the gaming experience of other participants.

3. Libel – the dissemination of offensive and false information. Text messages, photos, songs that are often sexual in nature. Not only individual teenagers can be victims - lists are sent out ("who is who in school", "who is sleeping with whom"), special "books for criticism" are created with jokes about classmates.
4. Imposture, reincarnation into a specific person - the pursuer positions himself as a victim, using her password to access an account on social networks, in a blog, mail, instant messaging system, or creates his own account with a similar nickname and performs negative communication on behalf of the victim. The organization of the "wave of feedbacks" occurs when provocative letters are sent to friends from the address of the victim without her knowledge.
5. Infighting, luring confidential information and its dissemination - obtaining personal information and publishing it on the Internet or transmitting it to those to whom it was not intended.
6. Alienation (ostracism, isolation). Any person has the desire to be included in the group. Exception from the group is perceived as social death. The more a person is excluded from the interaction, the worse he feels, and the more his self-esteem falls. In a virtual environment, this can lead to a complete emotional destruction of the child. Online expropriation is possible in all types of environments where password protection is used, a junk mail list or a list of friends is formed. Cyber ostracism is also manifested in the absence of a response to instant messages or emails.
7. Cyberharassment – covert tracing of the victim in order to organize assault, beating, rape, etc.
8. Happy Slapping - happy clapping, joyful beating - the name comes from cases in the English subway, where teens beat passers-by, while others recorded it on a mobile phone camera. Now this name is fixed for any videos with recordings of real scenes of violence.

Absolutely every owner of a smartphone or tablet using Twitter, WhatsApp, Snapchat, Facebook, YouTube or any other social network can be a cyberbullying target. Of course, avoiding the use of social networks would be the most effective way to protect against cyberbullying, but this is an extreme measure. It is much better to keep the dialogue open with the people around you, encouraging them to seek help if they become victims of online bullying.

Cyberbullying is a serious problem, and it can be really terrible to experience such a difficult period. Staying strong and resisting is the only option against these bullies.

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The Global Context of Jurisprudence – institutions, human rights and economy

The central argument of this article turns to global context of law. A number of important normative issues need to find their answer from a global perspective. The global economy is accompanied by climate change, migration, poverty, inequality and jurisprudence have to discusses these issues, expressing global context of law - very relevant problems of socio-economocal rights, the obligation of business responsibilities for human rights, democracy and justice in the global world. Analitical and institutional jurisprudence are relevant towards phylosophical explanation of legal probles that arise from global economy. Institutional jurisprudence has the capacity to interprete the human rights problems on the basis of the concept of Justice.

1. The Institutional context of law.

Contextual studies of law arise as an attempt to extend the boundaries of legal knowledge. At the end of the twentieth century, they acquired the character of a movement that discusses the law in a wide context - its social environment. Much of today's research focuses on EU law, globalization and comparative law. The law is not necessarily linked to the national legal systems, but is understood as a legal order. Institutional theories on the nature of law reach the idea of institutional normative order [7, 17-35], presenting in a new way the concept of sovereignty - post sovereignty.

The development of the theory of legal argumentation, which seeks to explain the principles of law at a time when institutions lose their authority, draws attention to the context of law - normativity and sociality. The justification of the legal consequences is contextual. What is important is the role of jurisdictions that, according to a number of philosophers and theorists, create the notion of law. It is part of the rational idea of the law considered in relation to the institutional one.

I share the idea that the law can and should be determined in different ways depending on the purpose of the study and its context. In this sense, I consider the institutional nature of law as a contextual. It exists and should be analysed in a wide social, political and economic environment. The institutional nature of law is this characteristic, which integrates the normative nature of law (ideality) and legal practice. It is a basic feature of a person, and hence its nature (in a philosophical sense). Modern law is much more connected with the institutions than with the political system of the states. A very illustrative example in this respect is a shaping of public administration as an organization of economic type - effective and professional organization, independent of politics.

The problem of the nature of law is at the root of the emergence and development of methodological teachings of law. Natural Law doctrine and legal positivism, imposed as classical theories about the nature of law, seek the foundations of law, determine its normativity, obligatory and coercion. Modern theories emerge that set a new point of view and overcome their disadvantages. Authors who explore the institutional nature of law try to overcome the limits of legal positivism and natural science. Philosophers and theoreticians are moving away from a legal positivism and natural-law theory. They find in the institution the nature of law basis for defining it as a unique social phenomenon. Joseph Raz defines his right as an institutionalized legal system and points out that his views do not concern either legal positivism or natural-law teaching [9, 490]. Neil McCormick and Otta Weinberg create an institutional theory of law that they define as a theory beyond positivism and natural law, although it remains within positivism [4, 22]. Georgi Boichev explains the institutional approach in studying the law as universal as he has the ability to combine the advantages of different theoretical directions [2, 105]. In the context of analytical jurisprudence, Ronald Daworkin views institutional jurisprudence as an institutionalized practice of jurisdictions, and Robert Alexi from a non-positivist perspective clarifies the institutional aspect of constitutional rights - constitutional justice [4, 203].

The subject of discussion in the present article is the institutionality of the law, which is understood as the unity of legal normativity and social (legal) practice. I would like to address three main questions: 1) what are the main issues that legal theory have to explain in relation to globalisation and human rights; 2) in what sense the institutional matters are relevant; 3) how it`s challenge the idea of human rights.

Another view in the article is the applicability of theoretical analysis through the specific institutionalization of economical and social rights. Methodological ground of the article are philosophy and theory of law as a part of analitycal jurisprudence. The publication also recognizes the role of the institutions for the formation and implementation of law, which defines reasoning as part of institutional research into the nature of law. The institutional notion of law is decisive. I uderstand the law more as an institutional normative order in the scence of theoretical views of Neil MacCormik [6], than as a creation of the states. In this scence it can be identified institutional jurisprudence as a part of analytical jurisprudence in the context of globalization. But also, I consider the normativity of law and it`s function to structure social relations through legal norms.

2. Analytical Jurisprudence and Institutional Jurisprudence – global context.

The need to construct a general idea of the nature of law, beyond the peculiarities of national legal systems, results in the emergence of so called

general or analytical jurisprudence that combines philosophical and theoretical knowledge of law. Basic legal concepts are reached. It combines the philosophical (ideal idea) of law with practice, understood as an institutionalized social practice - in a philosophical sense of practical reason. Analytical jurisprudence is directed at the application of law, not its creation. Lawmaking issues are part of politics. Analytical jurisprudence includes normative jurisprudence (philosophical and theoretical explanation of basic legal concepts) and jurisprudence as a practice of the courts - for example jurisprudence of the Constitutional Court, jurisprudence of the European Court of Human Rights, etc. Jurisprudence of the courts we may call an institutional jurisprudence – the knowledge of law based on case law. The practice of jurisdictions forms a great deal of knowledge of law. This is visible in the global world where there is a competition of sovereignty between the states. Jurisprudence, as a knowledge of law, seeks to explain the law, beyond the specifics of national legal systems. Of course, this is not a matter of neglecting the specifics of law deriving from the legal tradition. As is well known, law is not just a practice, it is the public's idea of justice, even philosophy. We can explain the nature of the law by taking into account the legal tradition in all its manifestations.

The processes of globalization pose new political, economic and legal problems. And the legal theory has to meet these challenges. But the answer is not just a global law. This is a matter of the global context of law. Jurisprudence must identify the legal issues arising from the processes of globalization and offer interpretations and solutions. If we try to determine in which area globalization has the most significant development, we can say that these are economic relations. The global economy and the global market have an impact on the development of countries and societies. But if we speak about human rights, we use term 'internationalization of rights', not so much 'globalization of rights'. The importance of rights is emphasized, regardless of the national context. And this is also a global perspective for interpreting the law.

The relationship between the global economy and human rights can be explained by analytical jurisprudence at national and international level. The global context means that we undertake specific problems in the area of human rights in the global economy. Law and jurisdictions have an essential role in balancing economic and human rights. But not only jurisdiction and other autorities are responsible. Business organizations also have their specific role in this respect. It`s not only a matter of business ethics. They have legal obligations that derive directly from human rights in globalized word.

Gobalization promotes interdisciplinary research. Authors in law increasingly raise the issue of the relationship between law and economics. The review of literature in the field of human rights shows that initially they are understood as incompatible or at least competing concepts. Currently, the

themes of economics and human rights, business and human rights are part of the civilization development of societies and law. Research is becoming more contextual. Research is increasingly contextual, as it is aimed at clarifying the specific relationship between the global economy and human rights. Jurisprudence is part of this process and this is its global context. Of course, the global context of jurisprudence also covers other issues. This is a discussion on the role of institutions in the protection of human rights in the liberal and global world, but for sure it`s important one. For example, other subjects are digital righs and digital citizenship.

A number of normative issues arise, for example deficit of justice and democracy in the context of a continuously globalization of economy. Economic inequalities in income and access to the wealth in different countries challenges the concept of human rights and justice, understood as equal access to resources. It is difficult to realize economic rights and access to resources. Globalization deepens these issues. The lack of democracy is that people are not able to participate fully in global economic decision-making. If we compare the human rights matters at national level and the problems in the global economy, we can see the differences in the way they are interpreted. At the national level, the law is much more related to the protection of state authorities. At international level in a globalizing world, the law is aimed at guaranteeing rights through different kind of institutions - jurisdictions, political organizations and economic organizations. Regardless of the relationship between national and international law, the difference is obvious. A global sense, jurisprudence is increasingly comparative in methodological terms. The concept of the universality of rights can receive its answers, despite its critics, who rightly point out that there isn`t possible equal protection of rights in all countries.

However, common human rights problems can be identified when we put them in a global context. And jurisprudence should give answers on their institutionalization, taking into account and explaining their different aspects - political, sociological, economic and legal aspects. This makes the subject of human rights and the global economy even more significant. The need for a social aspect of economic rights is obvious. I think this is the global aspect of the concept of the welfare state.

If I have to draw a general conclusion from what has been said here before proceeding to addressing a particular problem, I think that the process of globalization covers economic, political and social changes. Jurisprudence must explain them from the legal persiective. It`s not of globalization of law itself. Global aspects of law are the result of globalization in the economy. So, we have to make clear distinction between international law and global context of law. For example, international law establishes the protection of social and economic rights, through the adoption of international instruments (conventions, convnents, declarations, etc.) and the creation of international institutions. Jurisprudence explains issues related to the realization of social

and economic rights stemming from globalization and what are the role of different institutions in their protection. Global aspects of human rights are reflected both in national law and international law. In a global perspective, economic and social rights need an integrated approach in their institutionalization. They are socio-economic rights in the liberal world.

3. Law institutionalization of socio-economic rights in the global world.

The legal aspect of the issue is related to the process of institutionalization and realization of the socio-economic rights. The question is how law institutionalizes socio-economic rights, considering their global aspects – institutional relations between human rights and economy. We can identify two levels of institutionalization: 1) a guarantee of equal treatment in the exercise of economic and social rights and this is the principle of non-discrimination; 2) the obligations of business organizations that derive from socio-economic rights. These issues are relevant for both national legal systems and international law. This is in the sence of idea about prolegomena to a future legal methodology and to a non-sacred legal theory [3, 257].

Protection against discrimination is a specific form of ensuring the realization of human rights in accordance with the understanding of their universal and absolute nature. It applies to all generations of rights. The global context of protection against discrimination, however, is the protection of human rights in global economic relations. The subject of socio-economic rights arises when we discuss human rights from the point of view of the global liberal world. For example, the European Union adopts legislation and creates institutions to guarantee the right to free movement of people, goods, services and capital. The principle of non-discrimination is a guiding principle in exercising them in the conditions of a free economic market. Member States also create anti-discrimination legislation, with much of it institutionalizing socio-economic rights. Public institutions have been established at the national level with powers of protection against discrimination, including socio-economic rights. Property status is a defended feature. It can not be the basis for different treatment and enforcement of the law.

It is generally accepted that human rights are a source of duty for the state. On the other hand, business organizations are increasingly defined as institutions. They are seen as actors who have a role and responsibility for the development of society. The question of human rights and business organizations has long been a matter not only of business ethics. The question is not whether business organizations have human rights obligations, but what they are and at what framework should they be discussed. They are private actors and their duties should have the same grounds as the state's duties. Possible response is the exercise of socio-economic rights and the

prohibition of discrimination. They do not have a role in protecting rights, their role is in the process of realization. In an increasingly globalized economy and the creation of multinational corporations, the approaches of national legislation are insufficient and even inapplicable. They acquire a global context and a discussion about corporate social responsibility is the discussion is running under the so called 'grandchallenges' [8, 54]. But this does not put the same issues at supranational level. Socio-economic rights acquire a global context that expresses various issues - economic migration, discrimination on the basis of citizenship access to goods and services, and many others.

4. The global context of law and jurisprudence.

The global context of human rights - social and economic rights should be placed within a theoretical framework that explains their importance to the law. We need to make some distinctions and terminological clarifications. Let's start from a different perspective and clarify what the term 'global law' means. We can point out that global law is an international law. But the very term „global law" is not correct. Globalization is a process that takes place in the economy. As far as the law institutionalizes economic relations, it institutionalizes the processes typical of them. Consequently, law has a global context. Globalization is a process that takes place in the economy. As far as the law institutionalizes economic relations, it institutionalizes the processes typical of them. Consequently, the law has a global context that brings together specificities and issues typical of the global economy. The question is how law and jurisprudence respond to the challenges of globalization and what are the legal issues. If we identify global context of law, we have to develope global context of jurisprudence - philosophical and theoretical explanation of the law in a global economy. Without the claims of comprehensiveness, I think it should discuss the following issues: the relationship between law and the global economy; the role of economic institutions in the development of societies and legal systems; human rights in the global and liberal world.

5. Conclusions.

The global context of jurisprudence responds to the problems of globalization from the point of view of philosophy and the theory of law. It covers two main sets of issues: 1) normative issues - social and environmental issues that cross national borders and have effects on large numbers of people, communities, and the planet as a whole - climate change, migration, poverty, inequality, etc.; 2) institutional matters – how institutions respond to these problems, both at international and national level. For example, how to

overcome the deficit of justice and how to compensate for the deficit of democracy.

The core of normativity of global word is human rights and in particular socio-economic rights. The economy and the free market have their normative limits – norms and velues. Many business organizations are international corporations. Their employees are in different countries, which puts the issue of equality and human rights on a different base. Similarly to the state, business organizations have positive obligations regarding the realization of socio-economic rights and non-discrimination.

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The descent from the father in the proceedings of establishing the perishing or losing the register of the civil status acts

The civil status acts have their material strength of evidence regarding the facts entered therein. Provided that a certain man is entered as a father of the certificate's holder, the descent from the father is considered proven. The failure to draw up, the perishing or losing the birth certificate would create a number of legal problems in the exercising and protecting the rights and interests of the child established by the law. In that sense, researching the issues related to the proceedings of establishing the perishing or losing the Register of the Civil Status Acts has its specific importance for the legal doctrine development, as well as a wide practical impact. A birth certificate also contains the data of the child's mother. Therefore, as important as the latter is the marriage certificate, which verifies the fact of the matrimonial relation between the mother and the father. Thus, together with entering the child's mother in the child's birth certificate, on the basis of the legal presumption for paternity, the lawful husband of the mother is to be entered as the father of the child in the birth certificate of the latter, provided that the child was born during the marriage or within three hundred days as of its termination. Similarly, in the case of the father's death, his certificate of death shall be a condition for entering the father in the child's birth certificate, upon establishing that no more than three hundred days have passed between the date of the death and the birth of the child.

The article is aimed at studying the specific procedures in establishing the perishing or losing the Register of the Civil Status Acts according to the Bulgarian legislation and the Bulgarian judicial practice, which concern the issue of proving the descent from the father.

Materials and Methods

As empirical material for the study are used legal acts and acts from the judicial practice, while applying the following methods: analysis, extrapolation, abstraction and specification, induction and deduction, comparison, generalization, systematization and interpretation of facts.

Statement

When the civil status acts have not been drawn up, or even if having been drawn, they have been lost or have perished, this gives rise to the legal interest of the concerned persons to conduct safeguarding proceedings for establishing those facts.

The grounds for filing a request for initiating such proceedings are contained in the regulations of Art. 38, par. 4, hypotheses 1, 2 and 3, and par. 5 of the Civil Registration Act (CRA). Actively legitimized in the first three hypotheses is each concerned person, while in the last one – the Mayor of the

respective municipality. It is inadmissible, however, to file a request for initiating proceedings of establishing the perishing or losing the register of the population. There are no grounds for initiating such proceedings either when there is omission by the central government or the local administration in refreshing and filling in the USCRASP information system or for another reason by refusing to issue a civil status act. Inadmissible is also a claim under Art. 128, par. 1, item 9 of the Administrative Procedure Code (APC), pursuant to the obligatory judicial practice, the proceedings should follow the Civil Procedure Code as safeguarding proceedings, following Art. 542 of the Civil Procedure Code (CPC).

Since there are two types of registers under the Civil Registration Law – Register of the Civil Status Acts, where the legal events are entered (birth, marriage and death) and Register of the Population, where all the other data for a person is entered, which characterize a person as an individual and differentiate him/her from the other persons in the society and in his/her family in his/her capacity of a holder of subjective rights (name, nationality, family status, kinship, domicile, etc.), it should be pointed out that the proceedings under Art. 542 of the CPC, in relation to Art. 38, par. 4, hypotheses 1, 2 and 3 of the Civil Registration Law have as a subject only the first register. They abide by the general rule that a claim for establishing the existence or non-existence of certain facts is admissible only in the case envisaged in a law, such as the regulations envisaged in Chapter 50 of the CPC "Establishing Facts".

The regulations of Art. 542 of the CPC, in relation to Art. 38, par. 4, hypotheses 1, 2 and 3 or par. 5 of the Civil Registration Law envisage filing an application to the relevant regional court with a request to establish the fact subject to verification, and whenever necessary, also an order to draw up the relevant civil status act, when such has not been drawn, or when it is impossible to have it drawn up, in case it was destroyed or lost.

Actively legitimized to file such a claim is the person, who enjoys the rights from the alleged fact. It is also appropriate to clarify at this point that, in general, that is a concerned person or the Mayor of the respective municipality, when it concerns a destroyed Register of the Civil Status Acts, and only the Mayor, when it concerns such a register, which has been lost.

Concerned persons may be the holders of the civil status acts or other persons empowered by law. Those are the persons that the birth certificate refers to, their parents or legal representatives; the parties under the act for contracted civil marriage; the heirs of the deceased person from the death certificate; third persons explicitly authorized with a notarized Power of Attorney by the aforementioned persons or under the procedure of the CPC, the APC or the Penal Procedure Code (PPC).

The Mayor of the respective municipality, under the procedure of Art. 542, par. 2 of the CPC, in relation to Art. 38, par. 5 of the Civil Registration Law, is entitled to demand from the regional court to establish the fact of

losing or perishing of the respective Civil Status Register, which contains the civil status acts (for birth, marriage and death) and order its drawing up.

The court decision with a successfully conducted lawsuit replaces the binding strength of evidence of the perished or lost civil status act.

According to the judicial practice, the proceedings under Art. 542 of the CPC are admissible "only when the drawing up of the lost or perished document is obligatory and not facultative", when there is no possibility to restore any such document by the authority competent to issue it.

They are also admissible when the document has not been drawn up in order to establish those facts, the legal importance of which does not depend on drawing up a document referring to them, because, in respect to them, it is important only as evidence – birth or death, as well as those facts, in respect to which it is a condition for validity – contracting marriage.

This admissibility is determined "by the possibility to issue the document in the due order by the competent authority or by the admissibility the establishment of the fact to be realized with a claim procedure through the possibility stipulated under Art. 124, par. 4 of the CPC". In that sense, it has a subsidiary nature, i.e. only if it impossible to establish the fact in the due order through a document, drawn up by the competent authority.

However, such proceedings are not admissible when the law envisages another procedure for establishing the respective fact.

Subject of establishing is the very fact of perishing or losing the Civil Status Register, which is a condition for ordering its drawing up, or facts of legal importance for the verifying of which the law has envisaged to obligatory draw up an official document.

Proving within the proceedings under Art. 542 of the CPC allows for collecting all the means of evidence, including witnesses' testimony as well, in order to demand the drawing up or restoring the civil status acts.

In any case, in order to file an application for initiating a lawsuit under Art. 542 of the CPC, in relation to Art. 38, par. 4, hypotheses 1, 2 and 3 or par. 5 of the Civil Registration Law, the concerned person should have a certificate for the absence, alternatively for the perishing of the Register of the Civil Status Acts, or of the certificate of birth, marriage or death. Therefore, the applicant should file an application to the municipal or mayor's administration for issuing a certificate for the absence of the respective civil status act. Then, upon presenting it to the court, the latter shall request the enactment of a court decision on the basis of which the competent civil status official shall be obliged to draw up the respective civil status act and provide it to the applicant.

Provided that the Register of the Civil Status Acts is not preserved, data of importance for those acts can be obtained from the Register of the Population. Besides, with available computer equivalents of the civil status acts, there is no legal interest in initiating the examined safeguarding proceedings. In such cases, the civil status acts can be restored on the basis of

the electronic personal registration card and have listed in them the data available in their computer equivalents.

Results

With a successfully conducted procedure in establishing the failure to draw up, the perishing or losing the Register of the Civil Status Acts, there is the legal opportunity provided to draw them up or restore them. The respective regional court is empowered for that, and on the basis of its entered into force court decision – empowered is the competent administrative authority, which is obliged to draw up or restore the respective act.

The equilibrium in the legal sphere of the concerned persons is either introduced or restored as a result of the procedural activities conducted in this way, as well as in the legal sphere of the society, or at least of a large number of people, when the proceedings were initiated by the Mayor of the respective municipality.

Discussions

The studied empirical material provokes a discussion from a theoretical and practical perspective since the specificity of the legal methods is not exhausted only with the proceedings under Art. 542 of the CPC, in relation to Art. 38, par. 4, hypotheses 1, 2 and 3 or par. 5 of the Civil Registration Law. There are a number of regulations in the legislation, which concern the examined proceedings, as well as a number of legal consequences resulting from sustaining or rejecting the application thereof.

Conclusions

The civil status acts concern the issue of proving the descent from the father.

When they have not been drawn up, or although having been drawn up, they were lost or destroyed, the legal interest arises for the concerned persons and for the Mayor of the respective municipality to conduct proceedings of establishing those facts. By nature, these are safeguarding proceedings with legal qualification contained in Art. 542 of the CPC, in relation to Art. 38, par. 4, hypotheses 1, 2 and 3 or par. 5 of the Civil Registration Law.

Actively legitimized is each concerned person, as well as the Mayor of the respective municipality. Each concerned person may demand the establishing of the perished Register of the Civil Status Acts, as well as the Mayor, however the establishing of a lost Register may be initiated only by the latter.

The court decision with a successfully conducted lawsuit replaces the binding strength of evidence of the perished or lost civil status act.

Subject of establishing is the very fact of perishing or losing the Civil Status Register, which is a condition for ordering its drawing up, or facts of legal importance for the verifying of which the law has envisaged to obligatory draw up an official document.

Admissible are all the means of evidence, including witnesses' testimony as well, in order to demand the drawing up or restoring of the civil status acts.

Provided that the Register of the Civil Status Acts is not preserved, data of importance for those acts can be obtained from the Register of the Population, including from available computer equivalents of the civil status acts and the electronic personal registration cards.

The descent from the father cannot be established or challenged within the proceedings under Art. 542 of the CPC, in relation to Art. 38, par. 4, hypotheses 1, 2 and 3 or par. 5 of the Civil Registration Law. However, proving the descent from the father is directly determined by the successful conducting of these safeguarding proceedings.

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Concept of violence in jurisprudence

The social policy of any law-based state should be focused on creating decent living conditions and a high standard of well-being not only for the present but also for future generations. The demographic crisis that exists today in Ukraine is not a positive phenomenon for the Ukrainian people, which is why public authorities should promote both the education of a new healthy generation and the preservation of the existing gene pool. Having proclaimed that the person, his/her life and health, honor and dignity, inviolability and security are recognized as the highest social value in Ukraine (Article 3 of the Constitution of Ukraine), the state has committed to protect the individual, especially the child, with all available means. Articles 51-52 of the Constitution of Ukraine provide for state protection of childhood, equality of children in their rights irrespective of their origin, as well as whether they are born in or out of wedlock, and it states that any violence against the child and his/her exploitation are prosecuted by law. The Law of Ukraine "On the Protection of Childhood" notes that every child is guaranteed the right to liberty, personal integrity and protection of dignity. An important step towards the implementation of international standards for the protection of the rights of the child in the national legislation of Ukraine was the adoption of the "National Plan of Action for the implementation of the UN Convention on the Rights of the Child, approved by the Law of Ukraine "On the National Program "National Action Plan for the Implementation of the UN Convention on the Rights of the Child" for the period up to 2016 year", the purpose of which is to ensure the functioning of the system of protection of children's rights in accordance with the requirements of the UN Convention on the Rights of the Child. But despite the extensive system of state and international legal protection, the number of criminal offenses committed against children has increased significantly recently.

Effective counteraction to violent crime against children implies a clear awareness of this phenomenon. Therefore, our research has a terminological aspect: we will find out the content and scope of the concept of "violence against children" as well as find out the correlation of this concept with a relatively new concept of criminological science "aggressive and violent crime", since a clear understanding of the subject of research will be achieved only under conditions of unambiguous perception of the content of the abovementioned concepts.

The phenomenon of violence itself constantly accompanies the development of society. So, if we reach the times of Kyivan Rus, then about the existence of violence can be deduced from the treatise by the Byzantine emperor Constantine Bagrianorodny "On the Nations", which dates back to the middle of the X century. According to his story, in the beginning of November, when the rivers were freezing, the prince and his wife left Kyiv and traveled to the lands of the Derevlyans, Dregovichi, Krivich and other Slavs

paying tribute to him. Trip to the field continued until spring. The process of collecting the tribute was often accompanied with violent actions on the part of the militants [5, 33].

In Russian Pravda (extended version) violence is mentioned in several articles: "22. The same is true in all cases, about theft and in cases of suspicion of theft; if there is no kidnap in the accused, and the suit is not less than half a hryvna in gold, then to subject the accused to forcible testing by iron" [17, 17].

Historical and legal excursus allows us to conclude that violence was seen not only as a constituent element of individual crimes (a means of committing a crime), but also as a separate crime. Thus, according to article 142 of the Statute of Penalties imposed by world judges (1984) "For arbitrariness, as well as for the use of violence, however, without causing beatings, wounds or injuries (Article 28), the guilty person is arrested for no more than three months." [7, 58].

Given the importance of the concept "violence" content understanding, this issue was the subject of consideration by the Supreme Court of Ukraine. Thus, according to paragraph 5 of the resolution of the Plenum of the Supreme Court of Ukraine "On judicial practice in cases of crimes against property" under violence that is not dangerous to the life or health of a victim of robbery, it should be understood as the deliberate infliction of mild bodily harm which has not caused a short-term health disorder or minor disability, as well as the commission of other violent acts (attacks, beatings, unlawful imprisonment), provided that they were not dangerous to life or health at the time of infliction. Such violent acts committed during robbery are fully covered by the part two of Article 186 of the Criminal Code and do not require additional qualifications under other articles of the Criminal Code [14].

Somewhat different is the interpretation of the concept considered in the resolution of the Plenum of the Supreme Court of Ukraine "On judicial practice in cases of crimes against sexual freedom and sexual integrity of a person". Thus, in accordance with paragraph 3 of this regulation, physical violence, provided by the dispositions of Articles 152, 153 of the Criminal Code, should be considered deliberate external negative influence on the organism of the victim or on his/her physical freedom, committed in order to overcome or prevent the resistance of the injured person or bring him/her to a helpless state. Such influence may be expressed in the form of strikes, beatings, injuries, compression of the respiratory tract, holding hands or feet, restriction or deprivation of personal freedom, introduction into the body of the victim against of her will of narcotic, psychotropic, poisonous, potent substances, etc."[15].

It should be noted that criminology deals with the issue of violence, its characteristics, forms of manifestation, in the context of committing criminal offenses,. As the Ukrainian criminologists point out the following typical types of violence:

1) deprivation of life, infliction of bodily harm, violation of sexual integrity, seizure of hostages and other means of property seizure, torture and the use of unlawful methods of influence in respect of detainees and those under investigation;

2) excess of power, deprivation of various rights, ill-treatment of children, etc. [4, 84].

Typically the types mentioned above are called violent crimes in legal scientific and educational literature. At the same time, we can not but note that the issue of a clear definition of actions that constitute violent crime remains unsolved by domestic criminal law and criminological sciences. For example, we can note that soviet lawyers refered to violent crimes only such actions as intentional murder, intentional grave bodily harm, hooliganism [8, 174]. Although this approach is unlikely even logically grounded, the question remains unclear as to why the authors did not include moderate or mild injuries in this list? In addition, the group of crimes against sexual integrity, commission of which is mainly accompanied with violence, is not named.

One can not but point out that legal science and educational literature as well as the aforementioned judicial acts, use a limited interpretation of the term "violence", meaning under it only the use of physical force and, accordingly, distinguishing between physical violence and the threat of physical violence. Such an interpretation of this term does not correspond to its consistent use in colloquial language, as well as the legislative definition of "domestic violence" used in the Law "On Prevention and Combating Domestic Violence". But it is quite clear that in today's conditions of social development violence can not be limited to only the use of physical force. For example, such a relatively common phenomenon in Ukraine as baiting, being socially dangerous, causing significant harm to the formation and development of a full value personality, may not be accompanied by the use of physical force, however, it can not be but called a violent phenomenon. Typically, the baiting is determined with the help of the term "violence".

It should be noted that according to the Law of Ukraine "On Education", "baiting (harassment)" is an action (an act or omission) of participants in the educational process consisting in psychological, physical, economic, and sexual violence, including the use of electronic communications, that are committed against a minor or a juvenile and / or by such a person in relation to other participants in the educational process, which could or could have harmed the mental or physical health of the victim"[8]. We would like to emphasize that such a definition is fully consistent with the interpretation of domestic violence, which is enshrined in paragraph 3 of Part 1 of Art. 1 of the Law of Ukraine "On Prevention and Combating Domestic Violence".

It should be noted that already on February 5, 2019, the Boryspil City-Regional Court of the Kyiv region, having considered the administrative material received from the Borispol PD of the MD of the NP in the Kiev region, on bringing to administrative responsibility for the baiting, found

guilty of committing a baiting and imposed a fine. Under the circumstances of the case, a minor, a child recognized as a persecutor, while on the premises of the Boryspil General School № 7, "committed an act of baiting, that is, the actions of psychological and sexual violence involving the use of electronic communications against the minor, which was manifested in the illumination of obscene photos in the network of "instagram" , resulting in harm to the victim's mental health "[2].

The understanding of violence as such an act, which is not related to the physical impact on the person, also gives the decision of the Netishyn City Court of the Khmelnytsky Oblast on February 28, 2019. Under the circumstances of the case, a pupil of the 8-B class of an educational institution in the period from September 1, 2018 to February 12, 2019 "had been committing acts that consisted of psychological violence (abuse, contumeliousi, threats)" concerning to a physics teacher, thereby causing harm to mental health of the injured person. At the same time, this student "constantly disrupted the educational process, namely: during the lessons spoke in the words of an obscene vocabulary, during the lesson engaged loud music, clinging to other children, than prevented them from studying" [9].

The abovementioned court decisions, as well as the provisions of the current legislation, which were referred to by judges, allow us to conclude that both a legislator and a court practice apply a broad approach to the interpretation of the term considered, which involves not only its physical form, but also the other ones, in particular psychological, economic etc.

One can not deny violence and methods used by "collecting organizations" that are not directly related to the use of physical force, but are based mainly on intimidation of the person, psychological pressure, etc.: calls at night, threats of detention, prosecution, intimidation legal responsibility of relatives, letters to work and place of residence, disclosure of personal information, etc. According to the chairman of the coordinating council of the Association of anticollectors and human rights activists of Ukraine "Your Hope" Fedir Oleksiuk, 169 people committed suicide cause of the collecting business [13]. It is clear that the validity of such data may cause some doubts, but the impact of collector organizations on human life and health as a whole does not raise particular objections.

It should be noted that in modern society, such an act was called "stalking", indicating its prevalence and recognition of its existence. Stalking makes it possible to understand that the interpretation of violence with physical impact on a person, other forms of explicit aggression does not correspond to the current state of social development, which has also changed the forms of violence. The unwanted intrusive persecution is also a form of violence.

Note that stalking was the subject of study of foreign scientists. So, in this context, the paper of that Joshua D. Dantley and David M. Buss, "The Evolution of Stalking" should be noted where the authorsclear up the

understanding of stalking, its form and characteristics, including the gender aspect . Given the gender differences, Joshua D. Duntley and David M. Buss's theory provides various forms of protection against stalking, in particular, the strategies of women's actions against men who persecute women for sexual abuse. These are men who as a rule use “heavy” forms of stalking, in comparison with women [6, 324].

As Patricia Tayden and Nancy Tennessh emphasize the legal definition of stalking varies from one state to another. Despite the fact that most states define stalking as intentional, harmful, and repeated pursuit of another person, some states include in the normative definitions of this notion activities such as lies, surveillance, unacceptable communications, telephone harassment and vandalism [16, 1].

According to some data about 6 million Internet users in the world suffer from psychological violence. If we take into consideration our state, then about 90% of Internet users aged 15 to 24 undergo various forms of violence that negatively affects their psyche.

According to O. Pokalchuk, the Director of Amnesty International Ukraine, the domestic legislation of a large number of countries provides legal liability for stalking. For example, in Australia, Austria, the United Kingdom, Canada, the United States of America, and Japan, punishments in the form of imprisonment up to six years or a fine or (the issuance of a security order) is also provided. However, the actions of law enforcement bodies in applying legal norms are ineffective. Thus, even in the UK, the rate of those accused of prosecution is quite low, only of 2 out of 10 are brought to legal liability (from more than 10,000 filings filed in 2018, only 1822 individuals were charged with an official allegations [12].

Note that there is no separate legal norm in Ukraine that would entail responsibility for stalking. Accordingly, there are no mechanisms for counteracting such an action on the part of law enforcement agencies; there is no statistics on those affected by this negative phenomenon. Moreover, a significant number of citizens do not consider stalking as a crime, considering it to be permissible, and the possible means of counteracting the attempt is not to react.

One can not but note the fact that, nevertheless, internationally, various measures are taken to counter stalking. In this context, one can not but mention the fact that Art. 34 of the Council of Europe Convention on the Prevention and Combating of Violence against Women and Domestic Violence contains an interpretation of this phenomenon and obliges parties to an international treaty to take legislative or other measures to criminalize stalking: “The Parties shall take the necessary legislative or other measures to ensure that deliberate behavior consisting in the repeated implementation of threatening behavior directed at another person, which makes him or her afraid of his safety, was criminalized”[3]. However, Ukraine, signing the abovementioned international treaty (known as the Istanbul Convention), has

not yet ratified it, in particular, because of the rejection of a large number of Ukrainians of gender ideology. “The people of Ukraine do not support the ratification of the Istanbul Convention because of the imposition of a gender ideology that is incapable of protecting women from violence, but severely damaging moral principles and family values of the Ukrainian society” [1] – is noted in the appeal of the All-Ukrainian Council of Churches and Religious Organizations to the Parliament on inexpediency and risks of ratification of the Istanbul Convention. It should be mentioned that such a position of the council of churches is clearly contrary to the principle of tolerance and equality. There can be no equality if there is lack of tolerant attitude. At the same time, few will deny the fact that the principle of equality is the basis of a civilized society, and even more of a democratic and law-based state, as Ukraine is declared in art. 1 of the Constitution of Ukraine. Consequently, the lack of understanding by religious organizations of the fact that the unequal status of a man and a woman which is traditional for the Ukrainian society is an obstacle to the implementation of the principle of equality and prevents further social progress, “rejects Ukraine at the time of the Middle Ages”.

In this aspect, we can not but mention the results of a nationwide study, according to which only 25% of respondents defined tolerance as a value (this is the smallest result in comparison with other values (for comparison: 38% - patriotism, 43.9% - order, 44.7 % - material security, 47.5% - law-abidingness.) At the same time, 59.5% of respondents acknowledged the existence of a problem of discrimination within the Ukrainian society (14.8% of the citizens did not determine the seriousness of the problem of discrimination, 25.7% - did not recognize dicrimination (its presence) at all) [11, 66 - 68].

40% of respondents indicated that they personally faced with discrimination (in this case, the most frequent types of discrimination were mentioned: discrimination on the basis of age - 57.4%, discrimination on the state of health (disability) - 48.8%, discrimination against proprietary evidence - 34%, sex discrimination - 32.3%. Individuals who indicated that they were discriminated against named, as a rule, several features , with only about 18% named only one feature. About 21% of this category pointed to two features at the same time, 22% - for three features, about 39% - four or more features). Moreover, 88.9% of respondents agreed that there should be no restriction on the rights based on gender or age, 90.3% - there should be no restriction on the rights based on race or nationality, 84.8% - there should be no restriction on the rights based on political and other opinions but they also mentioned that drug addist users (66% of respondents), former convicts (53.2% of respondents), Gipsy (47.5% of respondents), LGBT (46.2% of respondents) may be restricted in their rights [11, 70-72].

In view of the abovetioned, taking into account the evolution of forms of violence, in our opinion both the use of physical force and the threat of the

use of physical force are entirely covered by the concept of "violence" and is simply different types of this social phenomenon.

At the same time, it should be noted that the sphere of criminal and legal relations has certain features. Thus, the commission of a criminal offense provides for bringing a guilty person to criminal liability, the punishment within which is the most severe in relation to other types of legal liability. The degree of danger to a person of physical coercion and the threat of its use at a specific time point are different and, moreover, provide (particularly in the latter case) the possibility of applying for protection to the authorized state bodies or to take other measures to prevent the realization of the expressed threats. Although the perception by the victim of the real possibility of a threat at the time of its statement, forces him/her to fulfill the requirements of the offender. The victim's refusal to submit most often ends up causing harm to his/her health or even deprivation of life. In most cases, violent actions are combined with threats of even more damage to health. At the same time, the threat of the use of violence is not covered by the concept of violence from the criminal law point of view, since it does not entail directly the infliction of physical harm to another person. By threatening with deprivation of life or causing damage to health, the perpetrator does not always intend to actually cause physical harm. Therefore, criminal law and criminology consider physical violence and the threat of its use as two independent methods of committing a crime. [4, 86].

Thus, taking into account the aforementioned distinctions between the concepts of "violent crimes", "aggressive crimes", "violent and profitable crimes", regarding the separation of the use of violence and the threat of violence, while characterizing violent crimes, and also taking into account the subject of our study, it is necessary to distinguish such signs of violent crimes against children:

1) the object of encroachment is the social relations protected by the criminal law, which ensure the physical and psychological integrity of the child;

2) violent crimes against children are committed with direct intent;

3) the method of committing a crime is violence or the threat of its use;

4) the absence of the will of the victim regarding the use of such violence or threat of its use;

5) the crime directed against the child, which must be perceived by a person who committes a violent crime.

Hence, violence is a phenomenon that dates back its roots in the time of the beginning of society itself, which is reflected in the first historical and legal sources. The views on violence have been changing with the development of society which (violence) today include not only physical but also other forms of manifestation. The criminal and law and criminological understanding of violent crime differs from the interpretation of this term in other spheres of social life.

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Distance technologies of education in the higher education system of Ukraine

Using distance technologies in the educational process of higher educational institutions of Ukraine has become today an urgent requirement due to both reasons: economic one and the convenience of higher education students. At the same time, the implementation of such technologies in Ukraine is a remarkable novelty and requires enhancing the development of new methods and pedagogical models for students. Educational models that are used in a real educational process depend on the form of training session and, to a large extent, on the level of perception of the audience. The challenge for the use of distance learning technologies is primarily the academic integrity of higher education students, especially in the process of knowledge monitoring and evaluation. It is necessary to consider the lack of proper level of motivation for some percent of students, who studying courses with the help of distance technologies.

However, there is no direct link between the activity and the strength of the motivation for success and avoidance of failures, because, besides the strength and nature of the motivation for success, the results of the activity also depend on the complexity of the tasks. This dependence was formulated in the well-known Dodson-Jerks Law and the Vvedensky Law of the Optimum-Pessimum. The main content of mentioned Laws – is the development of the "optimum" of stimulation, that depends on the complexity of the task. During the performance of a complex task, a weaker motivation is needed, and for the simple task – a stronger one, and its average level of intensity is "optimal". M. E. Vvedensky also paid attention to the individuality of the "optimum" motivation and the importance of maintaining the "optimal" pace and rhythm for mental work. And this pace and rhythm for each person is also individual. Motivation (from lat. "Movere") is an inducement to action; a dynamic process of physiological and psychological plan that controls a person's behavior, determines his or her organization, activity and stability, i.e. the ability to actively satisfy his or her needs [1, p. 175].

Therefore, it should be recognized that the introduction of elements of distance learning technologies with a well-thought-out organization of independent work of students can contribute to improving its effectiveness. In particular, it is advisable to give the student the right to independently draw up a schedule of study of the academic discipline, which he or she should strictly observe. The sanction for the violation may be a gradual increase in the number or complexity of tasks that need to be performed on the same mark (amount of points).

An assessment system is also designed to strengthen motivation for distance learning, but in circumstances where there is no direct link between the quality of education and the social and economic status of the individual, this motivation component does not work properly.

For students of the specialty 281 “Public Administration and Management” the motivational component is extremely important, especially in the context of advanced training of civil servants and local government officials. For example, professional training is provided in the Concept of Reform of the Professional Training System for Civil Servants, Heads of Local State Administrations, their First Deputies and Deputies, Local Self-Government Officials and Deputies of Local Councils of December 1, 2017 to No. 974-r (hereinafter – the Concept) approved by the Cabinet of Ministers of Ukraine [4].

The purpose of the Concept is to define strategic directions, mechanisms and terms of formation of modern effective system of professional training which will provide increase of level of professional competence of the specified persons, will be focused on needs of the person in professional development during a life course and will promote introduction of principles of good governance. The Concept notes that the system of professional training is a coherent set of interrelated components, including: the definition of professional training needs, the formation, placement and execution of government orders, the formation of motivation to improve professional competence, ensuring the functioning and development of the market for educational services in the field of professional training, monitoring and evaluation of the quality of training [4]. In particular, it is assumed that the implementation of the main provisions of the Concept will contribute to the creation of a modern holistic, qualitative, innovative, mobile and flexible system of professional training of deputies of local councils with a developed infrastructure, efficient management and proper resource potential.

Also it is necessary to take into account Strategy of reforming the public administration of Ukraine for 2016-2020 years, as it is relevant in the context of improving distance learning technologies for such a category of students as civil servants and local government officials. The Strategy is formulated in accordance with SIGMA's European standards “Principles of Public Administration”, as well as the good practices of EU Member States, which is one of the main directions of civil service reform and human resource management. This strategy of civil service modernization is aimed at addressing the problems faced by public administration, namely: the lack of highly qualified personnel in managerial and other civil service positions, which are the basis for the development and implementation of national reforms and are able to overcome the challenges of reform in various sectors, the insufficient level of resource management in ministries and other central executive bodies, lack of an automated management system, is an obstacle to

the effectiveness and efficiency of public administration; gender imbalance in human resources management [3].

Also, the Regulation on the system of professional training of civil servants, heads of local public administrations, their first deputies and deputies, local government officials and deputies of local councils (Cabinet of Ministers of Ukraine on February 6, 2019 № 106), defines the organizational framework of the system of professional training and the opportunity to exercise their right on professional training through formal, non-formal and informal education [2].

Participants in professional training may exercise their right to professional training through: training – the successful completion of the relevant educational and professional programme by participants in vocational training is the basis for awarding the degree of higher education at the master's level in the professions required for professional activity in the civil service and local government, in particular in the specialty 281 "Public administration and management" of the field of knowledge "Public management and administration"; advanced training – acquisition by participants of professional training of new and/or improvement of previously acquired competences within the framework of professional activity or knowledge field; internship – acquisition by participants of professional training of practical experience of performance of tasks and duties in professional activity or knowledge field; self-education – self-organizing learning of certain competences by participants of professional training, in particular, in everyday activities related to professional, social or other activities, leisure time [2].

So, mentioned category of applicants can implement professional training, just using the possibilities of distance learning technologies. In turn, educational institutions of Ukraine in order to implement educational services, their approximation to the European standards of continuous adult education (lifelong learning), can introduce individual development programs for civil servants and local government officials with the use of distance learning technologies.

For example, the course "Local and Intermunicipal Solid Waste Management Systems Planning" aims to: assist communities, especially the united territorial communities (OTGs), in the planning and organization of community-based solid waste management services; and help OTGs to increase efficiency through cooperation mechanisms between territorial communities (inter-municipal cooperation). The course is open to all community stakeholders on a regular basis. The course is nontjutorial, i.e. the participants work according to their schedule and after its completion the system generates an electronic certificate [7].

Today, the platform of the All-Ukrainian Network of specialists and practitioners of regional and local development REGIONET, created at the initiative and with the financial support of the EU project "Regional

Development Policy Support in Ukraine", is successfully operating. It is an informal and politically unbiased professional expert community aimed at forming a system of effective local self-governance and territorial organization of power to implement European standards of living in Ukraine. REGIONET is a community of leading specialists and practitioners in the field of regional and local development from all regions of Ukraine, interacting with the aim of professional development, involvement in the design and implementation of regional development policies, as well as to ensure that local governments, executive authorities at all levels and other subjects of territorial and community development are provided with the best practices of regional and local development.

The network aims to increase the capacity of the government system in the field of regional and local development through: selection, consolidation and targeted advertising of specialists and practitioners; continuous professional development of participants – through training, exchange of experience between participants and professional mentoring; facilitation of communication between knowledge and skills holders and consumers of their products and services – through product cataloguing and open access to the user directory.

REGIONET consists of members of the network – individuals selected according to professional criteria and rules, which are established by a separate Regulation on the selection of members of the network REGIONET. The main criterion for the selection is that the candidate has a specific product (service) – the best practice, which he or she, as the author of the idea or as a bearer of experience, is ready to further implement himself or herself, or to contribute to its implementation by others. At the same time, the professional and social status of the candidate does not matter – he or she can be an expert, employee, social activist, scientist, etc. [5].

So, self-education as a way of training civil servants actually suggests us to take the next step from online forms of training to innovative system of distance learning organization – creation of online groups of specialists, communities of practice, in which through the mechanisms of interaction there is an exchange of experience and self-learning.

In the process of distance learning under the educational and professional program "Public Management and Administration" of the master's degree in Poltava National Technical Yuri Kondratyuk University is applied a model of regulated self-study, but not in a "pure" form, but with the use of separate elements of other models. The university uses the Moodle system. The main form of organizing the educational process in a distance form is independent work.

Students are provided with access to distance learning courses, which contain all the content required to complete their academic tasks, pass credits and examinations. Students are sent to third party resources only to deepen their knowledge of what they are interested in personally or practically. This

is not a requirement. The only task for which the use of external resources is mandatory is the use of individual tasks that are creatively searchable.

Applicants for higher education are limited by the time frame of the course. He or she may independently choose the sequence of course topics and tasks, deviating from the instructor's methodological recommendations, but the preparation of the control works (tests) should take place within the time limits determined by the instructor. The total amount of tasks performed by the student is also controlled. If a student is significantly behind, reminders are sent to him or her. The completed tasks are checked and evaluated by the teacher, who should also explain the reason for the incorrectness of the practical tasks and the consequences of the assumption of such errors in real management situations. This should help to correct students' knowledge and stimulate their cognitive activity.

Certain challenges also arise in the process of direct teaching (support) of the distance learning course. Again, it is difficult to combine communication between discipline students and academic integrity. Students can organize themselves, copy tests to pass them on to their groupmates, perform tests on others (with appropriate passwords). In order to avoid this practice, the test base is being expanded, with which the system automatically selects options for each student individually.

It is more difficult to implement an individual approach to the distribution of practical tasks in the Moodle system. This can only be done by placing all tasks with the criteria for their selection by each student. However, it also does not guarantee the achievement of the goal. An alternative is a personal distribution of tasks among students, which is, however, quite a laborious process and can be implemented through the use of personal messages or forums.

This is one of the challenges that still needs to be addressed. One possible idea is to create a category of tests with descriptive questions (do not require an answer), in which there will be just a variant of the task, the system will choose a random variant from among the given ones, and students, according to this variant, will choose their own task. However, there is no possibility for the teacher to control the correctness of the choice of a variant.
There are also questions about the correctness of the distance learning system functioning and its protection from external interference. Due attention must be paid to safety issues. All actions taken by users in the system should be recorded in order to provide a reasoned response to all complaints. In addition, in the event of a failure, alternative directives should be developed in order not to disrupt the educational process. For example, training materials and exercises (which require a significant amount of time to complete) should be prepared in parallel in the form of a stand-alone website or pdf file with content that can easily navigate the course. It will also allow students to work with computers, but do not have permanent access to the Internet. Accordingly, the implementation of such projects requires the

development of a technology for mass preparation of such "backup manuals" on the basis of existing distance learning courses.

In the conditions of reforming the public administration of Ukraine, the effectiveness of civil servants and local government officials depends on professional qualities and knowledge, that is, intellectual capital. In the conditions of decentralization, it is knowledge that allows to ensure the efficiency of transformational changes and sustainable development. At the same time, it is knowledge that has the capacity for "rapid aging", which makes it necessary to form a system of continuous learning. In the world management practice, it is called "lifelong learning". Therefore, it is very important to use the achievements of modern distance education for training and education of this category of applicants.

For example, the Prometeus distance learning platform, which offers various courses, and in particular a number of relevant courses for employees of public authorities and local governments: "Conflict of interests: you need to know", "Critical thinking", "Declare virtuous", "Media literacy: practical skills", Public Procurements", "Personnel Management in Public Service", "Effective Budget Process in Local Self-Government" and other courses. For example, the course "Effective Budget Process in Local Self-Government Bodies" provides for the formation of the following competences: to prepare a draft decision on the local budget for a planned year with annexes thereto; to form an explanatory note to the draft budgets; to make up a monthly list of revenues and expenditures of budgets; to calculate the volume of revenues and expenditures of local budgets, budget transfers; to make estimates of budget-funded entities (individual and consolidated) to carry out financing of the expenditures provided for in the budget; to prepare an explanatory note to the draft budgets; to make up a monthly list of revenues and expenditures of budgets; to make up estimates of revenues and expenditures of local budgets, budget transfers; to make up estimates of budget-funded entities (individual and consolidated) to carry out financing of the expenditures provided for in the budget; to make up estimates of thus, a public servant or an official of local self-government, regardless of the structural unit and subordination, has the opportunity not only to obtain new knowledge, but also to form a comprehensive approach to solving problems associated with professional activities [6].

Distance courses allow not only to update knowledge, but also to form complex knowledge about events and phenomena that occur in the process of reforming public administration. Thus, online distance learning platforms are a modern tool for forming professional competences of civil servants, heads of local public administrations, their first deputies and deputies, local government officials and local council deputies. Besides, distance technologies allow to use significant technical capabilities to ensure the educational process, but for their effective implementation it is necessary to constantly take care of the development of methodological approaches to the

teaching of various academic disciplines, especially taking into account the specifics of adult education, and strict observance of academic integrity by applicants for higher education degrees.

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Brest Treaty and Georgia

The Brest Peace of 1918 was one of the most significant events in the history of Russia. The fall of the Russian autocracy undermined the foundations on which the Russian Empire rested for several centuries [1:11]. The revolutionary movement grew into powerlessness. The Russian army decayed, showing inability to conduct combat operations. Russian society felt tired of the war, which did not bring the desired and quick victory. This was one of the main and significant reasons for the activation of the Bolsheviks, which ended on October 25 (November 7) with the overthrow of the provisional government. The power was in the hands of the Bolshevik wing of the RSDLP (Russian Social-Democratic Labor Party). It was the leadership of these parties, from the very beginning of the war that consistently acted under the slogan "defeat of their own government") [16: 37]. The practical implementation of the policy of Russia's withdrawal from the war began after the Bolsheviks came to power. On November 8, 1917, the II All-Russian Congress of Soviets adopted a Decree on Peace drafted by V. I. Lenin. Having condemned the imperialist war as the most serious crime against humanity, the Soviet government proposed to all the warring peoples and their governments to conclude an armistice and begin negotiations on a just, democratic world without annexations and indemnities. On November 20, 1917, the Council of People's Commissars of Russia ordered the cessation of hostilities and the beginning of peace negotiations. On November 21, L. Trotsky, the Russian people's commissar for foreign affairs, sent diplomatic notes to the ambassadors of the Entente countries proposing "an urgent cessation of hostilities on all fronts and an urgent start of peace negotiations." The Entente states decided not to respond to Soviet peace proposals. On November 27, 1917, the German government agreed to begin peace negotiations. On the same day, the Soviet government sent a note to the governments of France, Great Britain, Italy, Belgium, Serbia, Romania, Japan, the USA and China, informing them of Russia's desire to start peace talks with Germany on December 1 and proposing to join them. "If the allied nations do not send their representatives, we will negotiate with the Germans on our own. But if the bourgeoisie of the allied countries forces us to conclude a separate peace, the responsibility will fall entirely on it," the message said. However, the new appeal also remained unanswered.

The conclusion of peace in the first place was in the hands of Russia and Germany. The first of them hoped to preserve the Soviet power, and the second to transfer the liberated forces from the eastern front to the western, hoping to dub here the advantages, and then the honorable world with the countries of the Entente. The conclusion of a separate peace between Russia and Germany suited both the weakened Ottoman Empire and other allies of Germany. The Entente countries did not want peace, but despite this, at the beginning of December peace negotiations between Bolshevik Russia and Germany began in Brest-Litovsk.

Having assessed the changed situation, the Entente missions began preparations for the creation of a government independent of Bolshevik Russia in the Transcaucasus, as confirmed by a telegram from the US Consul Smith sent to Secretary of State Lansing [2: M 112]. The Bolshevik coup in Russia proved unacceptable for the Georgian Mensheviks. This view of the Georgian Mensheviks was fully reflected in the resolution adopted by the regional council, where it was noted: "The speech of the Bolsheviks in Petrograd ... would cause a clear loss of the success achieved. The interests of the revolution suggest the need for the peaceful liquidation of the uprising, agreeing with all the forces of revolutionary democracy" [1: 110-111].

Georgian social democracy, representing a real political force for a whole quarter of a century, considered the struggle in accordance with social and class interests the main strategic line of its policy, and as for national ideals, they faded into the background. Of course, such an erroneous position of the leading party prevented the solution of the urgent problem and only brought harm to Georgia. November 15 (new style November 28) in 1917, the Transcaucasian Commissariat was created as the governing body of the Transcaucasus. By this time, a very complex and tense political situation had developed in the Transcaucasus. If the Transcaucasian Commissariat wanted to justify its appointment, then when developing an external course, he should have foreseen and accurately foreseen many phenomena. The main thing was to determine who will become the leading political force of the future. Proper solution of this issue and exact orientation remained an immutable task of the agenda [5: 11; 11: 185].

December 3, 1917 in Brest-Litovsk, where the Supreme Command Headquarters was located by German troops on the Eastern Front (the place of negotiations was proposed by Germany), negotiations on a truce began, ending on December 15 signing an armistice agreement for 28 days. The peace negotiations took place under conditions of the heightened desire of the peoples of the former Russian empire for independent existence. By the end of 1917, Finns, Ukrainians, Tatars, Lithuanians, Latvians, Estonians, Bashkirs, peoples of the Caucasus, Siberia, Central Asia expressed a desire to secede from Russia or to gain autonomy. Having agreed to participate in peace negotiations, the Soviet side did not have a clear program of their conduct and considered it as a means of propaganda in order to accelerate the world revolution [2: 112]. This approach was already apparent at the first meeting of the peace conference. Soviet requirements were non-specific, more like a declaration of general principles. Thus, the powers of the Fourth Union were proposed to abandon the forced accessions of the territories captured during the war, to withdraw troops from the occupied territories as soon as possible, to restore the independence of all peoples who lost it during the war, to give the opportunity to national groups that did not use political independence before the war, to solve ensure that for minorities living in territories not populated how many minorities, cultural and national autonomy and, if

possible, administrative autonomy. recognize unacceptable any pressure of stronger nations against weaker nations [6: 321].

On March 3, 1918, in Brest-Litovsk, the entire Soviet delegation signed a clearly violent peace treaty with Germany and its allies. What was the reason for such a sharp turn in the foreign policy of the Bolsheviks? Giving an answer to this question, for 70 years Soviet historiography repeated the same scheme, according to which the Brest peace treaty allegedly represented a brilliant victory of Lenin's strategy and tactics, which was that when the Entente and the United States failed the cause of peace Lenin made a compromise with the German imperialists. The central point of this concept was the thesis that from the very first days of the October Revolution, Lenin, in accordance with the principle of peaceful coexistence of countries with different state systems, wanted to achieve a peace treaty. In this context, a sharp change in the policy of the Bolsheviks looked like a logical development of Lenin's strategy and confirmed his rightness in the struggle against the "Left Communists" and "Trotskyists." The main elements of this scheme manifested themselves already in the second half of the 20s, when the inner-party struggle of the Stalinists broke out, first against Trotsky and his supporters, and then against Bukharin.

But this concept is not all right, and in order to reveal the truth, it is necessary to restore the course of the phenomena connected with the Brest-Litovsk peace treaty based on new documents published in recent years. However, now this is not part of our task. However, it should be noted that in order to clarify the role of the Brest Treaty in the history of our country, it is necessary to restore the moral and ideological coordinates in which the Bolsheviks and other revolutionary parties lived. It is necessary to comprehend the fact that the establishment of Soviet power in Russia initially represented only one part of the great phenomenon of the world socialist revolution, which, in their opinion, was the work of the near future. The main goal of their future activities the Bolsheviks saw in the ideas of the permanent revolution.

On December 9, 1917, the first meeting of the official peace conference began. The delegation of Soviet Russia proposed that the idea of a universal democratic peace be the basis of the treaty. However, the German military circle did not intend to abandon territorial claims, which only increased during the negotiations [6: 321]. On December 22, the Soviet delegation proposed its own version of a treaty (a program of 6 articles), corresponding to the decree “On Peace”. We are interested in the third and fourth articles.

In the third article, the Russian delegation stated that national groups that did not use any political identity before the war would now be given full opportunity to decide for themselves whether they belong to a particular state or, through a referendum, to announce the formation of their state identity. It also said that this referendum should be held in such a way that the population of the territory was given the opportunity of free voting. Refugees

and emigrants should have the same right. According to the fourth article, in territories inhabited by several nationalities, their rights should be protected by laws that equally ensure cultural and national identity, even if in the form of administrative autonomy [6: 320]. For the sake of maintaining decency, representatives of the powers of the Fourth Union agreed to accept the Soviet peace proposals, provided that the Entente powers also joined them. On December 30, 1917, Trotsky sent a corresponding appeal to the states and peoples of the Entente. Since the latter did not respond to the appeal of the Soviet government, R. Kuhlmann, on January 9, 1918, rejected the Soviet proposals. The "unspecific" character of the negotiations outraged the German generals. On December 26, 1917, General P. von Hindenburg sent Wilhelm II a telegram in which he demanded to treat Russia as a defeated state and, on this basis, speed up the course of negotiations. Hindenburg shared the views and Ludendorff. After the protest of the military, German diplomacy began to treat the demands of the Soviet side more harshly. The Brest-Lithuanian Conference was, in its nature and results, an extraordinary truly. Russia wanted to get out of the war so that, freeing itself from martial law, to streamline its domestic political and economic issues. Proceeding from this, the Russian delegation at the conference was ready to accept the most intolerable, most humiliating conditions offered by Germany. It is necessary to take into account the fact that Germany's ally, Brilliant Port, also had its specific goals on the Transcaucasus issue and she had to try to solve them here at this conference. It was obvious that Georgia faced the danger of losing a significant part of its territories.

On January 1 (14), 1918, Lieutenant-General I. Odishelidze received a letter from the commander-in-chief of the Turkish army, Ferik Vehib-Mehmed, stating that Enver Pasha, acting commander-in-chief of the Turkish army, "knows how to restore relations with the independent Caucasian government what proposals does the Caucasian independent government have in order to restore peaceful relations between the two parties ... "To this end, Enver Pasha was ready to send a delegation to the capital of the independent Kavka of the local Government - Tbilisi, in order to achieve "the earliest possible restoration of a mutually desirable and just peace" [4: No. 15]. Although the telegram explicitly mentions (4 times, N. Z.) the status of an independent Caucasian government (represented by the Transcaucasian Commissariat), on their part this was not a frank statement. The fact that the Ottoman side at this stage did not consider the actual government of Transcaucasia legal and did not recognize its "de-iure" was clearly manifested at the very first meeting of the Trabzon Peace Conference.

In response, the Transcaucasian Commissariat notified the Ottoman side that the Transcaucasian government was very interested in ending the war and establishing peace as soon as possible, however, at the same time, it considered it "necessary to bring to your notice that we, being an integral part of the Russian republic, can start negotiations on world only on receipt of the

appropriate authority from the just-assembled Constituent Assembly ”[4. No. 16]. It also says that the deputies of the Transcaucasus are sent to Moscow to take part in the work of the Constituent Assembly, where they will deliver this proposal, and the answer will be immediately communicated to the Ottoman side. On January 12 (25), 1918, it became known that the Constituent Assembly of Russia was dissolved by the Bolsheviks. The following reality stood before the Transcaucasian government: either to recognize the Bolshevik government or to begin negotiations with the Ottomans. Was elected the second path.

We share the opinion of the doctor of historical sciences, Professor Mikhail Svanidze that if the Transcaucasian government did not recognize the Bolshevik government, it should have fixed its position more actively and officially declared the independence of Transcaucasia. However, Noe Zhordania and his associates still hoped that in Russia the Bolsheviks would not retain power for long, therefore they believed that there were no appropriate conditions for declaring independence in Transcaucasia. On this basis, they even did not show proper attention to the Brest-Litovsk Treaty [3: 288-289]. On January 18, 1918, Hoffmann invited the Soviet delegation to get acquainted with the map on which the territorial demands of Germany and its allies were determined. The Hoffman Line cut off a territory of over 150 thousand square meters from the former Russian Empire km the territories that were alienated from Russia included Poland, Lithuania, a part of Belarus and Ukraine. Germany was able to control the ports of the Baltic Sea. Thus, the Soviet representatives were given to understand that it was time to move from declaring general principles to discussing the specific conditions of peace. Hoffmann's proposals, which Trotsky described as a hidden form of annexation, were transferred to Petrograd. The Central Committee of the RSDLP (b) ordered Trotsky to urgently return to the capital of Russia to discuss a response to the proposals of Germany and its allies [16: 49].

