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ul. Gen. Kazimierza Pułaskiego 4/6, 42-226 CZĘSTOCHOWA  
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## INTRODUCTION

Dear colleagues, authors and readers of the Scientific Journal of Polonia University (PNAP – *Periodyk Naukowy Akademii Polonijnej*)!

Congratulation on the release of a new PNAP 61 (6) (2023)!

In this issue we are presenting scientific articles, which deal with urgent problems of language, culture, communication, and education, sociology, issues on technology, creativity and implementation as well as on health, environment, development.

The collected papers and their objectives represent contemporary researches in linguistics, intercultural communication and education. Among them: the place of phraseologisms of American English in the world's language space, Azerbaijani realities manifested in "One thousand and a quarter of an hour Tatar tales", structural-semantic features of semi-affixes in English-French languages, EU cultural policy and society participation, successful cases of branding through graphic design, key aspects of lighting in portrait photography and others.

The authors in the sphere of education elicit pedagogical aspects of restoration of resources for teachers and students of Borys Grinchenko Kyiv University during the first year of the war in Ukraine, crisis management of an educational institution in conditions of martial law, ways of using artificial intelligence in education as well as ChatGPT in the paradigm of modern education.

PNAP also highlights the current problems of modern society, such as waste sorting in a front-line city: opinions of Kharkiv residents, objects as a factor in the transformation of social reality, the administrative and legal support's principles of civil-military cooperation in preparation for military service.

Authors in the sphere of health, environment, development elicit congenital and hereditary pathology in women contracted Covid-19 during pregnancy, dynamics of disability among the child population due to the nervous disorders in Ukraine, assessment of the functional state of the cardiovascular system of students as well as the role of kinesiotherapy in combating obesity and sedentary lifestyles in American society.

It is a great pleasure to thank our authors, who have already sent their scientific articles to PNAP, and invite and encourage those, who are thinking of submitting their research results to our journal. We would also like to express our particular gratitude to all the members of the Editorial Board, to the reviewers, and those who kindly accepted our proposal to work together and contribute to the creation of PNAP.

## LANGUAGE, CULTURE, COMMUNICATION

EU CULTURAL POLICY AND SOCIETY PARTICIPATION:  
REVIEW OF THE RECENT LITERATURE AND REGULATORY FRAMEWORK**Anca Parmena Olimid**

Ph.D., Associate Professor, Faculty of Social Sciences, University of Craiova, Romania  
e-mail: anca.olimid@edu.ucv.ro, orcid.org/0000-0002-7546-9845

**Summary**

Cultural heritage, cultural policy and cultural participation are crucial topics for the European Union (EU) participatory governance and social integration. The purpose of the paper is to conduct and develop conceptual and legal research on the EU documentation in the field of cultural policy, cultural heritage and cultural participation engaging a three-step research plan: (1) the appraisal of the recent literature in the field; (2) the broad interdisciplinary approach to the relevant doctrinal and latest legal advances; (3) the policy and societal contexts influencing the citizen participatory actions. The added value of the research is related to the identification of the inner concepts and processes influencing participatory governance and social integration: cultural assets, historical and social structures and areas, cultural goods, conservation management and participatory governance.

**Key words:** cultural heritage, cultural participation, participatory governance, social integration, European Union.

DOI <https://doi.org/10.23856/6101>

**1. Introduction**

The present paper explores the concepts of “society participation” and “cultural policy” offering a two-step guide to discuss the recent advances in the scientific literature and also, to frame the legal research on the European Union’s relevant documentation in the areas of cultural heritage and cultural management (*Nguyen, & Umemoto, 2009: 23-35*). Therefore, the first section deals with the systematic analysis of the concept of “cultural heritage” and “cultural policy” by synthesising the doctrinal and analytical contributions of recent studies reflecting:

(1) the cultural management and citizen participation in local governance (*Crowley, Jackson, O’Connell, Karunarthna, Anantasari, Retnowati, & Niemand, 2022; Kim & Lee, 2019: 1026–1047; Kiss, Sekulova, Hörschelmann, Salk, Takahashi, & Wamsler, 2022: 247–272*);

(2) the evaluation of the cultural policies and assessment of the community engagement (*Gupta & Gupta, 2019: 2681–2698; Keitumetse, 2011: 49–59; Mannarini, Fedi, & Trippetti, 2010: 262–274*);

(3) the infrastructure management and organizational factors (*Baird, Harrison & Reeve, 2007; Batteau & Villegas, 2016: 16–35*);



(4) the sustainable cultural tourism, public commitment and citizen engagement (*Chiabai, Paskaleva & Lombardi, 2013: 35–51*).