The second round of peace negotiations, which began on December 27 (January 9, 1918) in 1917, took place in a very tense atmosphere. At the new stage of negotiations, Trotsky kept more firmly and even provoked the representatives of the Fourth Union to make demands that would allow the Soviet side to declare a break in the negotiations. He stressed that the Soviet government, if the war continued, would appeal to the peoples of Europe to stop the aggression against Russia. A few days later, from the beginning of the conference, namely, on January 18, the Transcaucasian question was first touched upon in a dialogue between the German State Secretary Von Kulov and the head of the Bolshevik Russian delegation, Lev Trotsky. Trotsky confirmed that the Russian army operating on the Caucasian front is at the disposal of the Council of People's Commissars. In this statement, the idea was voiced that the new Russian government, the Bolshevik Russia, claimed all the territories that were in the possession of the Russian Empire. Based on this statement, the territorial claims of Turkey concerned only Bolshevik

Russia and no one else. Trotsky reiterated his position on this issue at a meeting on February 9. He stated that Russia will withdraw its troops both from Anatolia and from those territories of Armenia, to which the Turks have a claim [12: 18]. Trotsky also confirmed the existence of Transcaucasia as part of Soviet Russia to the Minister of Foreign Affairs of Germany Von Kulman [8: 125]. Therefore, probably, Soviet Russia did not invite the Transcaucasian delegation to the Brest Peace Conference. In the process of peace negotiations, Germany, together with its allies, was preparing to tear off vast territories from Russia. Of course, it was beneficial for Turkey to receive from Russia a part of the Caucasus Territories [17: 99-106]. At the same time, the Ottomans, encouraged by Germany, launched an offensive on the Caucasian front in order to force Russia to transfer to Batum, Kars, Ardahan [14: 182]. February 10, 1918 Trotsky was acquainted with the demand of the powers of the Fourth Union. After listening to the arguments of the other side, he announced the termination of negotiations on the terms "neither war nor peace". Trotsky's position caused surprise among diplomats in Germany and Austria-Hungary, but they were noted. On the same day, Trotsky left Brest and left for Petrograd. In the evening of the same day, a telegram signed by Commander-in-Chief Krylenko about the cessation of hostilities and the demobilization of the army was sent to all the headquarters staffs. The question of the existence of the Bolshevik government arose on the agenda. It was necessary to develop a policy that could save Bolshevik Russia from a terrible misfortune. On the direct instructions of Lenin, the Russian side expressed its readiness to accept any draft of a peace treaty.

On February 10, 1918, a telegram was sent to Leon Trotsky in which Lenin insistently demanded that he immediately accept any conditions of the peace treaty proposed by the Germans. Leaving the negotiations, Trotsky was sure that the Germans would not launch an offensive (he said this at a meeting of the Petrograd Soviet). However, the German command considered otherwise. On February 13, the Crown Council, at a meeting in Hamburg, regarded the behavior of the Soviet side as an actual ceasefire break and from February 18 decided to resume hostilities against Russia. At the appointed time, the German army launched an offensive all along the Eastern Front from the Baltic to the Black Sea[18: 39-41]. There was a threat of occupation of Petrograd by the Germans.

On February 23 at 10.30 am Germany finally presented its peaceful conditions, demanding to give an answer to them no later than 48 hours later, the Russian side accepted the German ultimatum consisting of ten points. According to this, the Russian side pledged to return the province of Anatolia to Turkey [6: 242]. After the final reading of the text of the ultimatum, it turned out that the Germans made certain changes in it to the benefit of the Turks. It was noted above that at first the Germans demanded that Russia return the provinces of Anatolia to Turkey. However, after the obvious manifestation of weakness on the Russian side, the Turks increased their

appetite and demands. Turkey decided to take advantage of the situation and make claims to other territories. Thus, the issue of the transfer of Turkey to Kars, Ardahan and Batumi regions was added to the above-mentioned provinces of Anatolia. The claims of Germany and its allies were so arrogant and predatory in nature that in order to get out of the scrupulous situation, Von Rosenberg suggested not including all the issues into the agreement. Despite this, the Russians must have withdrawn their troops from these points [6: 251]. In the ultimatum form Germany put forward tough conditions for their implementation. At the same time, Austro-German troops launched an offensive on the entire front, threatening to seize Petrograd. The Soviet government was forced to accept an ultimatum, since the old army was demoralized and did not want to fight, and the new, Workers 'and Peasants' Red Army was in its infancy [6: 344]. On the second day, February 24, the ultimatum was adopted by the Central Executive Committee of Russia, including the Soviet delegation, despite certain problems with the selection of candidates. Nobody wanted his name tied to the "shameful" world. After the German offensive, Trotsky resigned. They resolutely refused to leave for Brest and Joffe and Zinoviev. In the end, G. Ya. Sokolnikov agreed to lead the delegation, stressing the appointment that he was doing this only in the order of party discipline. Together with Sokolnikov, Petrovsky, Chicherin, Karakhan, Ioffe (as a consultant) joined the delegation. On February 25, the delegation left for Brest. On February 28, arriving at her destination, she set to work. March 1 meeting of the peace conference resumed. March 3, 1918 in Brest-Litovsk ended peace talks. Bolshevik Russia, Germany, Austria-Hungary, Turkey and Bulgaria signed a peace treaty. The peace treaty consisted of 13 articles, the content of which basically corresponded to the German requirements formulated in the ultimatum of February 23, 1918. The state of war between Russia and the powers of the Fourth Union was declared to be terminated.

In accordance with paragraph 4 of this treaty, the Bolshevik Russia had to fulfill all that was required of it under this treaty. The treaty, as already noted, demanded a lot and even very much from Russia. It was supposed to ensure quick clearance of the eastern provinces of Anatolia and the same quick return to their former owner. ”Ardagan, Kars and Batum districts will also immediately be cleared of Russian troops Russia will not interfere in the new organization of state-law and international legal relations of these districts, and will provide the population with them to establish a new system in agreement with neighboring states, especially with Turkey. ”[3: 121].

All this meant that henceforth Russia could not in any way interfere in the state-legal and international legal relations of these areas, it had to give the local population the full right to create a new power in their territories that would be acceptable to the neighboring states. , Ottoman Empire). On the same day, a Russian-Turkish supplementary agreement was drafted, under which Bolshevik Russia would immediately withdraw its troops from

the territories it occupied, that is, from the Turkish provinces. On the whole territory of the Transcaucasus, Russia could have only one division, no more [3: 199-200]. This agreement also implied that the Russian-Turkish borders were to be restored in the form in which they existed even before the Russian-Turkish war of 1877-1878. [3: 201]. According to the second clause of the agreement, the Contracting Parties within 3 months after the ratification of this agreement form two mixed Russian-Turkish commissions. The task of the first commission is to restore the border line separating Russia and Turkey, starting from the place where all three borders - Russian, Turkish and Persian - converge to the place where the border line reaches the borders of 3 sanjaks: Kars, Ardahan and Batum. For this length, the commission will be guided by the border line that existed before the war .... The second commission will establish the Russian border and the border of the three Sandjaks to be evacuated by the Russian Republic in accordance with the second paragraph of article 4 of the collective peace agreement. The border there will be restored in the form in which it existed before the Russian-Turkish war of 1877-1878" [3: 200-201]. This was the main point of the agreement. In others, issues of an insignificant nature were considered that have an additional character (telegraph, consulate, prisoner exchange, etc.).

At the peace conference, the aspirations of the Ottomans, whose far-reaching geopolitical plan began to be implemented after the occupation of the Batumi region, were only partially manifested. Thus, the Brest-Litovsk peace treaty took shape, the ratification of which both parties had to produce within two weeks. (In accordance with the norms of the peace treaty then established in world practice, the peace treaty was subject to ratification by the representative authorities of all the states that signed it. - N. Z.) On March 14, the ratification of the Brest-Litovsk Treaty was considered at the IV All-Russian Congress of Soviets. Despite a very significant opposition (left and right SRs opposed ratification of the treaty - they accused the Bolsheviks of betraying the world revolution and betraying national interests; anarchist communists and Mensheviks; the Bolshevik faction agreed to ratify the treaty only after Lenin promised that the treaty would be formal nature and after a short respite the war with Germany will be resumed), on March 15, 1918 by a majority of votes in the roll call vote (784 votes for, 261 against, 115 HOLD), delegates adopted the Brest-Litovsk treaty. On March 17, 1918, the treaty was ratified by the German Reichstag (only individual deputies abstained from voting, members of the Social Democratic faction, no one opposed it). On March 22, the Brest-Litovsk Treaty was approved by Wilhelm II. Thus, the treaty acquired legal force from Russia and Germany, formally putting an end to Russia's participation in the world war [7: 29]. As we see, isolated from all Bolshevik Russia fell into a very difficult situation. Taking advantage of this, Germany has put before it really subservient conditions [5: 11]. This is how GV Chicherin, the Deputy Commissar for Foreign Affairs of the Russian Federation, evaluated the decision of the Brest-Litovsk Treaty regarding

Transcaucasia. „ .... The territories, on which the conditions of the world are spreading, are divided into five categories .... Another category is Kars, Ardahan and Vatum. regarding these areas, the treaty does not clearly indicate that these areas are moving away from Russia, these areas are cleared of Russian troops, Russia will not interfere in their new organization. The new system will be established in agreement with neighboring states, especially with Turkey. In this case, the annexation has a slightly more subtle appearance than in the first case, but its essence of course remains in the same ”[3.667]. (In the first category, the report implies those territories which finally departed from the Russian supremacy - LK). In order to properly evaluate this contract, due attention will be given to Chicherin's words - “This is the content of the contract that we were forced to sign, putting a gun to his forehead” [3: 673]. A certain burden of this agreement directly affected our homeland - Georgia, since it was losing its historical territories, the Ardahan and Batumi regions. The Georgian emigrants laid the entire responsibility for the very difficult results in the office of 1917 and in early 1918 on the Bolshevik government of Russia [7: 65]. In particular, we divide the opinions of the leader of the Georgian Mensheviks, Noah Jordania, who blamed the Bolshevik government for this very unpleasant fact. In connection with this issue, he noted: After the dissolution of the meeting (implied by the Constituent Assembly - LK), it became clear that we were left alone. It meant to stand out from Russia and arrange our life at our discretion. Such a conclusion followed from the following well-known factors: the Bolshevik coup in Russia, the authority of which we do not recognize; the withdrawal of Russian troops from the Ottoman front and the Brest-Litovsk Treaty, under which we lost our provinces. Since Russia refused to protect us and, on the contrary, gave away our territories, it is clear that she refused from our country, she left and left us alone ”[15: 82-85].

Conclusion

In assessing the Brest-Litovsk Peace Conference, one must consider the full range of phenomena. Absolutely isolated Russia fell into a hopeless situation. Taking advantage of the moment, Germany imposed on Russia enslaving conditions [10: 24].

The Transcaucasian government, which also clearly excluded Bolshevism, was in complete confrontation with it. In parallel with this, it did not imagine this region outside of united Russia. The difficulty also lay in the fact that the objective assessment of the future fate of Bolshevism was complicated. When the Bolsheviks broke up the Constituent Assembly and continued the Brest Peace Conference, it clearly became necessary to work out the political status of the federation, which, unfortunately, the government could not implement.

The question is posed: Did Bolshevik Russia recognize the independence of Transcaucasia? Accepted or not, at the moment it essentially did not change

anything. But Transcaucasia would have both a moral and political right not to accept the Brest-Litovsk Agreement; not to accept the points presented in this agreement, clearly encroaching on the territorial integrity of Georgia [7: 47]. As a result, it can be said that this conference was a real expression of the chaos existing in the then Russian Empire. The Brest Treaty is an example of what can be imposed on a defeated, isolated state.

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Jurisprudence in Ukraine: The need of paradigm change

In a law-based state law is an important regulator of public relations, the rule of law is recognized and is in force. Since 1996 the designated developmental vectors have been chosen and enshrined by the Ukrainian society in the text of the Constitution of Ukraine. However, even today, within domestic law prevails normativism, law is identified with the law and is considered mainly as a result of the activities of the public authorities. And this contradicts the chosen direction of development of society. Under such conditions, the issue of the need to change the paradigm of understanding of law becomes of particular relevance. In this context, two important propaedeutic aspects should be distinguished. The first one is manifested through the understanding of the essence and content of the general and theoretical law science subject matter. In post-Soviet space, there is generally accepted provision on the fundamental nature of such science and subject as the theory of state and law and its important methodological purpose. However, let us remark that fundamentalism does not mean immutability. The humanities and, especially, jurispdence, can not but accept the changes that take place within a society. In this regard, we recall the statement of S. Holovaty who compared "modern" textbooks on the theory of state and law and the provisions contained in the paper of the founder of the Soviet law I. Vyshensky, on their substantive, essential similarity [3, 1571]. In addition, one should not forget the desire of the Ukrainian state to join the European community, and European and Soviet values are different.

In some post-Soviet states, some scholars point out the inadequacy of the theory of the state and the law provisions and of its subject matter, the need for a significant adjustment of the content of both science and thesubject of the theory of state and law. For example, O. Puchkov points out the following negative features of the Soviet theory of state and law, which have been preserved even at the beginning of the 21st century: mythology, speculation, utopian and orthodoxy, anti-anthropocentrism, irrationality, "dominance of traditions", excessive ideological pressure, insolvency, failure to predicted activities, lack of orientation towards the needs of social and legal practice, methodological weakness and compliance with scientific foundations [7, 5-10]. At the same time, the author concludes that the theory of state and law "remains sufficiently conservative, imperfect, theoreticized and, as a consequence, in many of its postulates untrue science" [7, 5].

Let's add that Barnabas D. Johnson points out that "One of the first courses (often the first) studied in law schools throughout the Soviet Union, and still studied by entering students in post-Soviet law schools, is the famous — no, the infamous — Theory of State and Law (TSL). ... Not surprisingly, during Soviet times the TSL did not give a whiff of attention to liberty,

equality under law, and the need for an independent judicial branch to determine facts and apply law without fear or favor … I was confirmed in my impression that law students and their teachers remain unaware that the TSL — originating with Hans Kelsen and German legal positivists in the 1920s — was long ago abandoned in the West" [2].

The active use by scholars and practitioners of outdated legal dogma increases, as it does not seem paradoxical, their desire for active borrowing of certain provisions of European law and the US law, given that that the States where these provisions are in force are the most economically developed, where human rights and social protection are at a high level, therefore, the active implementation of international standards into the national legal system of Ukraine, in particular in the field of human rights protection, is taking place. Although the result of such an implementation leaves much to be desired. And this is stipulated, in particular, by the following factors.

The Marxist doctrine of the basis and superstructure preferred economic factors (basis). The factors of the cultural (spiritual) character were actually denied (at least in theory, since the practice of socialist state building actively used the spiritual levers of influence on society; Soviet propaganda was at a rather high level, since its consequences are still seen within the Ukrainian society today). However, modern society proves quite different thing: quite often being a potentially economically powerful, the state can not provide the right conditions (even at the level of minimum subsistence level) for its citizens. Significant in this context is the study of the winner of the Nobel Prize in economics Amartya Sen who asks: "What should promote economic and social development?" And "Under what conditions is there a successful development?". And answers: "Freedom" – "Development, from this point of view, is the process of expanding human freedoms" [1, 5]. And adds that famine is almost never occurring in free countries, especially in countries where freedom of the press and freedom of speech take place, because the cause of famine is, in fact,not the absence of food but access to them, that is, the human rights that enter into force by virtue of freedom.

Law in the concept of Marxism was given the role of superstructure, it was understood as a means of bringing to citizens the will of the ruling class. However, in our opinion, law is not simply and not as much a means as an element of culture of the society in question.

As for Ukraine, the following should be indicated. The textbooks on the theory of state and law contain almost classicaldefinition of law: law is a system of norms (rules of conduct) and principles established or recognized by the state as regulators of social relations, which formally establish the degree of freedom, equality and justice in accordance with social, group and individual interests (will) of the population of the country, are provided by all measures of legal state influence up to coercion "[11, 216]. That is, law and the legislation are identified. "Law is the will of the ruling class", as the founders of Marxism and Leninism argued. At the same time, the hierarchy and

subordination of both the authorities and the acts that they approve are important. In this regard, all normative acts must comply with the Basic Act of the state - the Constitution, it is important that the state body does not go beyond the competence, comply with the regulations, procedures, etc. That is, the question of non-compliance of the letter with the spirit of the law is solved, but it turns out the correspondence of the letter with the letter of the law (which in the people may be called bureaucracy). Thus, under this approach it is important not the conformity of the law with law, but the compliance with the law of the law (the principle of the rule of the law).

However, such a definition of law distorts true understanding of it. “The difference between law (jus) and the law (lex) was seen by ancient Roman lawyers, who believed that, in the event of a difference between these phenomena, lex had to be reconciled with jus.” [10, 8]. “The order is the order” the soldiers are emphasized. “The law is the law”, says a lawyer. But at the same time, the duty of the soldier to obey ceases to act if he finds out that the purpose of the order is a crime or offense. Lawyers, however, after centuries of not being the founders of natural law among them, are not aware of this kind of exclusion from the law and the submission of law-abiding citizens to it. The law acts because it is the law, and this is the law if its force is recognized in most cases “ [8, 225]. However, such an understanding of the law and its strength (occurring within the limits of the positivist understanding of law), according to G. Radbruch, has made all, including lawyers, defenseless against arbitrary and criminal laws. This understanding of law identifies law with force: only there thereis law where power is present.

The same is true with the understanding of human rights. First, the question of rights (as human possibilities) can go only within the so-called European civilization and societies, to which the following values of the latter have spread: private property, freedom, the rule of law. Quite interesting in this aspect is the opinion of K. Jaspers that among the “axial peoples” (Chinese, Indians, Iranians, Jews, Greeks), science and technology arose precisely in the Romance-Germanic peoples. One of the reasons for this, according to the thinker, is that “the West knows the idea of political freedom. In Greece, however, only briefly, there was freedom that never appeared anywhere else. ... China and India do not know such political freedom” [4, 84].

Secondly, human rights can not be made dependent on the state (we do not mean verticality of human rights). After all, people are equal from their birth. Article 1 of the Universal Declaration of Human Rights proclaims that all human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and must act in relation to each other in the spirit of brotherhood [14]. If, however, rights are understood as “a measure of freedom guaranteed by law (the possibilities) of a person which, in accordance with the achieved level of human evolution, is able to ensure its existence and development and is enshrined in the form of an international

standard as a common and equal for all people [11, 172], then we can conclude that, for example, the right to life in various states in different historical epochs was diverse.

Thirdly, the Soviet legal doctrine, when it considered the issue of securing rights, it was the so-called collective rights, not human rights, rights of an individual. Individuality was that thing that was necessary to break in a Soviet man. Under this approach law and freedom ares denied.

Compliance with any right, the implementation of the principles of law is connected, first of all, with the presence of legal awareness and legal culture. The latter, above all, should be based on the distinction between law and the law, with the awareness of the possibility of the existence of a non-legal act, non-law. And this is the biggest challenge for the Ukrainian society. Paternalism, collective thinking, vision in other (non-soviet) people of enemies, exploiters, contempt for law, worship of the authorities – these are only a small list of qualities that have been brought up in soviet people and firmly rooted in the consciousness of the society. That is why today, in legal reality, rudiments of soviet law are numerous in Ukraine. And these rudiments are incompatible with LAW.

"Together with the desire to build complex social forms exclusively on ethical principles, our intelligentsia in their organizations finds an ***impressive passion*** for ***formal rules*** and detailed regulation; in this case, it has a ***special faith in the article and paragraphs*** of organizational charters. This phenomenon, which may seem incomprehensible contradiction, is explained precisely by the fact that in the legal norm our ***intellectuals see not legal conviction, but only the rule*** that received an external expression. ... We can say that the ***legal consciousness of our intelligentsia*** and ***is at the stage of development, corresponding to the forms of police statehood"*** – wrote B. Kistyakivsky [5].

Human rights under such an approach are actually denied, only certain of them are proclaimed and provided. However, it is believed that when human rights are derived from the state, the latter may limit them or cancel them.

However, and to this day, the vast majority of domestic lawyers (as well as lawyers in the post-soviet area) understand human rights as those opportunities which are provided to a person by the state and are protected by it, therefore, the existence of law is dependent on the presence of the precriptive text - the law: there is the law – there is law; there is no the law, there is no law (in this context it should once again be recalled that the Constitution of the Federal Republic of Germany does not establish the right to education).

Moreover, in the Ukrainian legal discourse almost always it is a question of human rights, to which correspond duties. However, verticality is an immanent feature of human rights: their destination is the state, and not another person. Therefore, human rights and duties of a person are different

and unrelated phenomena. The relationship between the rights and responsibilities of participants in public relations (but the rights of the authorized party and human rights are also categories that designate the various by their gist phenomena), one can speak only in the context of legal relations, but not in the context of human rights.

Thus, during 2012-2016 Ukraine occupied the first place by the number of appeals to this European institution. The year 2017 cannot be an exeption, taking into account the decision of "Burmich and Others v. Ukraine", according to which more than 12000 cases were removed from the list of cases of the Court and submitted to the Committee of Ministers of the Council of Europe. Herewith the vast majority of cases against Ukraine concern such fundamental rights as freedom from torture (Article 3 of the Convention for the Protection of Human Rights and Fundamental Freedoms), the right to liberty and personal integrity (Article 5 of the Convention for the Protection of Human Rights and Fundamental Freedoms), the right to a fair trial (Article 6 of the Convention for the Protection of Human Rights and Fundamental Freedoms). Considerable number of the cases in which Ukraine's violation of Art. 3 of the Convention for the Protection of Human Rights and Fundamental Freedoms relate to conditions of serving a sentence of imprisonment. Therefore, the issue of human rights in conditions of non-freedom is relevant and requires its solution.

The basis of the system of law must be the recognition of human dignity, it is not in vain in Art. 1 of the Universal Declaration of Human Rights "All people are born free and equal in dignity and rights" [14], not only de iure but also de facto. Recognition of human dignity as the basis of the system of law stipulates recognition of equality and the principle of tolerance. The results of a sociological national survey point to the gaps in human rights knowledge and the level of tolerance of the representatives of the expert community (civil servants, police officers, judges, teachers, journalists and human rights activists). At the same time, only 25% of Ukrainians called tolerance as a value [6, 8-17].

The soviet understanding of law came from the necessity of having a clear legislative provision, which was to be understood unambiguously, for this the theory legal technique was developed and a significant conceptual and categorical apparatus was formed, which led to excessive dogmatization (in fact, it should be emphasized once again that the main factor of acceptanceof the decision of the public authority was not to ensure human rights, but to comply with the letter of the law). For example, domestic legal science (as well as education) uses the following terms such as "system of law", "legal system", "law", "subjective law" "objective law", to which within the ambit of Western legal culture there is the only word law. Or the delineation of understanding of law and legal thinking (while the latter is perceived as a deliberate activity on the knowledge of law, therefore, citizens for whom law exist are pushed aside from the legal thinking that is an

absurd). The separation of law institutes, sub-branches of law (which, in fact, can not be differentiated, and if one takes into account the existence of the so-called inter-branch institutions, then it is impossible to understand what is more voluminous – a branch or an institute) is also inherent in soviet legal science and not immanent in Western legal tradition.

Therefore, within the West, law is perceived as something real, but within the post-soviet space as something abstract, devoid of actual content, ineffective, etc. (as opposed to the law, which is formalized and in the orders of which there exist law, therefore, the legislation and objective law in fact, coincide, as the system of law and the system of legislation coincide, although it is herewith asserted about the form and the content, as well as the objectivity of one thing and the subjectivity of another one). The Western legal culture, based on human dignity, proceeds from the practicality of law, from the need to create conditions for the free development of a human personality,but not from the need to create a "pure theory of law" with perfect and "frozen" definitions. But is it possible to give a definition of human dignity or justice, or human rights, or law that will not cause objections, remarks, etc.? I emphasize that just these categories are the basis of jurisprudence, it is them that the entire legal system is built up on.

The second aspect is related to the understanding of the principles of law in general and the rule of law in particular. Adopting the Constitution of Ukraine in 1996, it is unlikely that everyone understood the content of the provision, enshrined in Part 1 of Art. 8 of the Basic Law. Especially considering the provisions of other parts of this article, based on the interpretation of which some domestic scientists actually identify the rule of law with the supremacy of the law and the "top" of this system called the Constitution.

Domestic jurisprudence needed more than twenty years in order to begin to embody the principle of the rule of law, having enshrined in laws defining the sequence of organization and operation of public authorities, in particular the so-called law enforcement agencies, as well as courts (although it is the courts (as well as the law office, and non-state law enforcement organizations), in my opinion carry out the protection of law. In addition individual articles of the Basic Law were directly subjected to partial (but radical) changes: it is, first of all, about Article 129: the provision that the judge while administering justice is guided by the law is replaced by the provision that the judge is guided by the rule of law. Although even in this case the soviet dogma worked: the provisions of the Constitution require the introduction of the mechanism for implementation, which is determined by the law (in spite of the fact that, according to part 3 of Article 8 of the Constitution "The norms of the Constitution of Ukraine are rules of direct action").

At the same time, it should be noted that legislation in Ukraine is ahead of legal science. So, despite the fact that the rule of law is directly fixed in the

law, a large number of scholars are still studying the "rule of the law", and identifying law with the prescriptive text, and considering the law the as the guarantee of human rights (human rights are defined as a measure of freedom guaranteed by the law). The principles of law are regarded as effective means of regulation of social relations only when they: 1) are enshrined in the law, or 2) are deduced from the content of the law, making the existence of law dependent on the law. And this takes place while recognizing human rights and of person's rights as the main value, while fixing them as the main duty of the state to establish and guarantee human rights, while recognizing the inexhaustibility of human rights, while recognizing the rule of law, while recognizing the jurisdiction of the European Court of Human Rights.

Unlike such "scientific" provisions, in 2004 already, the Constitutional Court of Ukraine in the case about the appointment by the court of a milder punishment indicated that law is not limited only by the law, but also includes other social regulators, in particular, norms of morality and customs. At the same time, the law is not law if it is not fair (and justice is a category of morality; therefore, law is primarily morality, not the law) [12].

It is precisely because of the inconsistency of the principle of legal certainty that the Constitutional Court of Ukraine found unconstitutional paragraphs 7 of part 9 of article 11 of the Law of Ukraine "On State Assistance to Families with Children" of November 21, 1992, according to which the payment of the assistance at the childbirth is terminated "in the case of appearing of other circumstances" [13].

"If the court concludes that the enforcement in the form of confiscation of property will not ensure a balance between the general interests of the society and the requirements of protecting the right of ownership of a particular person, then *it is entitled not to impose such a penalty, even if it is provided for in the provisions of the Customs Code as obligatory* [9] – it is indicated in the ruling of the Court of Appeal of the Chernivtsi region of April 19, 2016.

The European Court of Human Rights has repeatedly pointed out in its decisions (quite often in decisions against Ukraine) that the phrase "in accordance with the law" does not merely refer to national law, but also implies that such legislation complies with the "qualit" of the law that is the rule of law. The law must comply with law, and not law with the law. The rule of law acts, and not the rule of the law. Human rights determine the conent and direction of the state's activities, and not the state establishes in the law and thus gives rights to a person. The absence of "mechanisms for the implementation" of certain provisions of the law is not the problem of a human being, but it is the problem of inactivity of the relevant state bodies and their officials for which they should be held liable and therefore this can not be a hindrance to the realization of human rights.

Thus, legal practice is clearly ahead of legal science, which is largely obscured. Soviet legal science perceived the principles of law as some kind of transcendental phenomena that have nothing to do with legal practice, besides giving the text of the law of an element of democracy. A similar attitude was to the Constitution (because the Constitution establishes the foundations of human relations and public authority, the principles of organization and activities of the latter, human rights).

Thus, for domestic legal science even to this day soviet dogmatism is inherent in such an important issue as understanding of law, human rights and the principles of law. As long as the principles of law are not perceived as a means of streamlining public relations as a mandatory requirement, a democratic law-governed state is out of the question. Principles of law are not a piece of advice, not a recommendation; they require mandatory and full implementation in social practice. Rough and systematic violations, ignoring of their demands not only damage individual social relations, but also undermine the foundations of law and order. Therefore, there is a need for radical change of the domestic legal doctrine.

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Professionalization of public service in terms of reforming the territorial organization of power

The development of democratic, legal, socially oriented Ukrainian society puts brings the need to solve the problem of professionalization of public service on the agenda, in particular it concerns public service and service in local governments, through the introduction of scientific and technological progress and innovative experience of highly developed countries. The success of the reforms depends primarily on the level of professional competence of the management of public authorities, their ability to implement institutional changes, implement reforms and development programs of the state, to ensure the effectiveness of the structures entrusted to them. However, the modern system of their professional development does not meet the rapid pace of change and high requirements for the level of professionalism, personal, business and managerial qualities and does not ensure the development of professional competence of leaders with the use of innovative educational technologies.

In December 2017, the Cabinet of Ministers of Ukraine approved the Concept of reforming the system of professional training of civil servants, heads of local state administrations, their first deputies and deputies, local government officials and deputies of local councils (Concept) [4], the draft of which was prepared by a group of experts at the National Agency of Ukraine for Civil Service (National State Service) with the support of the Office of the Council of Europe. The most acute problems in this document are as following:

- non-compliance of the existing system of vocational training with modern requirements to the quality and content of education;
- imperfection of the mechanism for determining educational needs;
- lack of a comprehensive system of monitoring and evaluation of the quality of educational services;
- non-competitiveness and closeness of the market of educational services for non-state subjects of their provision;
- lack of an effective mechanism of cooperation of all subjects of vocational training.

In order to solve these problems, the Concept not only provides for appropriate mechanisms, but a separate component of the new system of vocational education is defined as "ensuring the functioning and development of the market for the provision of educational services in the field of vocational training". Thus, the Concept focuses on the need to radically change the approaches to its functioning and state regulation. In particular,

the following main conceptual directions of reform and tasks of development of the system of professional development were defined [4]:

1. Creation of conditions for its provision that stipulates development and introduction of professional and educational standards on the basis of the competence approach, allocation of new types of professional programs of professional development (they are divided into general and special ones), definition of customers of professional development depending on its type and categories of positions of civil servants, improvement of the mechanism of financing of training, and also creation of the integrated information system of management of human resources.

2. The introduction of an effective system for determining the needs for its implementation, which should be provided by the formation of the state order for scientific and applied research in this area, the development of the necessary methodological materials to strengthen the capacity and ability of personnel management services, as well as periodic study of general needs at state and regional levels and the publication of its results.

3. Ensuring the continuity, commitment and planning of training by determining its frequency depending on the type of training, strengthening the responsibility of the heads of public authorities to create appropriate conditions for training, promoting educational innovation, organization of compulsory training of managers on the transfer of their knowledge and experience, development and implementation of a mechanism for the recognition of the results of non-formal and informal training, as well as the cumulative system of loans based on the results of vocational training.

4. Development of the market of educational services based on the principles of transparent and fair competition, which should be provided through the accreditation of training programs, determination of the licensing procedure for educational activities in this area, the creation of a web portal of knowledge management, ensuring the right of public servants to improve the skills of various types, forms and different subjects of educational activities, the introduction of external and internal monitoring and evaluation of the quality of services for professional development, as well as the development and implementation of the procedure for determining the results of training in Ukraine and abroad.

5. Implementation of the mechanism of cooperation of all subjects of the vocational training system (including civil society institutions and international technical assistance programs) and ensuring coordination of their activities through the creation of the Coordinating Council on vocational training under the National State Service, Professional Association of subjects of educational services, as well as the organization of systematic events for the exchange of experience and periodic publication (at least once every two years) of the report of the Head of the National State Service on the state of the vocational training system.

The Concept also states that the implementation of structural reforms, in particular the reform of public administration, public service, local self-government and territorial organization of power, the education system, requires a high level of professional competence and professional development of civil servants, heads of local state administrations, their first deputies and deputies, officials of local self-government, deputies of local councils. After all, the discrepancy between the level of professionalism of public servants and the needs of the development of a democratic state and civil society is usually the reason for leveling the result of the reforms, which hinders the process and reduces the effectiveness of the public service as a whole [4].

Actual problems of state policy in the system of training of personnel, professional training, professionalization of public service in the implementation of the reform of territorial organization of power in Ukraine, as well as promoting the recommendations of the organizational and methodical aspects of educational process of the employees of state authorities, local authorities, managers of state enterprises, institutions and organizations at regional and sectoral levels were covered in the works of M. Bilynska, K. Vashchenko, V. Hoshovska, V. Luhovyi, V. Maiboroda, T. Motrenko, N. Nyniuk, L. Prudeus, I. Rozputenko, S. Seriohin, S. Khadzhyradieva, etc. It is well-known, that any changes become viable only when accompanied by human changes. The development of innovative processes in education contributes to changes in the system of personnel training, in the professionalization of public service in the context of reforming the territorial organization of power.

Therefore, in our opinion, it is very important to substantiate the goals of professionalization of public service in the context of reforming the territorial organization of power in Ukraine.

The bearer of sovereignty and the only source of power in Ukraine is the people, who exercise power directly and through the bodies of state power and local self-government [3, art. 5]. Thus, Ukraine has created a constitutional framework for the establishment of a full-fledged public authority and, consequently, public service. The development of the state and society is a public matter, society (people) thus acquires the signs of the subject of management, and public administration gains publicity. It is no coincidence that until the modern period of modern history there was no mention of public service, but the problems of public service on the principles of vertical administrative management deepened, because in Ukraine, like in the post-Soviet states, for a long time society was considered as an object of management.

The emergence of the concept of "public service" is associated with the name of the French Professor of law at the University of Bordeaux L. Duguit, who in the 20-ies of the XX century outlined the scope of state intervention. The scientist specialized in public law, defended the idea of social solidarity.

He believed that public service means any activity, the implementation of which should be defined, secured and controlled by the leaders of the state, because it is necessary for the implementation and development of social mutual dependence and because by its nature it can be fully provided only with the intervention of the authorities [7].

In the 50s of the XX century, thanks to the well-known legal scientist Yu. Paneiko, the term "public service" appeared in Ukrainian law, who considered it as an integrated system of various types of services that serve to satisfy the public interest. At that time he introduced the concept of "public services corporation" for scientific use, which significantly changed the views of the state and its role in society [7].

For the first time at the legislative level, the concept of "public service" was enshrined in the Code of Administrative Procedure of Ukraine (CAPU) in 2005. So, according to clause 17 of Art. 4 of CAPU, "public service is the activity at the state political positions, in the state collegial bodies, professional activity of judges, prosecutors, military service, alternative (non-military) service, other public service, patronage service in state bodies, service in authorities of the Autonomous Republic of Crimea, local governments" [2, Art. 4].

We believe that the future of Ukraine depends on the professionalism of public servants and their ability to make management decisions. World experience shows that one of the key tasks of the process of reforming the public service is to create a direct correlation between career advancement and wages in terms of employee qualification, his competence and business qualities. The establishment of such a link provides every public servant with an opportunity to increase his / her interest and responsibility for his / her professional development. However, the creation of a system of influence of training on career advancement of civil servants requires several changes in the existing organizational and legal framework of public service in Ukraine. From the experience of the world's developed countries it is known that in situations of constant changes and inconsistency of legal and regulatory support, crisis phenomena and unstable political situation, it is the system of professional training, taking into account the orientation to the progressive direction regarding the goals and objectives of the political and socio-economic development of the country, that can become the basis of positive changes and the key to the formation of the national elite of professionals in the field of public administration and administration.

Justification of the goals of professionalization of the public service is caused by three main factors. The first one relates to the development of a new type of civilization and the new goals of the XXI century. Modern society is defined as "information society" - a society where information as well as information and communication technologies are widely used. However, the primary place of the term "knowledge society" in recent years, in our opinion, increases the heuristic potential of all development projects, including the

development of public service through professionalization. The privilege of the term "knowledge society" lies in its precise and complete definition, in the ease of its perception by the whole population. I would like to note that the idea of it even abroad is too vague and very blurred. The abandonment of the term "information society" is due to the fact that it is overly specialized and is already forever identified with the plans and processes of "computerization". In fact, the society of the future only in its small technological part can be considered to be "information society", but in all other, much more important aspects it can be a society of full dissemination and continuous use of "knowledge": "The society of knowledge differs in the fact that knowledge is the main component of any human activity. Economic, social, cultural and all other activities become very dependent on knowledge and information. In the knowledge society it is they become the creative power" [5, p 212-221].

The beginning of the XXI century is marked by the proclamation of sustainable human development as a strategic goal for all countries of the world. The topic of "human development" has gained lately widespread recognition, including through the theoretical developments of the Indian scholar, Nobel prize winner for Economics 1998 Amartya Kumar Sen. In his research he used the approach "from the point of view of opportunities" and justified the position that the development process is not increasing only material or economic well-being, but empowerment of the person, which implies "greater freedom of choice for everyone to choose from a large number of options the goal and the lifestyle which this person prefers". Income, according to the concept of human development is only one of the choices that a person would like to have. Despite its relevance, it does not define the complexity and diversity of human life.

According to the conclusions of A. Sen, economic growth can contribute to human development when it provides not only an increase in per capita income, but also allows to have a sufficient level of public spending, which is invested in the social sphere, and is accompanied by a fair distribution of resources in the economy [10, p. 22-23.; 11, p. 107-111].

The conceptual developments of A. Sen were continued in the annual reports of UNDP "On human development", the first of which was prepared in 1990 by a group of researchers under the leadership of a friend of A. Sen, an outstanding Pakistani economist Mahbub ul Haq. According to the concept of human development developed in UNDP reports, the primary need is to find a balance between economic efficiency and social justice. Public policies aimed at growth and efficiency do not always consider the vital needs of the part of society that is unable to meet them on its own. On the other hand, shifting the responsibility for meeting the needs of members of society to the state can generate dependency, which inevitably reduces individual economic activity. Therefore, it is proposed to proceed from the fact that the state provides not so much equality of consumption as equality of opportunity, especially in the field of education, health, security, political and civil rights.

The conceptual framework for human development proposed by UNDP is based on the following basic principles:

- labor productivity (people should be able to increase their productivity and participate in the income generation process, so economic growth, employment dynamics and wages are fundamental to human development models);
- equality of opportunity (elimination of barriers related to race, sex, place of residence, level of well-being that prevent participation in political, social and economic life);
- sustainable development (lack of financial, social, demographic, environmental debt for which future generations will have to pay, ensuring equitable distribution of development opportunities between generations);
- empowerment (promoting self-reliance, increasing people's responsibility for their own destiny, active participation of the population in decision-making processes and enhancing the role of civil society);
- social welfare (the need for socially responsible forms of development of free market relations, the presence of a sense of social cohesion) [1].

The phenomenology of "human development" was reflected in the United Nations Millennium Declaration, which was signed by the leaders of 189 countries, including the President of Ukraine, in 2000 during the World Millennium Summit. On behalf of their peoples, they identified eight Development Goals, which later became known as the Millennium Development Goals (MDGs). Countries have pledged to achieve the MDGs and agreed to make our world a better place for all humanity by 2015.

The MDGs for Ukraine are long-term development targets adapted to the peculiarities of the national development of our country, generalized and quantifiable. They include 6 goals, 13 objectives and 33 indicators. Each of these goals was defined in such a way that it could be easily understood, easily measured. Ukraine's signing of the UN Millennium Declaration is not only a recognition of the problems of human development that appear in the country, but also a sign of the state's acceptance of responsibility for the state and prospects of human development. Consequently, the hope for the implementation of the Millennium development goals relies primarily on investment in intangible, human and social capital. It is emphasized that the main driving force is knowledge and creativity. In other words, from now on humanity is doomed to eternal combination of thought and action, theory of knowledge society and its practical construction. It was noted that there would never be a time gap between them. After ascertaining these facts, the issue of adapting the professionalization of public service to a new type of civilization and the new Millennium goals is determined. This adaptation takes place through changes in public administration.

The knowledge society and the new millennium goals envisage positive changes in governance as such, which provides access to sources of knowledge, experience and resources to help people build better lives. State

governance in the 21st century focuses on the introduction of democratic institutions, e-government, partnership for democracy and development, innovation and quality, ensuring open and transparent governance [12].

However, the main essence of changes in government is the formation of a system of new subjects of administrative autonomy in the state - local governments. This makes it possible to achieve a qualitatively new level of efficiency of the management process. Thus, it is extremely important to take into account the reforms of modern local self-government and the transformation processes that take place in the territorial organization of power in Ukraine when justifying the goals of professionalization of public service.

The dominant vectors of transformation of the territorial organization of power in Ukraine include the following:

- implementation of the principles of decentralization, deconcentration and subsidiarity. Of course, they are interrelated and interdependent, contribute to mutual implementation, serve as the organizational and legal foundation of the modern model of local self-government, where the priority is to ensure individual and collective rights and freedoms of citizens. These principles are the basic principles of creating an effective mechanism for the implementation of local self-government and, at the same time, the factors of the effectiveness of the functioning and development of social and power relations. These principles were proclaimed by the European Charter of local self-government, which was ratified by the Verkhovna Rada of Ukraine;

- concretization and further institutionalization of the competence (subject of jurisdiction, powers) of local self-government bodies; determination of responsibility of local self-government subjects;

- self-identification of territorial communities, first, through the specification of the legal status of territorial communities (united territorial communities), the specification of their constitutional, civil, administrative legal personality. It should be noted that under modern conditions of local self-government reform it is important to introduce the principle of corporatism, which consists in the self-awareness of the territorial community (united territorial community) of common political, socio-economic, environmental, cultural and spiritual interests, as well as in the creation of mechanisms to meet the relevant needs of the population with its active participation in these processes;

- absolutely clear distinction of competence of regional and local government. In Ukraine, this problem exists, and it can be solved by applying an integrated approach, which is to provide local government authority, which is accompanied by appropriate financial resources. It is an issue both of own powers of bodies, and of the delegated powers;

- the effectiveness of the relationship between the subjects of local self-government and between local self-government and the subjects of international and cross-border cooperation;

- the ramified structure of the system of accumulation of local finances, the system of monitoring and control over the formation and use of local budgets, which is the main guarantor of the implementation of the tasks and functions of local governments. In this aspect, deserve the highest attention issues: 1) the efficiency of construction of budgetary system; 2) monitoring the revenues and expenditures of local budgets. Therefore, there is a need for a unified system of financial sanctions at the local level;

- improvement, unification and standardization of professionalization of civil service personnel; organizational and legal support for the provision of quality public services to the population by highly qualified professional managers.

Consequently, public authorities are responsible for providing quality public services and goods, creating favorable conditions for people's lives. Unfortunately, public authorities often lack the experience, skills and resources necessary to address certain problems within the existing system. For this purpose, local self-government uses the professionalization of service in local self-government. This should make the managers of the sphere of local government directly accountable to local communities. Consequently, the development of local government officials requires an integrated approach. The specificity of this approach is that the official is considered through the prism of the presence of the set of systemic properties, which are not reduced to a simple list of qualities of people. In addition, attention is drawn to the presence of the official hidden properties, which when changing certain conditions may arise.

Considering the above, we believe that the strategic objectives of the professionalization of public service in an innovative and knowledgeable society are to ensure effective and efficient interaction of a well-coordinated public service and an informed, interested and active community for local sustainable development.

I would also like to note that Ukraine, which gained independence after the collapse of the Soviet Union in 1991, had to undergo the process of triple transition: from the Soviet Republic to an independent state; from a centralized system of governance to democracy; from a system of state planning in the economy to a market economy. Today, the efforts of the people of Ukraine are aimed to introduce and further promote the basic principles of democratic governance at all levels, since, as the UNDP human development Report stated, "Ukraine, still has to recognize that it is not the responsibility of the state to determine human needs; rather, it is the responsibility of the people themselves. However, self-government as a form of local democracy is still not deeply rooted in Ukraine. This reflects sustained Soviet expectations that the state will take care of most people's needs. As a result, when dealing with issues of local importance, citizens rarely demonstrated a sense of community, especially when human development resources were limited" [6].

Consequently, the reason for the creation of a system of professionalization of public service, the determinant of its value and meaning of existence is a strategic goal, which is justified by three main circumstances: 1) the transition to a new type of civilization – "knowledge society" and the introduction of a new concept of the Third Millennium – the concept of human development, that recognize knowledge and creativity to be the main driving force; 2) positive changes in public administration, which provides access to sources of knowledge, experience and resources to help people build a better life; 3) the decisive shift in emphasis in personnel policy is primarily due to the need to find a balance between economic efficiency and social justice. In other words, from now on humanity is doomed to eternal combination of thought and action, theory of social knowledge and its practical construction. The time gap between them should never exist.

The argument in favor of such a proposal is that in foreign practice, the term "in-service training" (advanced training) is used very rarely, more often the term "training" is used as the acquisition of knowledge, skills or relationships, which improves the efficiency of professional activity in the position, as well as the term "development" in the meaning of the development of the potential of a specialist (personal, innovative, creative, managerial, professional), which also involves its preparation for new tasks and functions. But this approach corresponds not only to the terminology defined in the domestic legal acts, but also to the established practice and traditions of professional development of personnel in Ukraine, which have two interrelated parts:

1) professional and qualification development (raising the level of professional competence) through vocational training through the system of training, specialization and advanced training;

2) professional and official development, which involves mastering the system of professional motivation, professional socialization, promotion and the like.

Therefore, we propose to characterize the essence of professional development of public authorities within three aspects:

1) the component of the system of targeted continuous professional training, which is implemented as a formal, non-formal and informal education;

2) training based on previously obtained educational qualification level in order to deepen, expand and update knowledge, skills and behavioral changes necessary for professional and personal development;

3) increasing the level of ability to perform new professional tasks and responsibilities and willingness to implement an individual strategy of professional development.

The Regulation on the system of training, specialization and advanced training of civil servants, heads of local state administrations, their first

deputies and deputies, local government officials [8, clause 8] provided for such types of advanced training:

- training according to professional development programs;
- thematic permanent seminars;
- specialized short-term training courses;
- thematic short-term seminars, trainings;
- training in the bodies covered by the laws of Ukraine "On public service" and "On service in local governments", as well as abroad;
- self-study (self-education);
- annual all-Ukrainian competition "The best civil servant".

Term and form of professional development of civil servants, heads of local state administrations, their first deputies and deputies, officials of local government are defined taking into account the scope of their activity by the subject of destination or the body empowered to make proposals on professional development of these persons.

On February 6, 2019, the Cabinet of Ministers of Ukraine approved a new Regulation on the system of professional training of civil servants, heads of local state administrations, their first deputies and deputies, local self-government officials and deputies of local councils [9, clause 3], in which it is noted that the system of vocational training is created to meet the needs of state bodies and local governments, which are subject to the laws “On public service”, “On service in local governments”, “On local public administrations”, “On local self-government in Ukraine”, in highly qualified specialists and provision of the conditions for improving the level of professional competence of participants in vocational training.

The system of vocational training is based on the following principles:

- obligation and continuity of professional training during the civil service and service in local government, work in state bodies, the exercise of the powers of the Deputy of the Local Council;
- commitment, predictability and anticipatory nature;
- innovation and practical orientation;
- individualization and differentiation of approaches to learning;
- openness and academic virtue;
- proximity of educational services to the place of residence and service of the person;
- guarantees of financing of vocational training [9, clause 4].

State regulation of professional development of public authorities in the context of transformation processes in Ukraine should ensure compliance with these principles. The effectiveness and efficiency of professional development are determined at the individual, organizational and national levels as a result of the implementation of training activities, and the results of the public authority due to the development of professional competence of its staff. Unfortunately, due to the lack of effective external and internal control systems to improve the level of professional competence of employees

of public authorities, monitoring and evaluation of the quality of professional development services, there is currently no information base on this issue.

Thus, the process of professionalization of public service in the context of reforming the territorial organization of power is the driving force of the professional development of public power, through which economic and political stability is achieved, the adoption and observance of European values of civil society development. Given these factors, the neglect of the issue of professionalization is unacceptable and may lead to reducing the credibility of public authorities and bodies of local self-government, which is manifested in the formalization of public-government relations, the incompleteness and inefficiency of the proclaimed reforms, low quality of providing public services to the population, mistrust of authority in general, and the like.

We believe that the strategic goal of the professionalizing of the public service in an innovative and knowledgeable society is to ensure effective interaction between a well-coordinated public service and an informed, interested and active official for sustainable development. The achievement of the strategic goal will be facilitated by the intermediate goals: the development of administratively capable public service, the expansion of the opportunity to improve the quality of the activities of officials and employees of public authorities on the basis of science and practice; continuous improvement and focus on the high quality of public services. This approach will allow all elements of the system of professionalization of public service to interact effectively based on a balance of interests and resources, will ensure continuity in the evolution of public service, taking into account modern requirements.

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The effect of socio-psychological and linguistic factors on the quality of the legislation system of Ukraine

The results of the socio-psychological and legal regulation of lawmaking activity, its effectiveness mainly depend on how much of the socio-psychological factors are taken into account and influence, knowledge and understanding of the legislator created legal norms, assimilation of the recipients of the orders contained in them, the formation of a positive attitude to the law, readiness to correlate and to reconcile with it the legal behavior of individuals and the relationship in the system of social and legal relations. A characteristic feature of contemporary Ukrainian draft laws is the excessive speed of preparation and adoption of bills, the lack of intelligent planning and psychological forecasting, which often causes the need for prompt changes and additions to them. Frequent manifestations of systemicity, chaotic development of lawmaking, the absence of a psychological and scientifically substantiated system of bills, the presence of contradictions and contradictions between adopted laws and the executive branch, the absence in a number of cases of organizational and legal and psychological mechanisms for the implementation of adopted laws, legislative decisions, in particular, sanctions for their violation.

For a low level of self-awareness there are various negative consequences that are characterized by the publication of a legislative act, which contains errors that complicate the realization of citizens their rights.

Explore the process of socio-psychological conditionality in the formation of bills, in particular to identify psychological factors of the legislator's perception of the established legal norms and to reveal the influence of the law adopted on the consciousness of people, the reaction of society to the adopted law.

Reliability and theoretical and practical justification of the study is ensured through a set of general scientific and special-scientific methods, as well as a number of newest methods of scientific knowledge. The methodological basis of the research was provided, in particular, by the dialectical method of scientific knowledge, through which the relationship between psychological factors and the law-making process was investigated. Dialectical logic ensured adherence to the general principles of scientific knowledge: objectivity, unity of theory and practice, the development of the subject of research, its logical certainty and systemicity.

The formal-logical method was applied during the study of legislative activity. With the help of psychological method, certain aspects of monitoring of legislation, ties of legal phenomena, in particular the transition of

quantitative properties, qualitative features, as well as legal psychology of lawmakers, were studied.

The psychological method is associated with the imperative-attributive nature of legal experiences and with legal awareness. With the help of the causal-determined sociological method, social relations in the field of lawmaking are revealed *(Makejeva, 1999, p. 42)*.

The system method is also widely used in the work - the relationship between the legal writing and the mental perception of legal information is traced.

The innovative pragmatic method of legal monitoring has served to gain knowledge about the quality and effectiveness of legislative acts. This method is an independent, special type of legal control, which combines information (demonstration), analytical, interpretive, expert, forecast, system support of law-making and law enforcement. Legal monitoring plays the role of a "channel of feedback" between law-making and legal practice *(Onyshchuk, 2017)*.

A number of works by lawyers and psychologists O. Dejneka *(Dejneka, 2014)*, I. Kibak *(Kibak, 2011)*, A. Zabarin *(Zabarin, 2015)*, L. Murashko *(Murashko, 2005)*, A. Stolyarenko *(Stolyarenko, 2001)*, F. Hajek *(Hajek, 1990)*, M. Nowicki, Z. Fialova *(Nowicki and Fialova, 2000)*, devoted to the psychological problems of lawmaking, the quality of law and the effectiveness of legislation.

In the work of A. Stoljarenko, attention was drawn to the fact that lawmaking, like any other work, implies the presence of not only the general and legal culture, competence and positive psychological attitude of the legislator to this project, but also demands from them special psychological knowledge *(Stoljarenko, 2001)*, certain skills, skills, mastery of the art of preparing and adopting bills and legislative decisions.

The study of the current legislation of many modern states suggests the domination of the general trend of legislative activity. One of the aspects of consideration of this issue is the restriction of the main powers of the legislative body on the adoption of laws. According to F.A. Hajek, "parliamentary machine is absolutely not suitable for a quick review of a large number of bills" *(Hajek, 1990)*.

The traditional division of states into legal and non-legal, democratic and undemocratic, based on the law and the ruler's arbitrariness precludes the study of the realities of relations between a citizen and a state that are formed in a particular country. Bullying, as history shows, can not only easily get along with the law, but act on behalf of the law. But, in the end, in declarative legal states, citizens can be completely disenfranchised. Therefore, in order to carry out a psychological analysis of the relations of citizens with the state, a system of criteria is needed in order to measure the established measure of justice in the real practice of psycho-political relations *(Zabarin, 2015, p. 60)*.

At the same time, it should be noted that, with all the value of available scientific works, the authors did not aim at a comprehensive study of psychological support for lawmaking, but revealed problems are unsolved or require detailed, in-depth elaboration. Even from this point of view, the very object of study – the person of the subject of the law-making process – is of considerable interest. In this regard, we consider it very urgent to implement as soon as possible special innovative psychotechnologies and psychological developments in lawmaking activities.

People often suffer from their own emotions. Rational, analytical arguments persuade people because aesthetic concepts are drawn to the emotional structure of the human mind. Laws try to regulate and influence human behavior, so human behavior is largely limited *(Rappaport, 2010, p. 68)*.

According to I. Kybak it is expedient to create in the legislative body on a permanent basis a psychological and expert group consisting of psychologists, psychotherapists, psychologically oriented sociologists. The members of the group should regularly monitor the development of parliamentary events, receive relevant information and, in general, be personally involved in legislative activity. As the scientist noted, the expert group should give an opinion on each bill on the psychological consequences of certain legal norms, their impact on the public atmosphere, people's behavior, attitude towards developers and institutions of power, to offer non-standard ways of legislative resolution, in crisis situations, to predict the emergence of conflicts etc. *(Kibak, 2011, p. 192)*.

What changes are made to the personality when combining the roles of the legislator and the citizen? What should understand, know and be a lawmaker?

The study of these problems will allow finding the optimal ways to improve the regulatory framework, the regulation of interaction between the citizen and the state, educational influences, teaching as the basis for the formation of a human legal culture. The object of civic psychology is a person as a participant in the relationship with other citizens in civil society and with state authorities. At the same time, in practice, the relationship between the legislator and ordinary citizen is mediated by a personal factor and psychic phenomena. The psychological characteristics of the participants in these relations affect not only the nature of the interaction of citizens and officials, but also on decisions taken by officials, which affect the implementation of functions, rights and responsibilities of subjects of legal relations.

Defining the purpose and purpose of relations between the state and the citizen as the realization of the common good, the moral law or the idea of justice will be no more than a positively emotionally painted political slogan until such an attractive idea of universal good, moral law, and justice is not measurable *(Dejneka, 2014, p. 15)*.

Thus, unlike logical methods, the methods used in a number of sciences are mainly based on some specific scientific disciplines (statistics, mathematics, cybernetics, psychology, etc.). With their help it becomes possible to study the individual aspects of legal monitoring, the connection of legal phenomena, in particular the transition of quantitative properties, qualities, as well as socio-legal psychology of the population, etc. Therefore, these methods are applied not in any study, but only where there is a need for study of certain parties, relationships. This sees their fundamental difference from the logical methods used in any scientific knowledge.

It should be noted that during the monitoring process it is inevitable that various social relations - legal and non-legal (informal) - must be studied. Illegal relations arise from the socio-psychological features of the subjects of law, the motives and goals of their activities. Legal and illegal relations arise both before the adoption of certain normative legal acts, and after the respective amendments, additions or cancellations have been made to them. Normative legal acts determine and influence the social and real legal roles of people. Legal monitoring is associated with different stages of legal regulation: the publication of rules of law; the emergence of subjective rights and legal responsibilities; application and official interpretation of the law *(Kosovych, 2012, p. 31)*.

Due to the free and business discussion of bills, expert examinations, wide involvement of scientists and other specialists, there are clearer drawbacks of lawmaking (Murashko, 2005: 170), which impede the effective impact of legislation on the pace and content of market reforms, strengthening of democratic foundations of public and public life of the country.

According to the results of the analysis of the statements of representatives of civil society, to the most lobbyist, the bill "On Amendments to Certain Legislative Acts of Ukraine on Increasing Trust between Banks and their Customers" (No. 6027 of 02.03.2017) can be included. The said bill extends the rights of banking institutions and restricts the rights of clients. The most anticipated, according to experts, was the Law of Ukraine "On Amendments to the Commercial Procedural Code of Ukraine, the Civil Procedural Code of Ukraine, the Code of Administrative Legal Proceedings of Ukraine and other legislative acts" (No. 6232 dated March 23, 2017). The rules of the law expanded the methods of judicial protection and means of proof. The "e-court" system provided for by law should simplify communication with the court and reduce the financial costs associated with maintaining the judicial system.

Using such a scale of evaluation of legislative acts will allow systematically to identify defects in the mechanism of legal regulation, non-working legislative acts, and before the state authorities will be aggravated by the problem of resolving the fate of unjust laws, up to the expiration of their validity.

Legislators should respond to changing reality, because the Internet is becoming a tool that is being used by more and more people around the world. The principle of expediency is understood as a correlation between "costs" and "benefits" from legislative actions. The words "costs" and "benefits" are used in this context in a very broad sense. The first involves not only the direct financial consequences of observance of the applicable law. The elusive elements, such as psychological or emotional inconvenience, and all the negative influences as a result of a legislative act, in particular, the impact of a legislative act on people and the reaction of society to the adopted law, will also be taken into consideration.

The second concerns mainly the goals of individual legislative actions. All implications that are compatible with the objectives or facilitate their further realization can be considered as benefits.

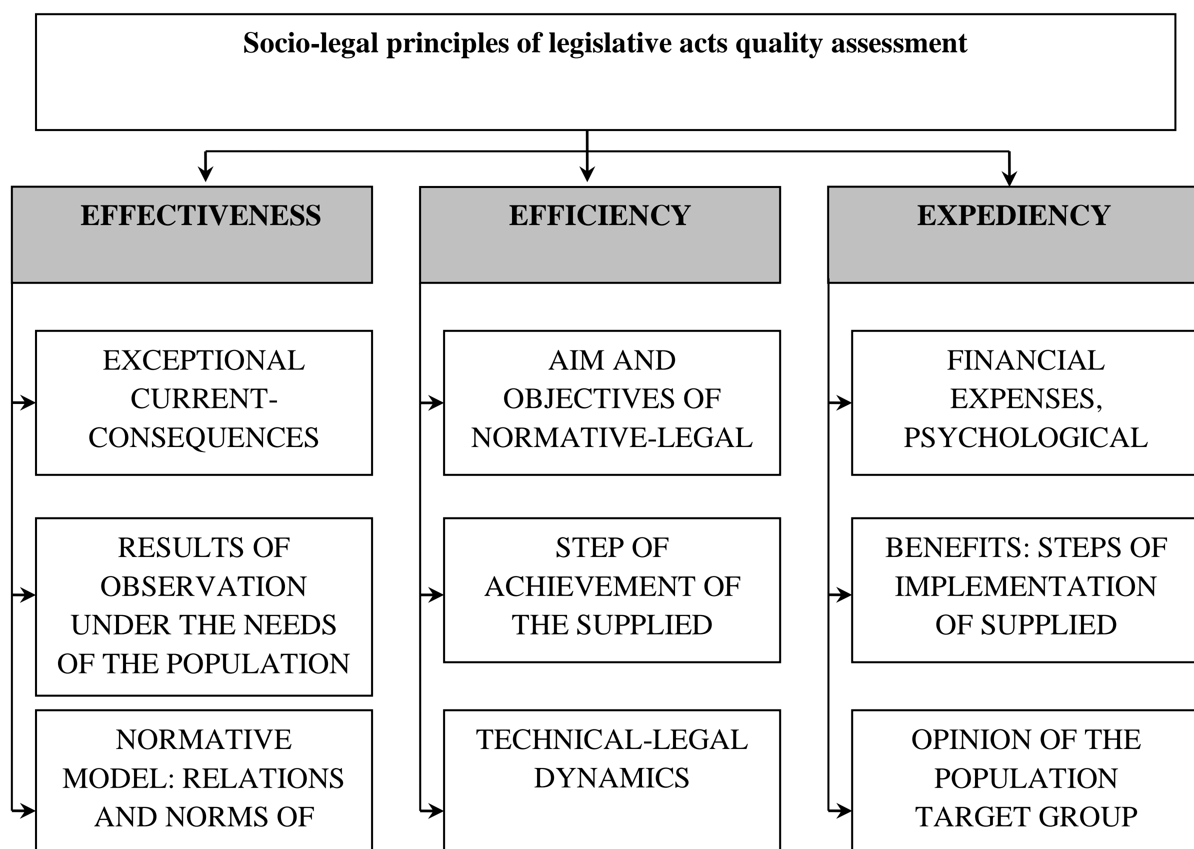

Table 1. Socio-legal principles of quality assessment of legislative acts

The purpose of legal monitoring differs from the tasks posed by sociologists and psychologists, social workers. Therefore, it is worth agreeing with M. Nowicki that monitoring should give knowledge of objective facts, not of what people know or think about them. The result of the monitoring should be the exact reproduction of the events, rather than the pictures they left in the memory of the witnesses *(Nowicki and Fialova, 2000, p. 96)*.

The ideal of rule of law depends on the principle of knowledge of possible sanctions for wrongful acts or inaction. People should be able to make quite reliable forecasts *(Whitman, 2000, p. 754)*.

According to E. Durkheim sociology of law is a kind of general theory of law. The method of sociology is that social facts come directly from some of the most common features of human nature. Parents naturally feel responsible for their offspring, marriage - a consequence of sexual instinct, innate sense of justice, etc. If collective phenomena are very significant, in history the function of human nature is revealed. Individual psychology can not explain social facts. In social life, everything consists of ideas, ideas and moods *(Durkheim, 1982, p. 247)*.

The very fact of the formation and expression of public opinion assumes the role of reason for the needs and interests of those who need their presentation. Public opinion is a socio-psychological phenomenon, an active stimulant of social action and actions, capable of providing them with scope and stability over a long period *(Eparhina, 2013, p. 14-15)*.

Legal monitoring, in conjunction with public policy, is a characteristic form of applied, scientific and cognitive legal activity. In this way, legal information is received and analyzed, its degree of adequacy to the state policy and the Technique of monitoring is a set of methods, techniques, tools, including methods of collecting information: expert evaluation; legal expertise; interpretation of law; observation; questionnaire; poll; grouping; socio-psychological receptions *(Neveselov, 2009, p. 13-14)*.

Among the available scientific approaches to the definition of the concept of law-making errors and their division into species dominated by the following: 1) due to deliberate or unintentional actions of the subject of rule-making negative result that hinders its effective work and the adoption of high-quality legislative acts – A. Lisyutkin *(Kashanina, 2011, p. 159);* connected with negligent fault (legal-ideological (conceptual), legal-informative, legal-language, legal and technical – V. Baranov *(Shutak and Onyshchuk, 2013, p. 111-112*) shortcomings of legislative acts that are the result of non-compliance with the logical, linguistic and procedural requirements of law-making technique in the process of its development and adoption - V. Ryndjuk (Ryndjuk, 2013); on the psychological mechanism of education (informational, motivational, program-target, energy, personal – N. Vanteeva *(Vanteeva, 2010, p. 27)*.

Thus, all the errors of law making can be divided into two groups according to the psychological mechanism of their formation: intentional and unintentional.

An act or a positive obligation requires the subjects of the right to take active action. If the rules are comparable to prohibitions, then we can say that the legislator makes expressive psychological pressure in relation to the recipient's rule of law. It is clear that the prohibitions, and especially the prescriptions, to some extent quench the energy of people. Then why does the

legislator dare to do this? The goal is to prevent possible negative consequences, prevent them or reduce their impact on society. With such techniques, vital, relationships are regulated.

The preamble includes such components as the motives for passing the law, the goals and objectives that we would like to achieve in the process of implementation of the regulatory act. We divide these close-to-one concepts. The motive motivates a person to engage in active work and makes her behavior meaningful and consistent.

The goal is the final result that the legislator wants to achieve by adopting a legal act. The task is to set the problem, which requires its solution through a regulatory act.

Inclusion of these components in the preamble of the law has a psychological nature, since the person's peculiarity lies in the fact that she tries to satisfy their needs by constructing the logical chain from the goal setting to the achievement of the result. Thus she convinces herself in the necessity of constructing her behavior precisely by law.

For example, in a legal writing one should try to lay maximum information with a minimum of words. Excessive words make the phrase not only longer, but also introduce an element of uncertainty or uncertainty. Lots of words are the enemy of clarity. By word of mouth there is an insufficient knowledge of the problem by the author of the text. Psychologists-linguists have shown that the average reader can hold only a few thoughts in the short-term memory. After mastering two or three thoughts, the reader needs a pause to put together what he has read. The dot at the end of the sentence is a signal for such a pause. The inner nature of the obligation is manifested in the fact that the person, knowing the typology, prevalence, practical expediency of certain relations, their variants, wants to adhere to them in their behavior, is aware of the need for their implementation. This desire becomes an internal conviction, a motive force of behavior, not imposed from the outside. The external nature of the obligation is due to external factors influencing the psyche of the individual – conviction and coercion.

B. Rappaport pays special attention to the fact that lawyers must understand and take into account the principles of evolutionary psychology. Rhythm and tone are important components of music and, therefore, the main components of legal writing. Such components must be deliberately incorporated by lawyers in order to provide a convincing form of legal writing, and thus encourage the addressees to pay special attention to the legal text, to promote a more pleasant perception, prompting the addressee to ultimately agree.

In a legal writing one should try to lay maximum information with a minimum of words. Excessive words make the phrase not only longer, but also introduce an element of uncertainty or uncertainty. Lots of words are the enemy of clarity. In many words there is an insufficient knowledge of the problem by the author of the text *(Hazova, 2011, p. 125)*. Linguistic

psychologists have shown that the average reader can only hold a few thoughts in the short term. After mastering two or three thoughts, the reader needs a pause to put together what he has read. The point at the end of the sentence is a signal for such a pause *(Shugrina, 2000, p. 51)*.

Creating a clear, understandable and effective writing involves tense work on finding the right word. The lack of clarity in legal writing is often due to the inattentive attitude towards the selection of words, careless treatment with the word. The word is defined as the minimum significant unit of language that performs a dual function. First, the word refers to individual concepts (objects, persons, processes, properties, etc.). Secondly, the word enters a syntactic connection with other words in phrases or sentences, and sometimes even a sentence. Each word has to bear meaning load, meaning, to sound. The word must correspond to its meaning. If the word does not matter, it is "not a word, but an empty sound" *(Hazova, 2011, p. 124)*.

Means of ensuring the mandatory requirements in this case come from other people, social groups and organizations. At the same time, they are more common to one social norm, others are less. The rules of law, in line with the number of religious, are categorized as norms, the requirements of which are strictly regulated, and their implementation depends primarily on the force of external influence. B. Rappaport pays special attention to the fact that lawyers must understand and take into account the principles of evolutionary psychology. Rhythm and tone are important components of music and, consequently, the main components of legal writing *(Onyshchuk, 2019, p. 64)*.

Such components must be deliberately incorporated by lawyers in order to provide a convincing form of legal writing, and thus encourage the addressees to pay special attention to the legal text, to promote a more pleasant perception, prompting the addressee to ultimately agree.

Evolutionary psychology and the evolutionary study of literature, known as literary Darwinism, will help lawyers better understand how to convince readers. People suffer from their own emotions. Rational, analytical arguments persuade people because aesthetic concepts are drawn to the emotional structure of the human mind. Evolutionary psychology helps lawyers understand the disadvantages of regulatory and legal acts.

Scientists have begun studying Darwin's theory to understand and improve the effectiveness of laws and legal systems, since laws are trying to regulate and influence human behavior, so human behavior is limited to a large extent and in a certain way. Scientists find convincing evidence and demonstrate concrete examples of how to penetrate the essence of the law. This will help identify useful patterns of behavior, where the law is aimed at its regulation.

It is related to this and irregular legal influence on social relations. The right of itself (regardless of what is specifically written in those or other laws) affects the consciousness of people. Information, psychological, cultural,

educational effect of the right to the life of society is primarily due to the psychological perception of law as a holistic phenomenon, which has a special meaning and meaning. Including this, perhaps, explains the delineation in our consciousness of natural and positive law or law and law. "Divorce" occurs at the level of perception: on the one hand, we are aware of specific established rules, imperatives that may seem fair or unfair to us, on the other hand, the law as a whole is perceived by us as a symbol of justice and order.

The contradiction between these two lines of perception and generates an idea of the parallel existing natural and positive law.

Many legal symbols do not contain certain imperious orders, but are intended to cause emotional, psychological influence on the subject, to convey the "spirit" of law, to convey to the addressee the norms of law elements of official state ideology. This function is common to legal symbols with such a variety of legal regulations as legal declarations. First of all, such official role is played by official state symbols, symbols of state bodies and other symbols expressing values connected with state power (judge's mantle, state awards). In this context, state-legal symbols are means of legitimizing public authority.

At the present stage of the development of information technologies, the basic skill is the ability to write. To write, to bring the essence of thought today becomes more important than to speak. Owning the technique of writing should be people of all professions, not just writers and journalists. A good writer must be able to "speak in writing", convincingly present his ideas and point of view to readers. Letter helps authors to structure information, better understand it. Mastery of the letter - an indicator of human organization. It is the ability to organize, organize and provide information for its easy comprehension.

The effectiveness of a specific rule of law, of course, depends not only on its content, but also on the features of interaction with the human psyche. Therefore, the effectiveness of the norms of law can not be wider than the possibilities of their perception and transformation of the human psyche. The sphere of psychological technologies of the law-making process includes questions of citizens' perception of legal norms, which psychological factors determine the need for the development and adoption of data law, the interests of which groups, social strata, institutions will reflect the bill, obstacles, psychological barriers to adoption of the bill, socio-psychological mechanisms of influence of civic groups on the content of the future law. It is also important to predict the psychological consequences of adopting and introducing into the public life of the future law.

Under the effectiveness of a legislative act understand its agreement with the needs of social development and legal regulation of optimal behavior. The effectiveness of a legislative act depends on the effectiveness of the three stages of the law: the rules of law, the implementation of law, legal awareness and legal culture. The main causes of the shortcomings of lawmaking can be counted: the inadequate level of legal awareness of the legislator,

inappropriate competence of those who accept legal acts, the subjective will of the legislator. The ways to solve problems of improving the legal awareness of law-making and society as a whole are: selection of personnel, so that in the legislative process involved exclusively professionals, and not persons associated with entrepreneurship, professional sport or culture, it is worth improving the quality of education, which is acquired by future legislators, provide lawmakers with all the necessary information about the state of society.

The quality of lawmaking in Ukraine will significantly increase as a result of psychologization of the basis for creating legal norms, transparency and professionalism, taking into account public opinion, increasing attention to the effectiveness, the theoretical and psychological and legal validity of adopted bills.

In practical terms, the legal monitoring will help to outline an identical way of a modern cognitive process in the field of law. The sphere of its application is science, educational process and practice. As part of system and global research, monitoring carries out complex cognitive functions. The application of the legal monitoring is to solve practical problems related to the organization of the research process in the field of law and the monitoring of its development, perception, the result of which is knowledge. The results of legal monitoring are used to find out the extent to which the legal system is compatible with social expectations. This is important both for the whole system of legislation and its separate directions, and for law enforcement activities: obtaining and using expert assessments based on the results of the analysis at the stage of developing the forecast of the development of legislation, improving the results of law enforcement in the administration and jurisdictional systems of the state.

The impact of the adopted bill on people's consciousness and society's response should be determined by the parameters of the scale of evaluation of legislative acts: the most expected; most successfully implemented; most socially oriented; most cited in the media; most lobbying the most controversial; most populist; most corrupt; least resource secured; least risky; the least clear; the least fair and so on.

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Improvement of State architectural and construction control and supervision in Ukraine

Under conditions of public administration transformation processes in Ukraine and implementation of the European integration development vector an issue of finding effective mechanisms of state regulation in various fields becomes increasingly important. In the absence of clearly delimited algorithms of interaction between the private and public sectors of the economy, the issue of implementing the state control function over economic activity comes to the fore. An issue as to effectiveness of state control as an element of non-tariff regulation in the construction industry is of primary concern. Construction is an important component of the national economy, since the construction market efficiency ensures development for infrastructure of territories, contributes to the revival of economic growth and establishment of a positive investment climate. Property construction ensures implementation of social functions, and construction of commercial real estate and industrial facilities contributes to the development of business environment and the real sector of the economy. At the same time, due to processing complexity, capital intensity and duration of the investment cycle, construction refers to industries that are characterized by the probability of a significant number of risks. One of the tools to avoid risks in construction is to increase the efficiency of architectural and construction control and supervision. Thus, searching for ways to improve the mechanisms of state regulatory policy in construction is a priority, and the effective implementation of control functions will contribute to the creation of clear and transparent rules for the construction business.

At present, the mechanisms of state control, introduced into practice of the construction market in Ukraine, show lack of efficiency. There are no effective tools to influence unauthorized development which causes a number of infrastructural, environmental, social and technical problems. Despite quite high fines, the quality of construction remains low, which leads to violation of civil rights, chaotic development of territories, the threat of environmental pollution and destruction of historical and cultural monuments. The lack of clear rules for implementation of construction projects at the pre-investment, design, construction and operation stages, taking into account the complexity of obtaining permits and supporting documents, hinders transition of the national construction market to the European integration development path. Therefore, it is important to search for effective regulatory mechanisms to influence economic processes through the regulatory framework of urban planning, which requires an in-depth analysis of the legislative framework on ensuring state control.

The issue as to improving efficiency of the system of state regulation and control in construction is of high relevance, therefore, it has been addressed by numerous scientists. Thus, the theoretical basis of state supervision in construction was studied by Y. Yurchenko [1]. Analysis and economic justification of the main shortcomings of the state regulation process in construction industry was carried out by O. Filonych [2]. Several authors investigated other aspects of ensuring the state architectural and construction control, in particular, S. Kravchenko [3], K. Rezvorovych [4], O. Serhienko [5, 6], O. Stukalenko [7].

At the same time, transformation features of the state control in construction have not sufficiently been studied presently, therefore, authors aim to find ways to improve the efficiency of architectural and construction control and supervision under transformation processes of public administration system.

The main challenges testifying to the need to improve the efficiency of state control in the construction market are as follows:

- irrational location of infrastructure due to unauthorized construction;
- transportation problems associated with irrational development;
- destruction of facilities with the status of architectural monuments and which have cultural and historical value;
- environmental problems caused by non-compliance with the construction rules and regulations, development of areas prohibited for construction works;
- violation of civil rights and legitimate interests, reducing investment attractiveness of the industry due to the threat of investing in unauthorized construction.

Among ***the reasons for the lack of efficiency*** of state architectural and construction control should be named as follows:

- focus of the state construction control system mainly on compliance with the organizational and legal procedure of construction, the lack of quality control for construction;
- insufficient qualification level of personnel of state supervision and control bodies in construction;
- underdevelopment of non-governmental market risk avoidance mechanisms which are an effective alternative to the state system of permitting and control procedures in the international practice of construction;
- legal conflicts and gaps in legislative and regulatory acts on state control, etc.

Historical aspect. The study on the issue of state regulation of construction control requires a retrospective analysis of its formation. It is believed [8, p. 14] that the history of the current state architectural and construction control system dates back 75 years to the formation of the

Committee on Architecture according to the Resolution of the USSR Council of People's Commissars of September 29, 1943 No. 1064. The following year, the Central Directorate of the State Architectural and Construction Control of the USSR was established, as well as the General State Architectural and Construction Control Inspectorate of the Soviet republics.

The first regulation on control in construction had a framework nature and required the adoption of relevant acts of a lower level: departmental decisions, building codes, instructions and the like. Since the procedure for the implementation of control had not been defined, there was no administrative liability envisaged for construction participants, subordination and reporting relationship of inspectorates at various levels (state, republican, regional, municipal) had not been established, etc.

First State Architectural and Construction Control Inspectorate operated as part of the Department on Architecture, and since September 1955, when State Committee at the Council of Ministers of the USSR for Construction and Architecture was established on its basis, it was included in this Committee. During the independence of Ukraine, the Inspectorate operated within the relevant Ministry, and only in 2006, with the adoption of the Resolution of the Cabinet of Ministers of Ukraine No. 428, it became an authority in the status of a separate legal entity for the first time. Its powers expanded simultaneously with the increase in the status. However, although today the system of architectural and construction control is the sole state institution to ensure the legality of construction, it still bears an imprint of the Soviet management system: non-governmental professional organizations, including self-regulatory, are not involved in the implementation of control; market mechanisms of risk avoidance (for example, insurance) and the like are not applied.

Construction control system reformation. The system of state architectural and construction control received a certain legislative base with the adoption of 1999 Law of Ukraine "On Architectural Activity", although before that some rules on the implementation of control in construction were contained in the Laws of Ukraine "On Town Planning" (1992) and "On Responsibility of Enterprises, Their Unions, Establishments and Organizations for Violations in the Sphere of Town Planning" (1994). The situation was rectified in 2011 with the adoption of the Law of Ukraine "On Regulation of City Planning Activity", where a separate article is devoted to the implementation of state control.

State policy on the control functions centralization degree was not consistent. For a long time, direct control functions used to be carried out by the local Inspectorates in the Autonomous Republic of Crimea, regions, districts, cities of Kiev and Sevastopol and cities of regional subordination. In May 2007, the law [9] was adopted, which introduced a centralized control system. More than 600 local Inspectorates of various levels (regional, municipal, district) were eliminated, and all permitting, registration and

control functions were concentrated in the central Inspectorate. However, in 2015, the new law [10] within the framework of the general policy on power decentralization allowed to delegate the functions of control in construction to the local inspectorates.

The same law [10] delimited the concept of state architectural and construction supervision and control. It defines *state architectural and construction control* as a set of measures aimed at compliance with the urban planning laws, building codes, standards and rules by employers, designers, contractors and expert organizations during preparatory and construction works. The concept of *architectural and construction supervision* was defined separately, which means a set of measures aimed at compliance with legal requirements, building codes, standards and rules by the authorized urban planning and architectural bodies, local architectural and construction control Inspectorates, other bodies exercising urban planning control in their implementation of urban planning activities [10]. In fact, a two-level control system has been formed.

Institutional support. Today, the main authority implementing the function of architectural and construction control and supervision, is the State Architectural and Construction Inspectorate of Ukraine. According to the Regulation approved by the Government [11], this Inspectorate is the central executive authority, the activities of which are directed and coordinated by the Cabinet of Ministers of Ukraine through the Deputy Prime Minister of Ukraine – the Minister of regional development, construction and housing and communal services. The functions assigned to the Inspectorate powers are as follows [11]:

- implementing the state architectural and construction control over compliance with the legislation by employers, designers, contractors and expert organizations;
- ensuring supervision of compliance with the legislation by the authorized bodies of urban planning and architecture, local inspectorates and other bodies exercising control in urban planning;
- permitting and registration functions in construction;
- licensing of economic activity in certain cases under the law.

The decentralization of state control in construction has made it possible for cities, towns and villages to establish their own Inspectorates. In their work, they are guided by the Model Regulations on State Architectural and Construction Control Bodies approved by the Government in 2015 [12]. Thus, now there are State Architectural and Construction Control authorities at a local and central levels.

Local self-government bodies have the right, based on their own needs and capabilities, to establish local Inspectorates under a special procedure studied by the authors in detail in their previous publications to assist municipalities [13]. However, not all cities, towns and villages have used their legislative right to form their own state control bodies. At the time of this

writing, their number equalled exactly 100 and it has not changed for more than a year [14]. There are even cities such as the regional centers of Zaporizhzhia, Poltava and Khmelnytskyi among those that do not have local Inspectorates.

Staffing. Like the entire economy of Ukraine, the construction state regulation system lacks qualified personnel. This is due not only to the problems of training employees and young people leaving abroad. It should be noted that the authorities in construction often perform unattributable functions of technical audit and engineering, and the personnel of such bodies is overloaded with technical and organizational tasks. Thus, maintaining high quality staffing of state architectural and construction control bodies is not only in the plane of training civil servants and employees, establishing criteria for conformity assessment of inspectors with the relevant requirements, increasing the requirements to the level of education, knowledge and skills, introducing the European system of proficiency testing through certification of such people. An important aspect is depriving Inspectorates of unattributable functions, privatization of a technical component of the construction control, involving non-governmental organizations being participants of the construction market in exercising control over the activities of its members, strengthening liability of persons engaged in designer and technical supervision, etc.

Improvement of legal regulation. In order to ensure the effectiveness of state architectural and construction control, it is necessary to focus on ensuring the sustainable development of territories in accordance with the Global Concept, taking into account 17 sustainable development goals defined by the United Nations [15], as well as to ensure harmonization of the public and private sector interests for the implementation of rational cooperation mechanisms in the construction market. One of the priorities of the state architectural and construction control should be not to ensure formal compliance with legislative norms, but their specific focus on ensuring safety of construction at different stages of the facility life cycle.

Having carried out a comprehensive analysis of the construction state control system, it can be concluded that the mechanisms of state regulatory policy at this development stage of the public administration system in construction are not effective enough. Despite numerous restrictions and sanctions established by the legislation, there is a rather low level of development quality in Ukraine in comparison with standards of the EU countries. Construction is accompanied by bureaucratic barriers and a high level of corruption. The first stage of solving problems as to improving the efficiency of architectural and construction control is analysing international practice and the domestic legal framework to determine ways of its improvement and bringing it in line with international standards.

On the way of transformation processes, an important stage is the creation of an open market that would ensure the proper qualification and a

high level of responsibility of those organizations that would be entrusted with the authority to implement mechanisms of architectural and construction control. This refers to conditions for the implementation of construction projects through a system of public-private partnership, the creation of a legal framework for the introduction of consulting engineer institution to the market, which could provide consulting, audit services at various stages of the construction project both at the state, regional or local levels, and with project owners on a contractual basis. Related industries serving the construction processes, in particular production of building materials, also require the introduction of market surveillance, the quality of which determines reliability and safety of the construction site. The powers of designer and technical supervision should be implemented in the system of "state regulation – private investment – public supervision", which will increase the effectiveness of control.

An effective mechanism implemented in the global practice is insurance of the construction project (complex of works) and civil third-party liability of all participants. The traditional system of state control does not provide for indemnification by a specific partner of contractual relations, while it is insurance that provides such opportunities. Insurance can become an alternative to the permitting and control functions of the public administration system and ensure not only the quality and safety of construction, but also the interests of all stakeholders in the construction market. Bureaucratic obstacles as a negative factor in the system of state control can be overcome by replacing permitting and control procedures with insurance mechanisms for indemnification in construction through reducing the level of state regulation and control over the insured objects, strengthening the role and liability of insurance companies when taking the works into operation and during the defects notification period. The expediency of insurance development in construction has already been determined among the priority measures in reformation, which is reflected in UKRAINE 2020 Sustainable Development Strategy [16], the Action Plan for deregulation of economic activities approved by the Government [17], and other documents.

Construction quality supervision requires tightening. Under the Law of Ukraine "On Architectural Activity", "...in order to ensure that actors of architectural activities comply with the approved urban planning and other design documentation, initial data requirements, as well as to ensure the state protects the rights of construction products consumers, state architectural and construction control and supervision are operated under the law" [18]. Based on the legislation, the state architectural and construction control must ensure the quality and reliability (safety) of construction. However, the analysis of the Code of Ukraine on Administrative Infractions and the Law of Ukraine "On Responsibility for Violations in the Sphere of Town Planning" showed that the state architectural and construction control focuses mainly

on ensuring compliance with the organizational and legal procedure of construction, setting aside safety, construction technology and quality of the final product. Therefore, it is reasonable to make amendments and additions to the legislation on:

- balancing sanctions for non-compliance with technological and technical standards both for separate processes and construction operations as a whole;
- differentiating functions of state control by transferring the functions of technical and technological control from state bodies to market institutions (self-regulatory organizations and other professional associations, which shall act in accordance with the legislation defining the process of delegating the function of technical and technological control to the public sector and the public in order to ensure transparency of control processes);
- transparent and effective insurance system with due regard to reputation risks.

The system of sanctions provided for by legal acts does not always comply with the general principles of legal liability. In particular, the transfer of design documentation developed in breach of the law (for example, inclusiveness or provision of utilities supply) to the employer provides for a fine. The fine is the same regardless of the severity of the violation, the scale and specificity of the works, the degree of risk. That is, the same fines are provided, for instance, for a private house and a large shopping mall. This is a violation of the principle of justice of legal responsibility. Therefore, it is advisable to differentiate the liability of urban planning entities for violations in the development of design documentation according to the specifics, the scale of the works and the damage caused (or the potential scale of the consequences).

In Ukraine, the majority of enterprises providing utility services are monopolists. Natural monopolies also have a dominant position in the issuance of technical permits for the connection of taken-over real estate items to utility networks. Obtaining technical specifications and connection of the built facility to utility networks is made in coordination with the municipal enterprises. The law establishes that enterprises providing technical specifications for the building services of a construction project are liable in the form of a fine for submitting inaccurate information as part of the previously provided technical specifications, refusal to provide technical specifications or failure to submit them within agreed time; failure to conclude an agreement on providing building services of the construction project based the provided technical specifications or failure to connect the construction project to utility networks as specified in technical specifications and the agreement on providing building services of the construction project concluded by the parties. However, enterprises providing technical specifications do not belong to the bodies of state architectural and

construction control, therefore employing sanctions to them becomes challenging, and the rules on their liability remain unfulfilled. At the same time, the monopoly position of such enterprises allows to drag the procedures for providing technical specifications and connecting facilities to utility networks, which in some cases leads to the establishment of corruption schemes. Therefore, an important step in improving efficiency of the permitting procedure for connecting construction projects to utility networks is to create a possibility for the application of sanctions defined by law by means of expanding the concept of state architectural and construction control, transferring them to the jurisdiction of construction supervision and control bodies or other regulatory bodies.

Non-compliance with the legislation is also observed in the following legal conflicts:

- establishment of control procedures at the level of government acts, not the law;
- the lack of development of market surveillance mechanisms in building materials production;
- unreasonable closing down of preparatory and construction works, etc.

The absence of sanctions against construction participants is unjustified, in respect of which the law provides for liability within the framework of state control, in particular for:

- failure to provide inspection and passportization of facilities, breach of the procedure for such inspection and failure to implement measures for reliability and safety during operation;
- violations in the development and expert evaluation of city planning documentation, non-compliance with the established terms of the expert evaluation;
- unauthorized use of information on qualification certificates of specialists of certain types of work on the creation of architectural works, etc.

Thus, as a result, the study identified a number of problematic aspects regarding ensuring the effectiveness of state architectural and construction control which hinders further development of the construction market. Priority ways to address this issue are as follows:

1) improving legislation on state architectural and construction control by bringing it in line with the Law of Ukraine "On the Principles of State Supervision (Control) in Economic Activity", making amendments and additions to the Code of Ukraine on Administrative Infractions, the Law of Ukraine "On Regulation of City Planning Activity" and the Law of Ukraine "On Responsibility for Violations in the Sphere of Town Planning";

2) introducing market surveillance over the production of building materials and products, since the quality of building materials, which directly determines the quality of the final facility and the safety of construction, can

not be attributed solely to the responsibility of developers who use those building materials that are placed on the market;

3) introducing the insurance system and replacing a part of the control and permitting system by market insurance mechanisms through:

- strengthening the role and liability of the insurer during the taking-over of the facility and during the defect's notification period (providing quality assurance instead of registering the act of operational readiness),

- decreasing the level of state regulation and control in respect of the insured objects without the submission of an act of readiness, replacing scheduled inspections of regulatory bodies with insurer auditing;

4) assigning liability for verification of compliance with the reliability and safety requirements for the construction project, its compliance with the established requirements and design documentation to insurance companies, consulting engineers and specialists engaged in designer and technical supervision of the construction of such facility, involving non-governmental self-regulatory and other professional organizations in workmanship control.

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Technical regulation in construction as a market-appropriate instrument of safety requirements compliance throughout the facility's lifecycle

Decrease in the investment activity on the market results logically in fiercer competition among suppliers of goods, works, and services. On the modern legal terrain in Ukraine, contractors and suppliers have competitive advantages if at the time of investing they offer their goods, works, or services with a single feature, "the lowest price." Simultaneously, such remote consequences as effective operation period of a facility (including structural and mechanical systems), environmental affect compensatory measures, social risks (in case of emergencies during real estate operation) is usually left out of sight of construction owners. The current situation brings on a number of consequences with the most sizeable being unpredictable scale of hazard to human life and activities and environment, reduction in investment realization effectiveness, and domination of unfair competition on the construction market. Technical regulation is one of the most efficient market regulation instruments aimed at risk mitigation. Pursuant to the Law of Ukraine "On technical regulations compliance assessment," technical regulation is legal regulation of relations in the field of identifying and meeting mandatory requirements for product specifications or related processes and production methods, as well as verifying if they are met by assessing the compliance and/or governmental market supervision and control of non-food products or other types of governmental supervision (control) [1]. Meanwhile, it should be noted that technical regulation in construction differs significantly from regulation in other economy sectors, which is confirmed by experience of technically and economically developed countries, particularly the European Union member countries.

It is common knowledge that technical regulation is an open system undergoing constant development in terms of fundamental provisions, formation methodology, organizational activities for support and implementation.

In Ukraine, one of the acutest problems is non-spreading of the technical regulation instrument over the facility's operation period, an investment project stage when many risks are realized, whose losses amounts are dozens of times bigger compared to other stages of the facility's lifecycle.

Thus, the research objective is to analyze the system of technical regulation in construction in Ukraine and prepare suggestions as per its improvement and development.

Relevance of the research subject is determined by the authors' attention to the problem of regulatory support to the facility construction and

operation field and potential risks that can arise at any stage of the facility's lifecycle. Issues of the construction development communicative strategy were reviewed in the works of O. Romanenko and I. Chaplay [2-4]. O. Nepomnyashchyy defined prospects of fulfilling interrelations between the public and private sectors to ensure innovative development of the construction sector in compliance with the European standard of economic system [5-6]. Instruments of forming and fulfilling the potential of construction enterprises development were analyzed in the work by O. Ugodnikova and K. Mamonov [8]. A thesis research by V. Yolkina studies the transformation processes on the real estate market, which are going on in the conditions of the economy assuming the European integration vector [9]. A research by V. Durytsky [10] identifies organizational and economic mechanisms of establishing and developing the real estate market. A work by S. Slobodianiuk, O. Danchuk and V. Senchuk [11] analyzes the regulatory and legal base of construction in Ukraine and compares it with global practices and tendencies and provides improvement recommendations. A detailed analysis of foreign experience in building up technical regulation systems was conducted by A. Serykh [12]. Yet, there remain unsettled several issues related to regulatory support of separate stages of a construction project lifecycle.

Under the Ukrainian Constitution [13], the state guarantees the citizens a right for a healthy environment that is safe for living in. The Commercial Code of Ukraine [14] defines technical regulation as one of the basic means of the state's regulating influence on the economic operators' activities. Being a public administration form in construction, technical regulation is assigned with fulfilling civil rights through meeting the requirements of technical regulation during the entire lifecycle of facilities (from making investment intentions to demolition and disposal of materials and waste) and simultaneous ensuring a favorable environment for business development, attraction and protection of investments, and consequently, ensuring sustainable development of territories.

Mandatory availability of the Technical Regulation as a regulatory documents is stipulated in the Agreement and Law of Ukraine "On technical regulations and compliance assessment" [1]: "technical regulation is a normative and legal act that defines the product specifications or related processes and methods of manufacturing including corresponding procedural provisions that are mandatory to observe..." Part 1, Article 9 of this law specifies that technical regulations determine governmental requirements for the products' safety to consumers and the environment and form requirements for allowed risks when using the products, i.e. those designed to ensure protection of consumer rights and not regulation of the commercial operations economic aspects.

In the construction sector, the above legislative requirements are ensured through the "Technical regulation for construction materials of

buildings and structures" [15] that implements Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products [16] to the Ukrainian legislation and takes in to account sector-specific features of technical regulation and identifies the criteria a consumer needs for safety and reliability of construction facilities in the form of basic requirements.

Compliance with the basic requirements of the Technical Regulation at the initial (planning, design, construction, and commissioning of a facility) and at the final (destruction) stages of a facility lifecycle is provided through applying the construction norms that under the Law of Ukraine "On construction norms" [17] are bylaws of technical nature, which contain obligatory requirements in the field of construction, urban planning, and architecture; and regulatory documents (standards) that are mostly voluntary to apply in accordance with the Law of Ukraine "On standardization" [18].

However, today neither the Ukrainian housing laws, nor the construction norms or current standards stipulate any provisions that ensure abiding by the basic requirements during operation. The longest, most expensive and important to a consumer stage of the lifecycle – operation is unregulated by laws and norms. In fact, there is no mechanism how to fulfill the Technical Regulation's requirements at the operation stage. Practical use of technical regulations, standards, codes of practice, and technical specifications, which is determined in the Commercial Code, legislates general European approaches to building up a legislative and normative basis of technical regulation.

To better understand the existing situation, we shall review the current model of normative regulation of construction in Ukraine. The nowadays model of normative regulation of construction is built similarly to the European model that worked from 1988 to 2011.

In 1988, the EU adopted Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products. The Directive's peculiarity is justified by a specific nature of construction products (materials and manufactured articles) as a component of more complex products – structures, whose production requires considering local climatic conditions, physical and mechanical specifications and properties of raw materials, and other factors. Directive 89/106/EEC differentiates between the notions of construction products and construction works: construction materials and manufactured articles belong to construction products, while structures are construction works. At the same time, the document states that the works in general and their separate parts can be suitable for target use with a due account of sanitary and safety rules throughout the entire lifecycle of the facility. Provided that the facility is properly maintained, it should meet the basic requirements during the economically viable operation period. The

Directive was applied to construction materials to the degree the basic safety requirements are used, which are imposed on structures.

The EU legislation stipulates that construction products can be manufactured in any country of the world, transported around the EU freely and used in real estate facilities on condition it meets its safety requirements, whereas real estate facilities are beyond the EU governing agencies competence. In their relation, Directive 89/106/EEC makes the issue of ensuring the construction products safety dependable on the fundamental requirements for safety of the structures where these construction products are used in construction and operation. The requirements can influence technical specifications of construction products and are presented as the regulation goals guiding the national legislation of every single EU member country. Every EU member country independently sets specific construction norms for design, construction and operation of facilities as well as mechanisms to control that the set requirements are being met because ensuring safety of real estate facilities is a sovereign right and duty of authorities of the country where the construction facility is located.

In 2011, Council Directive 89/106/EEC was replaced with Regulation (EC) No. 305/2011 of the European Parliament and Council, which repealed Council Directive 89/106/EEC and laid down harmonized conditions for the marketing of construction products [19]. The repeal was preceded by several problems linked to applying the Directive's requirements as it had been a framework law presumed to be implemented by the EU member countries at the national level and allowed to make amendments that considered national features. Such approach enabled member countries to build additional technical barriers to the goods and services flow, which contradicted general EU policy. Regulation (EU) No. 305/2011 is a direct-action law that does not need national implementation. Besides, the national normative regulation model remained almost unchanged. In particular, the Regulation differs from the Directive by setting up equal conditions for marketing of construction products, improved mechanism of compliance assessment, increased responsibility of construction products manufacturers, added seventh safety requirement advocating a need for well-balanced utilization of natural resources.

The Directive (now Regulation) states that facilities must be designed and built so that throughout their lifecycle they ensure:

- mechanical resistance and stability;
- fire safety;
- hygiene, health and environment;
- safety and availability to use;
- noise protection;
- energy saving and heat retention.

Basic requirements are detailed in corresponding interpreting documents with a purpose of setting interrelation between the Directive's

basic requirements, standards, and European technical rules. The harmonized standards are divided in two categories: category A standards (Eurocodes) and category B standards for various types of construction products. Eurocodes contain requirements for design and erection of building structures and consist of 10 standards made up of 58 parts. Category B has around 3000 standards.

In Ukraine, the system of normative regulation in construction is built according to the European system that existed from 1986 to 2011: technical regulation of construction products, buildings and structures sets six basic safety requirements; six SCN (state construction norms) implement requirements of the six European interpreting documents of Council Directive 89/106/EEC, which specify basic safety requirements; to make structural calculations, one can use a SCN or Eurocode.

Figures 1 and 2 show model systems of normative regulation in construction in the EU and Ukraine.

Fig. 1. Structure of normative regulation in construction in the EU before 2011

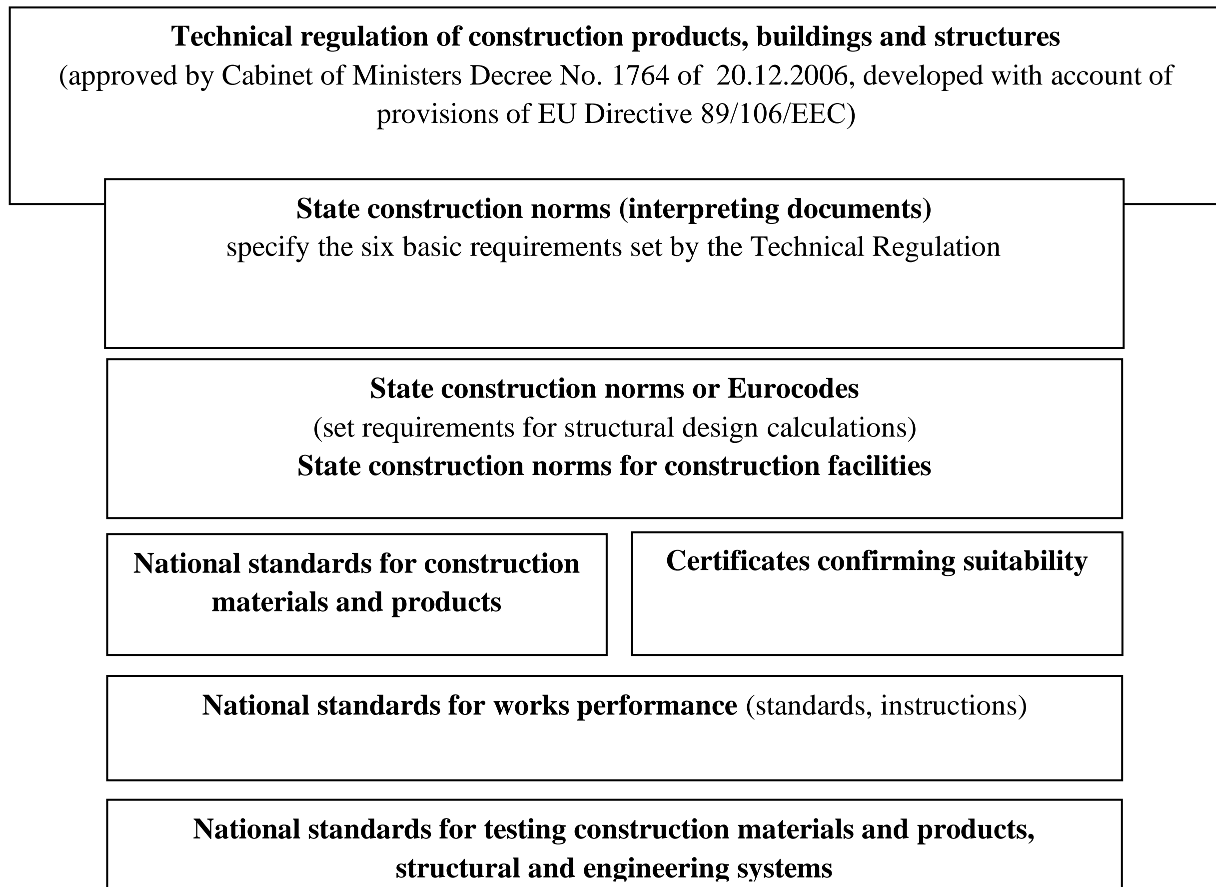

Fig. 2. Structure of normative regulation in construction in Ukraine

Despite similarity of the systems, still there are significant differences from the updated system of legal and regulatory support in the European Union, and these differences should be removed.

Another trait of the Ukrainian technical regulation system, which is different from best global practices is approaches to using the construction norms and standards. In the European Union, regulatory documents are voluntary to use. Moreover, voluntary use of certain standards (construction codes – Eurocode, and relevant harmonized standards for construction materials and products listed in appendix to the Regulation) proves that requirements of Regulation (EU) No. 305/2011 are observed. Simultaneously, a manufacturer can prove compliance with Regulation (EU) No. 305/2011 in any other manner, yet such process is lasting and very costly, and this right is used as an exception. In practice, these documents become mandatory to use.

In Ukraine, confirmation of the Technical Regulation requirements observance is application of the regulatory documents that are mostly voluntary to apply. Adoption of the law of Ukraine "On construction norms" in 2009 gave the construction norms a status of regulatory act of technical nature, which separated them from normative and legal acts but preserved mandatory status of requirements of this document category. In 2010-2015,

almost 300 construction norms were reviewed, and after that most of them gained a voluntary-use status of national standards or were cancelled.

Traditionally, it has come to pass so that current construction norms have an instructive nature and are overregulated, which prevents new technologies and materials form transparent and quick marketing. In the instructing normative system, construction norms are treated by specialists as a principal regulatory document in the sector, whose requirements observance confirmation gives a start to any design documents. Therefore, improving regulation in the field of construction must be accompanied by transition from the instructive manner of setting norms, which was common to economy management in the former USSR, to the parametrical manner consisting in setting the parameters (goals, criteria, requirements for operational specifications or indices) regarding safety, functionality, and quality of the regulation object.

Construction facilities have special features taken into account in the current Technical Regulation that defines safety and reliability criteria important to the consumer, in the form of basic requirements. However, changing the regulation method in construction from the instructive to parametrical one in the current transition period requires that traditions and common practice that was formed in the previous decades be observed.

Changes in legislation over the past few years have significantly altered the official approaches to technical regulation, which has increased the need for appropriate coordination of all elements of the legislative and regulatory system in the construction sector. The current legislation authorizes the Ministry of Regional Development to resolve problems of improving the sectoral regulatory base, including in the field of technical regulation and norm-setting in construction.

Implementation of requirements of the Law "On amendments to certain legislative acts of Ukraine concerning improvement of urban development" [20] and bylaws for its implementation was not aimed at solving the problems of technical regulation in construction. The main conflict of inconsistency between requirements of different documents in providing technical regulation is caused by a traditional vision of the facility's lifecycle stages affected by construction norms. In the period of transition to the parametric method of norm-setting, the role of construction norms is transformed from the principal sectoral regulatory document into a normative act interpreting the mechanism that checks observance of the Technical Regulation's basic requirements in the architectural and construction facilities during their lifecycle and contributes to ensuring stability of consumer properties of the facilities, their safety and reliability.

A step towards further transformation of construction norms should be amending the Law of Ukraine "On construction norms," which should consolidate further development of the construction norm system by means of parametric norm-setting and give an impetus to its further revision.

Unlike the Technical Regulations, whose mandatory requirements are determined at the legislative level, the standard is defined as a document containing requirements for general use, which are voluntary to observe. In 2015, having passed the new Law of Ukraine "On standardization," Ukraine made a significant step towards approximating the national legislation to the European one, prioritizing voluntary application of standards and delegating the standardization functions from the central executive authority to a state-owned enterprise.

In the EU, national standardization bodies are mostly non-governmental structures. In Ukraine, it is still the state. According to the new Law of Ukraine "On standardization," functions of the national standardization body are performed by the state enterprise "Ukrainian research and training center for standardization, certification and quality" (UkrNDNC). Standards are being directly developed by technical committees for standardization and enterprises, institutions, and organizations that carry out standardization, but the state is still playing a major role. For a long time in the European Union, it has been business who "produces the standards," which makes it possible t market the products faster. The state will never be able to keep up with the development of cutting-edge technologies and will be chronically lagging behind in developing relevant standards. In the EU, all stakeholders are involved in the standards development, and the state defines as mandatory only fundamental safety parameters. The standardization organization, CEN (European Committee for Standardization) adopts standards aimed at meeting these requirements.

Based on the above, one can ascertain that the standardization system in Ukraine needs further denationalization and transition to public administration. It is reasonable to consider possible establishment and operation of technical committees for standardization in the form of self-regulated non-governmental associations that will develop state regulatory documents on economic grounds, except for those whose binding nature is established by regulatory acts. Such standards should be publicly available free of charge and developed with state support (provision) of financing.

As mentioned above, the construction sector has a specific character, different from other branches of the national economy, which is connected not only with the use of the mandatory Technical Regulation (regulatory act), but also mandatory construction norms (normative act), whose application is regulated by Law of Ukraine "On construction norms." The Law also states that "... if the construction norms refer to standards, then these standards are mandatory to use." Thus, the Law of Ukraine "On construction norms" establishes another case of the standard being compulsory. This substantially broadens the scope of mandatory standards in the sector, which is unsatisfactory in the conditions of instructive regulation and does not facilitate the advancement of new technologies and materials on the market.

Thus, the two laws, "On standardization" and "On construction norms" require mutual harmonization in terms of applying the standards.

Recognition of the standard as a normative document voluntary to apply is a guarantee of the technical regulation system's flexibility and allows to remove various barriers when introducing new technologies, materials, or equipment, allows an economic operator to make a free and optimal choice of products options, which are involved in kits production provided that they meet requirements of the Technical Regulation for the performance features of these products, which are specified in the applicable standards.

One more problematic issue is the consistency of the standards and construction norms requirements. Since 2016, the Ministry of Regional Development has had no standardization authorities under the ICS 91, 93 codes, therefore it practically does not regulate standardization in the field of construction, does not act as a customer of standards development or update. Thus, the relationship of the documents complex in the field of construction, which are aimed at providing a safe and comfortable environment through the normative system of requirements "technical regulations – construction norms - standards" is gradually being lost.

The construction industry should ensure on a general basis compliance of the products put into operation with the requirements of the current Technical Regulations, which are currently a source of the safety criteria defined by the state on behalf of the civil society.

Since the main objective of normative support is to ensure protection of consumer interests when using construction products, efforts to reach this goal are focused on the achievement and maintenance of appropriate parameters of the works and their structural and engineering systems at the operation stage, that is, when the facility is being used. But introduction of such European approach to unifying the requirements for the facility safety throughout its lifecycle is hampered by the old ideology of normative regulation, which limited and continues to limit the validity of construction norms to the facility commissioning stage.

Such approach to the construction norms application led to the interagency distribution of the works maintenance at various lifecycle stages and subordination of the facility operation to the housing and utility sector. At the legislative and regulatory level, a paradox was created when the design, construction, reconstruction, rehabilitation, and demolition of buildings are based on the construction norm requirements, and their operation is carried out without taking them into account. This creates conditions to lose the normative safety level at the operation stage, which was introduced during the design and construction and confirmed by the construction inspection certificate at the stage of its commissioning.

It is noteworthy that in the sector of housing and utilities, there are no departmental documents of the normative act level, which are mandatory to perform and provide reliable and safe operation of housing and public

facilities on the basis of technical regulation. Thus, the only legal and regulatory document that contains requirements for safe operation of housing and public buildings in the governmental technical regulation system is the current Technical Regulation.

Whereas basic performance characteristics are laid down during the design and construction, and the Technical Regulation requirements must be observed throughout the entire lifecycle, it is reasonable to extend the construction norms for the works operation period, with separate sections providing recommendations for the operation of specific facilities. In addition, with the development of construction technologies and emergence of new materials and equipment, the works become more complicated technically, and it is next to impossible to ensure their normal operation without establishing certain design solutions, so the mandatory section of the design documentation should be a section related to the operational features of the structure, which is being designed.

It is reasonable to ensure the necessary extension of the construction norms validity to the operation stage at the legislative level when preparing amendments to the Law of Ukraine "On construction norms" by including the operation stage in the lifecycle stages.

The aforementioned proposal on legislative extension of the construction norms area of use to the facility operation stage will prevent a conflict that may arise in the event the draft Law of Ukraine "On basic requirements for structures, and conditions of construction products marketing" is passed and effected, which means implementation of the provisions of European Regulation No. 305/2011. In this draft law, the life cycle of structures is interpreted as successive stages of making and operating the works, starting from design and ending with dismantling. That is, the modern European approach adopted in the new law, to the technical regulation requirements for construction products will take into account the operation stage covered by the mandatory requirements of the Technical Regulation. Legislating the interpretation of the Technical Regulation basic requirements by construction norms without extending these norms to the facility operation stage excludes the possibility of normative support to creating and monitoring "conditions of normal maintenance of construction facilities," which makes it impossible to operate the facilities in accordance with the European Regulation. It is necessary to remedy the situation in the technical regulation of construction, knowing that the suitability for use is only created at the design and construction stages, but is evaluated during operation, i.e. when the facility is used for its intended purpose.

Corresponding approaches to prioritizing the basic requirements of the Technical Regulation should also be reflected in the current legislation. Article 96-1 of the Code of Ukraine on Administrative Offenses [21] states that it is a violation of the legislation when during planning and development of territories the client is given the design documentation to do construction

works on a site, if the developed documentation infringes the legislation requirements, as well as urban planning documentation, initial data for the facilities design, construction norms, standards and rules, including those to creation a barrier-free living environment for persons with physical limitations and other people with limited mobility.

If basic requirements of the Technical Regulations, mandatory for all economic operators, or simply the Technical Regulation are absent in the violations list, it leads to its being ignored by leading specialists in the industry. A regulatory act valid for two decades is not perceived as a document whose ignoring can make a problem for a specialist and consumer. The list of violations mentioned in the article became a well-established practice of a common notion in the society about a deviation from the normal and permissible. However, the list of the standards violations does not take into account peculiarities of their application, defined at the legislative level: "National standards and codes of established practice are applied on a voluntary basis, except for cases when their application is established as mandatory by regulatory acts." That is, compulsoriness of a standard arises only in some cases, while violation of its requirements is always interpreted as an administrative offense. It is necessary to review the current legislation and clarify the wording in order to bring it in line with the priorities of the technical regulation system. This applies, for example, to Articles 96 and 96^1 of the Code of Ukraine on Administrative Offenses, where it is the text "of construction norms, standards and rules" should be replaced with "regulatory and normative acts, mandatory normative documents," or to substitute "normative documents set as mandatory by regulatory acts" for "mandatory normative documents". The negative effect of the construction norms limitation at the building operation stage has affected the attempts to create a barrier-free living environment for persons with limited physical abilities and other people with limited mobility at the existing facilities. Attempts to improve the accessibility conditions of people with disabilities at the governmental level by introducing corresponding requirements in licensing conditions of economic operations confirmed that the current normative base if imperfect. Thus, Part 28 of the licensing conditions of economic operators providing financial services [22] stipulates that "Premises where customers (consumers) are serviced must be accessible to persons with disabilities and other people with limited mobility in compliance with the state construction norms, rules, and standards."

Considering the above, priority in the future should be given to forming the ways of public risk management through technical regulation, which include:

- distribution of general principles of technical regulation and technical regulations requirements on the final product of construction - facility;

- legislation of the risk management public system, primarily in the construction and housing sectors;
- bringing the regulatory base of construction and housing sectors to common principles of technical regulation and the rule of the technical regulation;
- introduction of a parametric method of norm-setting;
- setting the requirements for the operation of buildings and structures at the design stage, which, subject to the implementation of the measures envisaged by the design project, will ensure safe use of the facility for its functional purpose during the established period of operation.

The presented features of introducing modern international policies of technical regulation in the construction industry indicate the need to take measure to bring the current regulatory framework in compliance with the requirements of the Agreement and create conditions for the avoidance of technical barriers in the country's economic operations on the domestic and international markets. The most relevant thing when taking these measures is to solve the following issues:

1. It is necessary to eliminate the artificial sectoral division of buildings and structures lifecycle in construction and operation stages. It needs to establish a real cooperation between the construction and housing departments of the Ministry of Regional Development in defining a unified approach to ensuring the priority of the Technical Regulation basic requirements, taking into account the applicable regulatory and normative acts, rules, and norm-setting documents.

2. The intentions for appropriate changes in approaches should be formulated in the form of a concept for the support to the technical regulation system during construction and operation of buildings and structures, primarily of housing and public purpose.

3. Comprehensive notion of the possibilities and directions of improving the normative acts and documents base encourages the definition of new forms of ensuring the parametric method of assessment principles, necessary time and resources, reasonability of attracting international assistance and consultations.

4. It becomes urgent to review and amend (if necessary) draft regulatory acts prepared by the Ministry of Regional Development and bring them in line with the conceptual foundations of technical regulation of the facility properties at all stages of its lifecycle. It is necessary to urgently make final legislative clarification of the status, the regulation zone and place of construction norms in the technical regulation system, as well as introduce a new version of the sectoral Technical Regulation identical to the European one. Corresponding draft laws are being studies in the Verkhovna Rada of Ukraine and in some aspects, they require synchronization in accordance with the conceptual policies.

5. If the provisions of the mentioned draft regulatory acts are clarified, there will be a need to revise the draft laws being reviewed by the Verkhovna Rada and designed to resolve socially important problems of ensuring accessibility to people with disabilities and limited mobility.

Tasking the proposed set of measures requires solving organizational and legal problems at the inter-sectoral level but avoiding them increases the risk of mothballing the differences between national and European approaches to technical regulation in the construction industry.

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Assessment of system for country macroeconomic risk management taking into account the environmental component

The study provides an original methodology for forming the system for macroeconomic country risk rating taking into account a number of environmental factors, negative impact of which is directly related to the state of economic instability. The issues of using the proposed methodology for assessing the country risks under conditions of macroeconomic instability and development of a mechanism for blocking the negative impact of factors causing the excessive macroeconomic instability (singularity) are considered. We believe that in macroeconomic risk management the following main trends can be noted: identification of propensity of certain countries or regions to certain risks; need to take into account the increasing interconnection in risk transfer between countries that are not only at the same development level and connected geopolitically, but also those that are thousands of kilometers apart and at different development levels (for example, between developed and developing countries); significant complication of risk materialization processes, all their manifestations and internal structure; identification of interaction of different risk categories (political, economic, environmental, social); formation of more complex tools, technologies and techniques in the risk management allowing adequate response to the risk management complication processes; transition in the risk assessment infrastructure represented by agencies, centers and other structures to the integrated and aggregated assessments taking into account a combination of risks (for example, political and economic; cumulative political, economic and financial; macroeconomic and financial, etc.).

Using the example of two European countries – Bulgaria and Poland – we can trace that different groups of factors determine the manifestation of political, financial, economic and environmental risks. Scientists V. Mau and A. Uliukaev believe that the most important contradiction in the economic systems is the conflict between global nature of finance and national framework of its regulation [1, p. 6]. Thus, the greatest economic imbalances arise with development of globalization processes and liberalization of capital movements accompanying it. At the same time, these reasons are objective and logically determined by the course of civilization history.

However, the studies carried out by scientists from different countries show that in specific regions and countries more frequent crisis phenomena caused by economic risks and phenomena of instability are observed as compared with other regions [2]. During scientific discussions there is a question how country risks can be reflected on the worldwide trend and risk situations on an international scale.

One of the latest studies of the research department of Federal Reserve Bank of St. Louis Research Division identifies four groups of countries experiencing specific recessions regarding global ones. Such significant factors as geographical proximity defining synchronization between the countries; degree of trade and finance liberalization; development stage; institutional factors (in particular, legal system and linguistic diversity) are identified. The key indicators of the period of global recessions are asset prices; movement of real estate prices and changes in price of shares (the latter two are most common to European countries). The clusters, including the United States and other English-speaking countries, were open to many global shocks, including geopolitical uncertainty [3, p. 23].

The interesting study was obtained as part of preparation of the Working Paper of the European Central Bank. The researchers from the European Central Bank and several European universities obtained several results showing that there is the default risk cycle itself in the world space that differs from macroeconomic or financial cycles. The study showed that the systematic risk is only 18-26%, and the rest refers to specific risks. The share of systematic risk increases to 39-51%, if systematic industry fluctuations are "attached" to the volatility. The overall impact of macroeconomic factors at the global and regional levels explains 2-4% of the total default. The contribution of specific risk factors gives 7-18%, regional factors give 1-11%. The industry factors have the most significant impact - up to 17-31% [4, p.7]. It was also noted that all risk factors are very stable, especially industry factors with autoregressive coefficients up to 0.98.

Thus, the above studies show that macroeconomic risks are caused more by national features (production structure, degree of development of certain industries, political challenges, social miscalculations) than systemic risk-contributing factors (geopolitical, mutual impact of stock markets and banking system, etc.).

The ever-increasing role of the risks associated with development of technology in XXI century is significant and relevant. One of the sources of macroeconomic instability includes technology-related risks. The technology-related risks are so associated with the whole complex of macroeconomic, political, social and environmental risks that it is impossible to disregard their impact on the national economy.

The technology-related risks are associated with increase in negative effects of the use of modern technology, need to protect the processes from the unpredictable and irreversible impact of the natural environment, prevention of incompetent or malicious actions of individuals or social groups in relation to technology-related systems [5]. The specific "expansion", development of technology-related risks in the overall circle of public life risk is caused by rapid technological development in the global world, which, in turn, creates new risk problems in societies with permanent modernization transformations. The risks arising from such innovative areas as

biotechnology, genetic and information technologies (R. Coombs, P. Saviotti, A. Trekrey, W. Walsh and others) are at the forefront of new technology-related risks. The areas of potential distribution are "high-tech" regions, technopolises, science cities, innovation clusters, etc.

The main attention while studying the technology-related risks is paid to the environmental consequences of modern technology-related impacts. The technology-related environmental crimes (for example, anthropogenic pollution when implementing the industrial policy, desertification, changes in the composition of soils due to their improper use) have serious impact not only on national security system of a particular state, but also on global environmental security.

Today, ecology is perceived as one of the most significant factors not only of social well-being, but also of economic prosperity. At the same time, at the end of XX - beginning of XXI century, ecology became one of the main risk-contributing factors. A. Giddens, famous sociologist, in his article on risk and uncertainty noted that "chance and risk are integral parts of the system seeking to establish the domination over nature and reflexive creation of history" [6, p.107]. Moreover, it is to be noted that there are environmental growth inhibitors that can have adverse impact on the economy and impede the social and economic development of society [7, p.3]. Due to the above, we believe that it is possible to identify one more type of risk - environmental and economic associated with inefficient state policy in the field of natural resource management. It occurs as a result of systemic ecological imbalances that lead to environmental disasters requiring significant public financial resources and exacerbate the economic instability in the country.

The environmental risks can be shown as: increase in the number of environmental disasters and extreme weather; increase in and greater impact of natural disasters; increase in consequences of environmental disasters caused by human factors (accidents at nuclear power plants, oil spills), ecosystem imbalance associated with significant decrease in biological diversity in many parts of the land and ocean; depletion of freshwater resources [8].

The evolving risks landscape proposed in the materials of the World Economic Forum The Global Risks Report 2017 notes that during 2007-2010 the environmental risks were not listed as top 5 risks neither by materialization probability, nor by their impact. Since 2011, the environmental risks have been in top lists every year. In 2016, the environmental risks take three positions of top 5 factors according to materialization probability and one position of top positions by level of impact. In 2017, the environmental risks took 2 positions by materialization probability and 3 positions by level of impact [9, p.78]. The environmental factor acts as the limiter in terms of economic policy implementation, innovation introduction and society development determining the scale and

intensity of business management both on scale of the entire economy and within individual spheres and industries.

The environmental policy implementation affects macro-, meso- and microlevel, where the first one is the most significant. The elimination of the consequences of some technology-related disasters sometimes requires significant economic resources of the state. Thus, the economic consequences of the accident at Fukushima-1 nuclear power plant in Japan (2011) led to deterioration in the trade and economic balance of the country. This was because the government decided to stop all nuclear power plants in Japan for a period of five years, which, in turn, affected the decline in energy efficiency of the entire region.

At the same time, at the mesolevel the environmental problems are localized within a certain area, which, on the one hand, facilitates the processes of control and management of their solution, and on the other hand, increases the subjectivity level both when assessing the scale of negative phenomena and when choosing the tools for situation management. The microlevel creates minimum threats. At the same time, organization of risk management at separate enterprise is a rather subjective process. When collecting and accumulating, the unsolved problems at the microlevel can cause an explosion and materialization of macroeconomic risks at higher levels (as it was at the accident at Chernobyl nuclear power plant in Ukraine).

There is a clear need to improve the already existing social strategies, technologies and methods for prevention of main technology-related threats, as well as to further develop and introduce new ones (considering changes in the human environment). The processes of eliminating the consequences of technology-related disasters threatening the state security should be preceded by a system of preventive measures of financial, economic, legal and organizational nature. These measures should be aimed at creating reliable systems of technological risk management in the context of global control over the risk nature of modern public life. However, there are additional challenges associated with the possibility of timely ratification and/or implementation of system decisions (strategies) caused by specific nature of specific social and economic, social and political and social and cultural conditions. So, despite the special status of environmental problems in the XXI century, the conflict of interests on problems of ecology and quality of life between public authorities and local ethnosocial communities is inexhaustible. The lack of system planning, strategic forecasting, timely response and effective control mechanisms are just part of the problems associated with government regulation of the system for preventing technology-related disasters.

The states should adopt a number of tools to manage the environmental risks and their consequences, which are shown also in the economic sphere. Such tools are forecasting, identification and assessment of the size of environmental and economic risks. There is an urgent need to develop the

country risk management structure covering all components of country risk, including environmental and economic (technology-related). The setting of limits (restrictions) for key country risks is an important component.

The risk management provides for institutional support – relevant unit that will be able to conduct in-depth analysis of risks based on mathematical methods. The Fig. 1 shows the proposed model for country macroeconomic risk management reflecting the external and internal factors, main risk categories and changes in national economy and ecology. Since the previous risk typology does not always provide an accurate threat survey map, the problem of adjusting, supplementing, and sometimes serious revising some methodological approaches of riskology becomes relevant. The number of risks is growing along with processes of global economy formation; there are problems of their exact typologization. In this situation, there are additional difficulties associated with creation of effective risk management models that would take into account the features of modern social and cultural dynamics.

It should also be noted that control and monitoring of risks should be supported by processes of sufficient financing. These actions should include development of a clear strategic risk management plan with details for performing tactical moves and actions. The financial plan should include the search for enough financial resources for implementation of preventive measures, insurance, creation of a reserve fund to compensate for damage from risk materialization, etc. The expenses for information and communication campaign and consulting should also be provided.

Considering the above, we developed a methodology for calculating the country risk based on a number of indicators determining the significance of risk factors. The methodology involves complex system for basic macroeconomic risk assessment, which includes 4 risk categories: political, economic, financial and environmental.

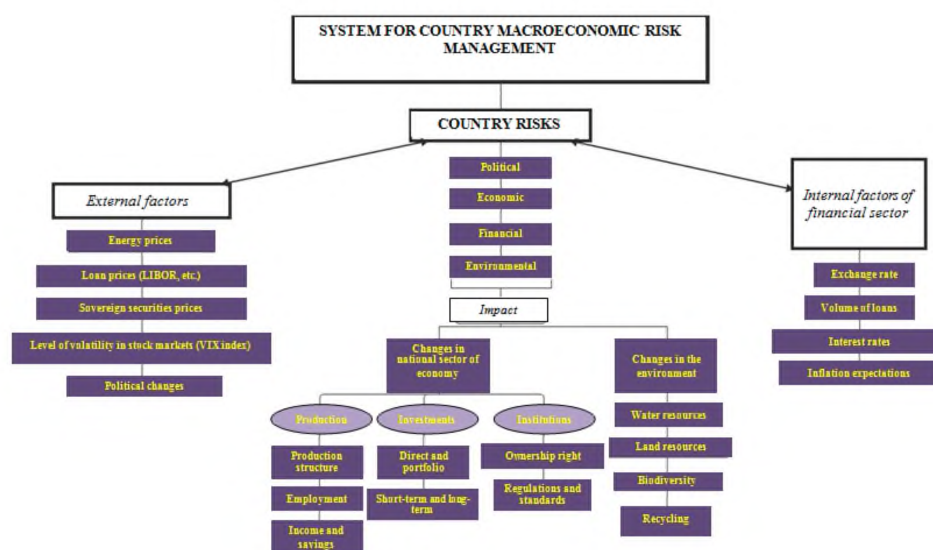

Fig. 1. System for country macroeconomic risk management
Note: developed by the author

In total and considering the importance of value of each component, we define the country risk index. Six most important risk factors are used in each category (the list of factors may vary depending on the risk features of country or region). The additional atypical risk factors/types with regional, national, cultural and other features can be added to the table, if the relative share of a specific factor has a significant impact on human life and activities and/or the environment in general in the area of its largest distribution. For example, the determining factor in the area of accident at Fukushima-1 nuclear power plant in Fukushima Prefecture is environmental factor of radiation contamination.

For the first time it is proposed to use a symbiotic type of environmental risk as obligatory when calculating the risk index for each specific risk category. We define the symbiotic risk as the risk having an impact on development of risk in the area where it "migrates" from the adjacent medium of distribution. This type of risk explicates various combinations of mixed risks: political and environmental, economic and environmental, military and economic, etc. Thus, the environmental risks have an impact on political ones in terms of development (or absence) of a legal and regulatory framework for making decisions on environmental (technology-related) risks. When studying the economic component of the integrated risk, it is important to determine the expenses for eliminating the consequences of technology-related disasters as a percentage of GDP. The level of organization of stock emission trading is an important indicator when calculating the financial component of macroeconomic risk.

Thus, we propose to consider the mixed types of risks when calculating the integrated country risk. For this study we used the environmental symbiotic risk for reasons of unprecedented significance of the environmental global problem in XXI century. In fact, since 1972, practically every report to the Club of Rome contains the environmental problem [10].

When assessing political risks, the following factors may be included: government stability; condition of the existing legislative system; corruption level; external and internal conflicts; reaching the democratic transparency and accountability; institutional basis for making decision on technology-related risks. *When studying the economic risks*, the following factors can be used: GDP per capita; inflation rate; GDP growth (reduction) index in real terms; budget deficit rate; unemployment rate; expenses for eliminating the consequences of technology-related disasters as a percentage of GDP. The factors considered *when calculating financial risks* are given below: external debt as a percentage of GDP; exchange rate stability; amount of funds for servicing the external debt; net international liquidity; volume (percentage) of unrecovered loans; level of stock emission trading.

Concerning the group of indicators characterizing the environmental component of macroeconomic country risk, it is possible to identify those that are associated with:

- extreme weather that imply additional expenses for its overcoming (drought, earthquake, hurricane, tornado control, etc.);
- water scarcity or decrease in water quality (obvious and potential costs associated with water purification, its obtaining from safe water bodies, increased costs of public utilities for water use, etc.);
- construction of new infrastructure facilities (for example, new pipeline in case of risks associated with air pollution and violations of land use rights);
- recycling, control of pollution and toxicity of some waste, payment of fines for storage of unauthorized waste;
- improvement of land resources, increase in soil fertility, their cleaning;
- increased costs for maintaining biodiversity, flora and fauna protection;
- "social cohesion" that results from public opposition to certain projects posing clear or perceived threat to the environment.

Thus, we identified the following indicators: qualitative and quantitative indicators of water resources; recycling; level of man-made pollution; degree of pollution and agricultural exploitation of land resources; "social cohesion" of the public on environmental issues.