(5) the cultural competences, human resources and cultural analysis (*Dauvrin & Lorant, 2017; Heath, Johansen, Vujnovic & Kruckeberg, 2018; Rode, Huang & Flynn, 2016: 471–489; Tenhiälä, Giluk, Kepes, Simón, Oh & Kim, 2016: 179–200*);

(6) the cultural planning and patterns (*Sacco, Crociata, 2013: 1688–1706*).

The second part of the study addresses the EU legal approaches approaching the regulatory provisions concerning EU policies, management frames, institutional variables and functional status focusing on major documents launched in the period 2014–2022 in the field of cultural policy at EU level: (1) Conclusions of the Council on a Work Plan for Culture (2015–2018) (2014/C 463/02) (2014); (2) Council Resolution on the EU Work Plan for Culture 2023–2026 (2022/C 466/01) (2022); (3) Communication from the European Commission on the cultural heritage for Europe, COM(2014) 477 final (2014); (4) Communication from the European Commission on a New Agenda for Culture, COM/2018/267 final (2018); (5) the European Commission framework for action in the field of cultural heritage (2019); (6) Regulation (EU) 2019/880 pointing the import of cultural goods (2019).

## 2. Methodology

### 2.1. Methods and types of legal research

The methodology perspective of the study addresses EU documentation ranging from the descriptive legal research focused on major legal initiatives (launched in the period 2014–2022) to the analytical legal research and the conceptual legal research on the heritage and governance field using the EUR-Lex Database.

The methodology of the first part of the study concentrates on the methods of the systematic review of the recent literature approaching a broad interdisciplinary and societal analysis of cultural management and factors, citizen participation and cultural heritage.

The second part of the study uses multi-method doctrinal and legal research employing three methods of research:

(1) the descriptive legal research focused on major legal initiatives launched in the period 2014–2022 using the results retrieved from the EUR-Lex Database;

(2) the analytical legal research on the norms, values and policies related to cultural management and cultural heritage;

(3) the conceptual legal research on the heritage and governance.

### 2.2. EUR-Lex Database and documents

The research is based on the content analysis of the EU legal documents issued and launched in the period 2014–2019 and related to the topics of cultural heritage and cultural participation. The legal documents were retrieved and collected from the EUR-Lex database. The EUR-Lex data were accessed and collected in the period 20 October–20 November 2023.

The study uses the publicly available EUR-Lex Database provided by the Publications Office of the European Union with detailed references to the date of adoption of the document, the institutional and legal frame, the title of the document and the document structure and contents.

The EU legal documents used for the research were retrieved in the period September–October 2023 focusing on five areas of the EU law: (1) Conclusions of the meeting of the Council of the European Union on a Work Plan for Culture (2015–2018) (2014) and 2023–2026 (2022);

(2) Communications from the European Commission focusing on the integrated approach towards the cultural heritage (2014) and a multi-level agenda for culture (2018); (3) the regulatory provisions provided by the Regulation (EU) 2019/880 “on the introduction and the import of cultural goods” (2019).

### 3. Results and findings

The results of the research emphasize the reliability of the EU legislation in the field of cultural heritage and cultural participation and the sustainability of the functional and institutional policies aimed to empower participatory governance and social integration in the last decade.

#### 3.1. Cultural heritage and cultural policy: values and assets in WPC (2014)

The Work Plan for Culture (hereinafter WPC) agreed by the Council of the European Union in December 2014 for the period 2015–2018 develops an up-to-date framework of the linkages between cultural cooperation, social development, civil society participation, voluntary initiatives, including cross-sectorial actions and programmes approaching cultural heritage and inclusive cultural policies (*Council of the European Union, 2014*).