Table 1. Example of total expert assessment of basic macroeconomic risks

Type of risk		**Scale/degree of threats**									
Political		**Low**					**High**				
											0
	1. Government stability										
	2. Condition of the existing legislative system										
	3. Corruption level										
	4. External and internal conflicts										
	5. Reaching the democratic transparency and accountability										
	6. Institutional basis for making decision on technology-related risks										
Total calculated											
Parameters											
Political risk index											
Economic	1. GDP per capita										
	2. Inflation rate										
	3. GDP growth (reduction) index in real terms										
	4. Budget deficit rate										
	5. Unemployment rate										
	6. Expenses for eliminating the consequences of technology-related disasters as a percentage of GDP										
Total calculated											
Parameters											
Economic risk index											

Financial	1. External debt as a percentage of GDP										
	2. Exchange rate stability										
	3. Amount of funds for servicing the external debt										
	4. Net international liquidity										
	5. Volume (percentage) of unrecovered loans										
	6. Level of stock emission trading										
Total calculated											
Parameters											
Financial risk index											
Environmental	1. Qualitative and quantitative indicators of water resources										
	2. Recycling										
	3. Level of man-made pollution										
	4. Degree of pollution and agricultural exploitation of land resources										
	5. “Social cohesion” of the public on environmental issues										
Total calculated											
Parameters											
Environmental risk factor											
Integrated risk in the country											

Each factor in each category is assessed according to the degree of threats on a scale from 1 to 10, where 1 is the lowest threats, 10 is the highest threats. Then, the level of threats is calculated that is determined by the threat point and number of factors being in the rank of this threat.

$Z_i = w_i * k$
where Z_i – threat level;
w_i – point of this threat (from 1 to 10);
k – number of factors in this scale.

For example, if 4 factors are in the scale 3, then in total we get: 3 * 4 = 12 points. The number of points on all scales and factors gives us a total assessment of the risk level:

$W = \sum Z_i$
where W – total assessment of the integrated risk for this country.

Then, using the method of expert assessments the table for determining the level of the integrated risk in the country is compiled.

Table 2. Determination of the level of integrated risk in the country

Risk level	High	Above average	Average	Low	Below average
W value					

We believe that it is important to assess also the dynamics of all indicators of the risk level. When calculating the index, the main thing is not the absolute values, but the dynamics of indicator movement.

The use of this methodology will allow more precise determination of the level of macroeconomic risks, their materialization and interrelations, sources of macroeconomic uncertainty and will allow the development of integrated risk prevention and management.

It should be noted that along with the growth of new risks, the technical capabilities of their prevention are being improved. “Atlases of risks and threats” are created [11], symmetrical diagnostic analysis is applied [5]. The latter provides for identification of technology-related risks, as well as social benefits of innovative technologies for modern society. The interregional cooperation on the safety of man-made systems becomes more active. The issues of post-industrial man-made safety culture are spreading in wide segments of society. Serious steps are being taken in the field of nuclear energy to create a nuclear power plant (based on 4th generation reactors) that meets all modern environmental safety requirements with minimum environmental impact.

Thus, innovations and modern technologies should be considered as phenomena having an ambivalent nature of the impact on biosocial environment. On the one hand, several new technologies are not studied in terms of possible negative consequences of their use, and, therefore, contain unintended threats to social and political, cultural or environmental stability. On the other hand, the process of rapid innovation and technologization of society brings obvious positive results in the fields of medicine, construction, transport, information and communication, etc. As we consider the risk as a phenomenon of uncertainty containing the potential of both an adverse effect and positive outcome (as certain advantages and benefits), it is appropriate to speak of risk as a natural component of social self-organization and necessary factor of social development. It is difficult to imagine modern business without risk, selection of business strategy without considering the probability of these or those critical situations. Risks are factor of the effective use of capital, its involvement in high-tech technologies and social and educational sphere. All activities of the banking system, in essence, are based on risks.

At the same time, the risks become complicate, they are modified, layered and overlapped. Some risks “overgrow” their conditionally local boundaries: risks previously belonging, for example, mainly to the economic sphere, fill adjacent areas of public life (political, social, spiritual). The risks of synthesized type are observed.

In a globalizing world, the risk boundaries become flexible, they are distributed non-linearly, and there is a process of risk "compaction" [12]. In countries with low dynamics of economic, political and technological changes, in the so-called traditional societies, the risk activities are significantly limited. Here, tradition, religion or ideology is the main regulator of social relations. In addition, the level of social and economic development varies considerably depending on the part of the world. There are high-risk areas, areas of extreme or chronic dangers and disasters.

Thus, the content of risks is diverse and multidimensional, the manifestation is many-sided. The risk management should also reflect all the diversity and variety of risks, combine tools and technologies of different methods. At the same time, it is necessary to adopt the databank already created and extremely rich by ratings and assessments that is regularly filled by professional rating agencies.

In this regard, the following can be concluded.

1. To manage the macroeconomic risks, it is necessary to identify the main trends developed in the world and national theory and practice. We identified the following features of risk manifestation: complication of risk materialization processes, all their manifestations and internal structure; propensity of certain countries or regions to certain risks; interactions of different risk categories (political, economic, social); increase of interconnection in risk transfer between countries that are not only at the same development level and connected geopolitically, but also those that are thousands of kilometers apart and at different development levels (for example, between developed and developing countries).

2. The following trends emerged in the risk management process itself: formation of more complex tools, technologies and techniques in the risk management, their diversity; development of risk assessment infrastructure represented by agencies, centers and other structures; transition in their practice to integrated and aggregated assessments taking into account a combination of risks (for example, political and economic; cumulative political, economic and financial; macroeconomic and financial, etc.).

3. The most significant feature of the modern stage of macroeconomic risk management is the need to consider its "environmentalization" – appearance of the environmental component in each category of macroeconomic risk, which reflects the influence of ecology on politics, economy and finance. In fact, one may talk of environmental and economic risk, the forecasting, identification and assessment of the size of which is an important task of the government, organizations and public authorities.

4. We proposed an approach to create a system for country macroeconomic risk management, which includes consideration of external and internal factors; identification of risk categories; identification of changes in national economy and environment.

5. The methodology for calculating the country risk based on a number of indicators determining the significance of risk factors was developed. The methodology involves complex system for basic macroeconomic risk assessment, which includes 4 risk categories: political, economic, financial and environmental. It is proposed to use six most important risk factors in each category and the list of factors may vary depending on the risk features of country or region. It is proposed to use a symbiotic type of environmental risk, which is defined as the risk having an impact on development of risk in the area where it "migrates" from the adjacent medium of distribution (political and environmental, economic and environmental, military and economic, etc.). The use of this methodology will allow more precise determination of the level of macroeconomic risks, their materialization and interrelations, sources of macroeconomic uncertainty and will allow the development of integrated risk prevention and management.

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Peculiarities of Ukraine's state migration policy implementation under conditions of globalization

Globalization is one of the features of the mankind modern development. It quickly penetrates into the various spheres of public life and causes the mixed perceptions and assessments. Globalization impart is particularly noticed on the economy, the state, and society in the countries which aim to mobilize their forces for economic reforms implementation. It is also fully applied in Ukraine. Globalization processes that sharpened the inequality of conditions and opportunities in the different countries, contributed to the growth of the interstate displacement of the population, led to the radical changes in the scale and structure of the global migration flows, gave impetus to the formation of a fundamentally new migration situation in the world. Its characteristic features are: unprecedented expansion of the scale of international migration and the formation of a peculiar "nation of migrants"; the expansion of the geography of international migration and the attraction of the worldwide migration of almost all countries of the world; transformation of the structure of migration flows in accordance with the needs of the labor market, which has become globalized; strengthening the role of the diasporas in the socio-economic development of the countries from which the population emigrates, and the formation of migration networks; the determining role of economic and, above all, labor migration; steady increase and structural instability of the illegal immigration; the growth of the scale and expansion of the migration geography; increasing the importance of the international migration in the demographic development of the world as a whole; the double nature of the migration processes that have both positive and negative consequences at the global, regional and national levels [1]. Therefore, today many researchers suppose the modern era as the "era of migration," thereby emphasizing the special role of migration flows in the development of the modern world. The movement of goods, technologies, capital and the movement of cultural values are caused by the movement of people across the state borders [8].

Under the influence of globalization processes, a new international division of labor is being formed, in which the migrants play an important role, filling the economic niches and sectors of the national economy of the countries in which they immigrate. The globalization of production processes and the dissemination of information and computer technology lead to the unification of the requirements for the qualification of workers, the standards of labor management, the growing role of the modern professions, for which national identity loses its importance, and geographical boundaries cease to be restrictions on employment. Under the current conditions, the migrants, including the illegal ones, are becoming an important element of competition

both between the large multinational corporations and "outsiders" of the world globalization process, that is, the small enterprises in the sphere of production and services [4].

Close relationships between the processes of globalization, the development of the sphere of work and employment, as well as the migration mobility of Ukrainians could be traced in each migration wave. Today, Ukraine faces the next, fifth wave of Ukrainian migration, which, in the experts' opinion, began in the 10s of the 21st century, has attracted the young, well-educated people, and unlike the previous ones, it is characterized by the transition to the migration of the population as a way of life . The new migration motivation is the response of people to the numerous global and national challenges of the development of the state, its economy and society.

In the recent decades the demographic processes in the developed countries have become negative. Aging and the reduction of the population inevitably lead to an increase in the shortage of manpower and its replenishment at the expense of immigration. The labor migration is a major component of migration and a link through which the countries with the excessive labor force are involved into the global socio-economic processes. The basic feature of the modern migration is that it is a phenomenon that is institutionalized, evolving from a traditional social movement into a structured social organism (diaspora, a network of social organizations of labor migrants, the infrastructure of the market for migration services, etc.), and with this above noted – into the subject and instrument of the human economic activity regulation.

The role of the modern labor migration in the ensuring of the sustainability of the Ukrainian state and society's economy is quite large. This is especially visible through the prism of the study of factors of economic dynamics, which by their nature are socio-economic and have much in common with the principles of the work of the International Labor Organization (ILO). In Ukraine, the precise data on the volumes, structure, trends of migration movements of the population are absent. One of the reasons for this is the complexity of the organization of the collection of data on migrant workers, their employment, income, duration of trips, etc.

According to the Migration Report of the UN Special Commission in 2017, the total number of migrant workers from Ukraine was 5.9 million people; according to the Center for Economic Strategy - 4 million people. Under the data of the IDSD of the National Academy of Sciences of Ukraine, the number of Ukrainians who work simultaneously abroad is 3 million, according to the Center for Economic Strategy - 2.6-2.7 million people. During the period from 2002 to 2017 (15 years), 6.3 million people left Ukraine and did not return. The duration of work abroad by the majority of Ukrainian workers does not exceed one year, 29% of Ukrainian citizens worked for more than a year, 14% - for several years.

The number of internally displaced persons (IDP) as a result of the

military conflict in the Donbas region is 1.6 million. The structure of IDP employment in Ukraine is: - 9% of the economically active population; 20% - are officially employed, others work according to the oral agreements or consider themselves as self-employed. The countries of the Ukrainian labor migrants' stay are Poland, Italy, Czech Republic, Portugal, Hungary [10, p. 19]. In 2018, $ 11.6 billion were transferred to Ukraine by the migrant workers. In 2019, it is expected that the amount of transfers will be $ 12.2 billion. Under the World Bank calculations, since 2016, the amount of money transfers exceeds 10% of GDP. For the fourth consecutive year the money transfers from Poland exceed - from $ 1.4 billion - to 3.6 billion dollars. Revenues from the USA increased from $ 0.5 billion up to 0.8 billion dollars and the Czech Republic - from 0.3 billion dollars. up to 0.8 billion dollars There is an increase in money transfers from Italy, the United Kingdom, Germany, Cyprus, Israel and other countries [5].

The role of Ukrainian migration in the ensuring of the economy competitiveness is monitored at different levels. The relationships which emerged on the basis of the sectoral markets development are closed at the regional or local levels. It is about the production of goods and the provision of services, the need is expressed by the migrant workers while making money in their homeland. In Ukraine, these are mostly essential goods, health care services, education, transport, etc. In the recent years, it is illustrated by the real estate market (secondary and primary), in which the labor migrants realize the accumulated capital, and also invest into the development of the related industries [10, p. 30]

The results of the migration processes are ambiguous. Their influence on the socioeconomic and political development of Ukraine is increasing. The extent of this influence depends largely on the effectiveness of the migration policy of the state. Therefore, the main task of the development of the migration management system is to identify the maximum possible and maximally agreed on the interstate level of the internal competence of the state in the organization of the migration process.

Educational migration in Ukraine is a component of migration today. The main factors include: Ukraine's accession to the Bologna Process (2005), the Revolution of Dignity (2013), the annexation of the Crimea (2014), military moves in the East of Ukraine (from 2014 to the present), the Association Agreement between Ukraine and the European Union (2014), which resulted in active processes in the educational migration of Ukrainians. The Law of Ukraine "On Higher Education" passed in 2014 declared the international integration and integration of the national system of higher education in the European educational space, which is one of the main principles of state policy in education.

In the field of international cooperation, the Law has identified twelve areas for the activities of the universities, including participation in the exchange programs for students, lecturers and researchers, organization of

international scientific events, etc. An additional institutional catalyst for the educational migration was the participation of Ukrainian universities in the Erasmus +, Horizon-2020 programs, which expanded the opportunities for Ukrainians to obtain the higher education abroad within the framework of the international academic mobility. Freedom of choice as one of the main European values has become, in the Ukrainian society, the main institutional condition for the academic freedom and the growth of the international and interregional educational migration [10, p. 68].

The ongoing reforms in Ukraine in the field of education have intensified the moving of Ukrainian graduates to the neighboring countries and in the first place to Poland, where 60,000 Ukrainian students are studying now [7]. Among the benefits of studying in Poland, Ukrainian students, among other things, call for easier job finding in the specialty. Therefore, the external educational migration of Ukrainians is easily transformed into the labor one. The analysis of the geographically close competitor nations in the international labor market and educational services market gives grounds to conclude that Poland is this market for Ukraine. By the number of foreign students in 2016, Poland surpassed Ukraine by actively implementing the strategy of internationalization of the higher education system and solving its own problems of human capital loss due to the increased migration of Poles to the European Union, the USA, Canada and other advanced economies. As a result, the Ukrainian youth in Poland became the most demanded among the foreign students.

Global trends affect the labor market of Ukraine, which in recent years remains one of the largest human resource donors for the developed countries. As a result, there is a shortage of skilled personnel in Ukraine, especially in the health care and education, and a decrease in the number of workers in the labor and technical professions. The demand for the latter has a tendency to increase, especially in the regions with programs of the industrial enterprises revitalization . This imbalance in the labor market is exacerbated by the development of information and communication technologies (ICTs) in the context of the global information revolution, which accompanies the fourth industrial revolution (4IR), as well as an increase in the disproportions in the economic growth of the countries. As a result of these processes, the external labor migration in Ukraine has reached a large scale and has changed the rules of the interaction between the participants of the national and regional labor markets, establishing the new basis and principles of employment.

To minimize the risks of migration and to use the positive migration potential in the interests of the national development, an effective migration policy is needed - a system of the state and interstate measures implemented by the state and non-state institutions within the legal framework for the regulation of migration processes. The ability of the national governments to regulate the migration processes in due course is a precondition for the

successful international cooperation, without which the migration management, as a multilateral process, is impossible.

Under the current legislation, the object of the migration policy in Ukraine is the territorial movement of the population. The subjects of the internal migration policy are the citizens of Ukraine who carry out the territorial movement. The subjects of the foreign migration policy in Ukraine are the citizens of Ukraine, citizens of other states and stateless persons crossing the state border of Ukraine.

Ukraine's external migration policy should contribute to the security of the country; increase its economic potential and the welfare of the population. The main areas of the internal migration policy are the provision of freedom of territorial movement of the population, in the field of labor, optimization of the interregional redistribution of citizens, taking into account the policy of employment, and the establishment of the regional labor markets.

The Strategy of the State Migration Policy of Ukraine until 2025 [6] defines the objectives of the state migration policy of Ukraine, the main of which are:

- to reduce the negative consequences of emigration from Ukraine and increase its positive impact on the development of the state;
- to create the necessary conditions for the return and reintegration of Ukrainian migrants into Ukrainian society;
- to promote the legal migration to Ukraine, consistent with the social policy and economic development of the state;
- to ensure the respect for the human dignity of the returning persons, encouraging them to voluntarily return;
- to provide the adequate infrastructure and conditions for the residence of persons who have applied for recognition as a refugee or a person in need of additional protection, as well as persons who have been recognized as refugees or persons in need of additional protection.

Understanding of the modern state migration policy is a necessary precondition for defining the functions of the migration policy. By their influence, these functions can be both external and internal. Having studied this issue, Block N.V [2, p. 23] and Vasiliev V. T. [3] define the following main functions of the migration policy:

1. Function of migration processes regulation. In this sense, migration policy has an impact on the migratory flows in order to adjust them, which is carried out through the creation of the appropriate socio-economic conditions, the adoption of laws and regulations.

2. Function of emerging contradictions rationalization is realized through the search for consensus decisions in conflict situations by creating a mechanism for determining the positions of the parties on controversial issues and harmonizing the regulatory directions of the political system that manifests itself in the reducing of the social tension among the various categories of migrants, while respecting the state interests of Ukraine.

3. Integrative function of the state migration policy. In the domestic political aspect, it is realized through the process of including of the forced migrants into the Ukrainian society, including obtaining the citizenship of Ukraine, as well as assistance in obtaining of a new place of residence, creation of the workplaces and other social support (scholarships, pensions, assistance). In the foreign policy aspect, the integrative function of the state migration policy is realized through the development and implementation of an agreed interstate migration policy within the CIS, as well as through the support of contacts with the international and foreign governmental and non-governmental (social, religious) organizations, the introducing of funds for the protection and realization of migrants as well as preventing and stopping the illegal migration.

4. The function of human resources mobilization of the state migration policy is an expression of the social dynamics. This feature allows you to use the migration policy as an important factor in the community restoring.

Under the Concept [9], the state migration policy is an integral part of the national security policy, and its development and implementation should be based on the principles of a systematic approach. This means that it should also be aimed at protecting the human rights and freedoms, which can be only solved if the specific rules of the state are enshrined within the legal framework. An important role in this is given to the organizational and legal means. And this is not accidental, because the rules governing the social relationships in the field of the migration determine the content of measures, powers of state authorities, other state structures, public organizations and citizens. They establish the forms, means and methods of ensuring the state of relations that are in the interests of the individual, society, and state based on the international humanitarian principles.

The system of public management of migration processes in the conditions of globalization should take into account the influence of the political and socio-economic factors, as well as the world trends, the main of which are:

- integration of Ukraine into the international labor market, which is accompanied by the outflow of labor from the country;
- decrease of the population in Ukraine, other European countries;
- active immigration policy of foreign countries, aimed at the foreign labor attracting;
- inconsistency of Ukraine's legislation on migration with the requirements of today, in particular due to the lack of the legislative acts in the area of protection of foreigners and stateless persons who have not been granted the refugee status in Ukraine;
- insufficiency of personnel, logistical support of the authorities implementing the state migration policy in Ukraine, lack of information automated systems of registration of citizens of Ukraine, as well as foreigners and stateless persons residing or temporarily staying in Ukraine [3].

Nowadays, for the European business, the Ukrainian labor force and geographical proximity to the Western European consumer are of interest. Investors are particularly interested in the western regions of Ukraine, which are close to the borders of the EU, and the labor is not only cheap, but also demonstrates the European mentality. In the past few years, German companies have created more than 25,000 jobs in the regions of Ukraine. Among the largest enterprises with German capital are Kromberg & Schubert, Bader-Ukraine, Forschner Ukraine, Leoni-Ukraine, Kostal Ukraine, HeidelbergCement, KNAUF Gyps Donbass, Klingspor-Ukraine, Henkel Bautechnik Ukraine, Pfeifer & Langen Ukraine, Alfred S. Ltd. Topfer International, Metro Cash & Carry [10, p. 40]. Therefore, one of the measures of the state migration policy for today which can reduce the level of emigration of Ukrainian citizens is the implementation of an effective investment policy - the invitation of an internal and external investor who will create new jobs.

Consequently, in the era of globalization of the world economy, the role and significance of the international migration is increasing. Due to the movement of labor in the countries of employment of migrants, the economy is developing steadily, and the homeland of migrants and their households are provided with better living conditions by means of money transmissions. Migration is increasingly perceived as a way of solving the demographic problem and an integral part of socio-economic development of society.

Ukraine has its own peculiarities, problems and prospects for the development of migration processes. There is no particular data on the number of Ukrainian migrants abroad. Different calculations, surveys and studies indicate significant differences in the estimates. Most experts call numbers of 5-6 million people. The number of migrants should be calculated based on their specific characteristics. Migrants work for a long time abroad, on average 1-5 years.

Ukrainians will continue travelling abroad - relatively low incomes in their homeland make them look for work in other countries, and first of all in neighboring Poland. The state migration policy should not restrain or restrict, as well as encourage the moving of citizens abroad. In a globalized world, the interchangeable migration processes are taking place: Ukrainians are replacing Eastern Europeans who go further to the West, while citizens of other countries come to Ukraine in search of higher earnings. It is more logical to support and direct the main results of migration and, first of all, migration capital in Ukraine for the acceleration of the social development.

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Human rights and modernization of the Constitution of Ukraine

Human rights it is the universal category that includes the fundamental and inalienable person's possibilities for the purpose of ensuring free and decent existence and development, as well as the universal value that allows to compare and measure all the most important events that occur in society and the state. Moreover, it is not just the declaration of rights and freedoms at the level of the constitution of the state as a normative prescription, but a really effective constitutional and legal mechanism for the implementation and protection, it is an indicator of the presence of civil society as an attribute of the modern constitutional state. The rights and freedoms of an individual and citizen are the most important political and legal, social institution, the degree of development of society and nation, as well as the basis and content of the functioning of public authorities. It is such a functional approach to the institution of human rights and freedoms, *first of all*, serves as a mean of access of an individual and citizen to the mechanism of public power and the implementation of the forms of democracy, and *secondly*, it is an indisputable condition for the independence of a person. Human rights are an integral part of the nation's culture, the highest manifestation of the moral and legal ideals of mankind. Among the spiritual values of the modern world, they occupy one of the most significant places. It is human rights that are an important indicator of the development of states, oriented towards democratic values, consolidating all life support systems of the human community and acting as an important factor in the strategy of world sustainable development.

Currently, the analysis of tendencies for the development of human rights demonstrates a comprehensive and contradictory way of their implementation. Every new stage in the development of mankind raises new difficulties; humanity should not only weaken the struggle for human rights, but also unite its efforts to overcome new emerging anti-human situations, because the stable development of the modern world is impossible without the implementation of human rights.

However, it is undeniable that the current state of legal regulation of human and civil rights and freedoms falls under the influence of two mutually conditioned systems, namely international and national law, that is, the constitutional and legal institution of the legal status of an individual and citizen in the current conditions of state and legal reality more often is the subject matter to the rules of international law. Such tendencies are also characteristic for the national legal system of Ukraine.

The study of the phenomenon of human and civil rights and freedoms as the fundamental basis and fundamental value of civil society and state does not lose its relevance, but only gains momentum. Modern legal science is constantly replenished with scientific research in the field of human rights.

Theoretical and legal, constitutional and international aspects of human and civil rights and freedoms are highlighted in the fundamental writings of Ukrainian scholars, namely Holovatyi S. P., Kliuchkovskyi Yu. B., Rabinovych P. M., Rechytskyi V. V., Shapoval V. M. and others.

At the same time, it must be noted that the law-making activity and law-enforcement practice of Ukraine in the field of human and civil rights and freedoms needs to be improved, especially in the context of the declared European integration course of Ukraine. Outstanding example of the above is the fact that Ukraine is among the top five of the Member States of the Council of Europe in terms of the number of cases that are pending before the European Court of Human Rights.

According to the opinion of Ukrainian scholars, the constitutional consolidation of the rights and freedoms of an individual and citizen, under all conditions has no self-sufficient and absolute value. Ukraine as the post-Soviet country has a gap between the values established in the Basic Law and those that exist in public and state practice. In fact, we believe one should agree with this statement. Considering the fact that the institution of human and civil rights and freedoms is the branch constitutional and legal institution that is largely influenced by the principles and norms of international law, however, there is no single unified approach to the definition of human rights among scholars in the field of constitutional law. The definitions of human rights in the science of constitutional law are based, to a greater extent, on different concepts of the essential understanding of the phenomenon of the rights and freedoms, namely the natural and legal or positivist approach.

However, as scholars note, the issues of the rights and freedoms of an individual and citizen are nowadays the source for the legal science. Given the landmark of the provision of the rights and freedoms, the researched modern state must acquire fundamentally new qualities and, accordingly, to be changed in its organizational and functional characteristics in the context of modern constitutionalism.

As S. Holovatyi notes, although it was already a quarter century since Ukraine has chosen a path to democracy and somewhat later joined the fundamental European documents, which form the foundation and parameters of the European legal space based on European values, the current state of legal education in our country is rather not consistent with European models.

According to P. M. Rabinovych, the modern level of cognition of the phenomenon of human rights, the accumulation of theoretical knowledge and practice of protective activities in the area of human rights requires the organization and synthesis of scientific data on the nature and regularities of the formation and development of the phenomenon of human rights, first of all at the general theoretical level, and subsequently – taking into account the above mentioned provisions in the process of constitutional and legal improvement of fundamental human rights and freedoms [6, p. 24].

We believe that the constitutional and legal status of an individual and citizen, in today's conditions of international cooperation and interaction, as well as in the light of events within the Ukrainian state of the last decade, which, in turn, radically affect and change legal awareness and legal thinking, must be based on a synthesized concept of an individual, which unites the basic rights, freedoms and responsibilities in all their dimensions and manifestations, as well as within the interrelated connection of the person – the state – the society. This convinces that proper legal provision of the mechanism for the implementation and guaranteeing human and civil rights and freedoms in Ukraine at the present stage should become fundamental in the field of any reforms. Indeed, human rights and freedoms in the countries with developed democracy are prerequisite for the implementation of the rule of law principle, constitutionality and legality.

Despite the fact that the rights and freedoms, which in turn are the highest value of the person, nowadays require not only a political declaration, but, on our deep conviction, the introduction of the legal mechanism for ensuring their implementation and guaranteeing.

As S. P. Dobrianskyi notes, the fundamental human rights at present serve as a kind of system of initial criteria for the legislation and legal practice of the states of the modern community – criteria that none of them is not entitled to ignore.

It should be noted that the world community has developed a fairly wide range of international documents that contain the system of principles and norms regulating the rights and freedoms of an individual and citizen. In particular, the Universal Declaration of Human Rights (1948), the International Covenant on Civil and Political Rights (1966), the International Covenant on Economic, Social and Cultural Rights (1966), the European Convention for the Protection of Human Rights and Fundamental Freedoms (1950), the Charter of the European Union on Fundamental Rights (1961), and others belong to the fundamental acts of universal and regional levels.

The main efforts of the United Nations and other international organizations in the XXI century will focus on the further development and application of radical measures to protect fundamental human rights and freedoms, where international humanitarian law and international human rights protection will be central to the world community's activities.

Compared to the fundamental international standards and values in the field of human rights, Ukraine practically at the end of the XX century, for the first time systematically enshrined the catalog of human and civil rights and freedoms, in particular, natural, political, economic, social and cultural. It was done in the Constitution of Ukraine of 1996, namely in the Section II "Rights, Freedoms and Responsibilities of an Individual and Citizen". Besides, it should be noted that the very constitutional consolidation of the rights and freedoms in the Section II is the evidence and provides importance to the institution of human rights. Along with this, despite the fact that the largest

number of Articles in the quantity is contained in the Section II, which fully testifies to the democratic nature of the Basic Law, the structuring of the Section II needs to be improved.

In this regard, the well-known human rights' specialist S. Holovatyi emphasizes that, considering the diversity of the Section II of the Constitution of Ukraine (more precisely, its "non-structural nature") and the fact that the examples of the "rights" presented here are of a non-uniform nature, The Venice Commission recommended at the stage of discussing the draft of the new Constitution, to "classify and systematize" them in such a way that it would be possible to anticipate respectively different methods of protecting each right. After all, the effectiveness of each method of protecting a different subjective right depends on the function of such a specific method of protection. And it, in turn, is determined by the content of each subjective right.

Examples of structuring in terms of normative definition and establishment of human and civil rights and freedoms are the constitutions of the world states, in particular the Constitution of the Portuguese Republic, the Constitution of the Italian Republic, the Constitution of the Kingdom of Spain, the Constitution of the Republic of Poland, etc.

Given the foregoing, we believe that the improvement of the Constitution of Ukraine in terms of its structuring is relevant and should be implemented. Namely, it is necessary to distinguish (in separate parts within the General Section) the fundamental principles of human rights and freedoms, in particular the principle of universality, equality, responsibility of the agencies and officials of public authority; personal rights, freedoms and guarantees; the rights, freedoms and guarantees in the political sphere; social, economic and cultural rights, freedoms and guarantees, etc.

In accordance with the Art. 1 of the Constitution, Ukraine is recognized as the constitutional state, and this, first of all, implies that the rule of law state acts as a form of restriction of power by human rights and freedoms, as the most important counterweight to the tyranny of state power. The main principle of the state policy in the field of ensuring human and civil rights and freedoms is defined in the Art. 3 of the Constitution of Ukraine, namely, "An individual, his life and health, honor and dignity, inviolability and security shall be recognized in Ukraine as the highest social value. Affirming and ensuring human rights and freedoms shall be the main duty of the State".

However, the constitutional text of the Art. 3 is criticized both by scholars and the Venice Commission. As S. Holovatyi emphasizes, this "socially-oriented" understanding of *a man per se* and its value as part of the Art. 3 of the Constitution of Ukraine is extremely harmful for understanding the essence of the nature of society, the origin of power, the place and role of the state in relations with a man and the place and role of a man in relations with the state. He further emphasizes that until the term "social" in the phrase "social value" (in relation to a man and his dignity) is not removed from Part 1

of the Art. 3 of the Constitution of Ukraine, there will still be a formal obstacle to the possibility to accept human dignity within the framework of the Ukrainian legal order likewise to the German constitutional experience – as the "right of rights", as "the peak of the whole system of fundamental rights", i.e., as the constitutive principle of the whole system of fundamental rights.
According to our belief Ukraine has the social necessity of realizing the principle of the priority of human rights in relation to the state and limiting the omnipotence of the state by human rights at the constitutional level, namely, with the growing role of civil society that we are observing today, the constitutional and legal consolidation of the rights and freedoms of an individual and citizen should be based on the universal principle of equality of all subjects of social relations, including the state. Only under this condition, the national legal system of Ukraine, in the part of its normative component, will be able to depart forever from the Soviet doctrine of law, where the state was recognized as the priority subject of legal relations.

In regard to the above considerations, the Art. 1 of the Basic Law of the Federal Republic of Germany (1949) is the outstanding example, namely "(1) Human dignity shall be inviolable. (2) The German people therefore acknowledge inviolable and inalienable human rights as the basis of every community, of peace and justice in the world. (3) The following basic rights shall bind the legislature, executive and judiciary as directly applicable law".
The essence of the constitutional regulation of the basic rights and freedoms of an individual and citizen in democratic societies is not only to consolidate them (to declare), but to guarantee them. The problem of the reality, security and protection of human and civil rights and freedoms is directly related to the specific features of socio-economic development of the region, the development of political institutions, political awareness and the activity of residents of a particular administrative and territorial unit.
The phenomenon of the Ukrainian state and the formation of law in early XXI century were the European integration aspirations, which were embodied in the Association Agreement between Ukraine, on the one hand, and the European Union, the European Atomic Energy Community and their Member States, on the other hand, Brussels in 2014.

One of the goals of the political dialogue enshrined in the Art. 4 of the Association Agreement is "to strengthen respect for democratic principles, the rule of law and good governance, human rights and fundamental freedoms, including the rights of persons belonging to national minorities, non-discrimination of persons who belong to minorities, and respect for diversity, as well as contributing to the consolidation of national political reforms". The Art. 14 of the Agreement, entitled "The rule of law and respect for human rights and fundamental freedoms", states that "cooperation in the field of justice, freedom and security will take place on the basis of respect for human rights and fundamental freedoms".

According to scholars, the rule of law requires the state to implement it into law-making and law-enforcement activities, in particular in laws that, in their content, should be primarily permeated by ideas of social justice, freedom, equality, etc. One of the manifestations of the rule of law is that the law is not restricted only to legislation as one of its forms, but also includes other social regulators, in particular norms of morality, traditions, customs, etc., which are legitimized by society and united by the quality that corresponds to the ideology of the idea of justice rights, which to a large extent have been reflected in the Constitution of Ukraine.

Thus, the actual legal formulation of the European integration of Ukraine entails inevitability of the reform of the national legislation of Ukraine, including in the part of the constitutional and legal regulation of human and civil rights and freedoms, that is, the rhetoric about European values and standards should go to the practical plane, namely, the rights and the freedom of an individual and citizen must determine the essence and content of regulatory acts, as well as direct the activities of the state and local self-government agencies and officials.

The effectiveness of Ukraine on the path to European integration, which used to be the imagination of an unknown future, is beginning to be developed in a more or less understandable form now. This new tendency, which has already acquired a certain legal form, entails the inevitability of reforming the national legislation, in particular the Fundamental Law of the State – the Constitution of Ukraine. Our European partners need to understand the Ukrainian strategy, and it is not just about official documents. Although, they are very important. The priorities should be very clearly defined. After all, according to the Art. 2 of the Law of Ukraine "On the Principles of Internal and Foreign Policy" dated from July 8, 2018, the principles of internal and foreign policy are based on unconditional compliance with the Constitution of Ukraine, ensuring the rights and freedoms of an individual and citizen in Ukraine and guaranteeing the rights and freedoms proclaimed by the Constitution of Ukraine, on generally accepted principles and norms of international law, ensuring the social orientation of the Ukrainian economy and sustainable socio-economic development of Ukraine, strengthening of democratic foundations of public and state life, providing the rule of law, the economic and political independence of the state, the protection of its national interests, the establishment of Ukraine as a full and authoritative member of the world community.

Therewith, the National Strategy for Human Rights was approved by the Decree of the President of Ukraine dated from August 25, 2015, the purpose of which is to ensure the priority of human rights and freedoms as a determining factor in the definition of the state policy and decision-making by public authorities and local self-government agencies.

In our opinion, the problem of ensuring and guaranteeing the rights and freedoms of an individual and citizen in Ukraine at the present stage has the central place in the mechanism of the implementation of constitutional and legal norms. Since, almost fifty provisions of the Section II of the Constitution of Ukraine are of a postponement nature, which leads to different interpretations of the constitutional norms as a matter of fact in the course of their enforcement, and this does not always take place in line with the basic constitutional values and principles of freedom and democracy.

As S. Holovatyi notes, true democracy, human rights and the rule of law as the basis of European law and order are a triad of values that are inextricably linked with one another. According to the author, human rights as a part of the system of a unified European order should be considered in the light of the normative content of the category of human rights through its two other components – democracy and the title.

Proceeding from the content of Part 3 of the Art. 8 of the Constitution of Ukraine "Norms of the Constitution of Ukraine there shall be the norms of direct effect. Resource to the court for protection of constitutional rights and freedoms of an individual and citizen directly on basis of the Constitution of Ukraine shall be guaranteed" [7], which, in general, establishes the highest legal force and their direct action, the rights and freedoms of an individual and citizen, under such conditions, are the duty to ensure and guarantee by the whole system of public authorities. In this case, there is a problem in the further legal development for the implementation of the mechanism for ensuring the rights and freedoms. And this is why the prescription of this constitutional norm should become the basis for further consolidation of the norm in the Section II of the Constitution of Ukraine, according to which the rights and freedoms of an individual and citizen would determine the essence, content and adoption of normative and legal acts, as well as would direct the activities of the legislative, executive and judicial power and local self-government agencies. Another issue is that the necessary laws are not adopted or existing legal provisions, in fact, instead of further development of the rights and freedoms make their application impossible.

Actually, the filling of the fundamental rights and freedoms of an individual and citizen with the real meaning can take place both through the adoption of regulatory acts and by the interpretation of the content of the norms by the Constitutional Court of Ukraine. However, the problem is that urgent laws quite often in Ukrainian practice, are not adopted, which makes it impossible to implement certain rights and freedoms in general.

It is quite evident that, despite constitutional reform (amendments to the Constitution of Ukraine in 2004), constitutional modernization (repeated amendments and alterations to the Constitution of Ukraine), the rights and freedoms of an individual and citizen need not only improvement at the legislative level, but also the creation of an effective mechanism for their implementation and protection.

Namely, in the context of the foregoing, there should be a concretization of the content of the constitutional and legal norms in part of human and civil rights and freedoms, which, in turn, is an important condition for the implementation of legal norms in the field of human rights and freedoms. Moreover, the modernization of the Section II of the Constitution of Ukraine should be based on the generally recognized system of values and their associated ideas, views, and principles on the place and role of human rights in society and the state.

According to P. M. Rabinovych, the Constitution of Ukraine should be brought into more complete conformity with international "law and humane" standards, in particular through: 2. To specify the content of the rule of law principle and its correlation with the principle of legality ... 5. The grounds for restricting the rights of an individual and citizen should be adjusted in such a way that they are not wider than those specified in international treaties ratified by Ukraine.

In the context of the foregoing, it should be emphasized that in accordance with Parts 2 and 3 of the Art. 22 of the Constitution of Ukraine "The constitutional rights and freedoms shall be guaranteed and shall not be abolished. The content and scope of the existing rights and freedoms shall not be diminished by an adoption of new laws or by introducing amendments to the effective laws". The provisions of this constitutional norm have an extremely important legal significance, but in the light of the current tendencies of international cooperation, they require wider guarantees in accordance with generally accepted principles and norms of international law. It should be noted that the real situation with the observance of human and civil rights and freedoms depends to a large extent on the education, development of self-respect and self-awareness of citizens, their readiness to have these rights, to implement and protect against any unlawful actions, it is necessary to state that this potential in the Ukrainian society is still insufficient. However, public demand for improving legislation on human rights and freedoms, awareness of relevant norms begins to increase.

Summarizing the above, it should be noted that the main expected results regarding the improvement of the Constitution of Ukraine in terms of human and civil rights and freedoms should be, *first of all*, the principle of priority of human and civil rights in relation to the state should be the primary, fundamental, determining and system-forming factor of the legal state and functioning of the public authority system. The constitutional state (the Art. 1 of the Constitution of Ukraine declares Ukraine as it is) must provide a compromise in society that is based on common sense, and the rights and freedoms of an individual and citizen must ensure the autonomy of an individual in relation to the state. The development and functioning of the rule of law state is possible only in the society, where there is agreement of citizens in regard to the basic principles of the structure of society and the strategy and goals of its development. *Secondly*, the necessity of real

provision of the principle of the priority of human rights in relation to the state at the constitutional level and the restriction of the state's sovereignty by human rights, i.e., under the condition of an increase in the role of civil society, the constitutional and legal norms regarding human and civil rights and freedoms should be based on the universal principle of equality of all subjects of social relations, including the state. Therefore, the introduction of amendments to the Constitution of Ukraine in part of human and civil rights and freedoms should ultimately ensure, in particular, the integrity and fundamental nature of the Constitution of Ukraine for law-making and law-enforcement practices in the context of general areas of constitutional and legal regulation. *Thirdly*, the Section II of the Constitution of Ukraine needs its structuring, with the purpose of proper practical provision of guaranteed human and civil rights and freedoms.

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Decentralization of power as a component of public administration reformation in Ukraine

At the current stage of economic development, Ukraine consistently focuses its efforts on the European integration course implementation, international legal obligations fulfilment, including local and regional democracy development. That is why further democratization of society and the simultaneous decentralization of power on the principles of subsidiary have been and are remaining to be the priorities for Ukraine. In the context of new approaches introduction to regions development, the issue of the effective implementation of decentralization is one of the basic conditions for independent and effective activity of local authorities, increasing the financial capacity of regions and communities, which determines the relevance of the current research topic. According to the general definition, the process of decentralization is a restructuring or reorganization of power, which results in a system of joint responsibility of institutions at all levels of government (central, regional, local) in accordance with the principle of subsidiarity, which increases the quality and efficiency of the management system and the opportunity for people to participate in economic, social and political decision-making process and thus ensuring the transparency and prompt implementation of these solutions.

The state policy of Ukraine in the field of local self-government is based on the interests of people from territorial communities and envisages the power decentralization - the delegation of a significant part of authority, resources and responsibilities from the bodies of executive power to bodies of local self-government. The basis of this policy is the provisions of the European Charter of Local Self-Government and the best world standards of public relations in this area.

The legislative framework for changing the government system and its territorial basis at all levels was formed in 2014 with the adoption of the Concept of Local Self-Government and Territorial Organization of Power Reform, which consists of three areas: the basic (formation of united communities at the basic level of the administrative-territorial structure of Ukraine), the creation of new districts, which will devote the scope of their responsibilities to what is within the competence of the oblast (communal property, secondary medicine, boarding schools, etc., the rest of rayon authority refers to on the competence of the united communities); the final one is the change in the form of the rayon's (region's) management [1].

The territorial community is a social community, united based on common interests and needs of the population included in it, the system of relations and nexus between these people. The right of the territorial community, its members to local initiatives is enshrined in Article 9 of the

Law of Ukraine "On Local Self-Government in Ukraine" dated May 21, 1997 [2]. This right of a territorial community can be conditioned based on the interpretation of Article 140 of the Constitution of Ukraine, according to which local self-government is managed by the territorial community both directly and through local self-government bodies: village, settlement, city councils and their executive bodies.

The most essential system-forming features of such a community are sustainable economic, social, informational, political, cultural and environmental ties and relations that distinguish it as a rather independent system of spatial organization of people's livelihoods [3].

Recognition at the highest legislative level of the territorial community as a source of an independent form of public authority in Ukraine, the primary subject, the carrier of functions and powers of local self-government requires the formation and functioning of the community not as a group of inhabitants of a certain settlement, but as a capable unity, socially and politically active, self-sufficient in terms of providing material and financial resources able to take efficient and responsible management of their own affairs that needs to be coordinated with its status with legal status of other participants of local self-government, building an effective system of distribution of functions and powers of local self-government [4].

During 2014-2015 Ukraine took important steps towards the reform of local self-government: the process of territorial communities' integration, decentralization of public administration and finance were launched, a number of legal acts were approved, which were regulated in that field, budget and tax reforms were implemented that strengthened a financial basis for the livelihoods of territorial communities.

State policy in the field of territorial community formation includes a large range of normative legal acts regulating their activities and powers. During the period of authority decentralization and the prerequisites for the capable territorial communities formation creation, numerous legislative acts were adopted, among which the following Ukrainian laws have to be singled out: "On Cooperation of Territorial Communities", "On Amendments to the Tax Code of Ukraine and Certain Legislative Acts of Ukraine on Tax Reform", "On Amendments to the Budget Code of Ukraine on the Reform of Intergovernmental Fiscal Relations", "On the Principles of State Regulatory Policy", " On voluntary association of territorial communities", "On Local Elections", "On Amendments to Some Laws of Ukraine Concerning the Organization of the First Elections of Deputies of Local Councils of Village, Settlement, City Mayors", " On Amendments to the Budget Code of Ukraine on the Peculiarities of the Formation and Implementation of Budgets of the Joint Territorial Communities", "On amendments to the Budget Code of Ukraine regarding the admission of certain administrative charges to local budgets".

Reform of local self-government bodies involves the association (consolidation) of territorial communities. This is due to the fact that an excess of resources in such communities is spent on the maintenance of the administrative apparatus. However, there is insufficient budget on the implementation of serious local development projects, rendering additional resources to the overwhelming majority of the existing territorial communities will not provide them with the capacity. Therefore, the reform of local self-government, considering the positive experience of both European and own historical experience, involves the mandatory association (consolidation) of territorial communities.

The Law "On Voluntary Association of Territorial Communities" enabled the formation of a capable basic level of local self-government. Voluntary unions have to be based on the following principles:

- ubiquity of the authorities - as part of a united territorial community, another territorial community with its representative body of local self-government cannot exist;
- integrity - the territory of the united territorial community must be inseparable, the boundaries of the united territorial community are determined on the external borders of the jurisdiction of the councils of the territorial communities that have formed an association; the united territorial community must be located within the same area;
- economic efficiency - when making decisions on the voluntary association of territorial communities, account is taken of historical, natural, ethnic, cultural and other factors that influence the socio-economic development of the united territorial community;
- compliance - the quality and accessibility of public services provided in the united territorial community cannot be lower than before association formation [5].

From 2015 to 2018, 878 united territorial communities (UTC) were created in Ukraine. These UTCs included more than 4,000 former local councils. The law also introduced the Counselor Institute in UTC, representing the interests of rural residents in the community council. There are already 786 counsellors working in the UTC villages, and almost 1.7 thousand of them are acting as chiefs [6].

State support for regional development and community infrastructure development during the reform has increased 39 times: from UAH 0.5 billion in 2014 to 19.37 billion UAH in 2018. Due to this support, more than 10 thousand projects were implemented in the regions within 2015-2018 [6].

The Law "On Cooperation of Territorial Communities" created a mechanism for solving common community issues: utilization and recycling of garbage, development of a common infrastructure, etc. The united territorial communities will be able to carry out external borrowings, independently choose institutions for servicing local budgets in terms of the development budget and their own revenues of budget institutions. With the

adoption of the law on the decentralization of powers in the field of architectural and construction control and improvement of city-building legislation, local self-government bodies have the right to independently determine the city-planning policy. By the end of 2018, already 325 cooperation agreements had been implemented. This mechanism has been applied by 975 communities so far [6-7].

The goal of the local self-government reform is, first, to ensure its ability to independently, at the expense of its own resources, resolve issues of local importance, that is, the allocation of territorial communities with more resources and the mobilization of their internal reserves. The main instrument of social and economic policy is the budget, and the same fiscal policy has to ensure sustainable and efficient economic development. Therefore, at the current stage of administration the budget decentralization is the ground [8].

Reforming the territorial organization of power and administrative-territorial organization in Ukraine is one of the fundamental reforms affecting many spheres of people's livelihoods. Successful implementation of this reform, which will result in a radical change in the basic principles of social development management, is a significant prerequisite and a key to solving other systemic issues of socio-political and socio-economic development of Ukrainian society.

Since the adoption of the Concept for the local self-government reform and territorial organization of the authorities a basic legal framework has been formed, in particular, the amendments to the Tax and Budget Codes of Ukraine (fiscal decentralization) have been amended, the State Strategy for Regional Development has been approved, and a new Regional Policy Law has been adopted, changes in the administrative-territorial system have been implemented.

The peculiarity of power decentralization in Ukraine is that the processes of local self-government reform, administrative-territorial organization and state regional policy are lasting simultaneously.

On December 28, 2014, the Verkhovna Rada of Ukraine adopted amendments to the Tax and Budget Codes of Ukraine. The changes introduced a new financial basis for local governments, established a new distribution of national taxes and introduced new local taxes, as well as introduced a new system of budget equalization.

After making changes to the tax and budget laws, the main taxes that comprise local budgets (cities of oblast significance, districts, united territorial communities) are: 60% of personal income tax, 5% of the excise tax on the sale of excisable goods, 100% of the single tax, 100% of the property tax (real estate, land, transport), 100% land payment, 100% profit tax on communal enterprises, 100% of the fee for the provision of administrative services and 25% of the environmental tax. Bodies of local self-government received the right to service own receipts of their budget institutions and

development funds in state-owned banks and not to be dependent on the State Treasury.

The most significant was the change in the budgetary equalization system of local budgets by expenditures, on the system of income equalization. As a result, only 50% of additional income is withdrawn from the budgets of the administrative-territorial units that earn more than the expenditures that they have, provided that the index of capacity is more than 1.1. Such seizures are used to provide a basic grant. Instead, in the administrative-territorial units that do not obtain the required amount of expenses, the basic grant is only 80% of the required amount (provided that the index of capacity is less than 0.9). The new system encourages communities to increase local budget revenues, i.e. the more is earned the more is received.

At the same time, in order to overcome the challenges facing fiscal decentralization, it is necessary to:

- increase the efficiency of local taxes and fees: simplify the administration of real estate tax without the establishment of privileges (every square meter is taxable); it is necessary to restore the transport tax;
- approve state social standards and norms for each of the powers delegated by the state to local self-government;
- the consolidation of the corporate profit tax for regional budgets and the city of Kyiv is ineffective given the very low predictability of the tax, since there is a tendency that the tax will flow to the budget of the city of Kyiv in connection with the re-registration of large enterprises in the city;
- the excise tax is uneven for different territories. Therefore, it is necessary to leave the proceeds from the excise tax to the budgets of the united territorial communities, which have been united according to the long-term plan, as well as to the regional budget.

On January 23, 2019, the Cabinet of Ministers of Ukraine initiated a transition to a new stage of decentralization reform, which envisages consolidating the already achieved successes and forming of capable communities, changing the territorial structure at the level of districts and communities, a clear distinction of authorities and control functions at various governmental levels, and the development of local democracy forms.

Consequently, decentralization is by far the most efficient and effective means of ensuring the financial autonomy and sustainability of local authorities through the empowering with sources of budget revenues previously allocated to the central government and the expansion of the financial base of the administrative-territorial units.

The most problematic nexuses for this task in Ukraine currently are: obsolete legislation that does not provide sufficient autonomy for the effective resolution of issues of local importance to the local self-government bodies;

mismatch of organizational and financial possibilities of local self-government bodies for the territorial communities development needs; not sufficient experience of direct participation of territorial communities in solving local issues. An analysis of the modern methodological foundations of the research and development of sustainable development strategies testifies to the absence of domestic conventional and actually tested modern techniques, which often leads to the adoption of many unsuccessful decisions in the area of a territory sustainable development.

In order to address the issues already identified in the reform of the territorial communities and to prevent the emergence of new major tasks of the government the following measures have to be taken: the approval of a new territorial basis for the activities of the authorities at the level of communities and districts; creation of an adequate resource base to ensure the local self-government activities; ordering the system of state control and supervision over the legality of the local self-government bodies activities; improvement of the coordination mechanism of central and local executive authorities, etc. (Fig.1.).

It is necessary to improve the institutional support of the territorial community reformation process, which envisages improving the legislative and regulatory framework for the further reformation and formation of an organizational and legal system and financial and economic mechanisms aimed at the formation and development of self-sufficient territorial communities. At the legislative level, the state must adopt a number of legal acts (laws):

- about the principles of the administrative-territorial system of Ukraine, which, in the framework of the current Constitution, would determine the principles on which the administrative-territorial structure of Ukraine has to be based, the types of settlements, the system of administrative-territorial units, the powers of state authorities and local self-government bodies on issues of administrative-territorial units, the order, establishment, liquidation, outline and change of the boundaries of administrative territorial units and settlements, maintenance of the State Register of Administration units and settlements of Ukraine;
- the introduction of amendments to the law "On regulation of urban development activities", which eliminates the existing shortcomings in the regulation of urban development activities that will eliminate the misuse and distribution of land;
- about service in local self-government bodies, which will ensure equal access to service in local self-government bodies, increase the prestige of service in local self-government bodies, motivate local employees to community enhancement and own development [9].

In the context of globalization processes increase and exogenous influences, the important task of each territorial community is to preserve its social structure and ensure sustainable development on an innovative basis.

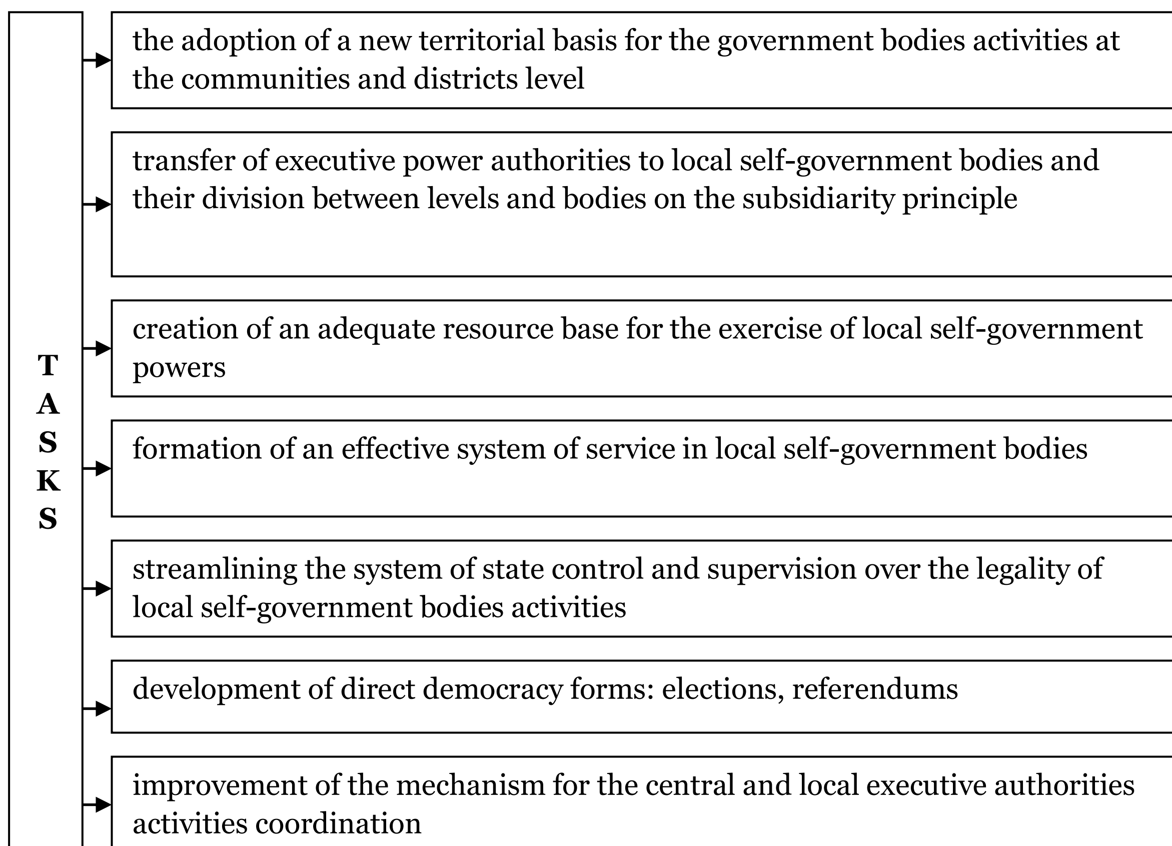

Fig.1. The main tasks of the Ukrainian government in the conditions of decentralization

The package of laws on extension of local self-government bodies powers and optimization of administrative services allowed to delegate to the local self-government bodies the appropriate level of authority in order to provide basic administrative services: registration of place of residence, issuance of passport documents, state registration of legal and private entities, entrepreneurs, associations of citizens, registration acts of civil status, property rights, land issues, etc.

The new legislative framework has greatly enhanced the motivation for inter-municipal consolidation in the country, has created the right legal conditions and mechanisms for the capable territorial communities of villages, settlements, cities formation, which unite their efforts in solving acute issues. Moreover, a new model of financial support for local budgets, which received some autonomy and independence from the central budget, has already justified itself.

The reform of local self-government and decentralization of government involves overcoming many challenges, namely: the dependence of the territories from the central parts; infrastructure and financial weakness of

communities; degradation of the countryside; high level of subsidy of communities; low investment attractiveness of territories, etc.

Successful implementation of this reform, which will result in a radical change in the basic principles of social development management, will be a significant prerequisite and a key to solving other systemic issues of socio-political and socio-economic development of Ukrainian society.

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Strategic planning of sustainable development of territorial communities in Ukraine

Globalization has significantly influenced the way cities and territories develop. It involves expanding the size and forms of international economic relations, granting access to large capital and resources, technologies and markets, leading to an increase in interdependence between the territories around the world. The concept of sustainable development is based on a systematic approach and is an important mechanism for strengthening national capacities in order to effectively manage and develop the approach to contemporary and future economic, social and environmental state policies. Local authorities implement the state policy through the governing entities - territorial communities. The state of economic development of the country directly depends on the ability and concern of the communities to engage in local development of their territory. Strategic approach to the planning of sustainable territorial development is actively developing and implemented in Ukraine and other countries. This is due to its benefits for all major subjects of this process. Nowadays, taking into account contemporary conditions of development, the functions implemented during the planning process are substantially changed, while the role of planning in the system of local government is changing as well. Such activation of planning activity, on the one hand, is a logical stage in the development of regions and separate territories, on the other hand, demonstrates the efforts of regions to find adequate tools that would help to respond to the challenges of a modern, globalized world. Taking into account the European integration course, the introduction of strategic planning of sustainable development of territorial communities in Ukraine is becoming urgent and one of the significant aspects of improving the efficiency of public administration.

To the conceptual principles of forming and implementing the state policy of territorial communities development the scientific works of Alfiorov S. [1], Brusak R. [2], Zalutsky I. [2], Melnichuk A. [3], Ostapenko P. [3], Shevchuk B. [2], Orlova N. [4] etc. are devoted. Despite the presence of a significant number of fundamental scientific works regarding the separate issues of creation and development of territorial communities, the issue of the mechanism of strategic planning of the territorial communities sustainable development remains to be solved.

The purpose of the study is to identify the elements of strategic planning of the territorial communities development in order to create an effective system of public administration and sustainable development of Ukraine.

Sustainable development is a modern widespread concept of the interaction of society and nature, which is today guided by the advanced countries of the world. Sustainable development implies the harmonious coexistence of all states and nations among themselves, with the environment

based on the concept of a noosphere, developed in the light of the realities of the XXI century, when meeting the needs of society takes place without prejudice to the development of future generations.

Implementation of sustainable development principles in Ukraine at the present stage of state-building is an important part of the state policy. The concept of sustainable development of Ukraine defines "sustainable development" as a process of building the state on the basis of harmonizing the economic, social and environmental components in order to meet the needs of present and future generations.

A key factor in implementing the principle of sustainable development in Ukraine is reforming existing management system, inter alia, the Concept for Reforming Local Self-Government and Territorial Organization of Power, approved in April 2014 [5]. According to the latter, the purpose of its implementation is to create and maintain a healthy living environment for citizens, to provide high-quality and affordable public services, to establish institutions of direct democracy, to meet the interests of citizens in all spheres of life in the respective territory, and to reconcile the interests of the state and territorial communities [5].

Different approaches to reforming the existing management system are proposed, in particular, these are such ways and means which envisage the normative settlement of the powers issue between the executive power and local self-government bodies in order to provide the high-quality administrative and social services for the population; formation of optimal resource capabilities of local self-government bodies through creating united territorial communities; maximum involvement of the territorial communities population in adopting administrative decisions, further development of modern forms of direct democracy [1].

In 2018, 899 territorial communities were created in Ukraine, in 66 of which the first local elections are scheduled for 30 June 2019, 25 - are waiting for the decision of the Central Election Commission regarding the date of the first elections, 26 – are the cities of regional significance, joined by territorial communities [6]. Due to financial decentralization, the resource base of local budgets has been substantially strengthened and the preconditions have been formed to intensify the process of voluntary association of territorial communities.

Sustainable development of the territorial community is a mode of functioning oriented on the positive dynamics of the population's welfare parameters, provided with sustainable, balanced reproduction of social, production, financial, resource and environmental potentials. Local governments are responsible for the sustainable development of the local community, guided by the principles of local self-government and creating the preconditions for transfering the minimum economic, environmental and social debt to future generations. The purpose of local self-government activities is to achieve, together with the territorial community, a sustainable

social and environmental development with an effective economic mechanism to meet human needs and preserve the natural environment.

Thus, in today's conditions, the sustainable development of the territorial community implies: the ability to self-development and progress, that is, to ensure sustainable growth of production, to create reliable conditions and guarantees for entrepreneurship, formation of a favorable climate for investment and innovation; rational use of natural resources and preservation of ecological balance of the territory; stable growth of the quality of life of the territorial community's population; efficiency increase.

In order to ensure the irreversible transition to sustainable development, one should ensure coordination of government actions at the state, regional and local levels, as well as clearly define the strategy for planning sustainable development of territorial communities, that is, planning local economic development with a focus on three components: social well-being, equal access of the population to public services, health care, environmental cleanliness, environmental safety and security.

Modern planning of the territorial communities sustainable development means the rejection of the industrial economy model, which has been a national ideal for a long time.

Planning of the territorial communities sustainable development is a hierarchical process aimed at increasing the social and ecological, as well as economic sustainability of functioning of territories or its separate territorial communities.

Social sustainability involves proper medical care, safe and healthy housing, high-quality education for all community members; support of public safety and law and order; strengthening the spirit of the community, its cohesion, generating a sense of belonging to a certain territory, that is, the development of local identity; promotion of creative expression, preservation of traditions, etc.

Environmental sustainability is not only the care and preservation of the environment, but also the satisfaction of first human needs in clean air, environmentally friendly food products; providing landscaping, implementing measures for energy saving, providing housing and communal services.

Economic sustainability is one of the important components determining the economic progress of community development. The achievement of economic sustainability is preceded by the creation of a favourable environment for doing business, attracting local and foreign investment in the local economy, providing maximum assistance to companies operating in the territory of the territorial community, retraining personnel in the light of future business needs, creating a financially viable economic basis. All of these factors influence the creation of jobs, and thus prevent the outflow of people from the newly created community. This

approach contributes to economic growth and meeting human needs while preserving the environment for future generations [7].

The key principles to be taken into account when planning sustainable communities are:

1. The need for a systematic, comprehensive and integrated approach to local development. To be effective, local economic development should not be limited to one measure, that is, it should not be directed exclusively to attracting any entrepreneurs and any jobs. Successful local economic development initiatives should be focused, multifaceted, and geared towards addressing a wide range of issues related to ensuring sustainable community development and balancing economic, social and environmental objectives.

2. Local Leadership and Perspectives. Leadership is a prerequisite for successful activity and the main pillar of strategic planning. Today, more and more experts tend to believe that the development of leadership as one of the important components of the local government process can significantly improve the efficiency of government activities by using additional tools when working with the team, community, stakeholders and direct recipients of services provided by the authorities.

3. Creativity. Today's competitive global environment is putting pressure on communities in their development. Sustainable development and aspiration for the growth of quality of life require constant search for new extraordinary decisions. Rapid technological, political, economic and social changes require creativity in the planning of changes, the search for new ways of economic development (for example, knowledge economy development, information economy, economy of impressions, etc.).

4. Creating partnerships, community engagement and networking is an important condition for the success of planning, ensuring progress, implementing effective strategies and local development programs. Local economic development activities are most successful when implemented through community engagement, partnership between authorities, entrepreneurs, non-profit organizations and the public.

5. Need to move from closed local economies to open global systems. In the context of globalization, the economies of the community, municipalities, regions and the country as a whole must shift emphasis to economic development programs. The best approaches to local economic development are to apply the leverage principle to further develop the strengths of the community or region to obtain comparative and competitive advantages.

6. Local development should aim at achieving strategic goals, but at the same time it should demonstrate a certain positive effect in the short term.

7. Local development should be a proactive, flexible and adaptive process. In today's global world, developing and coordinating planning with a dynamic, rapidly changing environment is an essential challenge for the success of local community development.

8. Programs and measures for local development should be transparent and accountable. Transparency means an open discussion of the process of planning local economic development and informing the widest possible audience about it. Accountability is a logical consequence of transparency.

10. Growth of competitiveness is an important part of the activities in the field of planning of local community development. Achievement of development plans and all activities in the field of local development include the development of strategies, the preparation of programs and projects that ensure formation of such a business climate and local conditions conducive to the maximum attraction of resources to ensure economic growth.

In general, the success of sustainable development depends on the success of local economic development, especially on the conditions in which business is located. High quality of life, developed economy, favourable business climate, friendly environment contribute to the formation of a culture of life, work and leisure, focused on sustainable development.