The WPC describes new approaches to society participation and cultural heritage as key factors for development cooperation and management and “catalysts for creativity” (*WPC, Annex I, Priority area C, 2014*).

The focus of the WPC (2014) engages a focus role for the mutual cooperation between resources, information and governance pointing out two sets of arguments expressing the symbiosis between cultural heritage and society participation.

Moreover, a recurring approach of the WPC is the engagement for the “Open Method of Coordination” (OMC) as a new initiative aimed at safeguarding citizen participation and cultural participation in multilevel governance.

However, as noted by WPC in Annex I, society participation and participatory governance are prominent areas for social development reflecting the role of heritage networks and resources (*WPC, Annex I, Priority area B, 2014*).

#### 3.2. Assessment of heritage management and participatory heritage

The WPC (2014) is crucial for encouraging access, support and contribution to cultural participation during the period 2015–2018. Therefore, the latest “EU Work Plan for Culture 2023–2026” launched by the Council of the European Union in December 2022 recognizes the prominence of the culture-oriented policies, but also the cultural heritage management impacting the local community, freedom of expression, social creativity and cultural relations (*Council of the European Union, 2022*).

The WPC (2022) enhances a three dimension framework addressing:

(a) the development of the priority areas involving a wide variety of cultural and creative areas;

(b) strengthening of cultural participation and participation in cultural activities;

(c) measures and support for cultural institutions and participatory heritage. In addition, the focus is on the “power of culture” in Part II dedicated to the priority areas (*WPC, p2022*), but it is also acknowledged the role of the sustainable measures for cultural heritage and accessibility to digital facilities and services.

Second, for purposes of the WPC (2022), heritage management is viewed as a culture of co-creative initiative and actions aimed to strengthen the role of the civil society, communication

and dialogue. At the core of the WPC (2022), the mechanisms for the society participation and cultural policy reflect selective cultural areas: (a) cultural policies for citizens; (b) dialogue and institutional collaboration; (c) cultural management and cross-sectoral initiatives and planning; (d) cultural heritage and digital area; (e) cultural heritage sustainability and resilience.

### **3.3. Heritage conservation principles and cultural management**

The Communication of the European Commission launched in July 2014 illustrates how an integrated approach to cultural policies and cultural heritage enhances the “sense of belonging” of the EU’s citizens (*European Commission, 2014*).

A key point of Communication (2014) approaches the developing standards and objectives by recognizing the consequences of risks and external events. Other commitments of the document focus on the heritage conservation principles and objectives requiring citizen-centred actions and establishing management-by-actions operating at local and European levels.

A key aspect of the communication illustrates: (a) the policy for governance and cooperation appealing to the inter-cultural contributions and dialogue and (b) the multi-layered initiative enhancing the cultural heritage and featuring the societal valorization and potential of the European practices and experiences.

Nonetheless, Communication (2014) designs a shared expertise of the cultural heritage and societal values undergoing the assessment of the societal challenges in local governance. Regardless of the cultural policy areas, one of the important tasks of the document impacts four categories of programs and actions: (1) the cultural infrastructure; (2) the cultural services and cultural access; (3) the cultural heritage values and policies; (4) the cultural resources and participation.

### **3.4. Cultural participation and participatory governance**

In focusing on cultural participation and participatory governance, the Communication of the European Commission was launched in May 2018 addressing a new agenda and framework for EU cultural policy (*European Commission, 2018*).

In the context of a culture-based approach to creativity, integration and innovation, the new EU cultural agenda fosters active citizenship, urban mobility and regeneration, and cultural participation addressing the need to advance new research initiatives and progress.

As noted, the Communication discusses a wide range of resources and actions related to: (a) participatory governance and social cohesion; (b) cultural awareness and innovation capacity in multi-level governance.

Therefore, with respect to public participation, the document (2018) notes three main categories of assistance and management:

- (1) increasing knowledge of urban policy and governance;
- (2) raising awareness of integrated cultural management;
- (3) fostering social cohesion and cultural participation.

### **3.5. Reability and sustainability**

Cultural goods, cultural memory and cultural life play a prominent role within the Regulation (EU) 2019/880 launched on 17 April 2019 designed for the regulation of the import of cultural goods (2019). In short, the new legal provisions identify the patterns of development by providing the regulatory mechanisms and instruments focusing on the procedures for the import of cultural goods, the administrative documentation, the implementing acts, cooperation and the use of the electronic system. A wider approach of the Regulation (EU) 2019/880 points to the categories of cultural goods in accordance with the regulatory framework of Article 3(1) assessing the role of the customs procedures an authorities and the requirements of the import licence.

#### 4. Conclusions

The study focuses on the different functional, structural and cultural patterns, based on the innovative potential of the cultural management and cultural participation as mentioned by EU legislation. In conclusion, the results of analysis of the legal provisions follow a two-approach framework: (a) the top-down cultural management and perspective individualizing the approach to cultural policies and governance; (b) the bottom-up approach creating the conditions for new cultural and operational capacity of the institutions.

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## RESTORATION OF RESOURCES FOR TEACHERS AND STUDENTS OF BORYS GRINCHENKO KYIV UNIVERSITY DURING THE FIRST YEAR OF THE WAR IN UKRAINE

**Nataliia Babych**

Ph.D. in Education, Associate Professor, Borys Grinchenko Kyiv University, Ukraine  
e-mail: natalia.logoped@gmail.com, orcid.org/0000-0001-8923-8960

**Hanna Suprun**

Ph.D. in Psychology, Senior Lecturer, Borys Grinchenko Kyiv University, Ukraine  
e-mail: h.suprun@kubg.edu.ua, orcid.org/0000-0003-3282-7603

**Roman Pavliuk**

Ph.D. in Education, Associate Professor, Borys Grinchenko Kyiv University, Ukraine  
e-mail: r.pavliuk@kubg.edu.ua, orcid.org/0000-0002-8957-6158

### Summary

The article is aimed at highlighting the problems of restoring the resources of teachers and students during the first year of hostilities in Kyiv, Ukraine. Modern scientific views on the concepts of “resources”, “human resources” in the context of the impact of the war on the condition of teachers and students are analyzed. The research is based on the “BASIC Ph” resource model developed by Mouli Laad and Ofra Ayalon (Israel). The focus is not on the negative consequences of the war for the participants of the survey, but on the ability to recover, to open up new opportunities for the ability to live on, to live a full life, as much as possible in the changed circumstances during the war. The article presents the results of the study of the content and features of the restoration of the resources of teachers and students of Borys Grinchenko Kyiv University during the first year of the war in Ukraine. The authors present an analysis of the features and significance of each component of the resource model for teachers and students, compare the results and draw conclusions. This article can be useful for everyone who is interested in the consequences of military conflicts on civilians, on their ability to overcome crisis situations and rebuild a new life.

**Key words:** resources, human resources, restoration of human resources in war conditions, restoration of teachers' and students' resources during the war in Ukraine.

DOI <https://doi.org/10.23856/6102>

### 1. Introduction

The impact of the war in Ukraine on society is studied in many scientific researches, where various aspects of this social phenomenon are considered. The main topics covered are related to the impact of the war in Ukraine on the psychological state of the population, in particular the occurrence of post-traumatic stress, depression, anxiety and other mental problems. Physical effects of war: injuries, wounds, access to medical care and medical services, etc.

Studies of the impact of war are generally seen in the context of effects on the social structure of society, including displacement, changes in family structures, ruptures in communities, and changes in social interaction. The economic consequences of war are described

as reduced economic activity, job losses, infrastructure destruction, and reduced economic well-being. The issue of violation of access to education, insufficient development of children and youth, scientific research activity is outlined. There are research on the impact of war on gender roles and gender equality, including changes in social roles, gender-based violence, human trafficking and other gender challenges (*Panasenko, 2019*).

Therefore, in the conditions of war and conflict, crisis situations cause the destruction of the usual reality for people and can contribute to the creation of a new mental reality for human resources. After all, people show extraordinary endurance, creativity and resilience in conditions of uncertainty and stress (*Lahad, 2016; Lazarus, Launier, 1981*). They seek new ways of adapting to changed circumstances, develop new survival strategies, develop new social connections and interactions, and rethink their values and beliefs. Crisis situations can also open up opportunities for the development of personal potential and internal change, because in the conditions of war there is a rethinking of values, changes in relations with other people, revision of views on the world and a person's place in it.