In order to achieve these goals, action plans should focus on the development of the economy and the competitiveness of the territorial community and should include tools, measures, programs and projects aimed at attracting investment, supporting entrepreneurship, starting up new businesses, maintaining existing enterprises, developing local markets, creating clusters, industrial innovation or industrial research parks, business incubators, business centres, business support funds, inter-municipal cooperation, creation of public-private partnerships, marketing of the territory, establishment of a communication system, etc.

The system of territorial planning tools for the development of territorial communities can be classified into three groups, each reflecting a specific objective (Table 1).

Table 1. Territorial planning tools for the development of territorial communities

Purpose	Tools
Supporting the development of existing and creation of a new local business	study, training, counselling, information, support, concessional and targeted loans, simplified permit conditions, access to lease at the start of activity, incentives, transparent access to business-oriented information, clusters.
Encouraging businesses and investments into the territory	algorithm of opening a new enterprise, investor's roadmap, creation of investment products, design of the territory, preparation of industrial sites, creation of industrial parks, marketing of attracting investments into the territory, development of investment passports, promotion of territory, identification of competitive advantages, criteria for investors, priorities for the development of the territory, etc.
Development of local development institutions	activities of economic development agencies or local and regional development agencies, city development centers, business incubators, business centers, public organizations, business associations, licensing centers, administrative service centers, chambers of commerce and industry, information and advisory centers, attracting investments agencies, entrepreneurship support funds, etc.

The development of plans for a strategy of territorial communities sustainable development should be based on six basic principles: economic development is created by business; workplaces ensure the welfare of the community and affect the growth of both individual incomes of residents and the growth of the aggregate social product; local authorities and public organizations create conditions for business development; developed infrastructure is a key element of the community's competitiveness; quality services provided by local authorities to the community and business is a key element of competitive advantage; effective city or regional management is provided by system management (planning, organization, motivation, control), local resources, stakeholder cooperation and tripartite partnership.

After the strategy has been approved, an important element of its effective implementation is the process of tracking and evaluating the planned results to minimize the risk that the strategy will not become an effective tool for long-term territorial development.

One of the tools for ensuring the sustainable and holistic development of the territorial community is formalized and regular monitoring of the process of implementing the strategic plan, analysis of the information received, making corrections, updating tasks, etc. Monitoring is a process of regular collection and analysis of key data (indicators) to determine the progress achieved in the implementation of the strategic plan. The following tools, such as SWOT-analysis, PESTLE-analysis and A-B-C analysis etc., are used to monitor the implementation of the strategy of territorial community sustainable development.

In the conditions of globalization, the key characteristics of planning are technological innovation, modernization of workplaces and content of employees' work, as well as the emergence of domestic local economic driving forces based on the competition of local factors of information, creativity and knowledge.

An interesting example for territorial communities' sustainable development can be revitalization projects, for which the EU allocates funds and which are carried out by EU Member States. For Ukraine, such projects are perceived as projects for the restoration of obsolete infrastructure (historical architecture, castles, houses, parks, etc.). According to the EU legal instruments, the funds for the revitalization project can be allocated, when, firstly, the object valuable to the community is to be restored and includes a component of the improving the infrastructure, secondly, this object should be used for the growth of economic activity in the community, and thirdly - the project should contain the social and ecological component: increase the equality of access of community members to the common service or increase of the level of environmental safety and health of population. The notion of "revitalization" is not the same as the term "overhaul". This recovery is not only technical, but also social and cultural. For example, in Poland

(Malopolska Voivodship, Rabka-Zdroj), the following two lasting revitalization projects were carried out:

- the project for the revitalization of the railway station premises based on the ideas proposed and discussed with the community (the restored premises of the station has a small waiting hall, a cafe, a hall for public gatherings, a small library and free access to a computer room with the Internet);
- the project of revitalization of the local park (lighting the park, now the park has a cinema in 3D format, cafe, stage for performances).

The main obstacles to the sustainable development of territorial communities in Ukraine are the instability of socio-economic conditions in the state, the lack of a scientifically sound, well-defined strategy for its sustainable development, effective reform of the economy and its state regulation, the imperfection of legislative and regulatory framework for the formation of adequate conditions for the financial market, legal, informational and communication space, imperfection of legal, organizational, economic principles of activities of executive agencies and bodies of local self-government, individuals and legal entities on the formation of a full-fledged living environment. Thus, the main obstacles to the development of territorial communities can be divided into four groups: the politicization of the association process of territorial communities, the low institutional capacity of newly formed communities, the low capacity of a part of the united communities, the lack of a direct subvention in support of territorial communities (Fig. 1).

Thus, we can state that not all opportunities for cooperation of territorial communities and the development of territories are currently being used. In order to activate this process, it is necessary to ensure, first and foremost, efficient communication of executive bodies and local self-government bodies on the ground, organizational and methodological assistance to local self-government bodies, dissemination of information on successful practices in implementing cooperation projects, etc. In the future, various forms of cooperation can be widely used to combine the efforts and resources of the united territorial communities in the implementation of investment projects.

On the basis of the study of the sustainable development concept, it has been proved that the implementation of the principles of sustainable development at the present stage of state formation is an important component of state policy. The principles of sustainable community development planning have been stressed: the need for a systematic comprehensive and integrated approach to local development, local leadership; creativity; creating partnerships, engaging the community and establishing cooperation; the need to move from closed local economies to open global systems; the pursuit of strategic goals; flexibility and adaptability; transparency and accountability; growth of competitiveness.

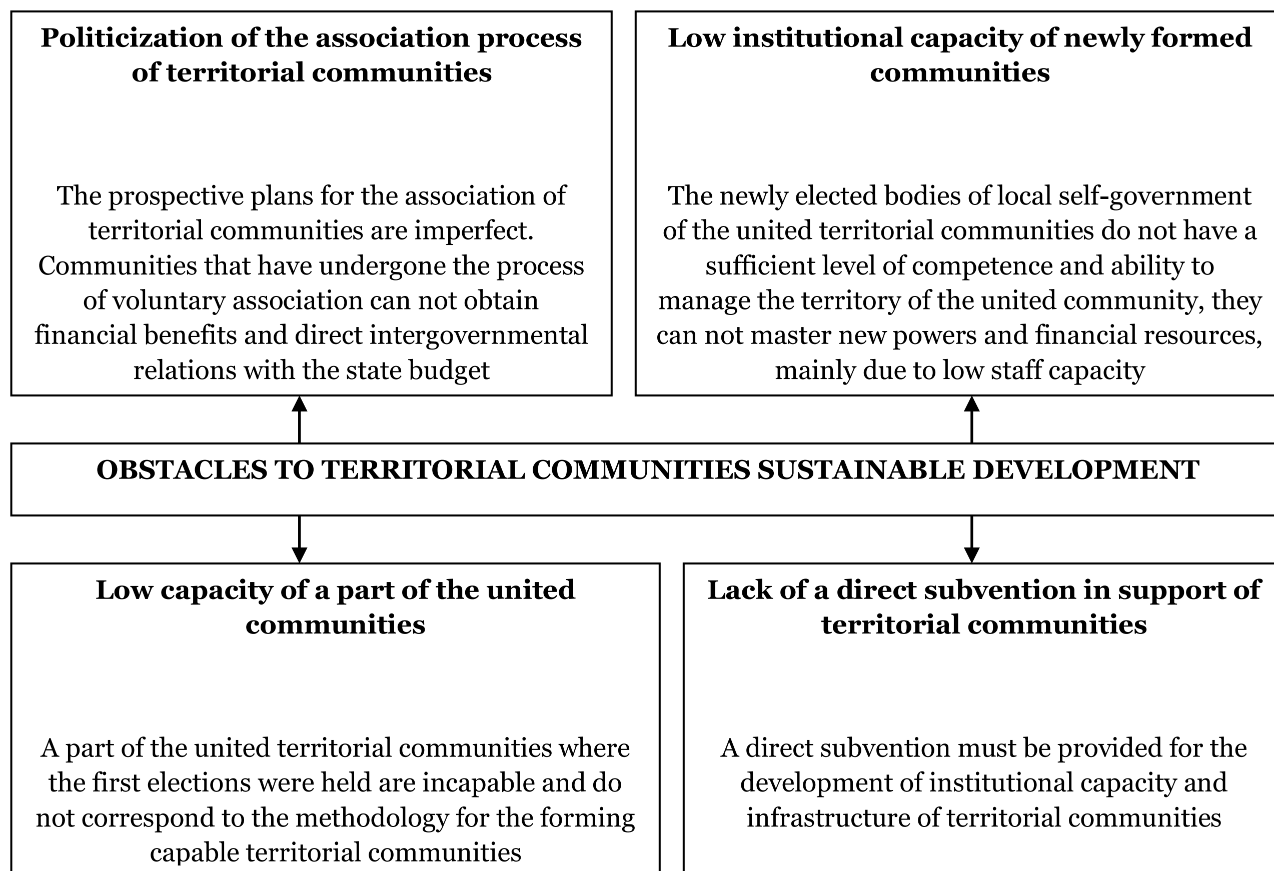

Fig.1. Obstacles to the sustainable development of territorial communities in Ukraine

In the future, it is necessary to ensure efficient communication of executive bodies and local self-government bodies, organizational and methodological assistance to local self-government bodies, dissemination of information on successful implementation practices of cooperation projects.

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Innovation and novation as a form of law renewal

In a broad sense, innovation is a product of intellectual activity of people, designed as a result of fundamental, applied or experimental research in any field of human activity, aimed at improving its effectiveness. Innovation in worldview and ideology, in formation of new industries and directions, in radical change in management system is attributed to revolutionary changes, when the innovations themselves require breaking stereotypes of thinking, staff changes, training of new specialists, changes in rules and regulations, programs and projects, laws and even the constitutional norms of civil society. Therefore, innovations are often revolutionary in nature and are the basis of scientific and technical and any revolution. An innovation is a novation or introduction that significantly enhances the performance of an existing system. In jurisprudence, modern scholars also distinguish between legal novation and legal innovation. In the legal sphere Yu. M. Oborotov defines the novation concept as a departure from traditional experience associated with its creative development. This author reviews novations in law in one meaningful field with the innovation concept, emphasizing the subjective and objective nature of the latter. Innovation, in his opinion, is any discovery made at the personal level, but achieves social acceptance. The main condition for novations is thus their broadcasting [7, p. 100]. The authors note the social content of this definition in the absence of its purely legal characteristics.

Initially, novation involved updating the legal matter. This is the title that was laid down in Roman law. The Edict of Milan (313) introduced such legal novations (novelties) as: freedom of Christian confession, the principle of religious freedom, restoration of property rights of the Christian Church as a subject of Roman law [8, p. 122].

Traditionally, legal innovation refers to the introduction into the legal system of a novatlty, which qualitatively improves its elements in order to harmonize existing law, and therefore legal innovation is considered as one of the means of improving the efficiency of legal regulation and improving the quality of legal system. Meanwhile, legal regulation updates can be non-progressive and even destructive. For example, rejection of the idea of holiness and privacy and absolutization of collectivist forms of legal life, carried out in process of so-called socialist transformations in Russia and some other countries, led to destruction of private legal regulation, mass violation of human rights, and a return to a lower level of development economy. As a negative novation, it is worth considering the law-making errors that cause the legal regulation to undergo destructive changes.

In our view, understanding the phenomenon of novation in law is impossible without generalizing its empirical manifestations. Such

manifestations of novations in legal sphere are the formulation of new in content or form of legal norms, emergence of new sources, institutions and branches of law, development of new approaches to individual legal regulation, in particular to resolution of legal cases, organization of new legal institutions, formation of new values in justice and emergence of new components of legal culture and legal communication. It should be noted separately the novative nature of legal science, which, at least ideally, is intended to develop new knowledge of law and legal reality.

The formulation of a new rule of law is the most common and simplest form of novation in law. This is exactly the way in professional justice, and law novation seems to be a value-normative system of social regulation. An example of groundbreaking approach in lawmaking is the formation of human rights institute during the bourgeois revolutions of the 17th and 18th centuries. The term "human rights" itself was innovative, since in the previous period of the history of law the existence of subjective rights, and in some places, of legal personality, was not recognized by every human being. The approach to defining the relationship between the subject of fixing the relevant legal norms - the state - and a person, was also novative. The state was entrusted with the duty to respect and enforce human rights. For example, Declaration of Independence of the USA stated that "for protection of human rights, governments are established whose fair power follows from the consent of governed" [5, 260], and French Declaration of Human and National Rights proclaimed that "purpose of any political alliance is to preserve natural and inalienable human rights” [5, p. 290]. Human rights, which define the sphere of its freedom and are based on formal equality, have become one of the main values of social development, that is, they have become not only legal but also social innovation. They influenced the state character, facilitated the establishment of democratic interaction between the state power and a person, freeing the latter from excessive care and suppressing his/her will and interests by the authorities.

In our view, the most striking novation in the area of legal protection of human rights has been the recognition, proclamation and consolidation in constitutional act of such human right as the right to life. For a long time, the fight for human rights has stood aside and was formulated only as a matter of criminal defense in the form of prohibition on murder. But the positive consolidation of this right first occurred only on the June 12, 1776, adoption of the Fifth Virginia Convention of Declaration of Rights, which later became part of the Constitution of Virginia [2].

The revolutionary nature of this innovation was that, for the first time, society and state apparatus created by it recognized a person who had previously been regarded solely as relative, as such, which the state willingly sacrificed in the protection of other protected values. It should be noted that recognition of other human rights occurred much earlier.

It should be noted that another revolutionary innovation, namely the right to privacy, is linked to American legal development. One of the first attempts to formulate the essence of "privacy" concept was made in 1890 by well-known American lawyers Samuel Warren and Louis Brandeis, who defined it as "the right to be alone" - the right to be left alone or the right to be given to oneself. [14]. However, there is also an understanding of this right as a way of organizing society [12, p. 2].

Let us note the preservation of the innovative potential of human rights to this day, which is manifestation in formation of new generations of human rights. These include the idea of somatic (personal) human rights, the study of which is part of the law anthropology, which has been asserted in Ukraine over the last decade. Somatic rights are understood to mean a group of rights that relate to the ability of a person to dispose of his/her body independently, to carry out his/her "modernization", "restoration" and even "fundamental reconstruction", to change the functional capacity of the organism and to expand their technical-aggregate or medicaments the right to dispose of one's own body (euthanasia), to determine one's gender, to freely dispose of one's reproductive function, to use reproductive technologies, in particular fertilization and cloning, organ and tissue transplantation.

In the days of the French Revolution and the American War of Independence, an innovative step was made in the formation of sources (forms) of law, namely, constitution was created as special kind of legal act possessing specific properties of stability and stability, supreme legal force, special security, etc. The first modern legal definition of a constitution was given in the French Declaration of Human Rights and the Citizen of 1789, according to which only that society has a constitution guaranteeing human rights and separation of powers.

In our view, the US Constitution (1789), France and Poland (1791) were in themselves revolutionary innovations in law, since they first put the state under the control of society and imposed legal restrictions on state power. The US Constitution is an unique document in its own right. Adopted in 1787, it still defines the foundations of political and legal system of the state. In the course of more than two hundred years of its history, only 27 amendments were made to it. To date, not only the "basic constitutional forms of the state have been preserved, the spirit embodied in the coined lines of the Constitution has been preserved." Although some of its provisions are now obsolete and regarded as anachronisms, the constitutional foundations of politics are still in force today as they were two hundred years ago. No wonder this oldest constitution in the world today is called the "legal bible". For American citizens, the Constitution is not just a law: it is a national symbol, and American constitutionalists, characterizing it, operate with the words "faith in the Constitution" and "faithfulness to the Constitution" [13].

The novative nature of the US Constitution is difficult to dispute, the only question is the qualitative nature of this novation, including whether it

was truly revolutionary. Opponents of the revolutionary American novations state that although constitutions of states and federations were created during the revolution, they nevertheless embrace ideas and principles that go back to the colonial experience (English charters and the legal system of the metropolis, including the representative government, civil liberties, and the general law legacy), ancient experience and European theory of constitutionalism. However, such a continuity does not seem to preclude revolutionary "leap" in the legalization of previously known theories, translating them into the realm of real state politics.

Innovations are traced in the law structure, in particular they are the formation of new branches of law. The whole history of law is a history of branching legal regulation according to the complexity and specialization of public life spheres. At the law history dawn, it was syncretic, and in fact, it examined only three spheres of regulation: criminal-administrative activity of state apparatus, sphere of private communication, sphere of penalties for committing offenses. It is precisely these spheres of regulation that are clearly traced in the content of the most ancient legal collections and codes (Hammurabi Laws, Manu Laws, Laws of the XII Tables, Barbaric Truths, Russian Truth, etc.).

At the stage of bourgeois revolutions, constitutional law was instituted, due process of justice was of importance, dualism of private law was formed in some legal systems, and codified laws became the main form of law. In fact, it was then that the sectoral structure of law was substantiated and put into practice. Moreover, such changes have occurred in the law of countries not affected by the revolution. Thus, at the turn of the 18-th and 19-th centuries, both the Austrian and the Russian empires developed and adopted codified criminal, civil and procedural legislation.

In our opinion, as manifestation of transitivity in law, we should consider the processes of expanding of legal regulation sphere, which is reflected in formation of new institutions and branches of law. A significant increase in the number of domestic branches of law is observed at the end of 20th -21st centuries during the period of transitional statehood and changes occurring in the political-legal regime and economic system of Ukraine. Today, we are witnessing the rapid development of the law branches related to new technologies, namely, institutionalization of social law, information law, electronic law, innovation law, intellectual property law, medical law, new branches of international law (space law, nuclear law), etc. This process has been analyzed in numerous scientific papers on emergence of new law branches. Given the patterns of emergence of new spheres of legal regulation, expansion of some law branches, there is a need to improve legal forms of the mechanism of legal regulation.

In recent years, the legal regulation of relations in the innovation field has become the subject of intense research by scholars dealing with issues of commercial and civil law. Innovation law is mainly regarded as an institution

of commercial law. Innovation law as an institution of law is a set of legal rules governing innovation relations and others related to innovation relations, as well as relations concerning the state influence on innovation activity by giving broad freedom to the subjects of innovation activity and presentation of obligations, linguistic prescriptions where necessary [3, p. 127-131].

However, modern researchers state that despite the creation of legislative framework to ensure innovative development of the state, there is no real reorientation of Ukrainian economy to an innovative model, and institutes' effect introduced for this purpose has proved ineffective. The current regulations do not consider real economic and social conditions, as well as the prospects for innovative development of society, so legal regulation is not complex. An important issue in improving the existing innovation legislation is the need to consider all the essential factors of functioning of national economy that impede innovation. Innovation legislation can be characterized as non-systemic. In such circumstances, priority is to systematize existing legislation, which will allow to harmonize and unify terminology in innovation sphere, eliminate the contradictions and duplications between the provisions of legal norms of different legal acts and ensure effective legislative regulation of relations in the innovation sphere, etc. The result of systematization of innovation legislation should be a single codification act (Innovation Code of Ukraine), which would cover all aspects of legal regulation of relations that develop in the innovation sphere. An indispensable prerequisite for innovation is clarity, stability and constant tight control over compliance with the regulatory legal framework, which requires immediate systematization and, consequently, formation of single codification act [10, p. 142-146].

At the turn of the 1980 and 1990. the information law concept, conditioned by the formation of social relations of a new type - information processes, was initiated [9, p. 7]. And at the beginning of the 21st century. a new sub-sector is emerging within information law - the e-law of high technologies. Electronic law is a complex branch of law that regulates public relations in the field of computer science, creation and use of electronic computers, electronic tools and software products [9, p. 12]. In turn, the development of e-law influences the formation of new law and state institutions. Today we can speak about the emergence of e-government - a legal form of organization of public administration, in which there is an active interaction of public authorities and local authorities, with each other, with society, a person and a citizen, business through information and communication technologies. One of the main ideas of the introduction of e-government is that it acts as a tool of development of democracy, seen as a real way to develop democratic processes in society, which was reflected in the emergence of the term "e-democracy" [4, p. 28]. It is a well-known fact that the newest Constitution's text of Iceland was created through

crowdsourcing, when proposals and amendments to the draft constitution were collected by Constitutional Assembly through social networks (however, the ideas thus elaborated were not incorporated into the current Constitution of the country). The idea of total participation in the management of public affairs has been institutionalized in Estonia, where through the Tana otsustan mina online portal, every citizen can express their opinion on current processes in the country, propose amendments to bills and even vote.

E-governance in the area of administrative services is even more common. US government provides citizens with a variety of services over the Internet: licensing, tax payment, and more. In England, business registration requires only one form to be completed online. Finland and Singapore offer mobile services to their citizens. For example, the Singapore Supreme Court sends SMS to citizens to remind them of hearing date. In addition, Singapore citizens registered on the site can electronically file small claims lawsuits. Ireland's online tax service allows businesses to receive tax information, pay taxes by filling out the appropriate electronic forms, and receive tax credits. Bulgarian citizens are able to obtain a passport within 5-10 minutes thanks to the new IT system, which integrates the passport department with the Ministry of Interior, the police and the criminal justice system [1].

Moreover, today we can talk about novative changes in the field of legal relations, which are taking a fundamentally new form. Socially, with the emergence of electronic networks, such as the Internet, communications sector has undergone a process of globalization, which has led to the emergence of virtual mass communication - this type of communication, when every participant in communication with a large number of people has the same opportunities to influence the mass, it can quickly change their roles: to be a communicator, to be a communicator; when the whole world becomes the only so-called "global village" on "common ground", it can simultaneously exist in a state of communication that loses discretion (tornness, dispersion) in space and time (the whole world here, on screen, and now). The legalization of electronic social relationships, and even more broadly, cyberspace or virtual legal behavior, is inevitable. This is already evident in the emergence of such legal phenomena as: electronic document circulation, electronic signature, electronic transactions (including electronic bidding), institutionalization of cybercrime and legal response to it, etc.

Thus, with the advent of the Internet, it has become possible to carry out legal activities online, as evidenced by the emergence of e-governance and e-democracy systems in modern states. Technological advances have given a significant impetus to public, and in particular to the legal one, as a result of which new branches of law are being formed, legal thinking and justice are changing, new skills and stereotypes of behavior are being cultivated.

An illustrative example of new ideas in the subject-matter innovation direction is the implementation of restorative justice, as well as the development and justification of Mediation Institute as a way of resolving

legal disputes and legal conflicts out of court. The effectiveness of mediation is recognized by the European Community, which led to the adoption of the Directive of the European Parliament "On certain aspects of mediation in civil and commercial disputes" of 21.05.2008 [11, pp. 3-8], which obliges EU Member States to implement the relevant regulatory acts. Mediation and other alternative dispute resolution is a widely used tool in all developed countries.

Another example of novation in the legal field is the creation and operation of reference legal computer systems. The development of legal system in the field of innovative-legal direction will allow to achieve the following results: to enhance legal culture of society; most fully to provide legal practice with legal and non-legal information; move to a system-based, logical modeling process of rulemaking; to obtain the possibility of intellectual analysis of legal information by creating expert systems, neural networks and genetic algorithms. Innovation in law contributes to positive changes in legal regulation and entails improving the quality of the legal system. For today's society, legal innovation is an indicator of social development and progress.

Finally, it cannot be overlooked such an novative aspect of legal development as legal science. It was initiated by textbooks used in ancient Rome to train future lawyers. Outlining the established stereotypes of legal activity, their authors, at the same time, systematized legal knowledge, based on which legal regulation was improved. Thus, in ancient Rome, the Gay institutions of the famous lawyer of the 2nd century are one of the best examples of the scientific-popular presentation of Roman law. The Guy Institutions served for the Roman Law Schools as an exemplary tool in the law study: consistency, brevity, clarity and statement accuracy, accompanied in difficult places by numerous explanations in case law examples, purity of the Latin language, and a great deal of historical information. The system of Roman law outlined in this famous textbook was later taken as the basis for the codifications of the emperors Theodosius II and Justinin I. The Code of Theodosius (438) united more than 3000 imperial constitutions. The 1st Book was dedicated to the law sources, the 2nd – 5th books were of private law, the 6th-15th books were of public law, the 16th one was of church law. The creation of the Theodosius Code pursued a certain purpose, one of which was to meet the informational needs of legal practice within the framework of implementing of the program of law certainty [6, p. 231].

The most notable achievements of legal science, along with elaboration of the systematization rules, are constitutionalism, justification for the separation of powers and the rule of law. Modern legal science should aim at identifying the conditions, opportunities and limits of mutual influence of legal systems, finding legal mechanisms for overcoming conflicts.

Thus, generalization of empirical historical and relevant material of innovative nature leads to the conclusion that novation in law is an update of

legal matter, that is, the value-normative content and form of law, its system or structure, or the way of its creation, realization, protection and provision. Innovation in law is a legal novelty, introduced in the course of law innovation itself as a certain system, which is accompanied by a positive change in state of legal regulation and entails improving the quality of the legal system. Innovation in law should become a tool that will solve complex theoretical and practical issues that arise when creating a fundamentally new legal regulation.

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Evaluation of EU mutual trust in criminal matters – principles, cooperation and challenges

The development of a genuine European judicial culture is a prerequisite for establishing the European judicial area but the real core of that community is the notion of "mutual trust". Legal instruments called for its building, strengthening, re-establishing, enhancing – which discloses fluctuations of the observed processes. As a main direction, the creating of legislative grounds for cooperation in criminal matters based on mutual trust has been consistently affirmed by all EU legislators. Moreover, the prospective area of freedom, security and justice needs close relationships between the competent authorities of the Member States involved in the implementation of the provisions addressed to combating of the organized crime, protection of the EU financial interests and guarantees for the concept of the fundamental rights. What has been reached for the last 20 years and is it possible to gauge the dimensions of these intangible assets?

1. The spirit of the mutual trust is attainable through the adopted legal measures and implemented activities.

Judicial cooperation in criminal matters in the European Union has developed considerably since the European Council of Tampere (1999) had decided that mutual recognition should become the cornerstone of such cooperation, as enshrined in Art. 67 and particularly in Art. 82 of the Treaty on the Functioning of the European Union. According to the Presidency conclusions in Tampere, enhanced mutual recognition of judgments and other judicial decisions and the necessary approximation of legislation would facilitate cooperation between competent authorities and the judicial protection of individual rights.

Currently the EU has established a comprehensive legal framework in the area of judicial cooperation in criminal matters and the instruments based on the principle of mutual recognition constitute the core of this framework. They cover the harmonization of the substantial criminal law provisions and unification, as much as possible regarding the sovereignty of the Member States for setting out the procedures. The most important workable instruments are the following: Framework Decision 2002/584/JHA (European Arrest Warrant), Framework Decision 2003/577/JHA (Freezing orders), Framework Decision 2005/214/JHA (Financial Penalties), Framework Decision 2006/783/JHA (Confiscation orders), Framework Decision 2008/909/JHA (Custodial Sentences), Directive 2011/99/EU (European Protection Order), Directive 2014/41/EU (European Investigation Order, which replaces conventional mutual legal assistance with a cooperation mechanism based on mutual recognition as regards, in

particular, obtaining evidence and acquires extreme popularity.). The Lisbon Treaty considerations place the accent on prospective upper level of the legislative grounds in EU policy in the justice area and particularly on the cooperation in criminal matters. Presently Regulation 2018/1805 of the European Parliament and of the Council on the mutual recognition of freezing orders and confiscation orders is adopted, which shall be directly applicable in all Member States from 19.12.2020 without any need of transposing national measures. The new proposal for a Regulation on European Production and Preservation Orders for electronic evidence in criminal matters will further complement the EU's mutual recognition instruments for judicial cooperation in criminal matters.

The principle of mutual recognition is founded on mutual trust which has been developed through the shared values of the Member States concerning respect for human dignity, freedom, democracy, equality, the rule of law and human rights, so that each authority has confidence that the other authorities apply equivalent standards for protection of rights across their criminal justice systems.

When applying this principle, a competent authority of a Member State forwards a judgment or judicial decision to a competent authority in another Member State, which executes that decision as if it was its own (subject to the applicable rules). Member States should trust in each other's criminal justice systems. Therefore the extent of the principle of mutual recognition depends on a number of parameters, which, *i.a.*, include: good understanding of different national legal systems; EU mechanisms for safeguarding the rights of suspects and accused persons, victims and third persons; and common minimum standards permanently interpreted by the European Court of Human Rights and the Court of European Union.

The process of issuing the judicial order, transferring it for recognition and execution to the country where, for example the person, evidence or the properties are, permits crossing state borders and achieving results on the territory within other national authorities' competence. And the executing country has to accept the order and to administer the procedure according to the applicable EU and domestic rules – fast, properly and with due diligence, combining obligations connected to the issuing Member State and the rights of the concerned nationals. During the execution of the judicial decision the competent court, prosecutor, judge-investigator or other authority, has to resolve any existing collision between three different legal sources – the EU law and the national law of the issuing country and its own, which should be implemented relevant to the content of request, penalty provided, stage of the procedure, legal remedies and guarantees for the fundamental rights and etc. By contrast to the ordinary legal assistance where the requested authority will make an exhaust revision of the request and deliver its own decision how it would be enforced, the principle of recognition provides directly the desired effect of the already issued act and empowers the foreign competent official to

execute it. Finally, if the formal revision gives proofs for the lawfulness of the recognized decision, the executing authority should activate and control the process of an execution to its full completion. The cooperation between judicial authorities and swift execution of decisions is not possible without direct contacts, optional clarifications and necessary consultations. These issues are also vital for building mutual confidence and trust.

2. The endorsement of the principle of mutual recognition through European legislative amendments and their application.

One of the streams of the legislative efforts refers to the concept of the fundamental rights. Initially EU law did not include specific human rights provisions. It was the Court of Justice of the European Union that, through its case-law, introduced them as fundamental legal principles of EU law based on common constitutional traditions of the Member States and international treaties, especially the ECHR. The Convention is also the basis for understanding the Charter of Fundamental Rights of the European Union, a kind of "EU Bill of Rights". Although adopted in 2000, the Charter became a legally binding document through the Lisbon Treaty. According to Article 51, it is limited to the implementation of EU law, whereby in so far as it contains rights which correspond to those guaranteed by the ECHR, the meaning and scope of those rights shall be the same (Article 52). At the same time, it should not restrict or adversely affect human rights and fundamental freedoms as recognized, in their respective fields of application, by Union Law, international law, international agreements and Member State constitutions (Article 53), specific provisions on justice, such as on the right to an effective remedy and to a fair trial (Article 47), the presumption of innocence and the right of defense (Article 48), principles of legality and proportionality of criminal offences and penalties (Article 49) and *non bis in idem* (Article 50).

By establishing the concept of the fundamental rights, applicable principles, common minimum rules on the different ranges of the criminal substantial and procedural law, protection of procedural rights of suspects and accused persons, victims, third persons, recently the EU legal acts aim to strengthen the trust of Member States in each other's criminal justice systems and thus to facilitate mutual recognition of decisions in criminal matters. As regards the question of whether there is a need for further legislation in the area of procedural rights in criminal proceedings, it is mentioned that in matters related to criminal procedural law, there are still significant differences between Member States that would justify to further analysis whether it would be advisable and necessary to take any legislative action in this respect. However, the opposite opinions clearly stated that it would not be necessary to take further legislative action in the said area, at least not at this stage. The current view among practitioners is, as regards judicial cooperation in criminal matters at EU level, and especially mutual recognition instruments, that the EU legislation is comprehensive enough and covers a

wide range of aspects, but it is necessary to enhance the application of the existing instruments and to improve practitioners' knowledge through continuous training and awareness-raising.

An application of the EU instruments on judicial cooperation in criminal matters and procedural rights should be put in the practice in a timely and correct manner. Development of Union law must be coupled with effective implementation (mentioned in "A Europe of results – Applying Community law", COM(2007) 502 final), which guarantees legal security and uniform interpretation. Current directions are clarified in Council's adopted Conclusions on "Promoting mutual recognition by enhancing mutual trust" (OJ C 449, 13.12.2018, p. 6) and in "The way forward in the field of mutual recognition in criminal matters" (Outcome of the 3697th Council meeting, Justice and Home Affairs, 6 and 7 June 2019).

The representatives of the EU Member States pointing out that various issues, notably of a practical or policy nature, can impair mutual trust, and that an ongoing effort is therefore required to foster and enhance this trust, for example differences in the implementation and application of EU law, the real degree of "rule of law", areas with a particular sensitivity with regard to fundamental rights, such as detention conditions and the length of pre-trial detention. The Member States who have made a declaration (reservation) in relation to a mutual recognition instrument are invited to verify whether such declaration can be withdrawn, so as to foster a uniform application of the instrument concerned. Cooperation with Denmark and Ireland, probably with United Kingdom after Brexit, is based on mutual legal assistance from the pre-Lisbon treaties, which could create misunderstandings and delays.

In the official papers, the Commission, the Council and the European Parliament are encouraged to draft instruments on mutual recognition, including the forms and certificates, in a more clear, precise and user-friendly way, and to seek more consistency in such drafting, so as to facilitate the application of these instruments by practitioners.

3. The role of the expert communities.

The cooperation in criminal matters is a vivid phenomenon inspired by the experts' communities. It is difficult for a single practitioner to begin such specialization considering usual caseload and the dimensions of EU and other member states laws, but the acquired knowledge is invaluable for resolving knotty situations. Nowadays the Member States are encouraged to designate practitioners in their jurisdiction as specialists in judicial cooperation in criminal matters so that they can assist the other practitioners in the application of all relevant instruments, including EU instruments based on the principle of mutual recognition. These experts are the momentum of cooperation with trust. In number of EU countries have been established national structures for ensuring international assistance of a full value.

The leader in cooperation in criminal matters, being at the same time European institution and expert community is EUROJUST. The organization,

created by the representatives of EU Member States, Norway, Iceland, the USA, Switzerland, North Macedonia, Moldova, Montenegro and Ukraine, has a remarkable role in increasing the exchange of information between the interested parties, facilitating and strengthening cooperation between national authorities and Eurojust, and strengthening and establishing relationships between partners and third States. Since November 2018 there has been announced the new Regulation on the European Union Agency for Criminal Justice Cooperation. The Regulation establishes a new governance system, clarifies the relationship between Eurojust and the European Public Prosecutor's Office, prescribes a new data protection regime, adopts new rules for Eurojust's external relations and strengthens the role of the European and national Parliaments in the democratic oversight of Eurojust's activities. The importance of that community is underlined in "Council conclusions on the synergies between Eurojust and the networks established by the Council in the area of judicial cooperation in criminal matters" (Outcome of the 3697th Council meeting, Justice and Home Affairs, 6 and 7 June 2019).

The European Judicial Network also plays an important role in legislative process in EU, in real cooperation between the authorities, in discussions on application of the instruments for the mutual recognition. Through its about 400 contact points this network ensures the flexibility in horizontal level and ability to solve practical problems with minimum pressure. On the other hand, it disseminates know-how and expertise by participating in training seminars, including in cooperation with the EJTN. In particular, the EJN Contact Points perform their tasks provided for in Article 4 (3) of the Council Decision 2008/976/JHA on the European Judicial Network. The crucial for the everyday work of the practitioners are resources of the Networks Internet site – atlas, compendium, judicial library, information of the legal systems of the countries and etc. The EJN could be addressed as the "tubular steel scaffolding" of the mutual trust in criminal matters.

Aiming to extent experts' preparation, the European Commission puts efforts to ensure that the European e-Justice Portal will promote the development of e-learning as a flexible tool to reach more end-users. It will draft practical guidelines, regarding specific learning behaviors in the judicial world and the best adapted training methodologies, which will also cover evaluation of quality and impact and the use of common quality criteria and indicators.

Mastering a foreign language and its legal terminology is important and should form part of the continuous training of legal practitioners. It is a precondition to effective contacts across Member States, which are in turn the cornerstone for judicial cooperation.

The role of European-level professional organizations should be rendered with a respect to European associations of legal professions such as the CCBE, the CNUE, the ENCJ, the Network of Presidents of Supreme

Judicial Courts, the European Union Forum of Judges for the Environment, etc., which have important coordination functions. They are key partners to promote European judicial training, evaluate the relevance of training content and methodologies, disseminate information on training resources available and ensure better results. European Academy of Law is a leading provider of a judicial training continuously presents its activities in front of the thousands of practitioners. The EJTN reached more than 1 200 exchanges in courts per year.

The training provided at national level by schools for the judiciary are also welcomed by the participants, who describe them as very useful and up to the necessary standards. Moreover, it is in their own language.

However, EU training in the field of mutual recognition could be improved, on the current challenges in the application of EU legislation regarding mutual recognition and best practices. As the field is a very dynamic one, keeping the training formats and materials updated is of great importance.

4. Problems in building mutual trust in cooperation in criminal matters.

First of all, it is a challenge to compare different national legislations in all 28 EU Member states. There are domestic measures of legislative or policy nature, launched in some Member States that encounter problems in the area of cooperation in criminal matters and progress is made in this sense. Such a complex matter needs adequate strategies and relevant responses that require, in their turn, a significant amount of observation, time and resources. However, the national constitutional traditions should be balanced with the various efforts undertaken by individual Member States to encompass the new EU provisions and standards. These include compliance with the substantial acquis of the Council of Europe and the status quo in the concerned country.

It is necessary in the short term to establish clear common criteria so that every executing State would ask the same questions and every issuing State would provide the same kind of information, while bearing in mind the particularities of the requested activity.

Specialists in EU cooperation in criminal matters need to be updated regularly on what is happening in the area of mutual recognition and mutual trust. First evaluation visits of the ninth round of mutual evaluations which could take place in the second semester of 2019 will focus on the issues as regards FD 2002/584/JHA on the EAW - practical challenges encountered by Member States' judicial authorities in relation to the recent case-law of the Court of Justice of the EU (CJEU) in the field of mutual recognition; in particular, the evaluation could assess the procedure to follow in case of a risk of infringement of fundamental rights, because of detention conditions ("Aranyosi" and "Căldăraru" joined cases and ML case), including as regards supplementary information and procedures in order to respond to questions related to prison conditions; proportionality in relation to the use of the EAW

as the most appropriate instrument; role of the central authorities and direct contacts between the competent judicial authorities; deficits of information by the executing authority to the issuing authority and the requirement of providing additional information by the issuing authority to the executing authority; new obstacles identified with regard to grounds for refusal, e.g. in relation to judgements "in absentia". As regards FD 2008/909/JHA on Custodial sentences, as the first, the evaluation could be more extensive and consequently focus on the: nature of measures involving deprivation of liberty-differences in legal systems; issues linked to the assessment of facilitating social rehabilitation; opinion and notification of the sentenced person concerned; adaptation of the sentence; grounds for non-recognition and non-enforcement; minor custodial sentences summing up to a custodial sentence of at least 6 months; judgements in absentia; partial recognition and enforcement; time limits for recognition and enforcement; law governing enforcement-grounds for early or conditional release; imprisonment in lieu of a fine-differences in Member States' legal systems and practices; requirement of a written judgment-differences in legal systems; requirement of translation of the judgment. Referring to FD 2008/947 on probation and alternative measures and FD 2009/829 on ESO, the aim of the evaluation will be to enhance the efficiency in the application and the awareness of these seldom used instruments among the practitioners. Promoting the coherent and effective implementation of all this package of legal instruments at its full potential could significantly contribute to enhancing mutual trust among the judicial authorities of the Member States and to a better functioning of cross border judicial cooperation in criminal matters within the EU.

There is a perception for a contradiction between the principle of proportionality of criminal offences and penalties (Article 49 from the Charter) and understanding what is minor in the different EU Member States. Some countries raise the debate and declare that minor cases do not deserve such high standards provided for the procedures for the mutual recognition instruments. To differentiate between “minor offences” (misdemeanours) and “serious offences” (severe) and to ensure as much as possible the consistency and comparability of responses for the different legal systems, the States classify as “minor” all offences for which it is not possible to hand down a sentence involving deprivation of liberty. “Severe offences” are those punishable by deprivation of liberty (arrest and detention, imprisonment). According to the report of the Council of Europe “European judicial systems. Efficiency and quality of justice. CEPEJ STUDIES No. 26”, published on 04.10.2018, “The number of incoming severe cases also differs significantly between States and entities, ranging from 545 cases in Monaco to over one million (1 217 842) cases in Italy. As regards misdemeanour cases, the figures range from 111 cases in Monaco to over half a million (545 706) cases in Poland.”. The continuing observation discloses that the “value of small claims diverges considerably by State, which, of course, must also be related to GDP:

18 € in Albania, 354€ in Armenia and 370 € in Czech Republic, whereas it is 12 703 € in Norway, 15 000 € in Austria and 25 000 € in the Netherlands. For the rest of the States and entities which replied, the small claims value roughly sits between 2 000 € and 6 000 €.”. On these grounds could be set a course of questions – would be assessed as proportional to the procedure of gathering of evidence in the Netherlands request through the Bulgarian authorities by the European Investigation order issued in case for the theft of the property which amount is about 300 € - more than the minimum month salary in Bulgaria, or there will be consultation initiated by the competent authorities in the Netherlands aiming withdrawal of the sent EIO; why it is possible to gather evidence with the same instrument in proceedings brought by administrative authorities in respect of acts which are punishable under the national law of the issuing State by virtue of being infringements of the rules of law and where the decision may give rise to proceedings before a court having jurisdiction, in particular, in criminal matters, without equivalent in amount of money and for which the penalty provided in 99 % of the statutes is only fine. The complication with the principle of legality and proportionality rises also from the translation of the “offence”, “crime”, “infringement”, “violation” on the different official EU languages, which is additional obstacle for the application of the instruments and for strengthening the mutual trust.

With regard to transfer of criminal proceedings, EU Member States currently conduct the transfer of criminal proceedings between themselves by using Council of Europe instruments or based on reciprocity – the European Convention on the Transfer of Proceedings in Criminal Matters, Strasbourg, 1972, and the Convention on Mutual Assistance in Criminal Matters, Strasbourg, 1959, Art. 21 – as providing valid solutions if proceedings need to be transferred to another state, Convention 2000, UNTOC and bilateral agreements. There are Member States that consider the legal framework as sufficiently comprehensive and working at a satisfactory level, but others are confronted with. Only 13 Member States are parties to the European Convention on the Transfer of Proceedings in Criminal Matters, and the others should issue requests to transfer proceedings based on reciprocity, which is only possible if both states allow such cooperation under a reciprocity regime. The use of Art. 21 of the 1959 Convention on Mutual Assistance in Criminal Matters discloses its limitations as well. It is considered that a specific instrument applicable at EU level could have greater effectiveness than these, which were adopted a long time ago. It could also present better solutions with regard to the degree of harmonization or approximation existing at EU level, which would lead to more positive outcomes than in the current Council of Europe legal acts.

5. Proposed best practices for “upgrading” mutual trust.

Collecting practical experience from the Member States regarding the actual application of the criteria established through the recent jurisprudence

of the CJEU on references for a preliminary ruling based on discussed instruments, as regards both challenges and best practices for issuing and executing States could help to identify recurrent issues and the best solutions.

Creating a common working methodology/guidelines regarding the specific scope of each instrument has non-binding nature, but practically contributes to the interpretation and application. For example, these are the well-known "Handbook on How to Issue and Execute a European Arrest Warrant" prepared by the Commission, the guidelines for deciding "which jurisdiction should prosecute?", and Eurojust's "Updated overview of case-law by the CJEU" papers. The European Commission deems to draft new handbooks on European Investigation Orders and probation and supervision measures and to make the European Training Platform with easy electronic access through the European e-Justice Portal to EU and national law training courses across the EU and to training materials of a range of training providers for justice professionals in the EU, including the EJTN, with *i.a.* self-learning material on the topics of their search. The Member States should encourage practitioners to use practical tools for judicial cooperation, to issue owns and to train their authorities how to fill the electronic forms and certificates of mutual recognition instruments that are available on the website of the EJN, as this may facilitate the application of these instruments and save amounts of time and funds (for the translation, post taxes and etc.).

To enter into dialogue and direct consultations with the authorities in other Member States may be appropriate, in particular regarding applicable standards, before considering not to recognize or execute, or to postpone these, or partially accept the requested activities. It is not so difficult just to phone the colleague abroad and clarify the question. In the complicated circumstances the authorities should address to EJN Contact Points or to the National Member in EUROJUST.

6. The role of the innovations in the area of the mutual trust in criminal matters.

In the modern technological world the artificial intelligence is very popular. The term refers to the automated learning technology called "machine learning" and obviously would take place in the suggestions about the future of the cooperation in criminal matters. European Ethical Charter on the use of Artificial Intelligence in judicial systems and their environment, adopted at the 31st plenary meeting of the CEPEJ (Strasbourg, 3-4 December 2018) is a real challenge which gives a matter of practitioners' full consideration from now on.

Digitalisation of judicial cooperation has been already discussed regarding Regulation amending Regulation No 1393/2007 on the Service of Documents; and Regulation amending Council Regulation No 206/2001 on the Taking of Evidence. The secure platform for the exchange of evidence or sensible/classified information could be with a great importance and needs to be set up as a matter of priority. The next steps will include summoning,

service of the procedural documents, software “speech to text” in all European languages and so on.

Conclusions

It is necessary to continue devoting appropriate attention to the issue of mutual recognition and mutual trust by ensuring a regular exchange of views on this subject, to promote the application of the instruments based on the principle of mutual recognition.

“A new strategic agenda 2019-2024” sets out the European priority areas that will steer the work of the European Council and provide guidance for the work programmes of other EU institutions - “We will build on and strengthen our fight against terrorism and cross-border crime, improving cooperation and information-sharing, and further developing our common instruments…. Our Institutions must focus on what really matters. In line with the principles of subsidiarity and proportionality, the EU must be big on big and small on small. It must leave economic and social actors the space to breathe, to create and to innovate. It will be important to engage with citizens, civil society and social partners, as well as with regional and local actors. Our Institutions will work in accordance with the spirit and the letter of the Treaties. They will respect the principles of democracy, rule of law, transparency and equality between citizens and between Member States. Good governance also depends on the rigorous implementation and enforcement of agreed policies and rules, which must be closely monitored.”. This guiding programme should reflect to the judicial systems in all Member States.

Literarily the evaluation means assessment, gives answers of specific questions and recommendations. Drawing attention to the observed theme, it means evolution of law and mind. The experience gained in the last 20 years proves the stability of the policy and efforts to foster a common European judicial culture and to make a unique judicial community. The tools for recognition are highly appreciated from both the legislators and practitioners and silently build trust and improve the overall quality of EU justice.

PART IV

TECHNICAL SCIENCES, PHYSICS AND BIOLOGY SCIENCES

Innovations in Science: The Challenges of Our Time

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Innovation risk of nanotechnology and biotechnology

In the era of globalization, bioterrorism, due to its reality and unpredictability, as well as due to the negative consequences of a medico-social nature, has become one of the most dangerous threats to humans. Bioterrorism is a new problem for epidemiology. From the point of view of epidemiologists, this type of terrorism contributes to the rapid activation of the artificially created epidemic process, as well as the development of the epizootiological process in the case of the use of biological weapons. Therefore, in the absence of real datum it is difficult even to hypothetically predict the course of development of the epidemic process caused one or another pathogen. In the present conditions, many researchers are of the view that biological weapon represents the type of weapon of mass destruction, whose action is based on the use of the properties of pathogenic microorganisms and their metabolic products of [8].
The revolution that takes place in the field of biotechnology can lead to creating biological weapons, which in terms of affecting parameters are not inferior to nuclear weapon and are more flexible in its application.

Biological weapon because of its combat characteristics, the relative ease of access to its preparation by the terrorist organizations, ease of use, variability of algorithms used to commit acts of biological terrorism and their possible effects acts as the most likely instrument of committing acts of international terrorism among other types of weapons of mass destruction.

It is obvious that biotechnologies have enormous potential and opportunities to influence people and society. However, these perspectives are dual. Noting their scientific and economic significance, it is also necessary to bear in mind their potential threat to man and humanity, in particular, the dangers that may arise with the further penetration of the human mind into the natural forces of nature.

The movement for the protection of human rights that has developed around the world now relies on an extensive system of very diverse international legal agreements relating to the legal status of the individual. The deepening of this process in this area is carried out in several directions. The greatest importance is given to efforts aimed at ensuring the most representative participation of states in agreements on humanitarian issues, including the preservation of biological security on the planet, in order to transform these documents into reliable universal tools for ensuring human rights. Despite the improvement of bioengineering methods, the expansion of the market for biotechnological products, the obvious benefits and efficiency of using environmentally friendly biotechnologies in industry, agriculture and health care, there are still concerns in the society over the possible

undesirable consequences for humans of biotechnological production and genetic engineering experiments.

A lot of international bodies that operate under the auspices of the United Nations take the subject of special consideration the protection of the human person in the face of advances in biology, medicine, especially as a result of advances in genetic engineering and biotechnology in general. When creating ever-growing opportunities for improving the living conditions of people, progress in science and technology generate, at the same time, several serious social problems requiring immediate solutions, including international legal cooperation in ensuring human safety and the environment.

The rapid development of biomedical disciplines significantly affects human rights, such as the right to life, the protection of honor and dignity, health, immunity, and several others. Since 1968, the international bodies operating under the auspices of the United Nations have constantly considered questions about the protection of the human personalities, their physical and intellectual integrity in the face of advances in biology, medicine. Since the early 1980s the similar situation exists in genetic engineering, which is a major component of biotechnology.

However, it is precisely now that fears arise that, in the course of realizing the positive potential of biotechnology and genetic engineering, unintended release of genetically modified organisms and recombinant proteins can occur in laboratories, at work, during field trials; and recombinant products which have not passed the appropriate control and prior approval by the competent authorities can come into the market. Despite the improvement of bioengineering methods, the expansion of the market for biotechnological products, the obvious benefits and efficiency of using environmentally friendly biotechnologies in industry, agriculture and health care, there are still concerns in the society over the possible undesirable consequences for humans of biotechnological production and genetic engineering experiments.

Mastering the methods of genetic engineering and its application leads to creating the new biologically active structures that can not be occur in nature.

In many countries of the world, numerous legislative acts that regulate activities and social relations in the field of genetic engineering are in a force for a relatively long time, while the questions of organization and safety of work with recombinant DNA and the problems of the planned incorporation of genetically modified organisms into the environment are under the attention legal services, scientists and society.

It cover a lot of issues and concerns the cases of loss of control over transformed organisms in the laboratory, production, during field trials; the risk of genetic instability of transgenic plants and animals in a series of subsequent generations and the emergence of unpredictable species of plants

and animals; the release of genetically engineered products on the market without proper verification.

These concerns are caused by poor public awareness, imperfect legislation, and insufficient popularization of scientific knowledge among the population. In order to avoid incompetent forecasts and estimates, it is necessary today to bring to the public objective information about the existing balance between the achievements of biotechnology and the risk of genetic consequences; clearly demonstrate whether the danger of specific biotechnologies or experimental areas of bioengineering is real.

Some aspects of the legal regulation of the use of biotechnologies were studied by the following researchers: Beyleveld D., Brownsword R., Feiler W., Ruggiu D., Sasson A., Sedova N., Plomer A. [1,2,3,4,5,6]

When paying attention to this situation, in this article the authors aim to conduct a retrospective analysis of the legal field of the use of biotechnology, as well as modern political and legal approaches to solving the problem of biosafety in the era of globalization. Due to the incredibly rapid progress of genetic engineering, resulting in relatively short intervals of time to the emergence of completely new levels of knowledge, qualitative and quantitative changes, public policy should be aimed at the constant improvement of legislation on the safety of genetic engineering based on to carry out constant propaganda of knowledge in this area to reduce the unreasonable fears of the population.

Certain contradictions arose between the long-standing norms for ensuring the safety of biological interventions in the environment, human health and the latest advances in science and technology. Therefore, there is a clear evidence of international legal regulation and control over scientific research related in one way or another to a person.

Thus, nowadays the international community has been faced with the task of creating comprehensive guarantees for ensuring the safety of people in conditions of a medical and biological impact on the environment and humans. The importance of the above-mentioned issues, as well as the lack of comprehensive researches on this issue, led to the choice of the topic of our scientific article.

Materials and methods:

The legal regulation of biotechnology, a rapidly developing branch of modern science, concerns, first and foremost, the wide range of activity related to the development, use and transfer of technologies for the use of living organisms.

The twenty-first century is characterized by tremendous discoveries in the field of science and technology, including in the spheres of biology and medicine. Today, new biotechnologies are being developed; they open up new perspectives for people in solving the problems of curability of diseases,

extending human life, and solving social problems. Cloning, genetic engineering, reproductive technologies, cellular technologies and other up-to-date technologies globally changed medicine and, thus, initiated the development of certain law standards by international organizations. This process determined the start of the formation of international biomedical law. A characteristic feature of international legal norms that govern biomedical relations is the integration of the principles of bioethics into these international regulations (Beyleveld D., and Brownsword R., 2001).

Emergence of bioethics and its further integration into law is due, on the one hand, to the possibility of realizing the achievements of medical and biological science in practice, on the other hand, the absence of a legal regulation in this area. The legal doctrine actively discusses the role of bioethics in modern society, because the law, as an institutional regulator, cannot cover all social relations. In particular, it is limited in its ability to solve the problems of regulating relations arising during abortions, organ transplantation, DNA modification and other relations related to the protection of the right to life and health.

Traditionally, there are three main models of the relationship between law and bioethics:

– the sociological model, according to which the law is recognized to be incapable of solving ethical problems and, as a result, the standards of bioethics are considered to be the only regulator in the use of biotechnology;

– a formalistic model where the law plays a major role in regulating any biotechnological issues, since the law establishes sanctions for violation of regulatory prescriptions.

Supporter of the formalist model A. Sasson (1987) points out that most international regulations that govern the use of biotechnology, reflect mainly ethical principles. In his opinion, such a mixture of norms of law and ethics creates the threat of legal uncertainty (Sasson A., 1987).

For this reason, it is necessary to rethink the role of ethics in the regulation of biotechnology. It is necessary to define clear boundaries of the legal regulation of biotechnology. D. Ruggiu (2018) takes the similar position. He believes that great amount of blanket law applied to the principles of ethics does not allow increasing the level of legal regulation. This state of affairs makes it difficult to implement the protective function of the law, and in the conditions of a low legal culture of the society, it contributes to the violation of legal regulations; (Ruggiu D., 2018)

– the liberal model, according to which the right confirms only some general bioethical principles. The ideas of the liberal model are presented in the works of N. Sedova (2004). (Sedova N., 2004). The researcher assumes that the principles of bioethics in relation to the of law act as legal custom, and the provisions of the law outline the framework in which the principles of bioethics apply. Plomer A. (2015), emphasizes that the principles of bioethics are a special source of bioethics. Practice shows that despite differences in

opinions regarding the benefits of bioethics and its significance, the principles of bioethics are included in national and international legal acts.

Moreover, the degree of their integration is determined by the scope of application of biotechnology. So, the cross - boundary move of GMOs is regulated by a universal international legal act such as the Cartagena Protocol. It contains a minimum of references to the principles of bioethics. At the same time, the regulation of biomedical technologies is mainly carried out by the norms of bioethics, since this sphere of social relations objectively cannot be completely regulated by the norms of law.

Discussion:

The great importance of bioethics norms while regulating the biotechnology makes difficulties in creating a single legal act at the international level, since the principles of bioethics are determined by the worldview as a system of generalized knowledge of the objective world, people's attitude to the surrounding reality from the standpoint of their ideals, principles and beliefs. But principles and beliefs are various among citizens of different countries.

The need to unify activities in the field of biomedical technologies was the main reason for the adoption of legal acts in the field of bioethics. The first laws were: the Nuremberg Code (August 1947, Nuremberg), the Helsinki Declaration of the World Medical Association "Ethical Principles of Medical Research with Human Participation as a Subject", adopted at the 18th Assembly in 1964,"International Ethical Guidelines for Biomedical Research on Human Beings", adopted by the Council of International Scientific and Medical organizations in 1982 (amended in 1993 and 2002), and others laws.

At present, only the Nuremberg Code is in force. The regulation of biotechnology is effected by above mentioned international legal acts, such as the "Universal Declaration on the Human Genome and Human Rights" (1997), "the Convention on Human Rights and Biomedicine" (1996).

A number of conventions and international treaties reinforce the common ethical issues of medical research using biotechnology. Among them are: the UN Convention on Human Rights (1989), the Convention on the Prevention and Punishment of the Crime of Genocide (1948), the International Covenant on Human Rights (1966).

The basic biotechnological principles were formulated in 1998 at the IV International Congress on Bioethics, held in Tokyo. They include recognition of the autonomy of the individual, the human right to self-resolution of issues relating to his psyche, emotional status, securing the right to free informed consent; the principle of justice as equal access to social benefits; the fulfillment of the Hippocratic oath and its expansion - not only do no harm, but also do good.

At present, the Universal Declaration on the Human Genome and Human Rights in the CIS enshrined the principle of preventing practices that are contrary to human dignity - prohibiting the practice of cloning for the purpose of reproducing a human individual (Article 11). States are encouraged to take measures at the national level, consistent with the principles outlined in the declaration. However, considering that specific obligations are not reflected in the declaration, one can be concluded that the international act is only a recommendation.

A similar principle is confirmed in the UN Declaration on Human Cloning (2005), which is a statement to Member States and contains "a call to ban all forms of human cloning to the extent that they are incompatible with human dignity and protection of human life ..." (A. b). It creates the opportunity for human cloning "to the extent that cloning is compatible with human dignity." [15]

The most important document in the field of regulating biomedical research at the international level is the Council of Europe Convention on the Protection of Human Rights and Dignity in Connection with the Application of Biology and Medicine: Convention on Human Rights and Biomedicine (1997).[10] The document contains the real obligations of states. The Convention calls the priority of the interests and benefits of the individual in comparison with the interests of society and science as the main principle of medical intervention in the human body.

The Model Law "On the Protection of Human Rights and Dignity in Biomedical Research in the CIS Member States" [13], adopted by the Inter-Parliamentary Assembly of the CIS Member States, is in force. The law extends to citizens of states participating in biomedical research and applies to all institutions and individuals involved in conducting this type of research.

According to Article 10 of the Law, all projects involving human biomedical research must undergo an independent ethical review by the ethics committee. Thus, the normative act contains the mechanism of moral evaluation of the technologies being developed before they are put into practice.

The 1994 UN Cairo Convention on Democracy and Development, the World Conference on Women (Beijing, 1995) and other international instruments enshrined a number of reproductive rights, including the right to make decisions regarding the reproduction of offspring, the right to achieve the highest possible level of reproductive health, including through the treatment of infertility.[12]

In the field of assisted reproductive technologies, like other biomedical technologies, there is no single international legal act. It often causes serious problems. As a result, it seems reasonable of adopting a single international law in the field of biotechnology applications (including in the field of assisted reproductive technologies, or at least in the field of legal regulation of surrogate maternity common principles for conducting medical

biotechnological research. It will help to solve the problem of controversial situations.

At the 1992 conference in Rio de Janeiro, the countries of the UN recognized the international need for regulating activities related to biotechnology. A committee was created to draft an act, which was later named the Cartagena Protocol. This law is to regulate the issues of protected the move across state borders, the processing, and use of products of modern biotechnology, including organisms modified at the gene level.

Despite the importance of this document, it was signed by only 57 states. In addition to the medical field, biotechnology is now widely used in other sectors of the economy. The most significant branches are agriculture, food and pharmaceutical industries.

Since 1996, seeds of genetically modified plants are available for sale. Taking into consideration the solving global food problems in the world, the most significant results in obtaining products using biotechnology, in our opinion, were achieved precisely in the agro-industrial complex (AIC).

Genetically modified fruits and vegetables, legumes have already been represented on world markets. At the same time, there are more and more questions on ensuring environmental and food security, since the consequences of prolonged use of GMOs are not fully understood.

In addition, agricultural crops with new consumer properties, resistant to viruses and parasites, new agricultural plants and animals are being created by using biotechnological developments; genomic certification is being introduced to improve the quality of breeding work. New veterinary biologics are being produced.

Another, no less important area of application of biotechnologies in the agro-industrial complex is the improvement of the feed base for farm animals. Nowadays it is difficult to imagine modern livestock farming without the use of various biologically additives to animal feed and vitamins.

The pharmaceutical industry accounts three quarters of the total sales of a product obtained using biotechnology. It is, above all, the production of drugs and vaccines, diagnostic tools. Thanks to the widespread use of biotechnology in the pharmaceutical industry, a new concept of "personalized medicine" has emerged, when a patient is treated on the basis of his genetic characteristics, including the creation of individual medical products.

Results:

The development of biotechnology, the introduction of their achievements into practice has identified the problem of ensuring the safety of human health and the environment. The use of modern biotechnology in practice requires proper legal regulation, because this sphere of social relations is new and not previously regulated by the rules of law. At the same time, it is necessary to take into account not only the positive effects of the

development of biotechnologies (combating hunger, protecting the environment, new possibilities for treating diseases), but also all possible risks of the negative consequences of using these technologies on human health and the environment.

Another, no less important area of application of biotechnologies in the agro-industrial complex is the improvement of the feed base for farm animals. Since at present, modern livestock farming is difficult to imagine without the use of various biologically additives to animal feed and vitamins. The pharmaceutical industry accounts for up to of the total sales of a product obtained using biotechnology.

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The development of biotechnology, the introduction of their achievements into practice has identified the problem of ensuring the safety of human health and the environment. The use of modern biotechnology in practice requires proper legal regulation, because this sphere of social relations is new and not previously regulated by the rules of law.

At the same time, it is necessary to take into account not only the positive effects of the development of biotechnologies (combating hunger, protecting the environment, new possibilities for treating diseases), but also all possible risks of the negative consequences of using these technologies on human health and the environment. Based on the above, legal regimes have the following provisions:

Biotechnology research takes place in two directions: regulatory and protective;

It will be correct to distinguish between legal studies of biotechnology on the basis of the subject (substantive, structural) and functional criteria;

The study of biotechnologies on the basis of the objective criterion (elements of biotechnologies) should be limited to the legal regimes of the regulatory orientation, with emphasis on static patterns, based on the inductive method;

Studies of biotechnology with the application of the law, occur on the basis of functional criteria (scope) require translational and variability in terms of temporal relevance;

It is necessary, on the one hand, to determine the identification of the most significant object elements and process elements (actions) in each individual area of application of biotechnology.

And on the other hand, it is necessary to limit the research to the framework that establishes legal norms, protective focus, with the identification of dynamic patterns.

Conclusion:

The analysis of the study is resulted into the following conclusions:

First, the analysis of the history of emergence of legal regulation of biotechnologies allows us to conclude that because biotechnologies are understood in a broad sense, and cover many areas of the economy, and there is no clear definition of biotechnologies, it is necessary a multilateral development of legal regulation of the performing and implementation of biotechnologies both into a separate state and into the entire global community.

Secondly, international acts, mainly, are declaratively aimed solely at protective legal regimes (preservation of biological resources), and permits for the use of biotechnologies are simultaneously combined with restrictions and prohibitions.

Ukraine has not acceded to some international regulations governing the use of biotechnology yet. Thus, it is necessary to improve domestic legislation, taking into account international experience in creating a legal framework for regulating the use of biotechnologies in various areas of the economy.

Moreover, the great importance of bioethics while regulating of biotechnology makes difficulties in creating a single legal act at the international level. The principles of bioethics are determined by the worldview as a system of generalized knowledge of the objective world, people's attitude to the surrounding reality from the standpoint of their ideals, principles and beliefs. The principles and beliefs are various among citizens of different countries. Thus, having analyzed the international legal acts that regulate the sphere of biotechnologies, it can be concluded that the international community requires developing cooperation and international relations in this area.

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Evaluation of retention of knowledge in microbiology, virology and immunology of Ukrainian and international medical students

The major task of higher education institutions is the qualitative training of competitive professionals who are able to assess the situation rapidly and make decisions in existence of big amount of professional information. Therefore, the task laid down in the basis of the credit-module system of higher education institutions is aimed at developing in students the skills to independently receive, update and use their knowledge in practice [1]. Consequently, it drives the student to be motivated in the chosen profession and influences the awareness and persistence of the acquisition of knowledge and skills and creates the preconditions for further professional medical activity [2]. An important part of the learning activities is the system of initial and final control and assessment of students' knowledge and skills. Therefore, standardized licensed examinations "KROK-1" and "KROK-2", the successful pass of which is an integral part of the quality of higher education in Ukraine [1, 3] is the main tools of control the level of theoretical knowledge of medical students and their compliance with the qualification level.

Undoubtedly, the quality of education in higher medical institutions depends on the introduction of the teaching approaches and technologies, as well as technical, didactic and psychological pedagogical environment. However, the key factor determining the objective indicators of the quality of students' learning is the combination of their own personal and professional qualities that directly influence the rate and amount of material to be retained [4]. The sustainability of the acquisition of knowledge and skills (knowledge survival) in time creates the preconditions for further successful professional medical activity, since for the future specialist it is important to retain theoretical and practical knowledge until they are put into practice [5]. The degree of knowledge retention is a guarantee of effective learning, and its quantitative analysis creates conditions for optimization of the learning process by identifying typical errors and issues that caused the greatest difficulties during the performance [5, 6].

The study was aimed at the analysis of the degree of retention of knowledge in microbiology, virology and immunology of domestic third-year medical students, and third-year international medical students with Russian medium of study within three months the second final module control was passed. To estimate the degree of retention of students' knowledge in microbiology, virology and immunology a comparative analysis of the students' knowledge at the beginning of the third-year course (initial stage of the final module III control) with their level of knowledge at the end of the

second year of study (final module II control) was carried out. The assessment of knowledge at the end of the second year of study was made in the form of final compute-based tests before the sit for the final module II control "General and Specific Virology". After the summer vocations, when students resumed studying the subject in their third year of study, the writing placement test was performed at the first lesson. In both cases, identical tests, included in the database of the "KROK-1" licensed exam on the subject were used to obtain the objective data.

The study involved the analysis of the results of the testing of 14 groups of domestic third-year medical students (174 individuals) and 3 groups of international third-year medical students with Russian medium of study (29 individuals). The number of students was accepted for 100%. The results were assessed qualitatively, using the conventional grading system "unsatisfactorily", "satisfactory", "good", "excellent", and quantitatively, where grade "2" corresponded to <69% of the correct answers, grade "3" - from 70% to 79%, grade "4"- from 80% to 89% and grade "5"- greater than 90%. The resulting data have been statistically processed using the *Microsoft Excel 2010* software and the *Student's t-test* was used for the reliability analysis.

The results of the final computer-based test control at the end of the second year of study showed that the total number of students who possessed sufficient and high level of knowledge, that is, score more than 70% of the correct answers, accounted to 81.7% among Ukrainian students and 93.1% among international students with Russian medium of study (Table 1). Interestingly, the number of domestic students, whose answers reached the maximum results and deserved the grade "excellent", was by almost 5.5 times ($p < 0,05$) higher the number of similar students among international students with Russian medium of study.

Table1. Survival of knowledge in microbiology, virology and immunology of Ukrainian and international medical students

Percentage / Students	>91%		>80% <90%		>70 <79%		<70%	
	abs.number	%	abs.number	%	bs.number		bs.number	%
Second-year Ukrainian students	65	37,4	61	35,1	16	9,2	2	18,3
Third-year Ukrainian students	5	2,9	55	31,6	60	34,5	54	31,0
Second-year international students with Russian medium of study	2	6,9	5	17,2	20	69	2	6,9
Third-year international students with Russian medium of study	-	-	-	-	7	24,1	22	75,9

However, within the three months after the pass of the final computer-based test control on the themes of the module "General and Specific

Virology", the situation has changed dramatically, indicating the students' short-term retention of the acquired knowledge and its poor survival.

The absolute number of domestic medical students, whose test results showed high level of knowledge, reduced from 65 to 5 individuals (37.4% and 2.9%, respectively), whilst the percentage of Ukrainian students who did not overcome a 70%-score or slightly exceeded it, having received "satisfactory" grade, was higher by 1.7 and 3.8 times, respectively ($p <0,05$). The total number of the third-year Ukrainian students who successfully passed the test accounted for 69% (120 individuals), which indicates a 1.2-fold decrease in the level of knowledge, compared to the number of students at the end of the second year of study, which, according to the results of the test, exceeded a 70%-score (Fig.1).

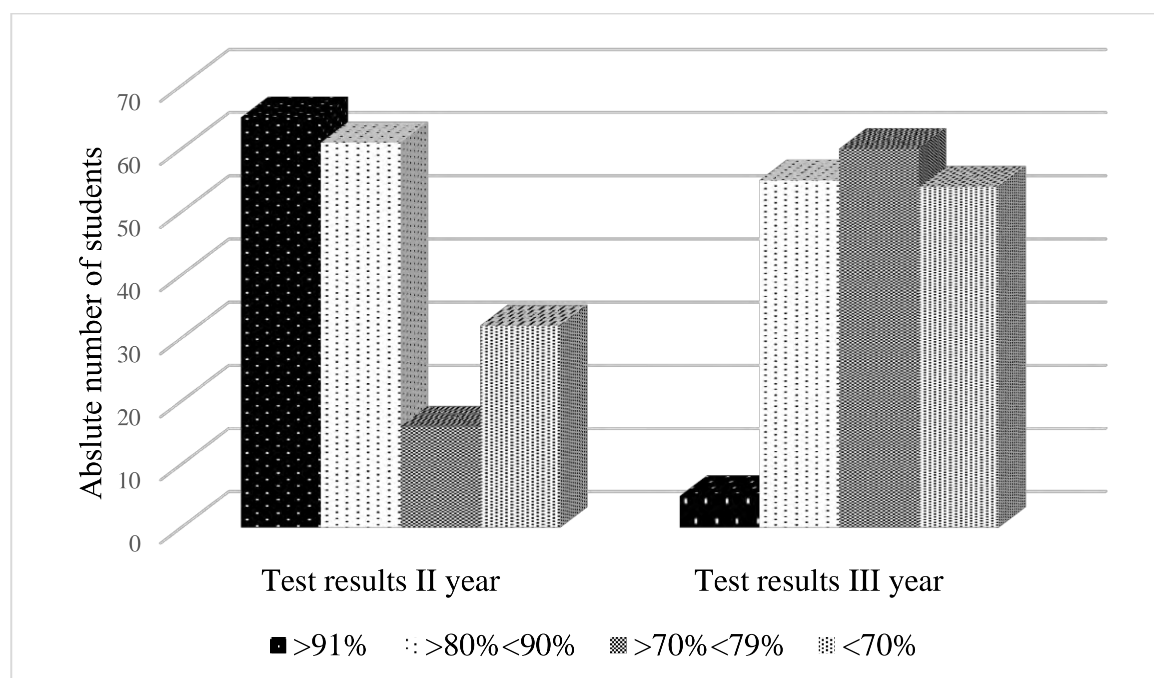

Fig.1 The ratio of the number of Ukrainian medical students depending on the level of the passing the control tests on the final module control II "General and Specific Virology".

Obviously, reduction of number of people whose level of knowledge corresponded to the grades "excellent" and "good" and increase in the number of students who passed with "satisfactory" among domestic students is quite logical. However, the dramatic increase (31.0%) of third-year students in this study group, which did not exceed 70% of the correct answers during the test, makes them a risk group of fail the licensed exam "KROK-1" and requires special attention to the preparation of these students on the themes of the module II "General and Specific Virology".

The results of the initial testing of international medical students with Russian medium of study, made before the sit for final module control II "General and Specific Virology", showed significantly higher level of

acquisition of the study material (“KROK-1” tests) than during the repeated testing within 3 months (Fig.2).

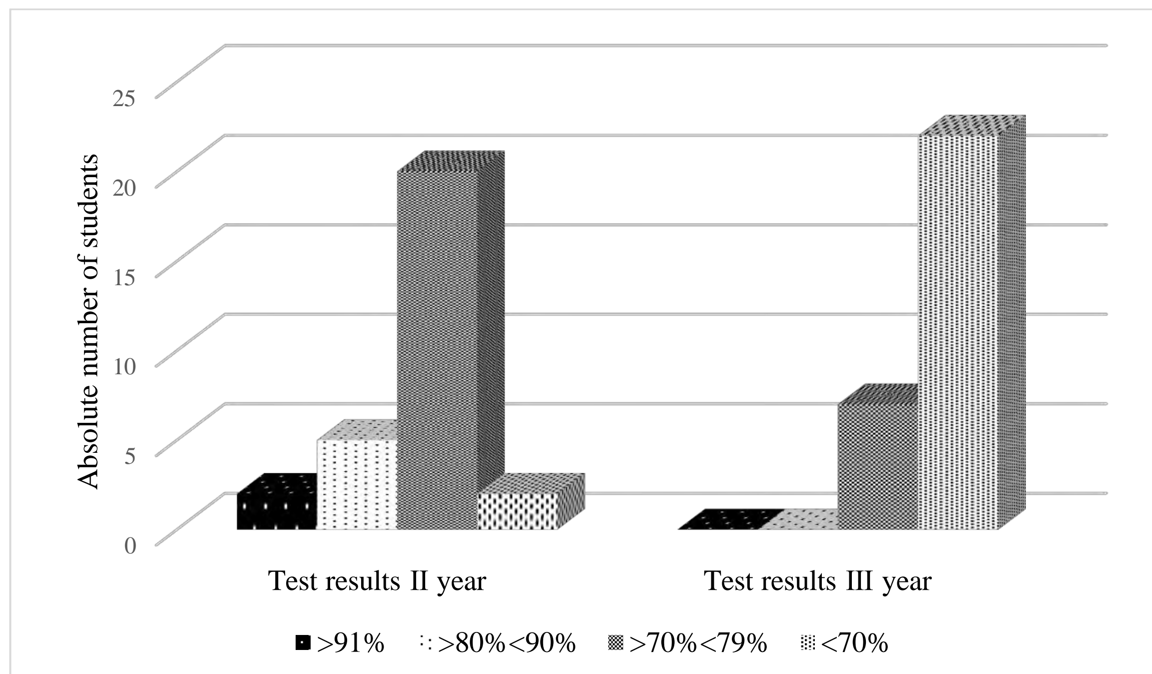

Fig.2 The ratio of the number of international medical students depending on the level of the passing the control tests on the final module control II “General and Specific Virology”.

Accordingly, the percentage of international students, who showed knowledge of more than 91% of the material, initially equaled 6.9 and decreased to 0. In the range of knowledge of study material from 80 to 90%, the same tendencies were observed. Instead of 17.2% during the repeated testing, the figure was 0%. For the interval of 70-79%, the indicator decreased by almost 3 times (from 69 to 24,1%) among international students with Russian medium of study ($p < 0,05$). However, the indicator at the level of less than 70% has risen by 11 times ($p < 0,05$).

The results of tests, showed by international students, cannot satisfy both the teachers and, actually, the students themselves. They can be seen as evidence of a threatening situation with regard to the prospects for the successful pass of the licensed exam “KROK-1”.

Therefore, this situation requires detailed analysis and search for the ways to improve the results of training international medical students with Russian medium of study. Among the possible reasons is the fact that in the initial testing, students were preparing for it and knew the exact date of sit for it. Repeated testing was carried out without warning. Moreover, the second-year international medical students with Russian medium of study are not native speakers. Consequently, a certain degree of language barrier can also affect the situation with the survival of knowledge in this category of students, compared with Ukrainian students. Failure to resolve this problem may

negatively affect the image of a higher education institution in providing sufficient training to pass the licensed exam [7].

Undoubtedly, a student should be responsible for the level of mastering of study material. However, the paper, first aimed at considering the ways to enhance the faculty's teaching activity to improve this situation, especially with international students. Obviously, a competence-based approach to the teaching process is crucial. In particular, a custom-oriented approach can play an important role in the activity of teachers [8]. Consideration should be given to the possibility of, to some extent, the existence of a language barrier and to assist international students to overcome it in order to improve the acquisition of the subject. The level of proficiency in the language of study affects both the degree of understanding of the material being studied and the time required by the student for quality preparation for classes. The student should feel not only the objectivity of his/her knowledge assessment, but also the teacher's readiness to help to improve the level of proficiency in the language of study. It is proved by the fact that, usually, the best success in learning is achieved by students with high proficiency in language of study [9].

Conclusions. The results of testing showed that within the three months after acquisition the study material, the level of knowledge of domestic third-year medical students significantly decreases compared with their level of knowledge at the end of the second year of study. However, despite the rapid decline in the number of students with the best results, the overwhelming majority of students had over 70% of the correct answers during the repeated testing, that is, acquired the study material sufficiently for the successful pass of the licensed exam. 31% of students have low retention of knowledge and require better preparation for the licensed exam "KROK-1". International medical students with Russian medium of study showed a poor level of retention of knowledge in microbiology, virology and immunology in the "KROK-1" tests format. This is a threatening indicator as for their successful pass of the licensed exam and promotes increased interest of the faculty in possible ways to overcome the current threatening situation.

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Shaping public consciousness under the influence of global architectural concepts

Modern civilization is in period of heightened global crises which are the challenge to its very existence. The severity and diversity of problems today become the object of attention of the overwhelming majority of the scientific community. Most architectural schools in the world are engaged in active development concepts of a new type of architecture that could withstand the deterioration in external conditions, keeping comfortable living conditions for their residents. These concepts, due to innovations, have quickly become the achievement of millions of global information networks providing relatively strong aesthetic and ideological influence. Our studies show that the main problem with the ecology of the planet lies not in the weak development of technological and scientific base of humanity, but in catastrophic backlog of social consciousness of the realities of the time. The cult of consumption, poor social activity, lagging the average intellectual level of human skyrocketing demands make a very difficult task for civilization transition to sustainable development and evolutionary coexistence with the environment. The key solution is violent and radical change in public consciousness by promoting the ideas of "green" consciousness. This study is devoted to the role of architecture in the process.

The term "global concept" (GC) should be interpreted as "a way of understanding any treatment effects, the main point of view and a top idea that the same is perceived by many people throughout the world ecumene." Similarly, you can interpret the term "global architectural concept" (GAC).

The phenomenon can not be seen as something that appeared in the last decades of world history. If we consider the European culture as a basis from which the development of world culture began, the appearance of the first global concepts can be attributed to the time of ancient Greece. Since then, for over twenty centuries, attempts to understand and create a "perfect architecture" did not stop. Naturally, each succeeding generation produced its own ideas about it, somewhat different from previous ones.

The idea that scientific and artistic concepts, being united, form great creative force is supported by the fact in the history and culture, when Renaissance masters were trying to create the perfect city. The global network can find millions of links to the phrase "ideal city" but the true meaning of this concept is manifested in the fact that, we an state without exaggeration that all planning of European cities, developed by architects over the past five hundred years, are traces of the influence of these ideas. The concept was "flesh and blood" of the profession core and possible new theories "SMARTcity" and "Sustainablecity" should be attributed to its future, innovation development.

Modern civilization has reached a level at which questions address emerging challenges acquires the character of selection from a variety of equivalent variations. Each of these options has the potential to become a kind of attractor of future development, and the problem of his choice increasingly looks like an attempt to predict the nearest future. Understanding and preparing a continuum of optimal solutions and become the basis of global architectural concepts. History shows that these concepts may become quite successful construction experience, such as the concept of a linear city, which has not outlived itself today.

In Kharkiv residential area HTZ - former "Sotsmistechko New Kharkiv" so far, though much re-built during numerous adaptations to the "present moment," maintained its basic features incorporated in it by the authors. This housing estate, designed to meet the needs of industrialization and communist ideas of the new state and had to become a model city of the future, the ideal model of a new life just where all the vital functions of plant workers - birth, cooking, entertainment, education, etc. had to be solved en masse. The structure of Sotsmistechko meant a clear linear zoning, becoming a kind of "factory for life and work." [2]

Unlike the first five era of socialism today we can see a unique situation where the development of interactive means of communication accelerated thousandfold circulation of information. The spread of ideas across the planet happens almost instantly, sometimes a couple of years is enough that idea was understood and sometimes lost relevance. Demonstration of this thesis can serve as the concept of "vertical city" and "arcology" - leaving that through the construction of large, self-sufficient, well-planned, multi-designs (hyper-structures), enclosing a population of a city, you can reduce the negative impact of settlements on the environment. Hyper-structures are also called arcology. [3]

The first wave of interest in the city-towers appeared in the 60s of the last centuries and continued until the mid-eighties, the second wave was active, but shorter and its peak was in 2007 – 2012. The second wave is notable that despite the relatively short period of activity it gave birth to thousands conceptual projects and developments quickly became extremely popular among professionals and students' architects. Moreover, this phenomenon has been greatly stimulated the emergence of such buildings as the Burj Khalifa (828 meters) in 2010, the Shanghai Tower (632 m) in 2013, Towers Abradzh al-Bayt (601) in 2012, Auckland Guangzhou (600 m) in 2009 and several dozen of towers over 300 meters high. However, obtained in the development of concepts towers demonstrated by the fact that under the current density of settlement of many countries and the cost of operation and construction of such facilities are absolutely not profitable, and are not interesting in terms of comfort.

A very interesting example can serve GAC concept of "intelligent city", "city sustainable development" vertical city, urban agriculture, regionalism,

de-urbanism, Reindustrialization and several other concepts that attract multi-million audience in the mass media.

Continuing the theme of global concepts in architecture can be considered quite revealing report of Doctor in microbiology Dr. Dixon Despommier - author of the concept of "vertical farm" made it on the pages of the same site, to 2012 in the world's media were more than 6.5 million. Link was published more than 1.3 thousand of urban agriculture facilities projects, based on material published by the author in 2008 [4]. In 8 years, several dozen working prototypes were created, which became the testing ground of this area.

The most notable agricultural city built, and which received with the greatest response of the world community can be considered:

1) Sky Greens-Singaporean company for commercial vegetable production and sales of technology to other countries. Owner and managing director Ang Jack (Jack Ng) organized the production of the financial crisis in 2009. Ng (Ng) said: "Prices for food rose because of disruption of foreign supplies. And I had the idea of growing food on site."

This world's first vertical system, driven by water, is designed to grow tropical fruits in the tropics. It brings quite a substantial increase, uses little water, energy and natural resources. This renewable "green" high-tech farm called "E Go Grau" ("A-Go-Gro"), grows vegetables in the A-shaped towers. Each tower is six meters high. Modular A-shaped frame quickly installed and easily maintained. Each tower consists of 22-26 levels for growing gutters, which revolve around the aluminum frame of the tower at a speed of 1 mm per second, providing a uniform distribution of sunlight, good air movement and irrigation for all plants. As observed Ng (Ng): "The plants do not overheat in the sun ... while they are equally getting food from the water." [5]

2) Vertical Harvest- located in Jackson, Wyoming and is home to one of the first vertical greenhouse in the world. Hothouse adjacent to the multi-city parking with a total area of 13,500 square meters. The three-storey greenhouse in its performance of 10.01 acres useful area grows annual production equivalent to 5 acres grown with traditional farming.

Vertical Harvest sells grown fresh vegetables all year round, providing Jackson surrounding restaurants, grocery stores, and the products sold to customers on the spot. Vertical Harvest per year produces 100,000 pounds of products. In addition to fresh salads and tomatoes, Vertical Harvest provides jobs and training. In the greenhouse 15 people with mental and physical disabilities work. [6]

In total, during the study found 6 successfully working prototype agricultural city. Vertical farms with a high degree of conditionality are three of them. However, in this case clearly delineated tendency to turn hypotheses into the theory and the subsequent beginning of its implementation in practice. It has played a huge role "paper architecture" making theoretical

work in Dixon Despommier's bright artistic phenomenon, creating a current research in the built environment.

Thus, defining what a "global architectural concept" should identify the factors that determine its practical significance. In this case, the interest is not so much the historical aspect of the problem, as its modern sense. So far, there were the following prerequisites are forced to reconsider the role of global concepts in architecture:

1) There was an urgent need to transform social consciousness of people around the world towards greening its global concept and can play a major role in this process.

In this context, it may serve as indicative emergence of a new term "Anthropocene" that determines our geological epoch. For the first time the term was proposed in the 1980s ecologist Eugene F. Stromer (Eugene F. Stoermer) and was widely popularized by Nobel laureate in Chemistry Paul J. Crutzen (Paul Crutzen) [8] in 2000. They argued that humanity so radically intervened in the cycle of matter and energy in nature, it caused significant geological changes on the planet. Moreover, according to Andrew C. Revkin (Andrew C. Revkin) in strength to our civilization compared to the activity of cyanobacteria 2 billion years ago. [8] However, in his statement, no one mourned cyanobacteria.

Leading economies are categorically unacceptable with the current population density of the planet outdated worldview of the era of industrialization. Attitude towards consumption of vital goods to be radically changed. The availability of clean water, food, air and housing can only be achieved by adopting concepts of humanity "ethical consumption" and "green consciousness".

We know that social consciousness has a high degree of inertia and significantly changed over decades, or in the case of global shocks such as epidemics, world wars, famine, revolution, etc. The catastrophic scenario changes public consciousness so depressed that it should try to avoid all possible means. Only persistent, long-term efforts of many people united order to translate the global crisis in the region-controlled challenges can give positive results.

Today, the 3D visualization allowed architectural ideas to find the colour, size and dynamics that achieve the required strength of the emotional impact in a very general population. Means media make it possible to disseminate as widely as possible the ideas which we hope will contribute to the development of co-evolutionary environment of mankind.

2) Global empower architects on presentation of their own ideas. To demonstrate this thesis is quite enough to conduct a simple experiment - type in the YouTube search bar in Word, for example, Eco-city [9] counter the results obtained (usually top right corner of the screen) as of 10.09.2016 p. Publishes results: 434,000 found footage. Similarly, the phrase: SMART-city links - 1 610 000 files, Sustainablecity - 890 000 files. Thus the three

requested topics offered 2,934,000 files in each of which there are 40 to 300 000 views (for example, a film Masdar: The City of the Future) [10], the average number of times a single file within 3000 - 5000 thousand Together from 8 million to 15 million hits. And this is only one site on three topics.

Today we are faced with the emergence of subcultures precedent, which gradually becomes the basis of a new way of thinking and attitude to reality. The media is the most powerful tool of influence on the imperatives of humanity and can be the basis for laying a more positive attitude towards the environment. It is therefore important today to begin a broad multidisciplinary dialogue about what parameters should have a new type of ethics and the means to achieve this goal. Naturally, the architectural process should get the most active role of the participant and generator of environmental stimuli and urban development.

3) Development of gaming space becomes an additional ground of architects. No exaggeration to say that today thousands of architects realize their potential in the gaming industry by creating virtual architectural space. Total twenty-five years it took computer games to enthusiasts from the movement to become a powerful interactive entertainment industry with a global market volume of 95.5 billion USD per year [11].

We can assume that the older generation thinks rather about the role-played games and computer technologies in shaping the minds of the new generations in the last twenty years.

4) For the first time in the history of architecture architects began to receive worldwide fame, and through it a great practice through the development of scientific and technically justified architectural concepts. A good representative of the generation of new formation specialists may be Kallebo Vincent. The author began with the publication in the media series of futuristic projects: THE PERFUMED JUNGLE, ANTI-SMOG, LILYPAD, DRAGONFLY, PHYSALIA, HYDROGENASE, CORALREEF, BIONICARCH, SOLARDROP and others. [12] and quickly gained the attention of the Internet community. His style and designs have become so popular that helped to create the architectural firm that competes with the most famous architectural firms.

The first reaction that an architect has in relation to this thesis is to recite Dinocrates work, Piranesi, Ledoux and Bull. Some of these academic links are justified, but only partially. Dinocrates in his attempt to make the maximum impression on a potential customer (in this case Alexander Macedonian) went even further Kallebo. He not only created a grand concept of converting Mount Athos in giant statue city, but even according to legend, recorded by Vitruvius: "... he was a tall, with handsome face, very handsome and prominent. So, relying on these natural gifts, he undressed at the inn, poured oil on his skin, put down a poplar wreath on his head, threw the lion's skin on his left shoulder and, holding a stick in his right hand, appeared before the tribunal of the king, who reviewed the claim. When people looked

at this sight unseen, Alexander looked at Dinocrates and fascinated by him, he commanded to let him and asked who he was. "Dinocrates - he replied - Macedonian architect who brought you ideas and projects worthy of your glory" ... "[13].

As can be seen from the works of Vitruvius, Dinocrates was already a famous architect and Alexander sought opportunities to implement his ambitious plans. Ledoux and Bulle created their neoclassical concepts at a fairly mature age already, formed as a practice. Piranesi was famous as a brilliant graphic artist, but as an architect left a modest legacy in the form of several projects, the most famous is the restructuring of the church of Santa Maria Aventyna (1764-1765) [14]. So obviously it must be assumed that in the last decade there is a unique phenomenon - joining of young professionals to the architectural practice through bright professional techno-art concepts.

Conclusions

Social consciousness is inevitably changed. The question remains open: which of two possible scenarios that happens - evolutionary or revolutionary. History shows that all the revolutionary changes in social consciousness scripts so depressed that anyone hardly still alive from the wish to participate in such a process. The evolutionary scenario can happen only through the efforts of thousands of volunteer agents of change and a very large impact can provide artists. We know that emotion is the most powerful incentive activities and art itself can generate the strongest emotional response. Architecture as an alloy of art and technology in this process should get a very active role. Creating and promoting the concept of cities and a new type of architecture can give very positive results in the formation of "environmental philosophy" of the humanity.

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Evaluation of vermiculite raw materials for the production of lightweight aggregates

In modern construction, several materials have been used for quite a long time, such as expanded clay, agloporite, expanded perlite, mineral wool, and some others that are artificially manufactured based on natural mineral raw materials. As a rule, the manufacturing techniques of the listed products are rather laborious and energy consuming. These products are mainly used as lightweight aggregates for concrete and mortar, as well as independent thermal insulation materials [1, 2]. Expanded vermiculite, which was the subject of these studies, also belongs to similar technogenic products.

Vermiculite is called magnesia-ferruginous mica modified to varying degrees, represented by aggregates of mixed-layered mineral aggregates, where layers of hydrated biotite or phlogopite alternate with layers of typical vermiculite, a mineral characterized by a high content of water of crystallization, the absence of alkalis and the presence of ferric oxide. Appearance of vermiculite is shown in Fig. 1.

Fig. 1. Appearance of Unbaked Natural Vermiculite

All the so-called "technical" vermiculites are products of change, namely the hydration of the natural minerals of the mica structure of phlogopite and biotite. They are represented by the “final” member of this transformation - the typical vermiculite itself and a series of intermediate, variable in composition and properties of various types of hydrobiotites and hydrophlogopite. Therefore, typical vermiculite can be characterized as mica of a certain degree of vermiculitization (hydration of mica), in which the coefficient of vermiculitization can be expressed by the following relation

$$K_в = B / (B + C) \cdot 100, \qquad (1)$$

where $K_в$ is the coefficient of vermiculization; B is the mass content of vermiculite; C - content of mica by weight.

The different directions of transformation of mica are due both to the peculiarities of their composition and to the environmental conditions in which these transformations took place, the so-called weathering processes. This determines that their technical properties are also ambiguous. In turn, typical vermiculite in the upper horizons of geological sections can be changed to kaolinite, sugulite and other species.

Despite the fact that the nature of vermiculite formation as a mineral is of a hypergene nature, many deposits continue to be considered as hydrothermal. Along with chemical processes in the genetics of vermiculite, a certain role belongs to the biological factor and free synthesis from the corresponding oxides, namely, synthesis from the components of groundwater. Such vermiculites have a high degree of swelling due to the development of hydration, which causes their industrial attractiveness. Much less common and does not have industrial value vermiculite, formed by changes in natural chlorites and other minerals.

2. Genetic features of the structure and composition of vermiculite raw materials and related mica

The geography of vermiculite mica is very extensive, they are located on almost all continents of the globe and belong to metamorphic, that is, modified rocks. The depth of their occurrence is mostly small - from 5 to 45 meters, which implies open mining, if the breed does not lie veins.

In Ukraine, deposits and manifestations of vermiculite are recorded within the Ukrainian shield on the territory of the Western Azov, Krivorozh'ya, Pobuzh'ya, and Volyn regions, where they are confined to the formations of ultrabasite and basite, gneiss and crystalline schists. On the territory of the Krivoy Rog iron ore basin with the extraction of iron ore by the open method, vermiculite sometimes goes as an accompanying waste material that does not contain iron, and is thrown into dumps. Within the Azov region, 36 manifestations and deposits of vermiculite have been identified, of which the most promising are Kamennomogilskoye, Andreevskoye and Rodionovskoye, with total estimated reserves of about 10-11 million tons. The content of vermiculite in ores averages about 20–25%, in some areas it reaches 40%. The thickness of the useful stratum of vermiculite is 7–15 m with a thickness of overburden of 3–10 m.

Since domestic and foreign deposits of vermiculite have a number of differences in structure and composition, they were classified according to genetic types into the following groups listed in Table 1.

A detailed description of the above groups of vermiculite deposits is given below.

Table 1. Genetic classification of vermiculite deposits

Group	Vermiculite Formation Conditions
I group	Vermiculite formed in complexes of ultrabasic and alkaline rocks
II group	Vermiculite formed in complexes of modified carbonate rocks
III group	Manifestations of vermiculite in the reactionary fringes of pegmatites, alcoves, corundum, asbestos and other deposits, as well as metasomatic veins in serpentinites
IV group	Deposits and occurrences of vermiculite in mica gneisses and other metamorphic rocks

A detailed description of the above groups of vermiculite deposits is given below.

Group I – is genetically related to ultrabasic and alkaline rocks, the complexes of which represent intrusions in ancient metamorphic rocks of aluminosilicate composition. Complexes of ultrabasic and alkaline rocks are characterized by a complex, often zonal structure and the widespread development of the processes of recrystallization of metasomatic processing and hydrothermal changes under the influence of post-magmatic solutions of alkaline composition. The formation of magnesian mica, which are the source material for the occurrence of vermiculite, is genetically associated with these processes. The deposits of this group contain large reserves of vermiculite, often estimated at millions and tens of millions of tons. Such vermiculite ores are well enriched by gravity methods.

Group II – deposits and manifestations of vermiculite in complexes of altered carbonate rocks. The accumulations of hydrated mica here are genetically connected with the bodies of diopside rocks formed during exchange reactions between carbonate and aluminosilicate rocks.

Group III – manifestations of vermiculite in the reactionary fringes of pegmatites, alcoves, corundum, asbestos and other deposits, as well as metasomatic veins in serpentinites. The content of vermiculite in such near-contact zones reaches 80-90%, and the thickness of the rims is up to 0.5 m and more. Usually, this thickness is measured by several centimeters, but even with a significant thickness of the rims, the stocks of vermiculite are small and are calculated at best by the hundreds, less often by several thousand tons.

Here vermiculite develops on biotite or phlogopite, and sometimes on other silicates, in the contact edges of granite pegmatites, albitites, plagioclacites, and hornblende rocks found in serpentinized hyperbasites. Sometimes the vein bodies themselves are not observed, but the inherent zonality of recreational rims remains: directly behind living albitite, plagioclase or pegmatite, there is a micaceous rim of vermiculite or hydrated biotite-phlogopite. In narrow zones of contact between serpentinites and bodies of diorites and granodiorites, plagiogranites, granites-aplites, albitites, jadeites, hornblende and other rocks, hydrothermally altered rocks are widely

developed. The accumulation of vermiculite is noted in the form of thin veins with a thickness of not more than 2-3 cm, which can be traced along stretches up to several meters, as well as small nests from centimeters to 0.3-0.5 m. 40-50 to 80-100%.

Vermiculite nests and veinlets are usually located close to each other and together form vermiculite-bearing zones with a length of 1-2 m and up to the first tens of meters and a capacity of 0.5-1 m, less often up to 1.5-2 m. Vermiculite content in such zones on average, no higher than 10-30% for the entire mass of the breed.

Serpentinites and the products of their hydrothermal changes, as well as the later implementations of acidic intrusive rocks, practically do not contain potassium, which is necessary for the formation of magnesian mica as intermediate products in the way of vermiculite formation. Vermiculite formed by the replacement of amphiboles, chlorite and other minerals has a limited development. Recreational contact rims, to which vermiculite clusters are confined, have large sizes.

Group IV - deposits and manifestations of vermiculite in mica gneisses and other metamorphic rocks. Hydrated biotite is found in fenitized mica gneisses, surrounding arrays of ultrabasic and alkaline rocks, in granitized granite gneisses, gneiso-diorites and other metamorphic rocks. Of practical importance are clusters of hydrated mica in the lenticular bodies of gneisses - micaites, occurring in strata of deeply metamorphosed aluminosilicate rocks. Deposits of this genetic type are currently being explored in Ukraine.

Within the Ukrainian crystalline massif, the outcrops of mica rocks are known in the Azov Sea region. Here in the basin of the rivers Berdy, Obitochnaya and Kiltychy have detected clusters of hydrated biotite micaites among Precambrian metamorphic rocks. A preliminary study of these clusters has shown the possibility of the occurrence of large industrial stocks of vermiculite in the Azov region. Mica-bearing rocks in the Azov Sea region are developed relatively widely. They are represented by biotite and amphibole-biotite gneisses, micaceous amphibolites, less frequently biotite migmatites.

All mica in the studied rocks are represented by small scales of biotite, hydrobiotite, and vermiculite ranging in size from 0.1–0.2 mm to 1–2 mm, rarely more. Their separation from the rock is possible only after grinding and special enrichment, and the concentration of the rocks has not yet been studied.

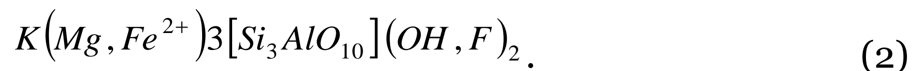
By its geological features, the Stone Tomb site is of the IV genetic type and, apparently, is characterized by significant reserves of vermiculite ores. The depth of the weathering crust on the site is not established, but presumably it is developed to a depth of not less than 30-40 m.

Taking into account the peculiarities of the structure, which may contribute to the industrial use of vermiculite, genetic species of I and IV groups deserve more attention from the above classification.

3. Qualities of the processes of natural weathering of the mica raw materials

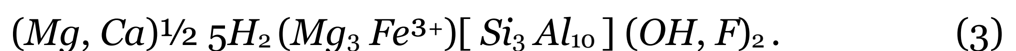
Vermiculite is a secondary mineral, as the genetic classification of rocks belongs to the metamorphic group. It is formed only in the weathering crust as a result of hydration processes — leaching, oxidation, and other changes in magnesian-ferruginous mica of the phlogopite biotite. As is known, magnesia-ferruginous mica forms a continuous series, the constituent members of which differ from each other only in the ratio of iron and magnesium.

Under natural conditions, the process of vermiculization occurs very slowly, therefore almost always in the deposits there are not only the end products of this process, but also the whole chain of transition of mica into vermiculite through hydromica with varying degrees of hydration. As a result of vermiculization, mica change color - they acquire light shades, cleavage deteriorates, shine from glass turns into fat, density and hardness decrease, but the property of puffiness is acquired when heated. According to modern concepts, phlogopite (biotite) crystal-chemical formula is represented as follows:



$$K\left(Mg, Fe^{2+}\right)3\left[Si_3AlO_{10}\right](OH, F)_2. \qquad (2)$$

In the process of hydration (vermiculitization), the mica of the phlogopite-biotite variety of potassium is almost completely removed, being replaced by water molecules and exchange cations (usually magnesium and calcium), and the bivalent iron is oxidized to trivalent. Vermiculite water content reaches 20% or more. The crystal chemical formula of the mineral differs from the above mica formula of the phlogopite series in that the cation K^+ in the crystal lattice of the mineral is occupied by ions of Mg^{2+} and Ca^{2+} surrounded by water molecules:



$$(Mg, Ca)1/2\ 5H_2(Mg_3\ Fe^{3+})[\ Si_3\ Al_{10}\ ]\ (OH, F)_2\,. \qquad (3)$$

According to the ideas of William L. Brega and colleagues [3] in the crystal lattice of mica, phlogopite of the biotite series, the presence of the K^+ cation causes a strong combination of silicate layers, which makes the mica plates elastic. In the lattice of vermiculite, two layers of water molecules are located between the silicate layers, which leads to an increase in the basalt interlayer distance from 10 to 14 Å. The schematic structure of phlogopite and vermiculite is presented in Fig. 2.

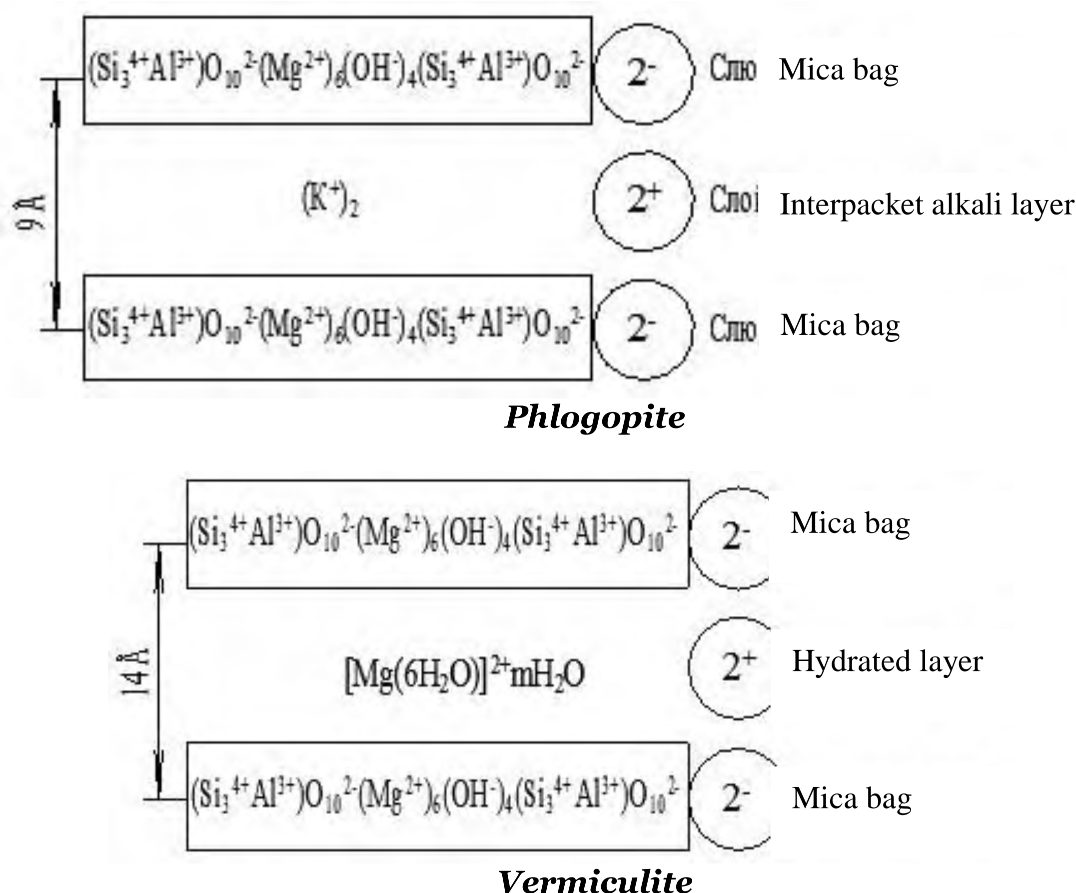


Fig. 2. Schematic structure of phlogopite and vermiculite

As can be seen from Fig. 2, the process of hydration of primary mica when they are transferred to vermiculite consists in replacing potassium ions with water molecules, into the layer of which the exchangeable ions of divalent metals (most often Mg^{2+}) are drawn. A hydration layer is formed between the packets, consisting of metal ions and molecules in a free state. The processes of hydration pass to the end only in particularly favorable conditions. Most often, mica undergoes partial changes with the formation of mixed-layer minerals - hydroflogopite and hydrobiotite. As detailed X-ray studies show, mixed-layer minerals consist of regularly alternating layers of typical vermiculite and biotite. Vermiculite layers are never contiguous, but more or less evenly distributed between phlogopite layers. These patterns are very important, since they explain the good swelling of mixed-layer mica, which allows them to be widely used in industry on a par with typical vermiculite. It is not by chance that in the technique the term "vermiculite" refers to all varieties of hydroflogopites (hydrobiotites) with more or less satisfactory swelling. Mixed-layer mica are characterized by intermediate (between phlogopite and vermiculite) degree of leaching of potassium, oxidation of iron and other changes.

Vermiculite ability to expand when heated depends on the type of ion in the layers of vermiculite. K^+-containing vermiculite has a greater coefficient of thermal expansion than Mg- or Al-containing vermiculite [4, 5]. The thermal

conductivity of vermiculite after treatment with $LiNO_3$, $NaNO_3$ и KNO_3 is 0.51, 0.44 and 0.33 W / (m·grad), respectively [6]. It is known that as hydration iron-magnesia mica lose their flexibility, elasticity, and the ability to split into thin leaflets; they also decrease the density / hardness and refractive indices while simultaneously increasing the angle of the optical axes. The maximum expansion occurs in the conditions of instant roasting at temperatures of 800–1000 ° C under conditions of explosive transformation into steam of all water located in the interlayer space. However, the effect of puffiness is reduced if the mica has appendages of other minerals or is impregnated with some substance. For example, in natural conditions, vermiculite is often impregnated with iron hydroxides, sugulite, kaolinite, montmorillonite or has inclusions of apatite, magnetite, pyroxene, etc. All this holds together, cements the thinnest leaves of mica, prevents the pair formed during firing to work on spreading them and separating.

4. Influence of the composition and properties of natural vermiculite on the processes of its expansion

Expanded vermiculite has several valuable properties, due to which its use in industry and construction increases annually in many developed countries [7]. Its most important properties include: low density (80–200 kg / m^3); low thermal conductivity coefficient (0.048-0.06 kcal / (h·m·° C); high sound absorption coefficient; high fire resistance; low thermal expansion coefficient (0.000014); beautiful golden or silver color; low hygroscopicity, durability, it is not rotting, able to absorb a large amount of liquids and doused with a number of other valuable properties.The difference in the properties of expanded vermiculite and mica most of all turns out when making insulating products from them, since a large bulk mass of expanded hydromica and the lamellar grain structure reduces the quality of the products obtained due to their lower strength, greater bulk density, deterioration of heat engineering properties.

The physico-technical properties of natural vermiculite include density and coefficient of expansion. The density of typical vermiculite varies widely:

- For fractions larger than 5mm, it is 55-120 kg / m^3;
- for fractions less than 0.5 mm, respectively 200-300 kg / m^3.

The density of mixed-layer mica varies even more widely: from 80-100 to 400-600 kg / m^3 depending on the degree of hydration and the size of the fractions.

The coefficient of swelling ranges from 1 to 7.

Other physical properties of mica from the phlogopite (biotite) - vermiculite series are listed in Table 2

Table 2.Physical properties of mica

Properties	Phlogopite-biotite	Hydroflogopite-hydrobiotite	Vermiculite
Density	2,7-3,2	2,5-3,1	2,3-2,8
Hardness, g / cm ^{3}	2,5-3,9	1,2-3,5	1,0-1,5
Refractive indices by Ng	1,590-1,635	1,570-1,630	1,537-1,670
Refractive indices by p	1,560-1,635	1,520-1,570	1,510-1,580
Birefringence	0,05-0,060	1,030-1,050	0,018-0,020
Optical axis angle, degrees	1-2	2-15	17-23
Splitting	Very good	Good to satisfactory	Virtually not split
Elastic properties	Flexible, resilient even in thin plates	Elastic properties intermediate	Elastic properties are lost, the mineral becomes brittle
Coloring	From pale green to dark green and black	Dark brown	Brown, golden brown

The change of vermiculite mica occurs according to the genesis: biotite-phlogopite-hydrobiotite-hydroflogopite-vermiculite-talc, respectively, the basic properties of the natural material also change, which is given in table. 3

Table 3. The change in the basic physicomechanical properties of minerals at vermiculitization

Field	Mineral type	Colour	Specific gravity g / cm^3	Mohs hardness	Free water content	Volume coefficient of expansion
Afrikandovskoe	Slightly convertible biotite Hydrobiotite Vermiculite	Black and purple Dark grey Light gray	2,86 2,52 2,41	2-3 1-2 1	2,50 6,40 9,42	2,05 3,60 6,10
Buldym	Hydrobiotite Highly verbalized hydrobiotite	Brown Golden	2,65 2,38	2 1	1,39 3,62	3,75 6,15
Kovdorskoe	Phlogopite Hydroflogopit Vermiculite	Silver Gray black Golden	2,84 2,74 2,55	3 2-3 1-2	0,84 5,11 11,4	1,65 4,60 6,55
Salla-Ilatvinskoe	Biotite Hydrobiotite Highly verbalized biotite	Gray brown Dark brown Light brown	2,92 2,52 2,32	2-3 1-2 1	1,08 3,44 8,78	1,40 3,65 5,90

Analysis table. 3 shows that the vermiculization of the mineral influences the positive properties of the mineral, namely: a decrease in density, an increase in the amount of free water, which contributes to a greater expansion coefficient.

Conclusion

Vermiculite mining and its properties are of interest to both scientists and manufacturers. All of the above advantages determine the unusually wide possibilities of using vermiculite as a multi-purpose raw material. But as industrial material vermiculite is used mainly in the expanded form.

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Usage of vermiculite in industry and construction

Construction, energy, industry, agriculture, transport, shipbuilding - not the complete list of industries where vermiculite finds practical application [1]. Its use allows to save fuel, contributes to reducing the mass of buildings, improves the heat-humidity mode of operation of facilities, reduces the cost of construction. The use of vermiculite in construction reduces the cost of 1 m^2 of housing due to the possibility of constructing less powerful foundations, increases the useful area of the interior due to the reduction of the thickness of the outer walls while maintaining the necessary insulation of the house, reduces the consumption of cement, etc. It should be noted that in view of the unique properties vermiculite, its scope is expanding, which ultimately forms the demand for this material.

The volume of consumption of vermiculite for construction purposes is constantly growing, the proportion of its consumption in construction is shown in Fig. 1.

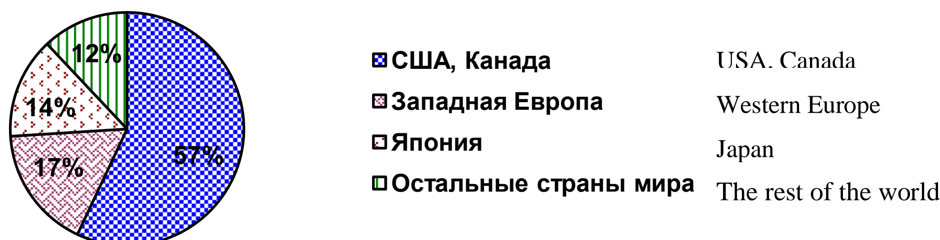

Fig. 1. Diagram of vermiculite consumption in construction

The main areas of use of vermiculite in construction are:

1) wall panels with vermiculite insulation;
2) heated floors with the use of vermiculite;
3) lightweight concrete and plaster mortars with vermiculite aggregate;
4) monolithic bitumen vermiculite thermal insulation of metal pipes;
5) vermiculite plates for fire-fighting and heat-insulating belts of industrial facilities;
6) fireproof pastes for coating metal structures;
7) structural products (plates, panels, etc.) based on vermiculite;
8) vermiculite-coated fiber boards and particle boards for partitions, suspended ceilings to improve fire resistance;
9) heat and sound insulation of civil and industrial buildings and structures.

Mineral fiber can be obtained from vermiculite, and for the first time it was obtained in Ukraine. This fiber is competitive in its heat and flame retardant properties not only in our country, but also abroad.

Plates based on vermiculite with the addition of mineral fibers, as well as phosphate, silicate and other types of binders are currently one of the main types of thermal insulation of building structures [2]. Today, unfortunately, the bulk of plate insulation comes from abroad. Vermiculite is used for thermal and sound insulation of aircraft cockpits, in facing slipways for testing aircraft engines, in film projection chambers, for screening recording devices, in telephone booths, in cars and refrigerated ships, for thermal insulation of water mains, gas mains, etc. In agriculture, vermiculite can significantly increase the yield. Burnt vermiculite, due to its properties, is an ideal medium in hydroponics. Vermiculite is used to improve the properties of both light (sandy) and heavy (clay) soils.

High thermal insulation properties of vermiculite and the ability to absorb large amounts of water make it an indispensable packaging material for the storage and transportation of living plants. It is one of the components in the granulation of fertilizers and chemical plant protection products.

Vermiculite is used in the production of rubber, for the insulation of open-hearth furnaces, in molding in powder metallurgy, in drying plants, in the manufacture of refractory insulating bricks and cardboard, in industrial thermoses. Crushed vermiculite is used in the automotive industry as a filler in the manufacture of brake pads, rubber products, added to automotive lubricants for cooling, increasing pressure and saving oil. Vermiculite has been used as an inert filler in the manufacture of explosives.

Vermiculite is used to purify wastewater from petroleum products, as a catalyst in oil refining, as an industrial sorbent for highly radioactive radium-137 and strontium-90 from waste from nuclear enterprises, which is especially important in Ukraine. In addition, vermiculite is used in water softening, cleaning and clarification of oils, to produce fire-resistant gold and silver paints, varnishes, enamels, as well as in the perfumery and pharmaceutical industries. Vermiculite fillings are used to isolate cold rooms and arches of open-hearth furnaces, for sound insulation of test chambers for aircraft and automobile engines.

In 1993, a new field of application of vermiculite in metallurgy as a heat insulator for oxygen separation plants, in which perlite was previously used, was discovered. But the main share of the use of vermiculite falls on the building complex. Every year the volume of use of cellular concretes on vermiculite and products based on them in monolithic multi-storey construction for the construction of external walls within the floor is growing.

1. The effectiveness of vermiculite as a filler of concrete and mortars

Thermal calculations show that the thickness of the exterior walls of cellular concrete blocks filled with vermiculite at a density of 400-500 kg / m^3 is 25 cm. The exterior and interior decoration is an essential element of the building envelope.

Analysis of foreign construction experience shows that for the decoration of both external and internal surfaces of walls of cellular concrete blocks, light heat-insulating plaster mortars with a perlite and vermiculite filler are mainly used [3]. Moreover, practice shows that vermiculite plasters have a higher adhesive property than perlite. This is due to the layered structure and higher elasticity of the particles of exfoliated vermiculite, consisting of many flexible mica layers [4]. In general, the ability of the expanded vermiculite to elastically-plastically deform even under insignificant loads provides stress relaxation at the boundary between the plaster and the plastered base, unlike traditional types of plasters prone to cracking and peeling under conditions of deforming loads.

When swelling, the volume of vermiculite increases by 20-30 times, which significantly reduces its bulk density from 400-500 to 50-100 kg / m^3 and places it among the lightest minerals [5]. In addition, vermiculite is characterized by high fire resistance (its melting temperature reaches about 1400° C), high sound-absorbing ability, low thermal conductivity [6, 7]. The above is only a small reflection of the possibilities of using exfoliated vermiculite in various sectors of the national economy, especially when solving environmental problems on the assumption that vermiculite is a local raw material with excellent characteristics, a small depth of occurrence, which in turn makes both its production and processing beneficial. .

2. Features of concretes and mortars on vermiculite aggregate

The features of expanded vermiculite have a great influence on the properties of concrete and mortars made on it. Vermiculite concrete is prepared from cement, expanded ver¬miculite and water. Lime, gypsum and water glass can also be used as a binder. The properties of the concrete mixture and hardened vermiculite current are influenced by a number of factors: water consumption, cement, grain composition of vermiculite, compaction method, curing conditions, etc. Research data shows a change in the basic properties of a freshly prepared concrete mix and compressive strength of thermally insulating and thermally constructive vermiculite concrete depending on water consumption and cement grade 400. For heat and sound insulating vermiculite concrete having a porous structure, the optimum water flow is almost at the boundary of delamination. The optimal water consumption for thermally-constructive vermiculite concrete, which sews a dense structure, corresponds to the best consistency and greatest

density of the mixture, laid under the given compaction conditions, it is set to the greatest concrete strength, and approximately to the greatest bulk density of the compacted concrete mix or ready-made concrete.

The lack of water leads to a more dramatic decrease in strength than its excess. With an increase in water consumption of up to 250-300 liters per 1 m^3 of expanded vermiculite, the vibro-collapsibility of thermally insulating vermiculite concrete worsens, and after passing through an extremum it improves. Studies have shown that the molding of vermiculite concrete mix can be done by pressing, vibropressing, rolling, vibro-rolling, vibro-stamping, vibrating with weights.

Extensive studies have revealed the main indicators of vermiculite concrete in the process, which are presented in Table. 1.

Table 1. The main indicators of vermiculite concrete on cement

Indicators	Composition (by volume)								
	1:1	1:2	1:3	1:4	1:5	1:6	1:8	1:10	1:12
I	2	3	4	5	6	7	8	9	10
Bulk mass, kg / m^3	1100	880	600	500	430	330	34и	ЗЮ	280
Heat conduction in dry condition	0,22	0,165	0,13	0,11	0,1	0,092	0,083	0,075	0,07
Same with 5% humidity	0,27	3,22	0,17	0,145	0,13	0,12	0,105	0,09	0,08
Compressive strength, kgf / cm^2	50	35	20	13	10	7	5	O	I
Cement consumption (binding agent), kg per 1 m^3	760	600	400	300	250	200	150	120	100
The volume of vermiculite, l per 1m^2	1100	1200	1200	1200	1200	1200	1200	1200	1200
Water consumption with vermiculite grain size of 0.6-10 mm, l per 1 m^3	530	455	425	410	400	395	390	385	380

From Tab. 1 it shows that on the expanded vermiculite and cements, it is possible to obtain heat-insulating and heat-insulating constructive concrete. Thermal insulating vermiculite concrete with compressive strength from 1 to 20 kgf / cm^2 and with a bulk weight from 280 to 600 kg / m^3 can be obtained with the consumption of cement (binder) 100-400 kg per 1 m^3 of concrete. Thermal insulation and constructive vermiculite concrete brand 35-50 with a bulk weight of 880-1100 kg / m^3 is obtained when the consumption of cement (binder) is 600-760 kg per 1 m^3 of concrete. Reducing cement consumption can be achieved by replacing it (up to 50% by mass) with active mineral additives (granulated slags, etc.).

Based on the results of the study of vermiculite concrete, it can be concluded that thermally insulating constructive concrete requires a large consumption of binder (due to the low strength of vermiculite grain), and its widespread use in construction is economically difficult to justify. But in small volumes for special purposes, such concrete has found application. They tried to eliminate these disadvantages of thermally insulating constructive concrete by introducing foam into the concrete mix, various additives, and applying pozzolanic cements, but no significant advances in cement consumption were obtained.

Thermal insulating vermiculite bats can be successfully used in construction, as they are characterized by a low thermal conductivity coefficient - 0.07-0.13 kcal / (h-m-°C), while the consumption of binders is relatively small. When introduced into the composition of vermiculite concrete of expanded clay, it creates a more durable frame (skeleton). Vermiculite ceramics concretes on various cements have become widely used to isolate the reactors of oil refineries as liners in concrete blocks and reinforced concrete structures to facilitate and warm them, for example, in tunnel kilns mounted from prefabricated elements. These concretes well maintain high temperatures and belong to heat-resistant concrete type.

Vermiculite "warm" plaster mortars are used for exterior and interior decoration of enclosing structures. According to the existing concepts, mortars on expanded vermiculite can be divided into masonry, plastering, decorative and fire retardant, mortars for foundations for plastic tile and linoleum floors, mortars for warming surfaces and heat-resistant coatings. Mortars prepared on Portland cement, alumina cement, liquid glass and other binders.

To obtain vermiculite mortars, use is made of vermiculite of various fractions: 0-1,2; 0-5; 0.6-5 mm, etc. The volumetric mass of mortars varies widely depending on the bulk mass of expanded vermiculite and other components. Masonry cement mortars prepared on expanded vermiculite with various additives have a bulk weight of 450-700 kg / m^3, compressive strength of 6-35 kgf / cm^2, thermal conductivity coefficient 0.1-0.25 kcal / (h-m- ° C).

Introduction to mortars of various pigments, fluffed as ¬ beste, plasticizers allows you to get mortars for special purposes.

3. Basic operations when receiving expanded vermiculite

3.1 Extraction of raw materials

Based on the small depth of vermiculite rocks (10-40 m), an open mining method is used. First, the top fertile layer of soil is removed, then the layer of waste rock, which does not contain a valuable component, is removed. After the overburden works, the mineral is directly excavated. Drilling and blasting may be used to soften the rock mass (its loosening in order to facilitate

mining). The open method has a number of significant advantages and is the most cost-effective way of development: the best sanitary and hygienic working conditions, the possibility of using high-performance mining and transport equipment and, as a result of this, the possibility of achieving high technical and economic indicators. With the open method, the labor productivity of workers is 4-5 times higher than with underground mining, and the cost of mined ore is 2-3 times lower. Mineral loss with open pit usually does not exceed 3-5% instead of 10-15% with underground mining. Capital expenditures for the construction of the whole complex of buildings and structures for underground mining are 1.5–2 times higher, and the construction time is 2-3 times longer than with the open method. Therefore, if there are several deposits of one mineral in the region, the development begins with the one that lies closer to production.

Extraction of vermiculite raw materials practically does not differ from the extraction of clay, or other high-lying rocks, and its low density allows the use of transport and processing equipment of reduced capacity, which has a positive effect on the overall technical and economic indicators of the entire production.

3.2 Enrichment of vermiculite raw materials

The task of enrichment is to separate from vermiculite grains of empty, non-obtusive rock and weakly oblique micas. This operation is the most time consuming and costly in the production of exfoliated vermiculite. With small mining, the enrichment of the rock is carried out near the place of extraction, and other operations - at the place of consumption. If the volume of extraction is significant, then crushing of vermiculite is carried out at the concentrating enterprises.

A characteristic feature of a number of fields is the difficulty of complete separation of vermiculite from waste rock in the enrichment process. Partially, it remains in the final enrichment product - vermiculite concentrate. This is due to the fact that poorly intumescent particles of mica remaining in the concentrate are similar in their properties to vermiculite. Their presence in the final product does not significantly affect its quality, especially since there are already ways to process the rock and concentrate, allowing more fully to separate not only waste rock from vermiculite, but also particles of biotite and phlogopite directly in the firing process or after it.

When using vermiculite in the immediate vicinity of the place of its production, it is advisable to obtain a concentrate with the content of waste rock even up to 50%. Incomplete separation of waste rock will not only reduce the cost of the concentrate, but also increase the extraction of vermiculite from the rock.

The enrichment of the rock can be carried out in various ways, the choice of which is determined by the grain composition of the rock, the content of vermiculite, the properties of the waste rock, the requirements placed on the concentrate. Technological enrichment schemes, as a rule, are multi-stage, i.e.

include several different sequential operations. This is due to the fact that some enrichment methods allow processing only coarse-grained rock, others, on the contrary, fine-grained. In addition, often the properties of small and large grains of waste rock are different. The main methods are screening, crushing, gravity concentration, flotation, electromagnetic separation.

3.3 Crushing vermiculite.

To obtain vermiculite with the required particle size, the raw materials are crushed. The granulometric composition of crushed vermiculite is influenced by the degree of its hydration. The maximum grain size of vermiculite, which is used as a filler in concretes and mortars, as well as in fillings, should not exceed 10 mm, since larger, well- expanded granules, as a rule, have weak bonds between individual scales and therefore easily break. The presence of such grains in the composition of the aggregate leads to a decrease in the strength of vermiculite products. In addition, grains of large sizes have large pores, and this adversely affects the insulating properties of products and backfill.

Vermiculite grains of 6–10 mm in size are of the greatest value, since, having sufficient strength and relatively small pores, they give, when roasting, a greater yield of exfoliated vermiculite as compared with small fractions. Their average density is 2-3 times lower than that of small fractions. As a consequence, vermiculite should be broken up so that the yield of large fractions is as large as possible. When the mechanical action of the grain of vermiculite is easily split along the cleavage planes, forming very thin weakly swelling scales, therefore, when crushing, it is necessary to exclude excessive splitting of vermiculite.

3.4 Roasting

Roasting is the final and most expensive stage of obtaining exfoliated vermiculite. Vermiculite is fired in rotating, shaft furnaces, on pallets. It is considered the best way to burn in a shaft furnace in a suspended state. This method provides intensive heating of vermiculite grains and the short duration of their stay in the high temperature zone. In suspended state, the expanded vermiculite moves freely in the furnace, without grinding, while this easily creates the conditions for the separation of waste rock remaining in the concentrate.

As the literature review showed, earlier attempts were made to reduce the firing temperature of vermiculite [8]. However, the results obtained related only to the raw materials of a particular field and were not sufficiently substantiated, which does not allow them to be used for vermiculite deposits, in which the composition of the raw materials may vary considerably. The task to develop and scientifically substantiate the technology of low-temperature expansion of vermiculite raw materials for various fields, regardless of its composition, was solved in [9]. As a result of the research, the possibility of obtaining low-calcined vermiculite due to pre-treatment with a solution of potassium salts has been established. It was shown that the

processing of vermiculite raw materials with a 3M KNO_3 solution allowed more than halving the burning temperature (from 900 to 400 ° C) while maintaining the basic physicomechanical characteristics of the bulk materials of the bulk materials 0.105 g / cm^3 and the thermal conductivity of 0.032 W / (m · K) . The use of such vermiculite as a filler for concretes is a factor that significantly increases the energy efficiency of the structures used due to a significant reduction in the firing temperature, an improvement in thermal performance, and also significantly reduces the weight of structures.

3.5 Cooling

The cooling of already burned vermiculite takes place in air. The increase in cooling rate is carried out by increasing the area of contact of the bulk mass of the product with air. Expanded vermiculite from the hearth of the furnace by gravity is poured into the receiving funnel and in bulk along the wide tray is transferred to the finished product chamber (slow cooling). More intensively the cooling takes place with the help of a pneumatic conveying device with direct removal of hot air, and subsequent packing in packing bags (so-called rapid cooling).

The above technological operations are related to traditional firing schemes for exfoliated vermiculite, which is carried out using liquid, solid or gaseous fuel at a temperature of about 900–1000 °C.

Conclusion

The above is only a small reflection of the possibilities of using expanded vermiculite in various sectors of the national economy, especially when solving environmental problems on the assumption that vermiculite is a local raw material with excellent characteristics, a small depth of occurrence, which in turn makes both its production and processing beneficial. The possible extent of using expanded vermiculite is commensurate with the use of such light construction materials as expanded clay and perlite. However, the consumption of vermiculite in Ukraine is constrained by the high cost of its extraction and processing, as well as the lack of exploration of its rich and large deposits.

The considered properties of vermiculite determine the wide possibilities of its use in the national economy as a light mineral aggregate in concrete during large-block construction, in dry construction mixtures for various purposes, for producing fire-resistant, heat and sound insulating materials and products, in shipbuilding, turbine-building and other industries.

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Current advanced technologies in training of a family physician

In the process of reforming the system of medical care and opening of general practice/family medicine institutions, being the basis of the health care system, a general practitioner/ family physician with high qualification, deep knowledge in general, pre-clinical and clinical disciplines is at the core of health care [7]. Considering the global tendencies, the improvement of the quality of educational services, provision of equal access to quality education at all levels, rise of the competitiveness of the national education system and its integration into common European educational space are marked among the priority directions of the development of education in Ukraine. Moreover, the system of higher medical education requires new approaches to the training of qualified medical professionals and comprehension of the pedagogical process in HEI [10]. Current international standards in the field of education provide for the training of qualified specialists capable of integrating theoretical knowledge and practical skills into a holistic system, acquiring the advanced technologies, etc. The search for standards in higher medical education is an optimal strategy for achieving a conceptually new level of quality of training of future professionals, based on the training of healthcare professionals in compliance with the conventional international standards of teaching, taking into account the peculiarities and interests of the national healthcare system [2,7,9].

The need for transition from traditional to advanced technologies is because the existing education system is not focused on activating the personality traits of the students, and the educational process is essentially monologue. That is why the use of active teaching methods such as trainings, discussions, games, simulation technologies, etc., should not be a practical appendix to theoretical issues, but rather serve as the starting point from which both a teacher and students are involved into learning process, which is a synergic activity for solving certain problems, including those aimed at the personal development of learners. Consequently, the position of a teacher also changes: from the supervisor to a participant in the synergic activity [12].

The choice of using different teaching approaches in medical education is influenced by the features of the medical specialty itself, which, obviously, is clearly expressed by both theoretical and practical components. Among the most frequent objections to the feasibility of using different teaching technologies in medical education, the thesis that the patient's bed is the only place to assess a physician's knowledge, skills and abilities is the most commonly used. However, it is not always, and not every example that can be considered directly during hands-on patient care. In particular, this may be due to the lack of appropriate patients while studying a particular topic, but at

the same time, there are active technologies and teaching methods ensuring effective training of specialists [5,11,15].

Noteworthy, integration of learning, involving the use of distant forms at the stage of theoretical training and working out practical skills at the clinical bases of internship, is crucial. Distant forms of education cannot exist independently and are used in combination with classical forms of learning.

Stage-oriented training encompasses maximum use of e-learning forms at the first stage (theoretical training) and distant practical activity directly with the patient at the next stage. Hands-on patient care is carried out at the affiliated clinical bases and educational and practical centers of the Department.

At the Department of Family Medicine and Therapy, the following distance learning technologies have been used:

- distant on-line lectures for the general target audience. Lectures have been given in the form of multimedia presentation. The main purpose of the distant lecture was to raise the audience's interest and encourage physicians to find information on the given subject;
- distant on-line workshops, aimed at interactive communication between the teacher and physicians, undergoing training, affiliated to the primary health care center. Teacher's role: guiding (organizational), advisory (informational) and controlling. During the distant workshop the Internet and the means of video communication were used;
- distant individual on-line consultations were aimed at interactive communication of a teacher with a specific trainee to familiarize physicians with updated information and control by the teacher. During individual consultation, the teacher assessed the level of theoretical knowledge of the physician and his/her clinical competence, which made it possible to make changes in the individual plan of the trainee, to refine some topics.

The findings of the study have shown that the learning process is transformed from the teacher's monologue and the study of a set of teaching materials into a persistent dialogue between a teacher and a trainee, transferred from the classroom to the conditions, more comfortable for the physician in terms of time and place of the implementation of the process of knowledge acquisition.

Admittedly, classical technological are supplemented with novel, in particular, interactive learning technologies. The term "interactivity" comes from English word "interact" where "inter" means a mutual and "act" means to act. Thus, interactivity is the ability to be engaged in the mutual dialogue [5,15].

Interactive learning foresees that all participants of the learning process interact with each other, share information, jointly solve problems, simulate

situations, evaluate the actions of colleagues and their own behavior, immerse themselves in the real atmosphere of business cooperation to solve a number of problems related to their interests, needs and requests. At the same time there is a constant change in the types of educational activities [6,15].

According to the European Academy of Teachers in Family Medicine/General Practice (EURACT) recommendations, the model of blended (hybrid) learning is the most effective in the training of family physicians. Blended learning involves a combination of independent work of a physician with or without the use of electronic platforms, media services and traditional activity in the classroom utilizing interactive methods of group work.

Currently, simulation technologies are widely used during the training of health care professionals, which is a novel trend in the training of highly qualified medical personnel [14].

The range of techniques, combined in the concept of “simulation technology”, is diverse, including multiple simulators, where practical skills are mastered with a high level of realism, and computer and virtual models for improving the algorithms for activities with different clinical situations [13].

Body Interact is the innovative simulation tool designed for use at higher medical schools and medical colleges to solve problems and clinical rationale with virtual patients. “Virtual Patient” is the innovative interactive learning technology that allows the healthcare learners to be fully immersed in the diagnostic and therapeutic process with the help of the computer model of a real clinical situation, to take independent decisions on the diagnostic and treatment tactics, to see and understand the consequences of their decisions, not thereby violating the patient’s rights and safety. The unconditional advantages of this technology are also the stimulation of interest in independent study of the material, visualization, the ability to “take a break” in the process of working with the patient and obtain the necessary background information.

Currently, interns and professional physicians, specializing in general practice/ family medicine, internal diseases, emergency medicine, neurology, pediatrics, endocrinology undergo training at the Department of Family Medicine and Therapy, provided by the faculty members. 20 clinical scenarios with different nosology are available to study. Such innovations in training of specialists significantly improve both the theoretical knowledge and acquisition of practical skills, and, generally, contribute to enhancement of the quality of training. The environment is as in real life: consolidation of all the resources and data into a dynamic physiological model with dozens of built-in states and health disorders, laboratory tests, diagnostic visualizations, assessment scale, intervention and treatment, along with highly effective tools for summing up. The database of the scenarios available for learning is constantly updated, providing teachers with a large library of pre-defined

clinical scenarios with updated clinical protocols. Body Interact offers an intuitive clear tool for creating personalized scenarios, thereby enabling physicians to enhance their expertise. In order to improve the quality of learning for each individual learner or the whole group, a detailed analysis is presented on the visual information panel, including a metric of actions and an intuitive clear interface, which greatly facilitates the setting and launch of the objectively structured clinical tests.

The system of professional medical education should quickly respond to continuous changes in science and research, increasing requirements for the individual and professional qualities of a specialist and timely make the necessary changes in the organization of the educational process. The peculiarity of practical classes in clinical disciplines is the classical approach: the lesson should be built around a real patient, accelerating students to think clinically, evaluate the resulting data and individually prescribe treatment. The quality of education depends on the quality of the acquired adequate knowledge, which meets professional requirements. From this point of view, a timely correction of the structure of the lesson is crucial [1,8].

Reorganization of the educational process at the university requires improvement of the methodology of conducting a practical clinical lesson with the provision of qualitative methodological and visual aids of learning, organization of the independent clinical work of a learner, reducing the number of learners per one teacher, especially in the study of clinical disciplines. The use of simulation technologies as one of the methods of reorganization of the educational process aids in optimization the acquisition of practical skills and increases the interest of family physicians in the profession [4].

Practicing of clinical skills utilizing dummies, simulators and standard patients under the supervision of a teacher provides an opportunity for interns and professional physicians to make erroneous decisions in a safe environment that improves their clinical competencies. In simulation training the priority is given to precisely the execution of educational assignment, in the process of which a negative outcome of medical care is allowed, so that the learner will feel the full extent of his/her responsibility, but, at the same time, not received a possible psychological trauma, if this happens with a real patient. Simulation training eliminates fear and psycho-traumatic component from the negative outcome of the first internship experience, which greatly improves learning of the material.

At the same time, it is evident that simulation training is not a panacea in any way, and cannot completely replace the hands-on patient care training, since both technologies should organically complement each other in the contemporary educational process.

Simulation training technology implements more effective practical training of physicians in the specialty “General practice/family medicine”, by 2-3 times improving the effectiveness of study.

Undoubtedly, the positive effect of utilizing interactive methods of teaching has been proven long ago. The following advanced technologies and interactive teaching methods have been introduced by the faculty members of the Department of Family Medicine and Therapy during the training of family physicians: brainstorming, discussion, case study, presentation, role play [6,15].

Brainstorming is one of the techniques widely used during the trainings.

Brainstorming is strictly staged and the sequence of stages cannot be changed. The teacher clearly formulates the task, the solution to which the learners need to find. The learners can suggest any thought that came in their mind. It is important to keep to one of the main rules of brainstorming - NO comments during the collection of ideas, even if they look ridiculous, inappropriate, since any comment may stop the process of producing ideas.

Discussion is a collective discussion of an important issue in order to find ways to solve it. The purpose of a discussion as a teaching method is to obtain reasoned points of view or positions on a given subject or problem.

A discussion contributes to the development of critical thinking, allows to determine own position, develops skills to keep to own standpoint, and extends knowledge on the problem.

A discussion may be arranged in the form of round table, debates.

Case study is a special interactive technique, which involves modeling of life situations, their consideration, solving under the pre-defined scenario, public defense of the decision.

Simulation of practical situations can be done in two ways:

1. Based on the description of real-life events (the patient’s medical history, publications).

2. Based on simulated situations (situational tasks, test tasks).

Presentation is a mode of presenting information, using a variety of technical means. An educational presentation is intended to assist a teacher in providing a convenient and visual presentation of theoretical and practical material.

Role play is a managed game aimed at the achievement of a pre-defined game outcome. Game situations simulate or reproduce real-life or typical working situations in which several people play certain roles in a specific scenario for a pre-selected study topic. A role-play allows creating a safe environment in which learners can consider, as well as identify alternative ways of dealing with the situation.

An integrated approach to the organization of the educational process is crucial in the formation of a harmoniously developed personality of a physician-citizen of Ukraine, trained at a higher medical school. The need for improvement and optimization of the educational process is dictated by the current requirements for training of highly qualified, all-round developed, erudite medical specialists [3].

Undoubtedly, the main objective of the activity of an educator at a higher medical educational institution is the training of competent, expert physicians, and, therefore, they should clearly understand the meaning of the terms “expertise" and “competence” and the conditions of training that must be created for physicians to achieve their appropriate professional competence.

In professional training of a specialist a competency-based approach is of key importance, since it is concerned with integrative characteristic of a personality that reflects the willingness and ability to mobilize the acquired knowledge, skills, abilities, experience, methods of activity and professionally significant and personal qualities of a specialist.

The main objective of the postgraduate education is to focus on the practical training of specialists. The assessment of practical training has been carried out according to the teacher’s evaluation scale in the following categories: *Clinical aspect*: to determine the degree of emergency care in a particular situation; to conduct a clinical examination and formulate its results; to prescribe additional examinations and laboratory tests and use their results; to make diagnostic and therapeutic hypotheses; to perform simple technical manipulations, required in a certain clinical situation; *Communication*: to provide information in a clear form; to interact with a patient and his/her family properly; to keep to the rules of conduct when working in a team; to demonstrate the ability of synthesis and scientific curiosity; *Oral presentation*: to be able to describe, present the course of the examination, clinical case, findings of scientific research, etc.

Apparently, the professional activity of a family physician is patient-oriented, considering his/her demands, needs and personality, as well as beliefs, fears, expectations and diseases. Therefore, the final decision is the result of communication with the patient; personal aspects requires action and, consequently, appropriate training of future physicians; the corresponding physician-patient relationship involves activities of a physician during treatment and epidemiological studies; the physician should use several different sources of information, such as the International Classification of Primary Care (ICPC-2) and numerous general practitioner’s manuals [5].

Some professional competence of a physician is formed based on comprehensive knowledge (declarative and procedural), skills (behavioral, operational and cognitive), personal qualities, clinical experience and external circumstances.

The National College of Teaching General Practitioners (CNGE) defines competence as a complex capability associated with the context of learning or practical training, which encompasses several types of skills and abilities and allows, by analyzing a similar kind of circumstance, not only to identify problems, but also effectively solve them in accordance with a certain situation [5].

To carry out the profession of a general practitioner, competencies and five areas of activity are required:

- Specific clinical approach;
- Communication with patients and their environment;
- Application of professional equipment and instruments;
- Coordinated interaction with professional environment and sanitary and social services;
- Ability to promote the development and enhancement of the prestige of general practice specialty.

The need to simulate the process of forming the research competence of future physicians in the course of studying disciplines is determined by the need for vocational education in the construction of this process, identification of its basic components, monitoring the outcomes, obtaining information on the possibilities for its improvement. Obviously, a model is an artificially created object that transmits any essential features of an original, displaying its structure and correlations between its components in the simplest form. In the scientific literature, the semantic field of the concept of a "model" is defined as a device that reproduces, simulates the structure, functions, actions of any other device (when tested); the image, analogue, scheme of a certain fragment of reality, object of culture or cognition of the original; interpretation (in the logic, mathematics).

The analysis of pedagogical literature gives evidence that the modeling process is widely used in pedagogy and didactics. In this case both the content of education and educational activities are subject to modeling. In pedagogy, the model is considered as a system of objects or signs, which reproduces certain essential properties of the original system, it is a generalized reflection of the object, the result of abstract practical experience, rather than the direct result of the experiment.

The problem of modeling the pedagogical process was reflected in the publications of domestic scientists O. Antonova, O. Berezyuk, S. Vitvitska, O. Rudnitska, S. Goncharenko and others. We consider the pedagogical model as the system, which reflects a real object of research capable of replacing it in the process of study. A model for forming the research competence of future physicians in the process of studying disciplines, which is defined as structural-content, has been developed to reflect the unified picture of the investigated process. While developing a pedagogical model, it was concluded that the problem of the formation the research competence of future physicians in the process of studying disciplines is complex and versatile, which should be considered from the standpoints of several interrelated scientific approaches, namely: systemic and competent-based ones [5]. The resulting data show that the simulation of the process of formation of research competence in accordance with the concepts of systemic and competent-based approaches ensures a positive dynamics of the degrees of the formation of research competence of family physicians.

Conclusions

Thus, the motivation of physicians to continuous self-improvement, active participation in the educational process, comprehensive complex theoretical and practical training lays the foundations for clinical thinking and promotes acquisition of general clinical competencies. Modeling of the pedagogical process of the proposed study in accordance with the concept of systematic approach guarantees the development of research competence in family physicians.

To achieve maximum acquisition of the learning material, to make the lesson interesting and dynamic, easy for comprehension, various interactive teaching methods, discussed above, namely, brainstorming, working in mini-groups, discussion, case-method, role-play and presentation should be used.

Introduction of simulation technologies into the learning process directs a physician towards the team work, the ability to consider the point of view of another specialist, promotes the development of communicative skills, the formation of intellectual autonomy and professionalism. The use of such interactive technologies as "Virtual Patient" in the professional training of the family physicians enables solving problem situations by means of effective actions, intuition, training, stimulation of self-learning, full disclosure of the potential and enhancement of personality motivation, the formation of behavior skills in critical situations, ability to enrich activity with the new ways of implementation, development of professional flexibility and mobility, making of the final decision, enjoy the activity itself, and not their outcomes [3].

At the current stage of the development of health care and medical education, the use of various distance learning technologies is very up-to-date and in demand, providing an opportunity to achieve a qualitatively new level of the postgraduate education.

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Successive processes in secondary phitocenoses in the mountain forests of Adjara

Human intervention in nature everywhere has activated natural processes. The mountains of Adjara are no exception. Adjara represents a mountainous, extremely small grounded region and is characterized with very complicated engineering geological conditions. The intensive pace of land development violates the fragile balance and causes the active development of natural-geological processes. On these kinds of territories, the natural renewal of ecosystems is a long-term and complicated process.
Due to the unpredictable and unforeseen consumption of the local natural resources, the woodlands of Adjara Mountains, in particular, Tkhilvana, Jalabashvilebi, Ghorjomi, Danisparauli, Tsablana, Jabnidzeebi, Tsinareti, Akho, Vashlovani, Rakvta, Pushrukauli and others are destroyed as a result of landslide processes, which made the soil barren. On April 29, 1989 the landslide in the valley of River Skhalta belongs to the number of grandiose and deep landslides. There are different factors of developing the landslide, including trees cut down and building a road in the mountain [5]. The natural processes are supposedly caused by the collapse of over cropped layers and erosive processes. For the formation, growth and development of the certain species of vegetation or the communities represented by them, the crucial importance is given to the environmental factors. In the mountainous conditions the relief is of an important factor for forming forest ecosystems [1]. As a result of natural processes, the information on the natural renewal of the damaged (destroyed) ecosystems is very poor. Therefore, the issue of studying the peculiarities of the dynamics of successive processes of forest ecosystems renewed on the landslide slopes of the mountainous regions in Adjara is quite topical.The goal of the research is to study the peculiarities of successive processes in the renewal forest ecosystems on the landslides, in particular, to study the successive changes of the serial stages of the composition of species in the process of coenotic structure, natural renewal and forest regeneration

The object of research is in Khulo region, Adjara. Renewed forest ecosystems on the slopes of the mountain in Tsablana.

The key method of the research was the method of traditional reconnaissance – survey expedition. We managed to collect the samples of herbarium, to describe typical phytocenosis by means of special questionnaires and to treat them. For geo-botanical descriptions we will apply traditional methods of phytocoenological research [2, 3, 4, 6].

We should mention here that despite the fact that the landslide totally destroyed the vegetative cover on the slope (mixed forests are developed on the right side slope) and the lifeless substrate was consisted of road metals, during a short period (30 years) a pine-tree forest was developed without any human intervention on the abovementioned habitat. It can be seen on the thin, undeveloped soils as grouped together. Since a pine tree is rapidly

growing plant, its sapling is rarely damaged by the frost and besides, other woody plants do not compete with it.

The pine-tree forests developed on the landslide is formed on the primitive, slightly thick, stony, and well-drained and quite dry soils. It provides a good renewal on the soil that lacks plant cover, since the pine sapling is sensitive towards grass cover and lawns. On the slopes of average steepness, low frequency pine forests are developed with enough light under them and the renewal process is permanently taking place there.

On the surrounding slopes and on relatively flat areas, the coenosis is developed with participation of alder. There is some fir, spruce, hornbeam, acacia trees in pine tree forests.

As a result of stocktaking of the species of flora of the landslide, we have found out the following**:**

The wild flora of the renewed forest on the landslide is represented with 105 species, which are united in 36 families and 88 sorts.

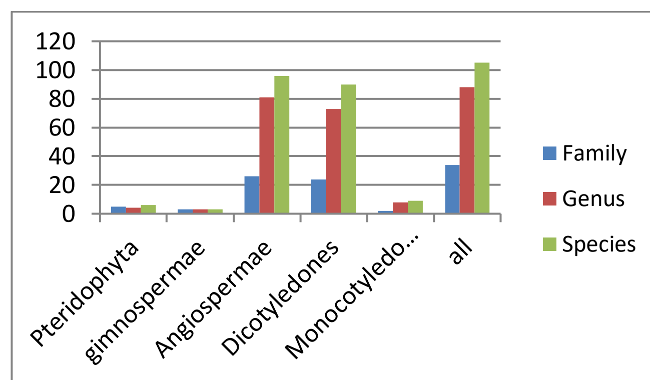

Diagram 1. Wild Flora of landslided Slope

The families distinguished according to the richness of species, are: Asteraceae-23; Lamiaceae-8; Borraginaceae-8; Brassicaceae-7; Poaceae-7; Umbelliferae-6; Scrophulariaceae-4; Leguminosae-4; Caryophyllaceae–3.

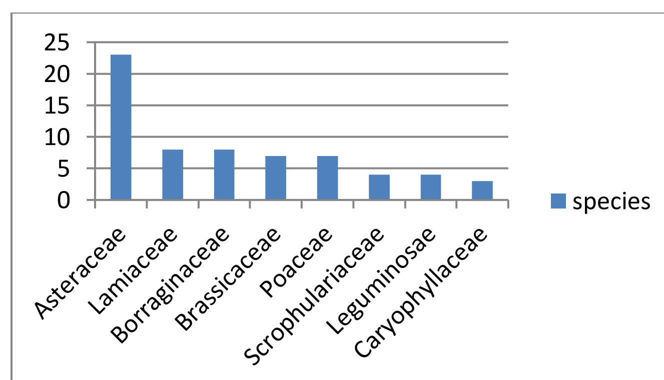

Diagram 2. In restored forests the families distinguished by varietal richness

There are no sorts which are distinguished according to the abundance of species here. Flora consists of woody (tree, bush, liana) and herbaceous

species as well. During analyzing the vital forms of the species of wild flora of the research object, it is obvious that the biggest share comes on perennial herbaceous species – 69,9%, on annual herbaceous species – 16 %. The total share of the woody plants (10 species) is 9,5%.

Typical phytocenoses of the renewed pine forest (Pineta; Pinus sosnowskyi):

- Pine forest with the subforest of black tree (Pinetum Ramnozum)

Height - 850 m from sea level. Northwest exposure. The steepness is 15-20°, uneven, underdeveloped soil, skeletal soil, moderately dry, the depth of the dead cover is 2-4 cm, the size of the section is 1200 m.

Tree plant tier: pine, alder, hornbeam, spruce, fir, Dominant Pinus Sosnowski. In the form of units Alnusbarbata, Carpinuscaucasica, Piceaorientalis, Abiesnordmaniana.

In the underbrush of the Dominant: RamnusImeretina; Characterized by: Ileqscolchica, Rhuscorrearia. Projection cover 25-35%.

Underdeveloped grass layer: Athyrium filix-femina, Echium vulgare, Crepisfaetida, Hieraciumpilosella, Mycelismuralis, Sambucus ebulus, Plantagolanceolata, Tunica saxifraga, Trifoliumcampestra, Poaannua, Fragaria vesca. Projective grass cover is 30-40%. The natural update is weak: Pinus sosnowskyi, Piceaorientalis, Abiesnordmanniana, Taxus baccata, Alnusbarbata, Ramnusimeretina.

- Alder and pine tree forests (Alnetum Pinetozum).

Height 900 m above sea level. Eastern exposure slope. The steepness is 20-30°, uneven, underdeveloped soil, skeletal soil, moderately dry, the depth of dead cover is 2-3 cm, the bedrock is mostly bare, the coverage of the dead cover is 20-30%. Plot size -800 m.

Tree plant tier: pine, alder, hornbeam, spruce, fir; Dominant Pinus Sosnowski. Sub-dominant Alnusbarbata, in units of Piceaorientalis, Abiesnordmaniana.

In the underbrush of the Dominant: Ramnusimeretina; characterized: Ileqscolchica, Rhuscorrearia.Projective cover 20-25%.

Is underdeveloped: Echium vulgare, Crepisfaetida, Hieraciumpilosella, Sambucus ebulus, Plantagolanceolata, Trifoliumcampestra, Poaannua. The projective cover of the grass is 30-40 %.

Natural renewal is satisfactorily in progress. The following species are characterized with weak natural renewal: Piceaorientalis, Abiesmordmaniana, Taxus bacatta, Alnusbarbata, Ramnusimeretina.

- Alder and pine forest with undergrowth Rhamnuscathartica (Alneto-Pinetozoramnosum).

Height, 950 m. Above sea level. Eastern exposure slope. The steepness is weak 20-30°, uneven, skeletal soil, underdeveloped soil, moderately dry, the depth of the dead cover is 3-4 cm, the coverage of the dead cover is 20 – 30%. Plot size -1000 m.

Tree plant tier: alder, pine, spruce, pyrus; dominant Alnusbarbata. Sub-dominant Pinus sosnowskyi, in the form of units Piceaorientalis, Piruscaucasica.

In the underbrush of the Dominant: Ramnusimeretina; characterized: Ramnusimeretica, IleqscolchicaSwidaaustralis. Projective cover 15 – 20%.

Is underdeveloped: Grass cover is poor: Sambucus edulus, Circiumimeretina, Teucrium nuchense, Echium vulgare, Clematis vitalba. Grass cover is poor; the projective cover of the grass is 30-40 %.

Естественное обновление в ольховых рощах слабое. Виды, создающие лесные рощи, представлены в единицах: alnusbarbata, Piceaorientalis, Pinussosnowskyi.

- Alder and willow forests (Alnetumsalixsosum) (on the surrounding slope of the valley).

Height, 750 m. Above sea level. Northeast exposure slope. The steepness is weak 60, more or less uneven, skeletal soil, underdeveloped soil, moderately dry, depth of dead cover 2-4 cm, area of dead cover 25-35%. Plot size -700 m.

Tree plant tier: alder, willow. Dominant Alnusbarbata. Sub-dominant Salix alba, in the form of units Piceaorientalis.

In the underbrush of the Dominant: Hedera kolchica, Ileqscolchica. Projective cover 10-15%.

Is underdeveloped: Grass cover is poor: Tusilagofarfara, Trifoliumpratese, Trifoliumarvense, Clinopodiumumbrosum, Crepisfoetida, Hipericumperforiatum, Echium vulgare Braxipodiumsilvaticum, Eupatorium cannabinum. Projective cover of the grass is 30-40 %.

Natural renewal process in alder groves is very weak. The species creating forest groves are represented in the form of units: alnusbarbata, Piceaorientalis, Pinus sosnovsci, Salix alba.

Based on the geobotanical description, the updated forest associations have the following characteristics:

Developed at an altitude of 750-1000 m above sea level, mainly on the slopes of the north-eastern exposure, where they occupy dry and slightly moistened places.The soil is skeletal, poor in humusюThe age of the renewed forest is 20-23 years.As part of the first tier dominates; alder, spruce, fir and willow are also mixed.The undergrowth is unevenly developed; mainly use ebony, as well as ivy and climber. Rhuscorriaria, Suidaaustralis are represented in the form of an offset form. Grass cover is mainly represented by perennial species; projective cover is relatively high in open spaces, in windows. Natural renewal of species creating forests is satisfactory. Developed saplings and mature trees of mixed polydominant forest are not observed in the cenosis.

The peculiarities of the renewed forest ecosystems are the following: For many years, along with the growth of woody plants, a phytocenotic structure eventually developed on a landslide. On the inanimate substrate, the

development of the phytocenosis is a complex process that is the result of the possible development of coenotic relations between species. In the process of renewal of forest ecosystems, some changes occur in the floristic composition of plant groupings; a multilevel structure was formed, vegetation cover was formed, a certain system of natural renewal was created, etc.

The main coating of phytocenosis is mainly formed by pines. In the forest grove there are alder, spruce, fir, hornbeam and willow in the form of units. In local climatic conditions, soils formed naturally in accordance with the intensity of plant growth.

It should be noted that mixed forests are developed on the right slope with a predominance of chestnut, oak and beech. These plant species are not observed in forest ecosystems updated on landslides.

In the process of vegetation development on landslides, types of communities replace each other in turn. At first, light-loving plants grew on a landslide habitat, and then the structure of the cenosis became more complex, the diversity of species increased, a so-called sequential series consisting of successive stages was formed. The successive series ends with a stage of maturity - a climax, during which the ecosystem turns into environmentally balanced conditions. The duration of successive processes, from the emergence of an ecosystem to the climax stage, is a long process. the duration of the period is associated with the need for the accumulation of nutrients, mainly in the substrate.

Conclusion

Sequential processes in naturally renewed forest ecosystems on landslide slopes occur in a sequence of successive stages. Pine forests (pine pine) develop on primitive, stony, well-drained and rather dry soils.

The wild flora of the updated forest on the landslide is represented by 105 species, which are combined into 36 families and 88 varieties. The process of restoring pine forests (Pinus sosnovskyi) and alder ses is satisfactory; but the renewal process of fir forests (Piceaorientalis) is a bit poor. we can also meet the yew forest (Taxus bacatta).

shoots of species creating mixed forests: chestnut, oak and beech are not observed on the slope, which excludes the possibility of renewing the forest that existed before the landslide soon.

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Evaluation of Chakvi red soils and secondary phytocoenoses developed on them

Almost all types of soils are met in the territories of Georgia starting from red soils of subtropical zone of western Georgia ending with mountainous-meadow soils of hilly areas. The main soil types of Georgian subtropical zone where various agricultural lands are located are red soils, yellow soils and subtropical bleached soils. Red soils are widely distributed in subtropical hilly foothill zone of western Georgia. They are represented with highest percentage in Adjara region, from 80 to 200 m height above sea level [1, 2]. The dominant crops are citrus and tea at most territories of them. At present tea is changed mostly by nuts and annual crops. The most common soil-producing rocks of red soils are the products exhausting volcanic mountainous rocks: andesite, basalts, tuffs, clays and loamy soils. The main source of collecting humus in red soil is "Kolkheti Type" forests under which they have been formed. The high saturation of roots and aluminum in absorbed conditions together with hydrogen causes acidic reaction of the mentioned soils [3, 4, 5]. On the basis of non-desirable socio-economic conditions of Georgia since past 90s some part of red soils (especially territories where tea plantations were cultivated) are degraded and abandoned at present. The only way out from the mentioned conditions is evaluation of modern conditions of red soils, for the purpose evaluation and enhancing their fertility level.

Adjara flora is distinguished with special diversity and originality which is stipulated by ancient plant groups and relicts formed in the third period (Palaeogene). Since ancient times the southern part of densely populated Kolkheti – Adjara Flora was enriched by foreign species. In the last decades of the past centuries strengthened colonization of adventitious plants was vividly expressed and formation of secondary phytocenosis by them. Therefore, it has become more and more common reaching and introducing invasients in aborigine plants. Herewith, foreign plants invase in local flora and exotic species become wild. The wide distribution of adventitious species made local natural flora incognizable, many of them invased in agro-cenosis and became grass [6].

In the first decades of twentieth century the formation of agrocenosis of various crops was followed by formation of secondary (changed) plants (mostly grass) in the place of mixed-leafy forest in seaside bar and hilly areas. Since 1885 tea plantations are cultivated in Chakvi territories. The invasion and introduction of many foreign species is connected to cultivation of tea plantations [7, 8, 9]. This is a long-term and still on-going process. At the end of twentieth century since tea plantation are considered to be non-profitable crops, agro-chemical and other activities were terminated, and local and foreign coniferous plants start growing together with grass in tea plantation

territories. The spectrum of coniferous plants distribution is well envisaged in Google map photos (Pic 1, 2). Hence, studying adventitious species will create a clear picture about their gradual invasion in a new environment, and will show modern transformation peculiarities of flora and plants with the influence of anthropogenic factors.

Pic.1. Research object (2004)

Pic.2. Research object (2017)

The research goal was the following: to identify chemical composition of red soils in Chakvi area and evaluation of their fertility level with main parameters; as well as, studying secondary phytocenosis of Chakvi bar area, geo-botanic diagnostics of naturally formed secondary phtytocenosis, formation of data base for foreign plants inhabited in research objects, taxonomic and geographical analysis, studying dynamics of successive processes.

Materials and Methods.

The used red soil samples were taken from Adjara A.R. Chakvi area, the samples were taken from two depths: 0-40, 40-80 cms. The research methods were: potentiometric, titrimetric, photo-colorimetric, Plasm Atomic Eissive Specter Analysis [10]. The research material in chakvi bar area in secondary natural cenosis was plants of local and foreign origin. Totally 5 objects were selected where geo-botanic descriptions were made through method of squares. The main research method was traditional route expedition method. For identification of species various data and scientific literature/sources were used [11, 12]. Internet sources and data base of world invasive species. In secondary natural phytocenosis plants description is made through Releve and square methods [13, 14].

Results and Discussion.

Evaluation of Chakvi Red Soils Fertility Level, based on Their Agro-Chemical Parameters:

The tea crops were cultivated as red soils for a long period (more than 50-60 years) which caused strong acidic reaction of the mentioned soils. In 0-40 cm layer of the soil, where there are mostly agricultural crops root system,

pH (H_2O) is 4.3-4.6, in KCl suspension - pH 4.0-4.5, according to the depth pH of the soils are increased (Table 1). By reducing pH the changeable and hydrolysis acidity of the soils are regularly increasing. Humus (in Latin *humus* - means land, soil) - is organic, dark part of soil which is produced through bio-chemical transformations of vegetal and animal residuals. Humus includes all the elements necessary for feeding the plant, which become easily assimilating for plants by the influence of microorganisms. The soils are poor in general humus (3.57-3.02%). Humus concentration regularly decreases according to the depths. General nitrogen is the sum of mineral and organic nitrogen, which is identified in order to have an idea on balance of nitrogen substances. It includes easily soluble nitrogen admixtures (nitrates, nitrites, ammoniacal nitrogen), as well as hardly soluble nitrogen organic admixtures (mostly nitrogen in proteins). Organic-mineral admixtures in Nitrogen is one of the most important nutritious components. According to the received results it was identified that general nitrogen is 5% of general humus.

Table 1. Basic Fertility Parameters of Chakvi Red Soil

Place of Taking Sample	Depth of Taking Sample, cm	pH		Acidity, mg.equivalent/l		General, %		Nutritious Elements, mg/100g			
		H_2O	KCl	Chan-geable	Hydro-lysis	Humus	N	P_2O_5	K_2O	CaO	MgO
Chakvi	*0-40*	4.3	4.0	6.2	13.0	3.57	0.15	15.5	13.4	16.8	11.5
	40-80	4.6	4.5	5.0	10.0	3.02	0.12	13.0	9.3	15.4	11.0

Multi-element analysis of red soils showed that from macro- and semi-micro elements, Al (93.7mg/kg) > Fe (48.06 mg/kg) > Si (41.6 mg/kg) are dominant. Macro-elements are in the first row according to their composition: Al > Fe > Si > Ca > Mg > K-P > N (Diagram 1). From necessary macro-elements used for feeding plants K, Mg, P are with minimum composition. The soils are poor for absorption forms level of Potassium and Phosphorus. The composition of Calcium and Magnesium movable forms in soils are not enough for feeding plants.

Toxic elements are beyond discovering norm in soils where tea plantations used to be: Cd, Cr, Hg, Li, Sb, Se, Ti, Tl, V, Pb. The determined micro-elements are classified as follows according to decrease: Mn>Mo>B-Cu> Co-Zn > As (Diagram 2, Table 2). Composition of microelements including toxic elements does not exceed MPC in any soil samples. Among defined microelements Mn (17.3 mg/kg) was with the highest concentration, which once more underlines the acidic reaction of red soils where tea plantations used to be. Molybdenum was with minimal concentration in soils (0,0277mg/kg).

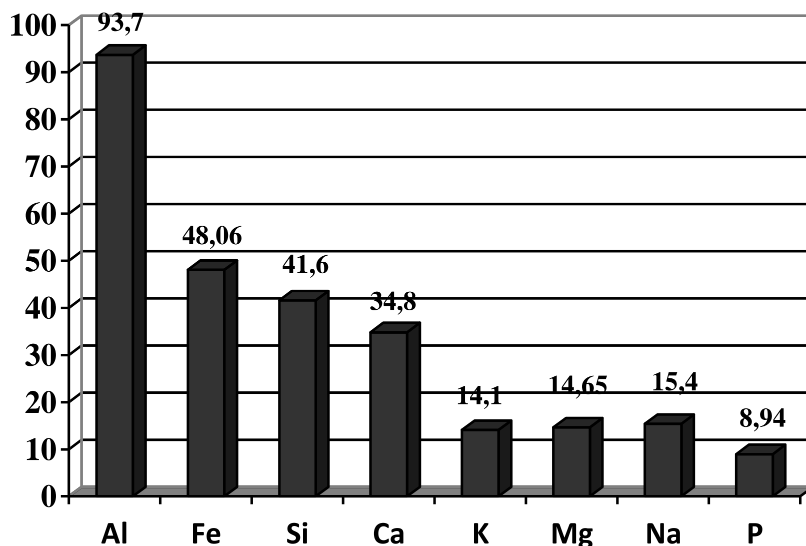

Diagram 1. Multi-element composition of red soil, macro-elements, mg/kg

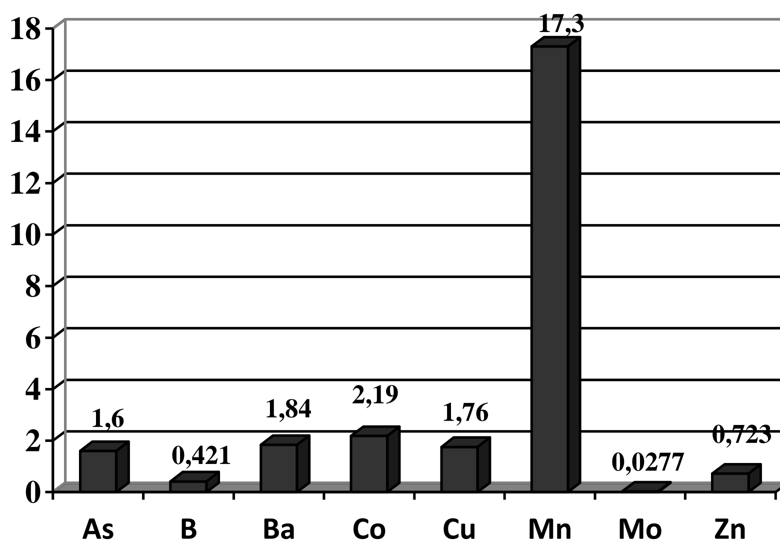

Diagram 2. Multi-element composition of red soil, micro-elements, mg/kg

Table 2.
Element analysis of Soil Acid Extract (0,1 N H_2SO_4), mg/kg micro-elements (including toxic)

Elements mg/kg / Location	As	B	Ba	Co	Cu	Mn	Mo	Zn
Chakvi	1.60	0.421	1.84	2.19	1.76	17.3	0.0277	0.723
MPC, mg/kg	2,0	55	2,5	5,0	3,0	70-80	3,5	1,0

Floristic and cenotic analysis of secondary phyto-cenosis in Chakvi Bar and hilly areas: Based on background description and researches in Chakvi bar area four formations were selected and classified in secondary cenosis: plant groups created from Japanese criptometry (*Cryptomeria japonica*) dominance; plant groups created from hardbeam and oak dominance (*Carpinus caucasica, Quercus palustris, Quercus falcata*); plant groups created from alder (Carpinus caucasica, Cryptomeria japonica); Japanese hardhack and American edible pokeweed dominance (Alnus barbata, Spiraea japonica, Phytolacca americana) (pic. 3).

Pic. 3. Secondary cenosis

In secondary natural cenosis totally 63 families, 137 breeds, 191 species from which local is 61 and 130 of a foreign origin are described. In the nearest past in he mentioned territories deforestation of representatives of local flora – beech (Fagus orientalis), chestnut (Castanea sativa), hardbeam (*Carpinus caucasica)*, Hartvis oak (Quercus hartvisiana), teil (Tilia caucasica), phloem (Pterocarya pterocarpa), persimmon (Diospyros lotus), rhododendrons (Rhododendron luteum, R. ponticum) and others took place and tea plantations were cultivated. Though since agro-technic measures were terminated in plantations tea bushes were degraded. On the places where plantations used to be successive processes of naturally formed phyto-cenosis started by the participation of aborigine and (adventitious) species of a foreign origin.

In plant groups created with the dominance of Japanese kriptometries (*Cryptomeria japonica*) 71 species are described, from which 25 are local and 46+ are foreign. In tree-plant row Cryptomeria japonica is dominant, (height 8-10m)б Quercus falcata, Quercus palustris, Frangula alnus (height 2-4 m). sambucus nigra, Smilax exselsa, Lonicera japonica, Polygonum perfoliatum, Rubus caesius, Rubus hirtus, Rubus serpens are met in underwood. Tea

bushes are covered with ferns (Pteridium tauricum). Two kinds of peat are met in open areas of groups (Polytrichum strictum, Calliergonella cuspidata). The grass cover is poorly developed, units of Castanea sativa, Corylus avellana, Aleurites fordii, Acer negundo are met.

In groups created by dominance of hardbeam and oak (Carpinus caucasica, Quercus palustris, Quercus falcata) 119 species are described from which 37 is local and 82 is foreign; 26 species of coniferous plants from which 10 is local (Alnus barbata, Carpinus caucasica, Castanea sativa, Corylus avellana, Frangula alnus, Laurocerasus officinalis, Rhododendron luteum, R. ponticum, Vaccinium arctostaphylos, Sambucus nigra) and 16 foreign (Ailanthus altissima, Aleurites fordii, Cedrus deodara, Chamaecyparis lawsoniana, Cinnamomum glanduli-ferum, Cryptomeria japonica, Quercus acutissima, Q. falcata, Q. myrsinifolia, Q. glauca, Q. palustris, Mallotus japonicus, Rhus javanica, Robinia pseudoacacia, Spiraea japonica, Thea sinensis). Carpinus caucasica, Quercus palustris, Q. Falcata are dominant in coniferous species, other coniferous plants are met as single units. From liana plants Lonicera japonica, Polygonum perfoliatum, Smilax exselsa, Hedera colchika are met. The major territories are covered with ferns (Pteridium tauricum) and bushes (Rubus caesius,R. hirtus, R. serpens). In the mentioned cenosis dominance of hardbeam, rhodonendrons, plushes and laurel cherries and excess amount of grass species gives the prognosis for returning mono-climax co-societies.

In plant groups created by the dominance of alder (Alnus barbata), Japanese hardhack (Spiraea japonica) and American Phytolacca (Phytolacca americana) 106 species of plants are described from which 40 is local and 66 is foreign. From coniferous plants 7 (Alnus barbata, Acer pseudoplatanus, Cornus australis, Ficus carica, Hedera colchica, Hedera helix, Paliurus spina-christi) is local and 11 (Acacia dealbata, Acer negundo, Ailanthus altissima, Cedrus deodara, Cryptomeria japonica, Juglans ailanthifolia, Paulownia tomentosa, Platanus occidentalis, Quercus palustris, Rosa multiflora, Ulex europaeus) - is foreign. Lianas presented of Polygonum perfoliatum, Hedera helix, H. Colchica და Smilax excelsa.

In tree-plant row Alnus barbata is dominant, height 8-12 m. in the second row Spiraea japonica, Phytolacca americana are represented mostly. Projective coverage of grasses (Hydrocotyle ramiflora, H. Vulgaris, Duchesnea indica, Polygonum perfoliatum, P. posumbu, P. Thunbergii) - is high. 6 species of fern are described in group (Asplenium scolopendrium, Blechnum spicant, Dryopteris remota, Cyrtomium falcatum, Pteridium tauricum, Thelypteris limbosperma). In formed cenosis more than 75% of plant species in formed cenosis are of a foreign origin.

Conclusion

Chakvi red soils are having acid reactions, the changeable and hydrolysis acidity importance regularly increases by reducing pH. The soils are poor in humus; general nitrogen concentration is

5 % of humus. From macro-elements Al, Fe, Si - is dominant. Soils are poor in elements - K, Mg, P. The movable forms concentrations of Calcium and Magnesium in soils are not sufficient for feeding the plants. Toxic elements are beyond discovering norm: Cd, Cr, Hg, Li, Sb, Se, Ti, Tl, V, Pb. From micro-elements Mn is dominant. The micro-elements concentration does not exceed MPC.

Irrational usage of natural plants, anthropogenic factors influence on them and ignorance and abandoning agricultural crops in Seaside Adjara phyto-landscapes caused peculiar transformation of flora and plants which was expressed in formed secondary phyto-cenosis which are characterized by high potential of invasion of foreign plants (adventitious). in secondary groups by the way of regular formation of cenotic inter relations, in parallel with growth of coniferous plants, phytocenotic structure is formed which is differentiated like rows. A certain system for natural rejuvenation is created. Based on background descriptions and researches in Chakvi bar areas in naturally developed secondary phytocenosis there are described 63 families, 137 breeds, 191 species from which local is 61 and 130 of a foreign origin.

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Study of Adjara soils pollution with chemical elements

Production of plant products is the main basis for providing the population with groceries. The main criterion in production and consuming nutritious products are quality. Therefore, in risky ecological conditions it is highly important to control assimilation intensity of toxic pollutants by plants from the soils.This to its part depends on soil solution reaction, forms of toxicants, admixtures and compounds, as well as organic substance concentration in soil and its mechanical and mineral composition and concentrations of carbonates, phosphates, macro and microelements, humidity, temperature etc. [2]. At present, in plant composition more than 74 various elements are discovered, which create thousands of organic and mineral substances. From these elements Carbon, Oxygen, Hydrogen and the following seven elements are necessary for growth and development of a plant: Nitrogen, phosphorus, Potassium, calcium, magnesium, sulphur, plumbum. These elements except plumbum are with significant concentration in plant. Besides these 7 elements a plant needs a very small amount of magnesium, boron, molybdenum, vanadium, copper, zinc, cobalt, iodine, chlorine and others. Together with macro and microelements, the plants include smaller amount of – rubidium, cesium, selenium, cadmium, silver, etc. [7]. From 118 elements being in nature1/3 are essential elements. The essential elements are hydrogen, oxygen, carbon, nitrogen, sodium, magnesium, phosphorus, chlorine, potassium, calcium and sulphur. Conditionally essential elements are copper, zinc, magnesium, plumbum, iron, chromium selenium, molybdenum, iodine, cobalt; conditional essential elements: boron, bromine, fluorine, lithium, nickel, silicium, vanadium, toxic aluminum, cadmium, plumbum, mercury Beryllium, barium, bismuth and potentially toxic are: thallium, gold, rubidium, silver, indium, titanium, uranium, antimony, zirconium, tin [5, 6].The sources of happening heavy metals in soil are exhaustion of natural hilly-rocks, erosion processes, volcanicactivity and obtaining and processing technogenic-useful minerals, as well as fuel consumption, auto-vehicles omissions, gasses omitted from enterprise [3, 4, 7]. Agricultural lands are damaged with toxic chemicals, pesticides, mineral and organic fertilizers, liming and waste waters. The cities' lands suffer from important technogenic pressure the composing part of which is pollution with heavy metals. Among redsoils and ash-greysoils, on yellow soils which aredistributed inAdjara coastline organic fertilizers equivalent norms to mineral fertilizers gives better results for enhancing soil fertility level [3,8]. According to qualitative norms of environment MPC of heavy metals in soil equals to mg/kg: vanadium 150, arsenic 2, mercury 2,1, plumbum 32, antimony 4,5, cobalt 5. Copper 3, nickel 4, zinc 23, chromium 6, magnesium 700 [1]. Therefore, the main goal of our research was to study concentrations of heavy metals in agricultural lands in the territories of Adjara A.R.

The research object was various types of agricultural soils in orographic conditions of Adjara A.R. territories, in particular redsoil (1), yellow soil (2), yellow ash-grey (3) and ash-grey soils (4).

Picture 1. Red Soil

Picture 2. Yellow Soil

The redsoilsare distributed in Adjara Black Sea Coastline in hilly-mountainous ridgesand foothills. The yellow-ash-grey soils are distributedat 500-600 m to 900-1000 m above sea level in Adjaracoastal region between redsoils and ash-grey soils. The yellow soils cover northern and central parts of subtropical zone.

Picture 3. Yellow Ash-Grey Soil

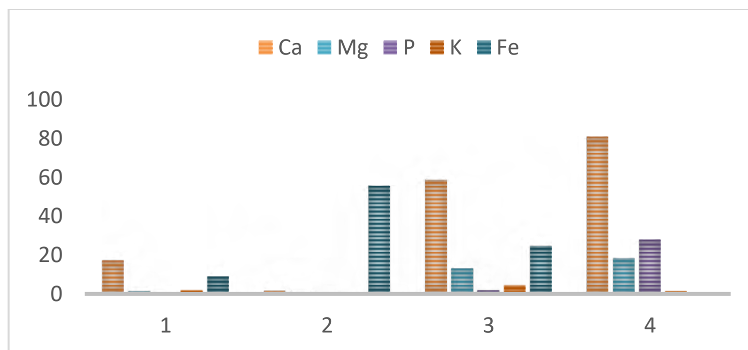
Picture 4. Ash-Grey Soil

The quantitative and qualitative concentrations of chemical elements-metals were determined in the mentioned soils using Plasm Atomic-Emissive Spectrometervia Atomic emission spectroscopy method. The analysis has been carriedat Agrarian and Membrane Technologies Research Institute Plasm Atomic-Emissive Spectrometer Laboratoryunder Batumi Shota Rustaveli State University.

The research results are given under Table 1 and Diagrams 1,2,3,4. From the obtained results, it is identified that 28 types of macro and microelements were discovered in sample soils using plasm atomic-emissive spectrometer. It was identified that the soils create the following row according to concentration of macro elements (calcium, magnesium, phosphorus) 4>3>1>2; and they create

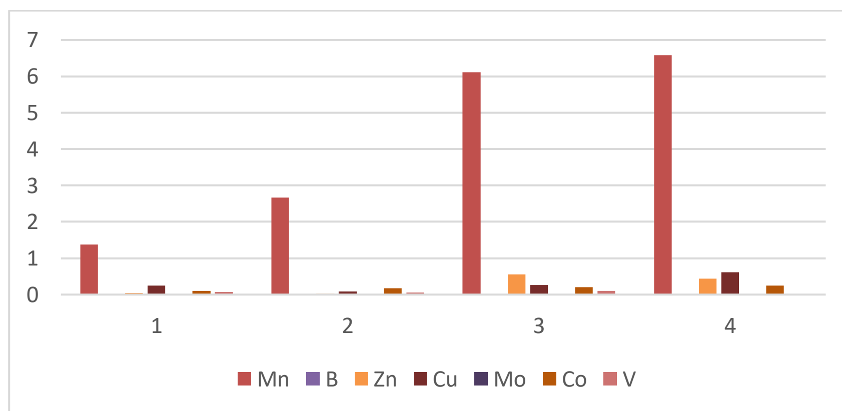
the following rowaccording to concentration of plumbum2>4>3>1; according to concentration of potassium 3>1>4>2 andtherefore finally we can conclude that ash-grey and yellow ash-grey soils are distinguished by concentrations of macro-elements.

Diagram №1
Macro-elements Concentration in Various Types of Soils (mg/l)
Macro elements



From macro-elements in reviewed samples molybdenumis not discovered in any types of soils,vanadium is met in the face of trace; boron is not discovered in yellow soils. The concentrations of magnesium, zinc, copper and cobalt is below Maximal Permissible Concentration Norms in samplesof all discussed soils.

Diagram №2
Micro-elements Concentration in Various Types of Soils (mg/l)

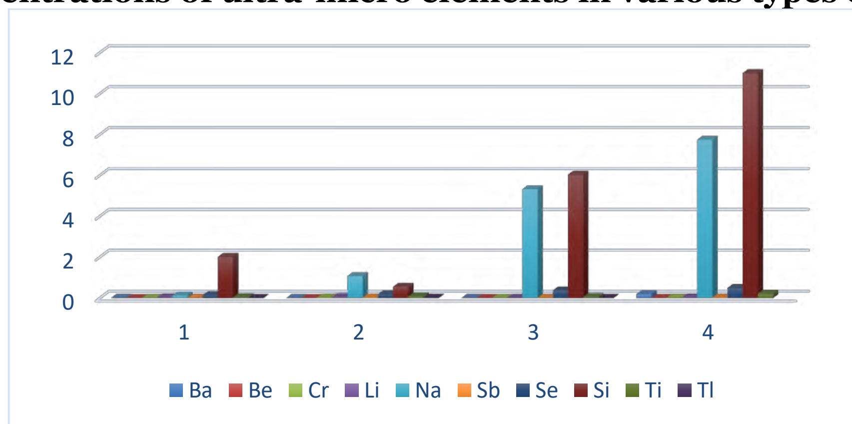


TableNº1. Concentrations of macro, micro and ultra-micro elements in various types of Soils in Adjara

Sample Name	Date/Time of Analysis	Al Quant Average mg/L	As Quant Average mg/L	B Quant Average mg/L	Ba Quant Average mg/L	Be Quant Average mg/L	Ca Quant Average mg/L	Cd Quant Average mg/L	Co Quant Average mg/L	Cr Quant Average mg/L	Cu Quant Average mg/L	Fe Quant Average mg/L	Hg Quant Average mg/L
1	3/25/2019 12:18	!!!!!!!	0.0331	0.0027	0.01	0.0004	17.3	-0.0029 L	0.0974	0.0035	0.251	9.03 H	-0.0029 L
2	3/25/2019 12:20	!!!!!!!	0.0654 H	-0.0008 L	0.0055	0.0004	1.56	-0.0026 L	0.173	0.0203	0.0858	55.6 H	0.0012 L
3	3/25/2019 12:21	!!!!!!!	0.0665 H	0.0109	0.0068	0.0035	58.7	-0.0006 L	0.196	0.0042	0.267	24.6 H	-0.0040 L
4	3/25/2019 12:23	!!!!!!!	0.123 H	0.0144	0.194	0.0019	80.9	-0.0017 L	0.24	0.0109	0.61	29.6 H	-0.0154 L
Sample Name	Date/Time of Analysis	K Quant Average mg/L	Li Quant Average mg/L	Mg Quant Average mg/L	Mn Quant Average mg/L	Mo Quant Average mg/L	Na Quant Average mg/L	Ni Quant Average mg/L	P Quant Average mg/L	Pb Quant Average mg/L	Sb Quant Average mg/L	Se Quant Average mg/L	Si Quant Average mg/L
1	3/25/2019 12:18	1.77	0.0304 L	1.35	1.38	-0.0032 L	-0.122 L	0.0054	0.115 L	-0.0114 L	-0.0098 L	0.144 L H	2.01
2	3/25/2019 12:20	0.517 L	0.0481 L	0.553	2.67	-0.0051 L	-1.07 L	0.012	0.0810 L	0.021	-0.0213 L	0.187 L H	0.55
3	3/25/2019 12:21	4.45	-0.0101 L	13.2	6.11 H	-0.0036 L	-5.32	0.0122	1.79	-0.0114 L	-0.0079 L	0.365 L H	6.03 H
4	3/25/2019 12:23	1.3	-0.0298 L	18.4	6.58 H	-0.0044 L	-7.74	0.0201	27.8 H	0.192	-0.0195 L	0.490 L H	11.0 H
Sample Name	Date/Time of Analysis	Ti Quant Average mg/L	Tl Quant Average mg/L	V Quant Average mg/L	Zn Quant Average mg/L								
1	3/25/2019 12:18	0.0408	-0.0016 L	0.0714 L	0.0437								
2	3/25/2019 12:20	0.0806	-0.0143 L	0.0500 L	0.0327								
3	3/25/2019 12:21	0.0488	-0.0083 L	0.0935 L	0.559								
4	3/25/2019 12:23	0.213	0.0079 L	0.105 L	0.443								

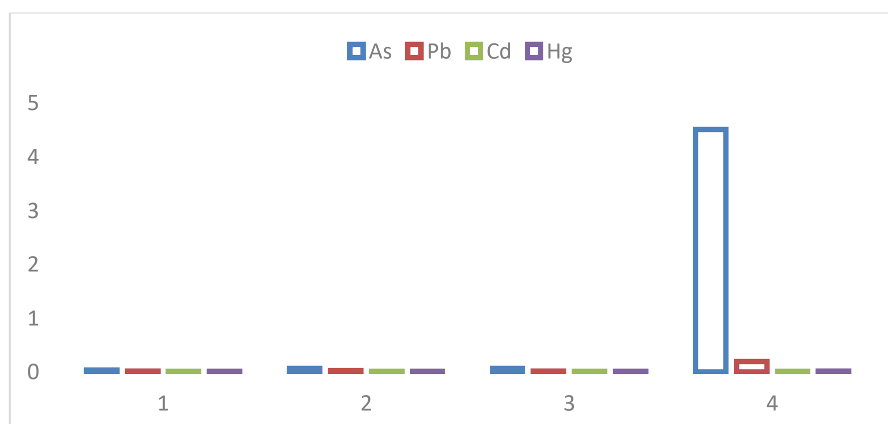
According to studied micro and macro elements the concentrations of barium, beryllium, chromium, lithium, sodium, antimony, selenium, silicium, nickel, titanium and tellurium were studiedin Adjara territories agricultural lands. According to which it was identified that the concentrations of sodium, antimony ad tellurium are not fixed at all in all four types of research soils. The concentration of lithium are in the face of trace in red and yellow soils, and ash-grey and yellow ash-grey soils do not include lithium.

Diagram №3
Concentrations of ultra-micro elements in various types of Soils (mg/l)



Foreseeing ecological conditions of the modern world it is highly important to pay attention and focus on the strongest toxicants such as arsenic, plumbum, cadmium and mercury. The mentioned metals represent heavy metals and soil pollution with these metals is one of the significant issues. It is well-known that these metals happen in soil in various ways, then in agricultural crops and hence they affect human health.

Diagram №4
Concentrations of toxic heavymetals in various types of Soils (mg/l)



In our soil samples the concentrations of significant pollutants such as arsenic, plumbum, cadmium and mercury are not alarming; on the contrary,

we can state that soils are ecologically pure from these elements, as they do not include cadmium and mercury, besides, concentration of plumbum is not discovered in red and yellow soils, besides, concentration of plumbum in ash-grey and yellow ash-grey soils is below Maximal Permissible Concentration. As for arsenic concentration, it is below Maximal Permissible Concentration norm in all the samples and the soils create the following row according to arsenic concentrations4>3>2>1.

Conclusions

From obtained research results the following is identified:

1. The concentrations of molybdenum, vanadium, tellurium, sodium, lithium, antimony, cadmium and arsenic arenot discovered in red soils, yellow, ash-grey and yellow ash-grey soils of Adjara region territories. The concentrations of the rest elements are below Maximal PermissibleConcentration norm.
2. The discussed soils are ecologically pure soils, as they do not include or include the concentrations of toxicants such as arsenic, plumbum, cadmium and mercury within Maximal permissible Concentration norm.
3. Agricultural products produced in red soils, yellow, ash-grey and yellow ash-grey soils of Adjara region territories can be considered as ecologically pure products.

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Tap microfiltration attachment for domestic mechanic and biological purification of drinking water

Notwithstanding optimistic assessment of global recourses of fresh water, problem of drinking water remains acute in many regions of the world. The researches of the World Health Organization proved that 80% of the widespread diseases are caused with use of low-quality drink water [1]. Bacterial safety, harmlessness of chemical content and good organoleptic indexes are the main criteria of fresh water quality [2].On the initial stages of water purification (settlement, coagulation, filtration in sand) performing in the water treating facility it is removed suspended particles, colloids, partially microorganisms, although long-term monitoring shows that the events of chemical and microbiological pollution are so frequent, that water supplied by water supply system may be named clean only relatively. In our outdated water supply system, there are not only water losses while transportation, but often secondary pollution. Microbiological pollution is caused also with irregularities of water supply because of frequent repairs of the system [3].

Water of concrete geographic origin has its specific chemical content, that is why the methods of water purification are different and depend on pollution level. The Georgian water supply is based mainly on mountain rivers' water, so its turbidity is rather high. Besides it contains plenty of silicium-contained compounds (the smallest particles of clay, silicates and alumosilicate minerals). Particle suspended in water have microorganisms associated thereon. Traditional methods of water purification are not enough for their removal. More than 5% of causative organisms remain in water. People are mainly troubled with microbiological pollution caused with colon bacillus, viruses, virus-like organisms. These small-sized organisms cause such diseases as diarrhea, cholera, gastroenteritis, viral hepatitis. Nowadays chlorination is widely used for drinking water disinfection. Chlorine kills microorganisms, but often in excessive doses, what not only worsens odor and taste of drinking water but causes water pollution with harmful products of chlorination of organic compounds, which cause the gravest oncologic diseases in case of prolonged intake [4].

People resolves this problem buying bottled water which although is protected from anthropogenic and technical pollutions, but contain chemical compounds added for the purpose of their preservation. That is why their use is not justified neither economically, nor ecologically.

Along with chlorination ozone [5], ultraviolet irradiation is often used for water purification. In comparison with chlorination ozonization is less harmful, but ozone is unstable and rapidly destructs. That is why its

bactericidal action is not long-term and after passing of outdate water supply system water becomes polluted again. Besides, effect of joint influence of ozone and ultraviolet irradiation [6,8] is high, but expensive.

Multiple filtration modules [7] used for water purification and conditioning are also known. At their stages the following methods are used: mechanic filtration with stainless steel or polypropylene net, sorption on activated or solver ions-covered coil, ion exchange on ion-exchange resins for removal of hard metals, sterilization with ultraviolet rays, ozone, ions of Ag, Cu, Zn, diaminoargenate-ions, filtration with micro-, ultra- and reverse-osmosis membranes [9-14].

In 90-s drinking water filters appeared in consumer market, but they were not widely used, as their filtration recourse proved to be much shorter than it was promised. These filters could not work in our conditions. Their disadvantage was caused with difficulty of their use and mounting, frequency and expensiveness of their cartridge removal. After fouling of filtration sorbents with pollutants they passed into filtered water and caused its secondary pollution.

Among membrane methods of filtration reverse osmosis is the most effective one for elimination of all kinds of microbiological pollution [28]. But in case of reverse-osmotic filtration water is removed not only microbiological pollutants, but valuable mineral components. In addition to the general criteria of drinking water quality criterion of physiological adequacy is scientifically proved. On its ground necessary content of biologically active elements (Ca, Mg, F, K, I etc.) is established [2]. The new, prospective methods of drinking water purification, notable for their safety, cheapness, compactness of equipment attract growing attention. Nowadays membrane technology, namely the microfiltration method of drinking water purification is the most important of them [14-15]. In the process of filtration with microfiltration filters microorganisms of size less that 0.1 micron (bacteria, parasites, cysts) are removed from water.

Research Objects and Methods

Research object includes the membrane filter produced by us. We used thermally and chemically stable microfiltration membrane having the specific pores dimensions as a filtering material.

The membrane was designed for the microfiltration device based on the industrial polymer – fluoroplastic (F-4), based on its modification. It is produced with baking of powder polymer polytetrafluorethylene and further the film is formed with extrusion and calandering. The membrane modification is provided under temperature and pressure.

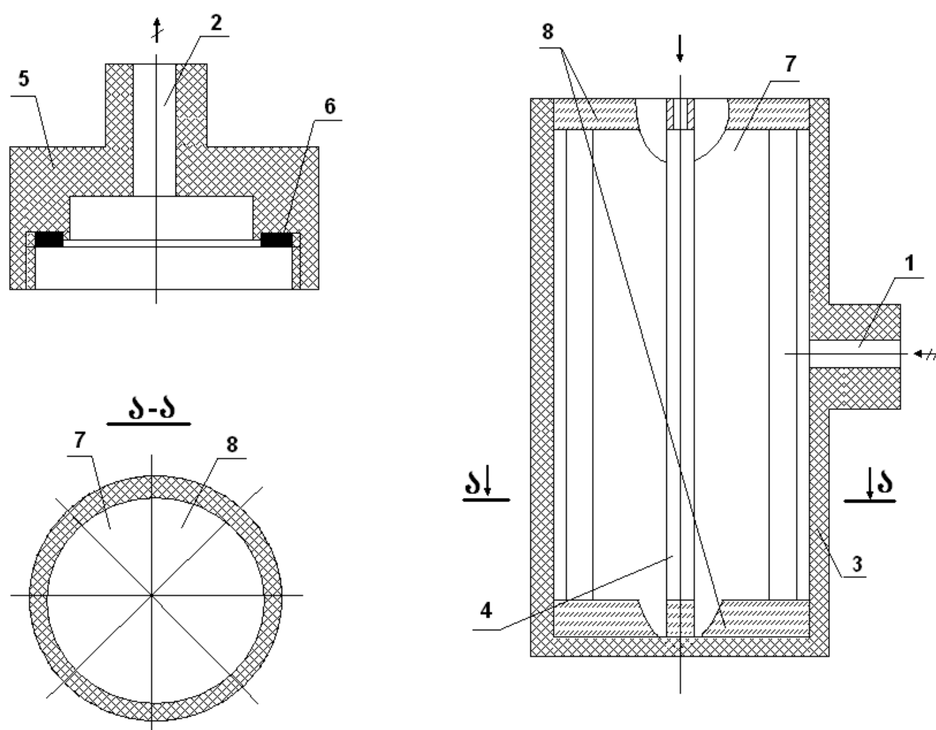
We researched dimensions of membrane pores using photometer POROLUX™ 500(Porometer NV). The table (Table 1) shows the indexes of the membrane pores produced in the various conditions.

Table 1. Pores dimensions of fluoroplastic membrane produced by us.

Sample ID	Ft	Ft	Ft-P	Ft-P
Bubble point pressure (bar)	0,060	0,080	0,180	0,280
Bubble point pore size (um)	7,985	10,65	3,554	2,285
Main flow pressure (bar)	0,307	0,136	0,586	0,642
Main pore size (um)	2,084	4,701	1,091	0,996
Smallest pore pressure (bar)	0,757	0,900	2,880	1,960
Smallest pore size (um)	0,844	0,711	0,222	0,326

In the Institute we produced the pilot microfilter using fluoroplastic membrane (Drawing 1) in which the pleated filter is placed for increase of filtering surface. Working space of the membrane is 0.03 m^2.

Drawing 1. Microfiltration device



1. **water inlet; 2. filtrate outlet; 3. case; 4. filtrate pipe; 5. Cover; 6. rubber padding; 7. Membrane; 8. paraffin**

The research was carried out with use of drinking water which general physicochemical and microbiological indexes were determined according to the methods fixed by the standard [16-28] , with use of the up-to-date laboratorial testing devices: Elementary analysator - Inductively coupled Plasma Atomic Emission Spectrometer (Shimadzu ICPE-9820); IR Spectrometer (Agilent); laboratory pH -meter (Metller Toledo); UV-1800 Spectrometer (Shimadzu);

Results and Discussions

In the course of the research we have performed the physicochemical and microbiological analyses with the various drinking (tap, spring water) and technical (borehole, gulley) water, which is used as drinking one, for watering and in fish farms. The results of the analyses are given in the tables (Tables 2, 3, 4).

According to the analyses results which were performed with the up-to-date instrumental methods, we can conclude that in some cases the chemical and microbiological indexes exceeded the permissible limits in the taken samples (Table 2, 3). As for elementary analyses results, which were performed with use of ICPE-9820, it is proved that water supply system water was free of any toxic metals (Table 3).

Table 2. Physicochemical indexes of water.

Parameters	Tap drinking water, Batumi, BOP	Borehole water (Khelvachauri District)	Technical water (Khelvachauri District, Chelta River)	Technical water, gully (Salibauri District)	Technical water, gully Feria village)	Technical water, gully (Bartskhana)	Tap drinking water string (Bartskhana)	Tap drinking water (Khelvachauri District)	Drinking water string (Khelvachauri District)
Colour, °	6.02	17.03	25,32	47	-	-	14,657	13.873	-
Turbidity, mg/l	0.55	0.85	0,65	2,25	-	-	0,5	1.15	-
Hardness, mg.eq./l	0.8	1.1	1,1	1,0	1,3	0,8	0,3	1.2	1,0
pH	7.25	6.05	7,05	6,8	5,75	6,2	5,1	6.35	5,87
Cl^-, mg/l	2.0	4.0	4,0	3,0	-	-	6,0	4.0	-
Ca^{2+}, mg/l	8.0	14.0	12,0	10,02	8,0	8,0	2,0	14.0	14,02
Mg^{2+}, mg/l	4.86	4.87	6,08	6,08	10,9	4,86	2,4	6.1	3,6

HCO_3^-, mg/l	30.5	48.8	61,0	36,6	36,6	42,7	12,2	42.7	48,8
Sulfates, mg/l	0.0	16.2	0,0	0,0	-	-	0,0	14.1	-
Dissolved Oxigen, mg O_2/l	1.6	1.04	1,76	2,48	2,16	1,52	3,04	1.04	5,68
F^-, mg/l	0.34	0.03	0,078	0,0	-	-	0,08	0.0	-
Total Phosphates, mg/l	0.07	0.15	0,3	0,49	0,35	0,22	0,037	0.18	3,37
Ammonium, mg/l	0.31	0.214	0,047	0,17	0,133	0,03	0,0	0.325	0,0
Nitrites, mg/l	0.52	0.86	2,38	4,713	0,95	7,65	0,704	0.8	0,47
Nitrates, mg/l	2.85	13.6	5.45	10.8	-	-	1.65	17.8	-
Petroleum Hydro-carbons, mg/l	no	no	no	no	no	no	no	no	no

Table 3. Microbiological indexes of water.

#	sample	Total quantity of microbes / 100 ml water	Total coliform bacteria	Thermotolerant bacteria
1	Drinking water Batumi	12,0	46	n/a
2	Drinking water Batumi	9,0	n/a	n/a
3	Spring water Green Cape	21,0	1,1	0,4
4	Spring water Green Cape	62,0	>240	1,4
5	Spring water Salibauri	15,0	0,9	n/a
6	standard	Max. 50 units	Not permitted	Not permitted

Table 4. The results of the elementary analysis performed with tap water ICPE-9820

Contentration, ppm	*Al*	*As*	*Ba*	*Ca*	*Cd*	*Cr*	*Fe*	*K*
Test 1	0.0221	-	0.0006	7.3	0.0059L	0,0001	2,18	0.208
Test 2	0,1	0,01	0,7	-	0,003	0,005	-	-
Contentration, ppm	*K*	*Mg*	*Mn*	*Na*	*Ni*	*Pb*	*Si*	*Zn*
Test 1	0.208	1.53	0.0644	1,74	0. 0129	0.000	6.63	0,129
Test 2	-	-	0,4	-	0,07	0,01	10	-

We recommend purification of drinking water by microfiltration method with use of the tap filter head produced by us and designed for home conditions. The purpose of our research included research of possibility of use of fluoroplastic membranes for disinfection of drinking water.

Coarse of the experiment:

We researched some physicochemical and microbiological indexes of drinking water before and after filtration, based on which we proved existence of the correlation dependence between mechanic (turbidity) and microbiological pollutions.

According to the test results, we can conclude that the process of filtration of drinking water has the considerable bactericidal effect. The filtrate contains decreased total quantity of bacteria and thermophilic coliforms.

Table 5. Drinking water microbiological indexes before and after filtering

Turbidity (mg/l)		E-coli	
before filtering	after filtering	before filtering	after filtering
0,25	0,00	240	<3
2,0	0,00	21	<3
2,0	0,00	>1100	3
2,0	0,00	460	<3
2,0	0,00	>1100	3
2,0	0,00	>1100	<3
0,75	0,00	<3	<3

The table shows that unfiltered water has enough high turbidity, what causes rapid decrease of membrane productivity. For removal of mechanic impurities, we used also fibrous filter (pore dimension 5 mcm). Inclusion of mechanic filter into filtration process causes increase of productivity of microfiltration device.

We matched the technological regimes preventing accumulation of pollutants on the surface and in the pores of the membrane (turbulent mode of water stream movement, tangential position of the membrane). Unlike the other filtration apparatuses where after passing of some period of operation the sorbent using for filtration aggregates pollutants causing propagation of microorganisms and further secondary pollution of water, in our microfiltration device pollutant will not rapidly accumulate, as we do not use so called dead-end filtration [29]. In the process of filtration, the cleaned

water (filtrate) will pass the membrane and the “concentrate” will wash out the membrane surface with the turbulent stream.

For regeneration of fouled filter, we researched the effect of various chemical reagents upon exposure to which, the membrane should restore its filtration properties (productivity). Using hypochlorite and hydrofluotic acid for regeneration purposes we became able to restore productivity of the membranes (80% of the initial productivity) without disassembling of the filtration device and replace of the membrane, produce chemically and biologically clean water providing preservation of the mineral salts containing in drinking water before filtration which have the vital physiological functions. Ability of the membrane regeneration will increase filter-resource of the filtration device, i.e. its operation life giving it advantage over the other filters.

Table 6. Report of produced water analysis.

#	Indicators	unit	Permissible limit	Filtered water
Organoleptic and chemical analysis				
1	pH	_	6-9	7,35
2	Smell	points	2	1
3	Taste	points	2	1
4	Hardness	mg.eq./l	<7	0,67
5	Solid residual	mg/l	1000-1500	72.5
6	Color	degree	20	<5
7	Total alkalinity	mg.eq./l	5,5-6,5	2.2
8	Permanganate-index	mg/l	3,0	1,1
Microbiology				
9	coli-index	unit/100ml	no	<3
10	Total quantity of microbes	100unit/1ml	<100	21
11	staphylococcus	unit/100ml	no	no
12	Enterovirus	unit/100ml	no	no

Filtration of drinking water with use of microfiltration technology may be recommended for non-reagent disinfection of water at the last stage of water supply system. Water pressure in the system allows to provide filtration without use of pump. Microfilter may be fixed on the tap with the special attachment easy for use in home conditions. Quality parameters of water filtered by the microfiltration device corresponds to the standards (Table 6).

It is important that fluoroplastic is an ecologically pure material and its use in medicine and food industry is permitted [30]. It is proved that fluoroplastic is not a food for microorganisms, thus it does not promote their propagation. Unlike the other polymers, fluoroplastic is stable to active chlorine. Fluoroplastic is not a food for microorganisms, so it does not promote their propagation and increase of biomass inside the filtration device.

The membrane and the method of filtration and regeneration developed by us will essentially promote further development of the technology of water purification by microfiltration method and improvement of quality of drinking water.

Conclusions:

We chose fluoroplastic polymer for production of the microfiltration membrane, as it is stable to chlorine and the other acidic and alkaline reagents. We have researched such property of the synthesized membrane as trapping of the dispersed colloids and microorganisms contained in drinking water and matched the optimal dimensions of the membrane pores. We have developed the various design variants of the microfiltration device (with/without the mechanic filter). For the purpose of increase of working surface of membrane, we used the replaceable cartridge of pleated membrane. Filtration of drinking water with use of microfiltration method may be recommended at the last stage of water supply system, just by customer. Water pressure maintained in system provides filtration without use of pumps. Microfiltration devices may be designed for individual use.

For regeneration of the fouled membrane we matched the reagents and regenerants which allow regeneration of the filtration cartridges. Simplicity of operation of the device allow the users purchase only the filtering cartridges and thus increase the filter's life term. Use of microfilter allows purification (disinfection) of drinking water without any chemical reagents. Drinking water passed through the microfiltration device has not only good taste, but preserves all the microelements required for human's organism (fluorine, iodine, calcium, magnesium etc.)

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Computer simulation of agricultural machinery parts

In the concept of the development of agricultural machinery, it is planned to create a combined, universal and unified machinery of the new generation [1], which provide high performance at minimum resource costs and perform in a single pass of the unit several technological operations without reducing the performance of the tools and the reliability of machinery at the level of modern foreign analogues [2]. To solve the problems, it is necessary to create precise mathematical models of soil tillage systems for the purpose of further computer simulation of their operation.

Analysis of recent publications on the issues and allocation of previously unsolved parts of the general problem. Any farm machine is a complex mechanical system. When choosing a calculation scheme, first of all, the issue of the number of recognized degrees of freedom – the number of independent coordinates of the mechanical system which fully determine the position of all its points is solved. The real mechanical system consists of an infinite number of material points. Since the connections between them are not absolutely rigid, the number of degrees of freedom of such a system is infinitely large. However, depending on the concrete problem to be solved, it is possible to determine the finite number of degrees of freedom without loss of accuracy. Experimental studies of agricultural machinery in laboratory and field conditions have shown that in many cases they can be represented as a mechanical system with 1, 2 or 3 degrees of freedom, which greatly simplifies the solution of dynamic tasks.

It's possible to specify three ways of generating finite-dimensional models [3, 4]. The first method is that relatively less massive parts of the system are completely deprived of mass and are presented as inertial elements, and the most rigid parts of the design are taken for absolutely solid bodies with a finite mass. In accordance with the second method, the properties of the compliance are distributed throughout the system volume in the finite number of points. In this case, the system is represented as a set of elastically joint rigid elements. The third method is based on some a priori assumptions about changing the configuration of the system in the process of oscillation (oscillation forms). If the form is given, the position of all points of the system is determined, therefore, one degree of freedom is recognized in the system. This idea of the reduction to a system with one degree of freedom lies at the basis of approximate methods for determining the dynamic characteristics of mechanical systems (Rayleigh method) [5].

Formulation of research goals. The aim of the research is to develop a mathematical model of soil cultivation system with subsequent

program realization with the help of modern mathematical packages. To achieve this goal, the following main tasks need to be solved: create a mathematical model, reproduce the model in the software environment, and verify the adequacy of the model.

Principal layouts and their justification. In the process of soil cultivation, cultivation is one of the important technological operations, which involves the use of working bodies for weeding and loosening the surface layer of the soil. When changing the physical and mechanical properties of the soil and the physical composition of plants, it is necessary to take into account the design features of the working bodies of cultivators and their modes of operation. In order to use of tractor engine power effectively, it is necessary to determine the optimal parameters that ensure the maximum productivity of the aggregate at different values of the depth of tillage and the specific resistance of the soil, as well as the features of structural materials and their profiles for the manufacture of operating devices.

The computer simulation of the mathematical models of the work of soil treatment systems in order to establish their parameters is one of the necessary stages in the creation of new operating devices [5, 6].

The modern process of mathematical modeling can't be realized without computers or embedded controllers. Various tools and environments (MathCad, MatLab, Mathematica, Maple, Derive, VisSim, Genius, Exel, and others) are used for this purpose, which considerably simplifies the process of mathematical modeling. Modern mathematical packages can be used as means to simplify expressions when solving any mathematical problems, and as generators of graphics or even sound. The tools for interacting with the Internet, by generating HTML pages directly in the computation process also became standard. A skilled researcher who has sufficient knowledge of one of the modern programming languages (C++, Java, Pascal, etc.) can independently create a separate program or a set of programs that will allow him to implement the algorithm of his task on a PC. However, such an approach requires, as a rule, large labor costs for programming, debugging and testing of each program. Therefore, in order to reduce the programming time, the said application software packages were created, the areas of which are largely overlapping. For the most effective use of computing equipment, it is necessary to choose the right software package at the very early stage of the application. After all, the real goal is to solve certain problems, and calculations are just an intermediate step on the way to this solution.

The use of computer simulation in the creation of modern technical objects has become widespread, automated design systems now provide not only the possibility of developing design documentation, but also the engineering calculations on the created solid-state models. This allows to solve a lot of issues related to the interaction of parts of the mechanism, their mutual location, and to visualize the project most clearly both in the interactive mode on the computer screen, as well as on paper, using a variety

of types and sections, at the stage of design. At this stage, the primary task is to determine the choice of the most suitable automated design system. Recently, the tendency of expanding the range of CAE product users (Computer Aided Engineering – applications for engineering calculations), which are distributed based on geometric CAD systems (Computer Aided Design – automated design) is clearly outlined. This leads to the emergence of geometric modeling and calculation software tools. Therefore, when choosing CAD systems, it is necessary to immediately analyze the CAE products that can make calculations based on the generated models. One of the most advanced solid-state modeling systems is SolidWorks with the integrated COSMOS engineering package. The COSMOSWorks application is intended to solve the problems of mechanics of a deformed solid by a finite element method. The program uses a geometric model of a part or assembly to form a calculation model. Integration with SolidWorks makes it possible to minimize the operations associated with specific features of the finite-element approximation. This provides the solution of such tasks as the calculation of static strength and stability in linear and nonlinear formulation, allocation of own frequencies, optimization of the shape of parts and assemblies in linear formulation, analysis of fatigue and structural behavior at the impact. COSMOSWorks can accept the results of the dynamic analysis obtained in COSMOSMotion [7].

In the study of systems of automatic control, computational mathematical problems, the Matlab software system with a wide range of object-oriented libraries (toolbox) and Simulink visual simulation tool is the most effective. MatLab also has extensive programming capabilities. Its C Math library (MatLab compiler) is object-oriented and contains over 300 data processing procedures in C. Inside the package, both MatLab's own procedures and standard C language procedures can be used, making this tool the most powerful helper in the development of applications (using the compiler C Math, it's possible to embed any MatLab procedures in the ready-made applications). To visualize the simulation, the MatLab system has the Image Processing Toolbox library which provides a wide range of functions that support the visualization of computations performed directly from the MatLab environment, increasing and the analysis, and the ability to develop image processing algorithms. The MatLab system can be used to process images by constructing its own algorithms that will work with graphic arrays like with data matrices. As the MatLab language is optimized for matrix manipulation, the result is ease of use, high speed and cost-effective operation of images. System Identification Toolbox, a set of tools for creating mathematical models of dynamic systems based on observed input / output data, can also be noted among other MatLab libraries. A flexible user interface that allows organizing data and models is distinctive feature of this tool. The System Identification Toolbox supports both parametric and non-parametric methods. The system interface facilitates preliminary processing

of data, work with the iterative process of creating models for obtaining estimates and the allocation of the most significant data. As far as mathematical calculations are concerned, MatLab provides access to a huge number of subroutines contained in NAG Foundation Library by Numerical Algorithms Group Ltd (the tool has hundreds of functions in various fields of Mathematics, and many of these programs have been developed by well-known experts worldwide). This is a unique collection of implementations of modern numerical methods of computer mathematics, created over the past three decades. Only a large amount of documentation added to the system can be considered as a fundamental multi-volume electronic directory on mathematical support. VisSim software package is more convenient for visual simulation and simulation in combination with real hardware.

The reduction of energy consumption in achieving the established agrotechnical requirements for the quality of soil (depth of tillage, regularity of loosening, the area of overlapping hoes, small soil aggregates on the surface, etc.) is the urgent task when performing pre-planting treatment of the soil. The process of changing the parameters of arrow-like hoes occurs in several stages, characterized by the degree of wear of the cutting edge and the size of the occipital chamfer. With the changes in the parameters of the occipital chamfer, the agrotechnical performance of the hoe worsens, and the traction resistance increases. At the same time, the occipital chamfer excessively densifies the seedbed (bottom furrow), thus, slowing down the process of plant development. When moving the arrow-like hoe in the soil, the greatest influence on the traction resistance is made by the occipital chamfer. However, there is no a single opinion in the direction of change in traction resistance, since there is no exact theory of the formation of the occipital chamfer. The most grounded reason for the formation of the occipital chamfer is the movement of the operating device in the soil on the complex trajectories due to the movement of the equipment in the vertical direction in depth and its translational motion.

Traction resistance of the arrow-like hoe can be decomposed into components due to the gravity of the formation of the soil layer, the force of inertia, the resistance of the soil to the compression of the occipital chamfer and the resistance of the soil deformation [8]:

$$R_X = R_{GX} + R_{FX} + R_{3X} + R_{DX}, \tag{1}$$

where R_{GX} – resistance, caused by the gravity of the layer of soil $G_п$; R_{FX} – resistance, caused by the action of force of inertia F; R_{3X} – resistance of the soil to the compression of the occipital chamfer; R_{DX} – resistance of the soil to deformation.

The components of the traction resistance are determined as:

$$R_{GX} = a \cdot b \cdot l \cdot \gamma_{об} \cdot \frac{\sin\varepsilon + f \cdot (\cos\gamma \cdot \cot\gamma + \sin\gamma \cdot \cos\varepsilon)}{\cos\varepsilon - f \cdot \sin\gamma \cdot \sin\varepsilon}, \tag{2}$$

where a – depth of soil tillage; b – the width of the capture of the hoe; l – width of the hoe wing in the direction of movement; f – the coefficient of friction of the soil on the surface of the hoe; $\gamma_{об}$– volumetric weight of soil.

$$R_{FX} = \frac{a \cdot b \cdot l \cdot \gamma_{об} \cdot V^2 \cdot (\sin\gamma)^2 \cdot [\sin\varepsilon + f \cdot \sin\gamma \cdot ((\cot\gamma)^2 + \cos\varepsilon)]}{g \cdot (\cot\varepsilon - f \cdot \sin\gamma)}, \qquad (3)$$

where V– speed of movement of the hoe; g – free fall acceleration.

$$R_{3X} \leq \lambda \cdot G_M \cdot \frac{\sin\gamma \cdot \sin\varepsilon 3 + f \cdot (\cos\varepsilon 3 \cdot (\sin\gamma)^2 + (\cos\gamma)^2)}{\cos\varepsilon 3 - f \cdot \sin\gamma \cdot \sin\varepsilon 3}, \qquad (4)$$

where G_M– the gravity of a machine that falls on one hoe; λ – coefficient determining the permissible value of resistance arising from a blunt blade (λ = 0,3...0,4); ε_3 – the angle formed by the occipital chamfer with the bottom of the furrow.

This does not take into account the resistance from the shank of the arrow-like hoe R_c. At the same time, analyzing the components of the traction resistance, which is influenced by the change in the parameters of the hoes, we conclude that among the forces that determine the traction resistance, one of the main forces will be the one spent on separating the layer of soil with the blade.

Let's consider the forces and reactions that arise when moving the arrow-like hoe in the soil. When the traction effort is applied to the rack and the movement of the hoe in the soil on it, the forces arising from the friction of the ground on the foot of the paw will affect it, the force of inertia as a result of vertical lifting of the cut the layer of soil and force, is spent on the plunging of the hoe into the soil and the destruction of the roots. Let's make a scheme of forces acting on the arrow-like hoe (Fig. 1).

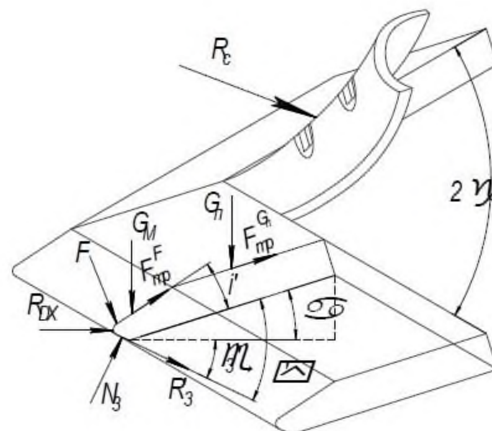

Figure 1 – Scheme of the forces acting on the arrow-like hoe when moving in the soil

Without taking into account the influence of blunt blade, with the constant depth of tillage and the speed of movement of the hoe in the soil, to change the traction resistance, the main effect will be produced by the friction force of the blade on the bottom of the furrow. The analysis of expressions (2), (3) shows that when the width of the wing of the hoe (the height of lifting of the soil layer) decreases, the traction resistance is reduced. Thus, the greatest influence on the change of traction resistance will be provided by the processes occurring at the interface between the blade and the bottom of the furrow.

The reaction N_3 is assumed to be proportional to the hardness of the soil:

$$N_3 = k \cdot \tau \cdot S, \quad (5)$$

where k – the coefficient of proportionality; τ – the hardness of the soil; S – the area of the occipital chamfer.

The reaction N_3 will determine the strength of the soil friction on the lower edge of the blade (or on the occipital chamfer after its formation):

$$R'_3 = N_3 \cdot f. \quad (6)$$

Regardless of the nature of the formation of occipital chamfer, from the physical point of view, it is formed at an angle determined by the direction of movement of the soil relative to the cutting edge. Taking into account that the angle of the occipital chamfer vary with operating life, the horizontal component of the friction force will also change R'_{3X}:

$$R'_{3X} = N_3 \cdot f \cdot \cos\varepsilon'_3 = k \cdot \tau \cdot S \cdot f \cdot \cos\varepsilon'_3. \quad (7)$$

The area S of the occipital chamfer depends on the angle of its inclination and the degree of the blade wear, as the blade has a sharpening area at an angle i.

The dependence of the width of the occipital chamfer on its angle and the linear wear of the U-wing on the sharpened area is determined by the solution of the triangles:

$$\begin{cases} b_\Phi = \frac{t + U \cdot \tan i}{\sin\psi}, with\ 0 < U < \frac{T-t}{\tan i} \\ b_\Phi = \frac{T}{\sin\psi}, with\ U \geq \frac{T-t}{\tan i} \end{cases}, \quad (8)$$

where T – the thickness of the wing; t – the thickness of the blade of the new hoe.

Taking different values of the angle of the occipital chamfer, the equation can be represented graphically. Since the width of the occipital chamfer determines its area (taking the length of the perimeter of the edge of the blade L unchanged when other parameters are changed), the expression (7) can be written as:

$$\begin{cases} R'_{3X} = \frac{k\cdot\tau\cdot L\cdot(t+U\cdot\tan i)\cdot f\cdot\cos\varepsilon'_3}{\sin\psi},\ with\ 0 < U < \frac{T-t}{\tan i} \\ R'_{3X} = \frac{k\cdot\tau\cdot L\cdot T\cdot f\cdot\cos\varepsilon'_3}{\sin\psi},\ with\ U \geq \frac{T-t}{\tan i} \end{cases} \quad ,(9)$$

The angle ε'_3 of the inclination of the occipital chamfer to the direction of motion is defined as the angle difference $(\psi' - \alpha)$. Then:

$$R'_{3X} = \frac{k\cdot\tau\cdot L\cdot(t+U\cdot\tan i)\cdot f\cdot\cos(\psi'-\alpha)}{\sin\psi}, \quad (10)$$

where α – the incidence of the hoe.

The vertical reaction R_{3z}, affecting the occipital blade edge, can be determined by the formula:

$$R_{3z} = \lambda \cdot G_{\mathrm{M}}, \quad (11)$$

The coefficient λ, as it was already mentioned above, can't exceed the values of 0.3...0.4. Thus, the vertical reaction can't exceed 0.3...0.4 of the weight of the machine, which falls on one operating device. Consequently, the value of the coefficient k in the formula (10) is a variable magnitude.

Assuming, with some assumption, the value of R_{DX} unchanged with the wear of the blade, the coefficient of proportionality k varies from 0.43 to 0.60. Solving the expression (10) with different wear of the wings of the hoe in width, we obtain the theoretical graphical dependence of the change in friction force, and, respectively, and the traction resistance, from the angle of the occipital chamfer (Fig. 2).

According to this dependence (Fig. 3), with the decrease of the angle of inclination of the occipital chamfer to the bottom of the furrow, the horizontal component of the traction resistance increases. This change also depends on the width of the wings of the hoe. In real conditions, the formation of the chamfer and the change in the width of the wing occur simultaneously. Hence the conclusion arises: if the angle of inclination of the occipital chamfer decreases, then its area increases. This leads to an increase in the part of the weight of the equipment, transmitted by the chamfer to the soil, as the soil is

more difficult to deform with the increase in the support area, and the growth of traction resistance. But at the same time the width of the wing decreases, and, correspondingly, so does the depth of tillage, which leads to some reduction in traction resistance.

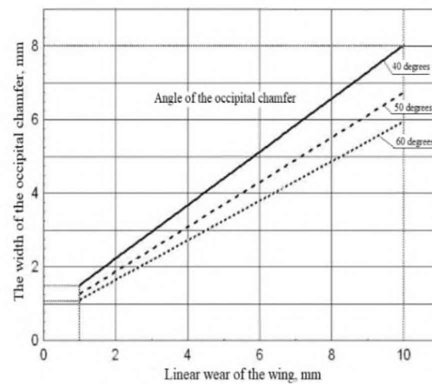

Figure 2 – Dependence of the width of the occipital chamfer from the linear wear of the wing on its angle

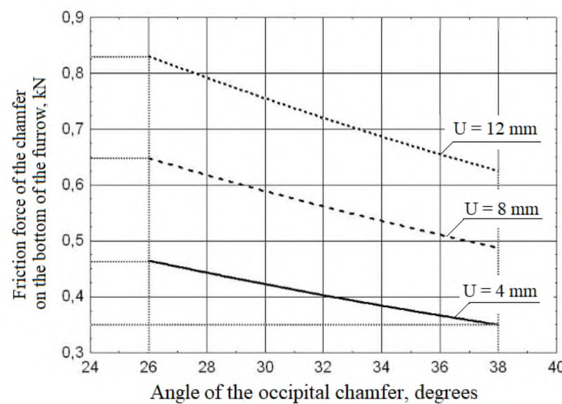

Figure 3 – Dependence of the friction force of the occipital chamfer on the bottom of the furrow of the occipital chamfer on the linear wear of the wing from its angle

Thus, the task of computer modeling is to determine the degree of impact on the traction resistance of the width of the wings of the hoe.
Let's consider how the depth of the soil tillage changes with the uneven movement of the hoes. We assume that at a certain moment of time all hoes of the equipment (or at least two adjacent ones) deviated by the same magnitude. In this case, the depth of tillage will be reduced due to the turn of the leg by the value of $h_в$, due to the turn of the hoe and the formation of the ridge bottom of the furrow by the value of $h_л$:

$$\Delta h = h_в + h_л = 2R_1 \cdot \left(\sin\frac{\delta}{2}\right)^2 + \frac{B-c}{2\tan\gamma} \cdot \sin\delta, \qquad (12)$$

where c – the area of the intersection between the adjacent hoes.

In addition to the size of the recess Δh, the hoe is deepened due to the presence of the occipital chamfer and uneven distribution of hardness of the soil massif. As a result, with the increase in wear, the area of the occipital chamfer increases, which complicates the plunging of the operating device into the soil. Therefore, the largest value of the recess should consist of Δh and the recess from the action of the occipital chamfer, with the latter providing the greater effect on the uneven depth of tillage, which requires an experimental verification.

Arrow-like hoes move in the ground not horizontally (or at the small technological, pre-installed angle), but deviating back to a certain angle α and oscillation of the operating device occurs in relation to this position. The angle depends on the properties of the soil and the geometry of the hoe itself. Geometric calculations show that there is the following dependence between the angles of the reverse chamfer on the stern ψ 'and the wing ψ:

$$\psi' = \tan^{-1}[\tan(\psi - \beta) \cdot \sin\gamma] + \tan^{-1}[\tan\beta \cdot \sin\gamma] \, , (13)$$

where β – the incidence of the hoe in intersection, degrees; γ – the angle of opening the hoe wings, degrees

If the assumption made about the deviation of the operating device during the process of operation with the exceeding of the traction resistance of some value of R_{x1} and the formation of the reverse wear chamfer of the furrow parallel to the bottom is correct, then the horizontal component of the traction support for the cultivator with a restraining spring is proportional to the characteristics of its spring:

$$R_{x1} \sim F_2 = c \cdot (\Delta l_0 + \Delta l), \qquad (14)$$

where c – the stiffness of the traction booster spring, N/m; Δl_0 – precompression of the spring, m; Δl – the compression of the spring in the process of operation, m

The compression of the spring in the process of operation is determined by geometric calculations when considering triangles *OO1A* and *OO1B* (Fig. 4):

$$\Delta l = l_1 - \sqrt{l_1^2 - 4 \cdot r_2 \cdot \sin\left(\Theta - \frac{\alpha}{2}\right) \cdot \sin\frac{\alpha}{2} \cdot \left[r_2 \cdot \cos\Theta + \sqrt{l_1^2 - r_2^2 \cdot (\sin\Theta)^2}\right]} \;, (15)$$

where l_1 – the length of the spring in the mounting position, m; r_2 – the radius of turning point B around the pivot O, m; Θ – the angle between the beam of the rack OO1 and the lever OA in the mounting position of the

operating device, degrees. Then the horizontal component of the traction resistance of the operating device is:

$$R_{x2} = \frac{F_2 \cdot l_F}{l_R}, \qquad (16)$$

where F_2 – the force that occurs at the safety spring compression, H; l_F and l_R – moment arm F_2 and R_2, correspondingly, m.

The expression obtained (16) allows us to determine, on the measurable experimental basis, the angle of the rear chamfer of the hoe blade, the average value of the horizontal component of the traction resistance of each operating device, which is perceived by the coupling device of the tractor. However, the equation (15) is obtained under certain assumptions that during the operation of the cultivator sower frame and the ploughshare leg are absolutely rigid. We also neglected the force of gravity and friction that arise in combinations. In fact, when working under the influence of dynamic forces there are elastic deformations in the design that give some increase to the angle α, which is very difficult to evaluate theoretically, so computer simulation is necessary to verify the assumption.

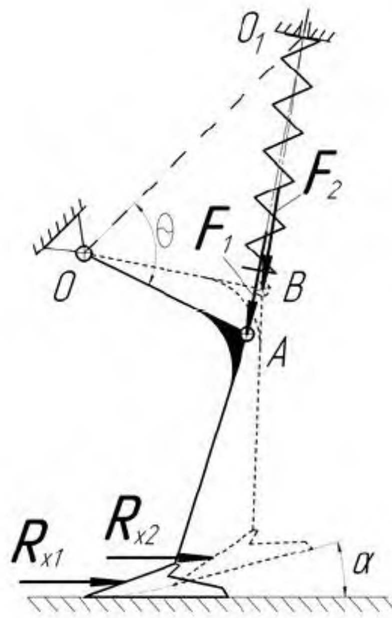

Figure 4 – Scheme of forces affecting the rack

Thus, after performing simulation, it will be possible to determine the traction resistance of specific working bodies in any soil-climatic conditions, knowing the design of the rack and exploring the geometry of the operating device.

At the stage of computer simulation, 26 simulations of the cultivator hoe operation of measurements were formed at various parameters (Tab. 1), such as ploughing depth, speed of motion, type of soil, etc. In addition,

different types of soils were taken into account: I – preparation: ploughing for the winter, spring harrowing, 2 time cultivation, sowing – sunflower and corn, after sowing – 1 time inter-row treatment; II – preparation: ploughing for the winter, spring harrowing, 2 time cultivation.

As a result, data files were obtained concerning the dependence of the output voltage on the ADC from the effort on the operating device of the plough.

Table 1 – Parameters of the simulations

Type of the soil	№ (title) of the test	Number of tests	Depth of ploughing, cm	Speed of motion, km/h	Frequency measurement
I	Test 1	1	7	0.895	-
	Test 2	3	7	1.79	-
	Test 3	3	10	0.895	+
	Test 4	3	10	1.79	+
	Test 5	4	10	3.6	-
II	Test 6	3	10	0.895	+
	Test 7	1	10	7.19	-
	Test 8	4	7	0.895	-
	Test 9	1	7	7.19	-

The graphical representation of typical files is shown in Fig. 5

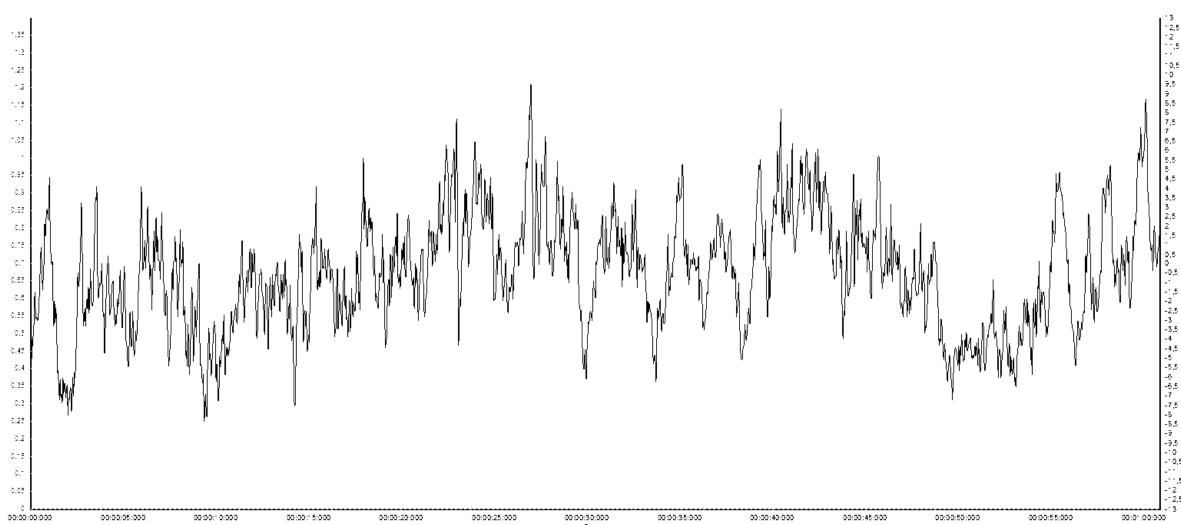

Figure 5 – The graphical representation of typical files of simulations

After the corresponding simulation, these data allow us to determine the optimal parameters for the use of the plough: the speed of motion, the thickness of the cutting tool, etc.

Using the remarkable Fourier transforms, it is possible to determine the correlation function of the random process by the magnitude of the spectral density:

$$K_x(\tau) = \int_0^\infty S_x(\omega)\cos\omega\tau d\omega \qquad (16)$$

The inverse Fourier transform allows finding the spectral density by a known correlation function:

$$S_x(\omega) = \frac{1}{\pi}\int_0^\infty K_x(\tau)\cos\omega\tau d\tau.$$

Dividing the correlation function and the spectral density by dispersion, we obtain the same normalized values:

$$\rho_x(\tau) = \frac{K_x(\tau)}{D_x}$$

$$S_x(\omega) = \frac{S_x(\omega)}{D_x}$$

All the considerations above associated with the spectral analysis, belonged to the semi-period 0 – T or to the positive part of the frequency axis ω. This simplifies the calculations. Negative frequencies do not actually happen, but it turns out that it is necessary to introduce conditional and negative frequencies into consideration in the case when spectral decomposition of a random process in a complex form is carried out. Using the Euler formula for substitution we get:

$$\cos\omega\tau = \frac{e^{i\omega\tau} + e^{-i\omega\tau}}{2}. \qquad (17)$$

Let's replace the expressions (4.1), (4.2) with Fourier transforms in the complex form:

$$K_x(\tau) = \int_{-\infty}^{\infty} S_x^*(\omega)e^{i\omega\tau}d\omega \qquad (18)$$

$$S_x^*(\omega) = \frac{1}{2\pi}\int_{-\infty}^{\infty} K_x(\tau)e^{-i\omega\tau}dt. \qquad (19)$$

In the expression (19), the negative frequencies region ω is also included in the integration limit, that is, they are expanded 2-fold in comparison with the limits in formulas (16) and (17). At the same time, the spectral density function $S_x^*(\omega)$ remains even and valid. Therefore, the practical transition to spectral decomposition in a complex form is connected with the fact that in

the graph of a function $S_x^*(\omega)$, except the right-hand side, in the region of positive ω there appears a left-hand symmetric side in the region of negative ω. Since the area of the graph should remain equal to Dx, then, for the corresponding frequencies, we obtain:

$$S_x^*(\omega) = \frac{1}{2} S_x(\omega). \qquad (20)$$

The discrete spectra were discussed above, which helped us to pass to the consideration of continuous spectra. In practice, both discrete and continuous spectra of dispersion can occur. The first occurs in cases where the random process consists of periodic fluctuations of one or more frequencies $\omega_k = k_{\omega_1}$ with random amplitudes. Each such fluctuation corresponds to a discrete spectrum line.

If the oscillations acquire an aperiodic 'disorderly' character, then the spectrum of the dispersion becomes continuous. As the random fluctuation increases, the spectrum graph 'is aligned' and on the boundary becomes ribbon-like, limited on the top by the horizontal line. Such a graph is called the white spectrum, and the corresponding random process is called a white noise. Any two sections of such a process are not correlated with each other, however closely they were located.

The expression of spectral density has this form:

$$S_x^*(\omega) = \frac{\alpha}{\pi} D_x \frac{\omega^2 + \alpha^2 + \beta^2}{(\omega^2 - \alpha^2 - \beta^2)^2 + 4\alpha^2\omega^2}. \qquad (21)$$

This expression of spectral density includes regions of negative and positive frequencies:

$$S_x^*(\omega) = \frac{2\alpha}{\pi} D_x \frac{\omega^2 + \alpha^2 + \beta^2}{(\omega^2 - \alpha^2 - \beta^2)^2 + 4\alpha^2\omega^2}. \qquad (21)$$

The algorithm for obtaining a correlation function [11] in MatLab program [12, 13, 14] is presented in Fig. 6.

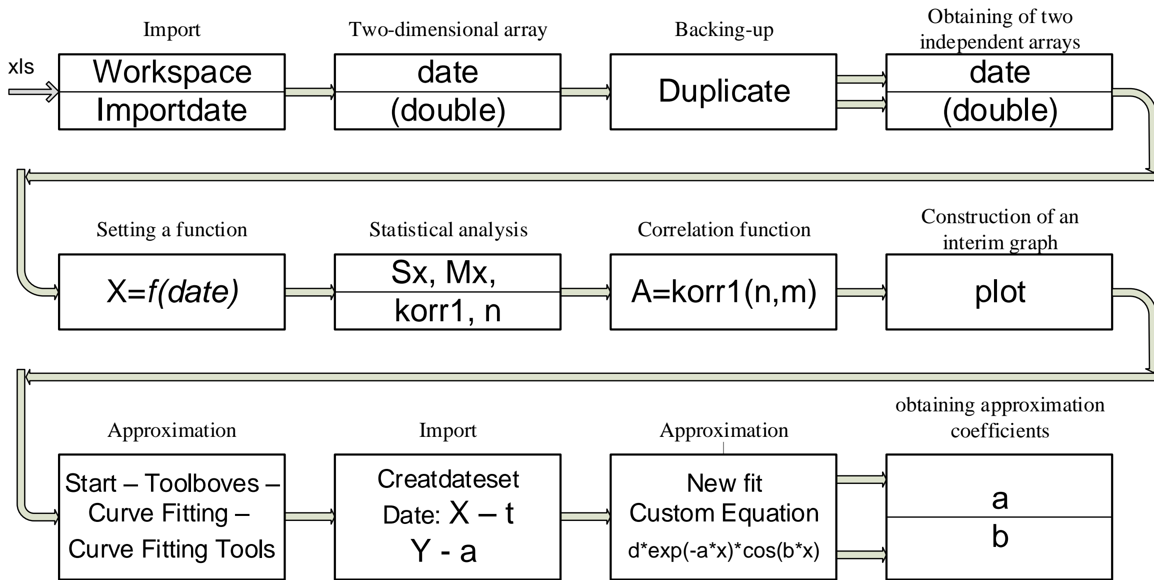

Figure 6 – The algorithm for obtaining a correlation function

Fig. 7 shows screenshots of the digital signal filtering.

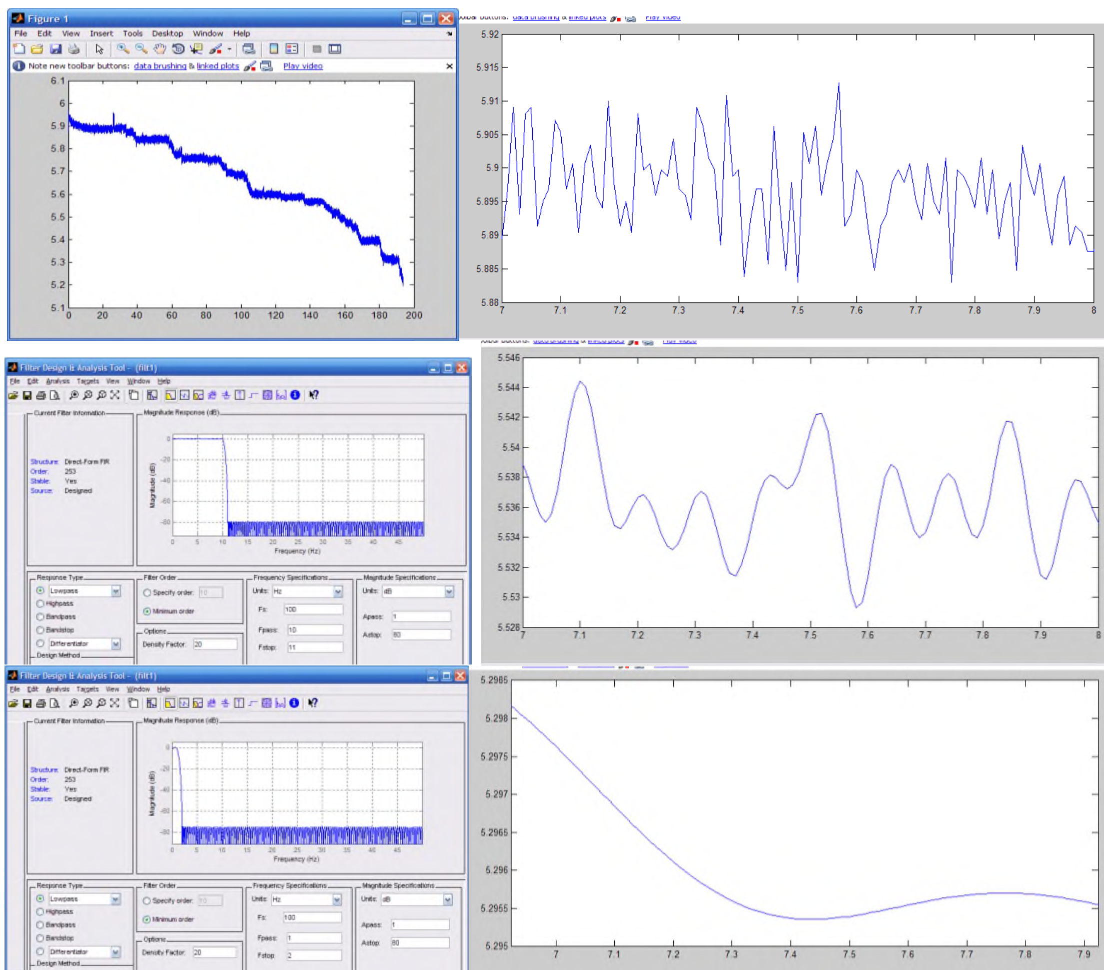

Figure 7 – Digital signal filtering

Fig. 8 shows the results of computer simulation in the form of correlation and spectral functions.

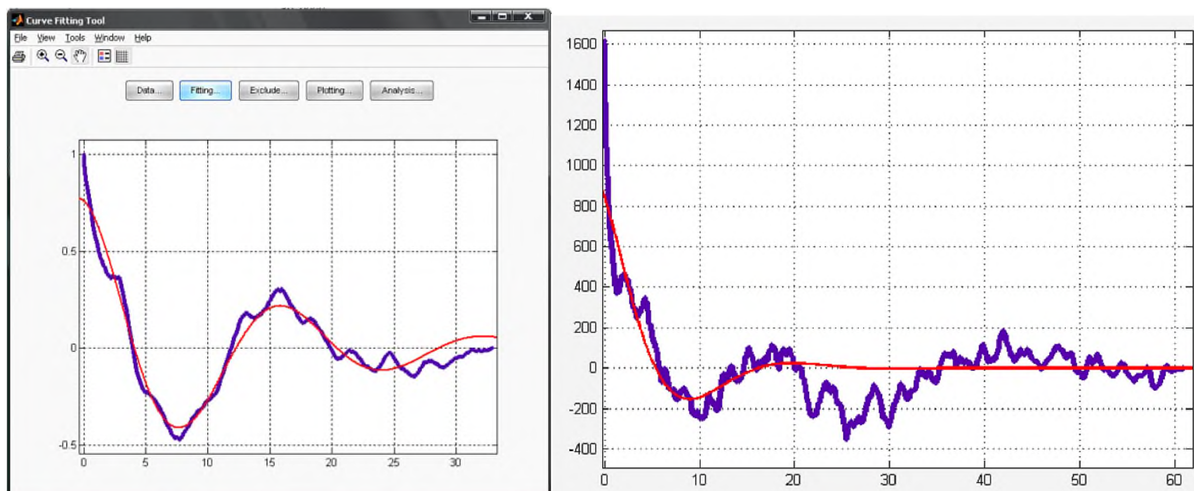

Figure 8 – Screenshots of construction of correlation and spectral functions

Thus, computer simulation of the parameters of the operating devices of the plough can provide complete information for amplitude-frequency and spectral analysis. These data allow us to determine the optimal parameters for the use of the plough: the speed of motion, the thickness of the cutting tool and others.

Findings and perspectives of further research. The use of computer simulation of the cultivator operation with different parameters allows to quickly visualize the potential of the research on the stage of designing, which gives the opportunity to find the optimal parameters of the operating devices and significantly reduces the probability of structural errors, which otherwise could only manifest itself at the stage of manufacturing and testing of research samples. In the future, it is planned to fully automate the simulation process and visualize the cultivator's modeling.

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New techniques in visual language of Ukrainian sculpture of 2000's

The Ukrainian sculpture of the first decade of the XXI century is reaching new professional and artistic levels. It becomes a multifaceted and significant phenomenon of cultural and artistic space. It also evolves from traditional solutions to art objects in space and is enriched with other visual arts in its artistic language. There are three main trends in the Ukrainian sculpture of the 2000s which are defined by techniques and on the basis of which the interpretation / analysis of works is performed. First trend involves the technological way of producing sculptural works which is *close to the classical* (use of traditional technologies and materials), the second - the artistic construction of sculptural objects (experimental sculpturing that uses methods and materials inherent in both sculpture and other types of artistic creativity), and the third can be conditionally called "the design trend in modern sculpture" (art objects that are "on the verge" of sculpture and design). All three trends coexist in works of Ukrainian artists. Accordingly, each trend uses different, sometimes opposite, means of artistic expression and creative techniques.

Today, the use of classical techniques in the creation of sculpture is characteristic for majority of Ukrainian sculptors, because they usually get professional education within academic tradition in art academies and art colleges. For example, Kyiv-based sculptor A. Oziumenko works in this trend. His sculptural composition "Knight" (2006) is a great example of the author's observance of realistic techniques and use of traditional bronze casting technology. Also, Kiev-based artist I. Grechanyk does not abandon classical material processing using the updated creative solutions ("Inanna. The Dream Gate" and "Inanna. The Dream Art" from the series "The Goddess of Love" (2005). Traditional means of bronze processing are used by the Kiev-based sculptor. S. Karunska ("Minstrel", 2004).

The sculptural work "The Fulcrum (self-portrait)" (2008), created by Kharkiv-based artist M. Demchenko, is made in accordance with academic tradition, in which one of the main tasks of the author is the naturalistic transfer of figure's proportions, plasticity and movements. The author sculpts a naked body, however at the same time "dressing" him, creating a sculptural composition "on the verge" of academic sculpture and contemporary art. "The Fulcrum" can be interpreted as a visualization of the transition of the old art into the new.

A small bronze statuette of Kharkiv-based sculptor V. Milikov's "Bayanist" ("Accordion Player") (2009) is the example of coexistence of traditional methods of material processing and modern plastic solution of the human figure in one work of art. Expressive silhouette clear contour lines, "S-

shaped" composition and movement – all these features of classical composition canon are emphasizing the action.

"The French Bulldog" (2007) by Kharkiv-based S. Gurbanov, an interior marble sculpture depicting a sitting dog, is a rather illustrative example of the use of classical sculptural masonry. The sculpture is made of white marble – author used the property of this material to highlight the volume. It should be noted that Kharkiv at the beginning of the XXI century does not lose academic foundations in the creation of sculptures, though somewhat "deforming" their imagery according to new trends in art and demands of the present. However, in the first place it is the classical mastery, obtained, first of all, in the academic school (KhDADM).

Fidelity to academic traditions is also characteristic to the works of Kyiv-based sculptors, for example M. Bilyk ("Kiss", 2003), whose work was shaped "at the fruitful verge of the traditions of folk carving and modern aesthetics" [3, p. 12–20]. The sculptural figure of a Cossack playing bandura ("Song of the Wind") (2006), created by Honored Artist of Ukraine V. Boroday, is made in accordance with the traditions of small sculpture and in a rather realistic manner. The material of the sculpture – grog (or shamotte, or firesand) – is traditional for folk sculpture, for clay figurines baked in the furnace that were made in ancient times have been found almost in all countries of the world. The production of the material changed in the course of technological progress but the essence remained the same.

The first decade of the XXI century is a time marked by intense search for new forms. Increasingly, there appear to be sculptures that can move, shine, change their volume or even "sound" (I. Svitlychny, object for exhibition at the Pinchuk Art Center (Kyiv, 2012) which helps them to "emerge" in the imagination of the viewer. Artist add a variety of welded or forged parts, as well as plastic and paper to the traditional materials. Industrial waste and items of common everyday usage are often used. That is why due to their existence on the verge of fine arts, crafts and design objects of modern sculpture are referred to as "object", "art object", "sculptural composition". On this verge exist "experiment objects" that are increasingly appearing in the field of sculpture.

The combination of two, seemingly completely different materials – bronze and marble – is present in the series of interior sculptors by V. Znoba, "The Knight's Bust" (2002–2006) and "The Beauty Queen" (1999–2002). This combination, is similar to the chryselephantine sculpture technique which was used by the artists of Ancient Greece. These sculptures feature marble incrusting bronze of vice versa – both materials coexist harmoniously in the one sculpture.

In a pair of sculptural compositions "In Captivity" (2010), created by Kharkiv-based artist A. Kleytman, inside bronze architectural constructions there are "sharpened" figures of angels. Clear, light, relevant to the story the sculptures are complemented by special lighting elements. Blue LEDs

emphasize the toning of bronze (in this work the material has a rich blue (cornflower) color) and plastic forms. In terms of creative design sculptures by S. Karunsky "Animula Vagula Blandula" (2005) and "Dawn Angel" (2004) could be considered similar to "In Captivity". Bronze "constructions" of angel bodies, into the holes of which colored glass, imitating stained-glass windows, is inserted – form a soft, light "lace" on the surface of figures.

In "Breakthrough" (2010), Kharkiv-based V. Degtyarev and G. Masalitin recreated the image of a man who "breaks through" the obstacles of his life: a bronze figure of a man slams into a glass "obstacle" deforming it. The idea of this interior work is embodied by the artists primarily through the contrast of bronze and plexiglass. The thin plexiglass, deformed under the pressure of bronze, as if stretched, repeats the shape of the head and arms of the man.

A common experimental trend in contemporary Ukrainian sculpture is its appeal to "sculptural antiquity". It is expressed in particular in the appeal of the sculptors to old themes and forms and "transfering" them into the modern spatial environment using the latest techniques and materials. Thus, the sculptural work of Kyiv-based artist M. Bilyk draws attention to the grandeur and lyricism, plastic perfection and appeal to national traditions. His bronze work "Mamay" (2003) transports the viewer into the world of ancient Ukrainian culture. The sculpture is almost like a picture, a two-dimensional object. It is designed to be perceived from the front view, and the generalized monumental forms and static of the composition make this work more like a terrain painting than a work of circular sculpture, which refers us to the achievements of folk painting and the search for "analogies" of the image.

Creativity of the famous Kharkiv-based sculptor V. Kochmar "testifies to the adherence to classical art and positive values, which in the times of their devaluation is perceived as unexpected and desirable phenomenon" [6, p. 96]. In the work "Warrior" (2006) he refers to antiquity. The composition is static and perfectly balanced, harmonious proportions of the figure of the man, "S-shaped" silhouette, expressive contours - all this "refers" the attentive viewer to artistic techniques of the past. The noble bronze, under the "transformation" of the author's design, becomes dark and dull, as if the sculpture had been made many centuries ago, not several years ago.

And "The Cat in the Sun" by L. Betliemskaya looks almost like a "Scythian woman" (natural stone – sandstone – can be called "eternal material"). The material, more typical in decorative or landscape sculpture, receives a chamber mood under the sculptor's cutter. There is already conditional interpretation of forms, natural material, anthropomorphized cat's muzzle – all this is characteristic of ancient (archaic) sculptural plasticity. The simplicity and clarity of "The Cat..." plastic solution make it possible to see its monumental features. It's like a "monument" to an animal, but in a small, interior scale. In in the sculptural composition

"Priestess" (2005) O. Vladimirov (one of the few contemporary Ukrainian sculptors who works with marble) also uses the tradition of rendering forms of ancient archaic sculpture while adhering to the traditional processing of the material. O. Vladimirov's sculpture embodies the collective image of the female priestess: it is not indicated to which civilization does she belong. "Here Vladimirov does not allow unnecessary play with form or idea, following the texture of the stone, its millennial layers. This approach is rather a "classical" vision, having both historical traditions and unconditional expediency, which once again reminds us of sculptor's good taste and keen eye"[7]. The archaic images are also addressed by M. Gorlovy in the sculpture "The Lily. Trypillian Goddess of Love" (1999).

G. Ivanov, in "One who Tries On the Sun" (2007), which is part of "Living Trees" series presents the image of a girl who is seemingly dressed in a warm solar disk. The work attracts theo attention with soft naivety that resembles a child's drawing. In the sculptural composition one can also find a hint at Slavic mythology in which the worship of the sun was one of the leading ones. In Ukrainian culture, the image of a woman symbolizes nature, fertility. In the author's interpretation, "One who Tries On the Sun" is a woman who gives the world warmth and love.

Thus, current sculptors, appealing to the use of ancient technical methods of work "move" them in their works into the environment of modern apartments and offices, creating small sculptures in a new way. Such sculptures inevitably carry the features of monumentality with adherence to archaic traditions of shaping.

There is an expanded understanding of sculpture as a "three-dimensional art" that combines the qualities and functions of various types of art within the conceptual and plastic form among contemporary sculptors. Thus, often modern sculpture is called "all that is not painting" [2, p. 29–31]. In fact, now the range of types of sculptural art is expanding at the expense of not only the diversity of its types and genres, but also approaches and methods of work. Contemporary Ukrainian sculptors, in search of new technological methods for creating contemporary sculptural objects turn not only to other types of art but also to trends in design and the term "constructing" a sculpture rather than its "sculpting" is better suited to describe the work process. It (constructing) became not only the basis of "restructuring of the old morphology, but also became the carrier of "new synthesis" of traditional forms of plastic thinking" [1, p. 91].

For the sake of this synthesis, the authors in their works combine different genres and types of art, they search for original "technologies" of production and make compositions, as mechanisms, from already existing industrial objects. These tendencies are manifestations of the ideological, aesthetic, technological, and sometimes mental and economic aspects of the artistic creativity of the artists, because nowadays there is a kind of collision between new technologies and form creation with traditional aesthetics. Thus,

modern sculptural objects, which tend to be "on the verge of sculpture and design" can be conditionally divided into "hybrids" and "spatial objects" according to the specific aspects of their technological solutions.

Sculptural works in which authors mix or combine different materials, forms, styles, and even types of art, are called "hybrids". Here metal can be combined with wood, glass with leather, and sculpture with design, photography, painting, or, as in the interior composition of O. Blazhko, with stained glass.

In her object "Lovers" (2009), the sculptor applies the characteristic of many artists of the twentieth century combining different materials into one work. Glass (stained glass) and metal (bronze) coexist in the same plastic volume. And in the work "Butterfly" (2010), M. Demchenko combines sculpture with "painting". Unlike the traditional sculpture, where the usual criteria for the evaluation of the surface of the work are texture and processing methods, here the main criterion is the color solution, because the author painted the composition in different colors.

The use of finished industrial products (scrap metal, parts of things) in the sculptural composition allows to focus on the transformation of a particular object, usually removed from the usual context. Thanks to this technique, when old or ready-made things are used in the molding of a new sculptural product, ordinary objects can acquire a new image, content or form and perform a new, often quite unexpected, function. In some cases, objects can be constructed from identical module elements taken as the "assembly unit". For example, the stuff of soldier boots – objects that seem to be quite distant from the visual arts – can be such a material for form-making. For example, in "The Object of Finding Goliath" (2009), S. Shaulis refers to the audience's memory famous David by Michelangelo, but he creates his "hero" from small "elements." This is how "big" is created of "small", large spatial object obeys the "laws" of small segments, old finished objects are sculpted into a new object.

The thoughtfulness of the compositions and the set of "materials" used in G. Kornienko's sculptural objects causes fascination. This sculptor can be safely called one of the apologists of Kharkiv's "ready-made", but in this case he is not just a deciple of this trend, but a creator who takes only technical means from adding his own visual vision [8]. For example, in "Theresa", where ordinary pharmacy scales take the form of a fish – a creature that holds balance in water. There is a duality of the genre of this sculpture – animalistic or domestic. His other work, "Mobila", is a collection of things that are incompatible with everyday life: a shower hose, an old telephone dial, bicycle bells, and so on. The concept of the work is built around the word game "mobile" – mobile phone and "mobile" – car. It was these two things that the author combined in the work: the form of a "retromobile" is filled with elements that resemble parts of the apparatus of an old landline telephone ("retrotelphone").

A. Pinchuk uses in his works finished objects and existing products. An example is the "Reincarnation Object" (2010), which depicts a mythical beast that resembles a griffin. But, most of the details that formed the basis for this "beast" are so deformed that they have finally lost their former function and shape.

The popular shift to the creation of sculptures in the form of spatial objects causes the sculpture (often interior) to be produced without the use of classic tools: molding, molding, casting, etc. In classical sculpture the main "message" of the work is brought by author to viewers through the plastic, proportions, composition, way of molding: in "spatial objects" design and shaping come to the fore.

A striking example of visualization of the calendar theme is offered by O. Ridny – a recognized leader of "maximum simplification of forms"[6, p. 96], idea that was fulfilled in the “Calendar” series: twelve wooden objects resembling in style and form of Scythian women. All of them are different in height, diameter and composition, each symbolizing a separate month of the year.

G. Ivanov is the heir to the "constructing" of objects by A. Ridny. She transforms sculpture into an object, a complex artifact. An interesting example is the Sand object (2009). Inside the rectangular wooden structure, behind the curious glass window, "sand time" flows. The "hourglass" revolves and drives the sand that makes it work for its "obvious functions". It is difficult to call this work "sculpture" because it is more suited to the definition of "spatial object", in which functional part of the object, not plastic one, is dominant.

A new vision of sculptural volume and form is offered by sculptor M. Demchenko with "The Moment" (2010). This is a prime example of the author's departure from the classical understanding of "sculpture". "Spatial object" is made of brass wires by soldering individual parts. The artist depicted a dog holding a stick in its teeth at the moment before the jump and the from and volume of the sculpture were created only by its frame. The sculptural composition by S. Shaulis "Copper Dance" (2010) is a peculiar sculptural interpretation of Henri Matisse's famous work "Dance". The work’s plot is a figurative "hint" on a group of people dancing around the fire. Contour, abstract figures, made of a single section of copper wire, and in the center of this "ring" – the center – a chaotic tangle of wire. Both works lack modeling as a tool for creation, which is why they can be distinguished from the classical notion of "sculpture" and referred to as "spatial compositions".

Significant for the development of this principle was the first personal exhibition of sculptor-student I. Svitlychny under the name "Stool". An object called "Stool in a Stool" by Ivan Svitlychny is a kind of interpretation of well-known drawings with optical illusions. The author proposes a geometric "game" where one form hides the second, the second – the third, the third – the fourth, and so on. Forms in the work are geometrically and

mathematically aligned, which is not peculiar to sculpture – an example of a combination of design and sculpture, where "almost a design object" is created by sculptural means. It seems to be "cut out" of a parallelepiped.

Summarizing the above, we note the characteristic approaches to visual solutions in the creation of contemporary works and objects of Ukrainian sculpture of the 2000s:

– sculptural works which artistic features and *techniques inherent to the classical sculpture* (use of traditional techniques and materials, realistic (or close to realistic) techniques of object image and traditional material processing).

– experimental sculptural works created using modern techniques, but within the limits of traditional solutions, i.e. "modernised" in form, but relatively traditional in execution, such as objects-experiments and modern plastic solutions with appeal to the sculptural antiquity while maintaining the techniques of the usual material processing.

– spatial "objects", *modern in shape and updated in design and technology, works of "design trend"* in sculpture which are divided into "hybrids" and "spatial objects". Hybrids also include ready-made objects. Such works contain elements of arts alien to sculpture, combine different materials to create objects that interact with space and created with the help of various household things, etc. Today, when many new opportunities arise, when artists are intensively experimenting with a variety of materials, inventing original techniques, the boundaries between types of art are blurred. Thus, on the art scene, they arise and coexist with traditional, more "synthetic" forms of sculpture.

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INNOVATIONS IN SCIENCE: THE CHALLENGES OF OUR TIME

Collective monograph

Volume 2

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