In order to study ways of recovery and creation of resources among teachers and students of Borys Grinchenko Kyiv University during the first year of martial law in Ukraine a study was conducted. The first stage was a survey at the beginning of 2023 among teachers and parents: they described interesting experience of finding and using in their daily life effective ways and methods to continue learning, preserve and develop the personal potential of children with special educational needs (*Babych, Suprun, 2023*).

The second stage was a survey of students and teachers of the Faculty of Psychology, Social Work and Special Education of Borys Grinchenko Kyiv University about their peculiarities of restoring resources during the first year of the war.

The dictionary of the Ukrainian language offers the following synonym series for the word “resources”: stocks, sources, opportunities, means, economic means, (human) personnel (*Karavanskyi, 2000*).

The concept of resource can also be extended to different contexts, such as economics, ecology, technology, social sciences, psychology. In different disciplines, this concept can have its nuances and specificity, reflecting its application in specific scientific, social or cultural contexts.

Our study used the “BASIC Ph” resource model of coping and resilience, which was developed by Mouly Laad, a professor of psychology who directs the Center for Stress Prevention, and Ofra Ayalon, PhD in Psychology, who specializes in crisis intervention in situations of armed conflict, terrorist attacks, and natural disasters. They described a model of resilience assessment, intervention and recovery. It is based on the assumption that each person has internal strengths or coping resources that can be mobilized in stressful situations; that is, the effort to survive comes from a healthy, not a pathological instinct. Each letter of this model reveals a specific resource (*Lahad, 2016*).

Let's briefly consider each of them.

- Belief is a person's worldview, his/her beliefs and moral values, which allow him/her to resist the obstacles and difficulties that people encounter in stressful situations.
- Affect is emotion and the expression of feelings that allow you to experience stress through crying, laughing, talking about your experiences, writing (diary), drawing, dancing, music, role-playing and scenarios, etc..
- Social is the strength and energy that comes from a sense of belonging to a group (family, company, community, association) and a role associated with responsibility for others,

common goals and tasks; it is family, friends, parents, professionals, community that provide the necessary communication.

- Imagination is the involvement of the imagination for relief and/or motivation, generation of unconventional ideas and solutions that allow overcoming difficulties and obstacles, imagining and planning the future.

- Cognition (cognitive) is a resource that provides the ability to think logically and critically, analyze and make rational decisions, develop strategies and plans for solving problems.

- Physiology means physical activity that allows you to fight stress (sports, work, walks, physical pleasures, relaxation, healthy eating, etc.).

The authors called this combination of resources the “language of resources”, and they also note that people in crisis situations mostly use not one resource, but several. However, when the stress is very strong and long-lasting, the resources are exhausted, so they need help and support.

Guided by the groups of resources that were defined in this model, we developed a questionnaire that included questions related to the definition of the content of those resources that help a person overcome stress in war conditions and move on.

## 2. Research Methodology

The scientific and pedagogical team of the Department of Special and Inclusive Education of the Faculty of Psychology, Social Work and Special Education of the Borys Grinchenko Kyiv University developed questionnaires for students and teachers “Searching for resources in conditions of war” (call for a questionnaire for students, and teachers). The study was conducted in February-March 2023. 40 students and 29 teachers participated in the survey. The questionnaire contained identical open- and closed-type questions for all respondents according to the “BASIC Ph” resource model. The subject of this article's analysis is the responses of survey participants to questions revealing the content of the resource model. Here is a list of the open questions of the survey:

1. Who or what inspired you to search for a resource this year?
2. What values or faith in what/who helped you restore your resource?
3. What activity in the last three months helps you restore your resource?
4. What ways of expressing feelings helped you to return your resource?
5. Did critical and rational thinking help restore the resource state?
6. What unexpected resources have you found in yourself over the past year?

Respondents were also asked to rank groups of resources: “Choose the rank of importance for you of each factor that helps restore resources (1 – the most important factor, 5 – the least important factor):

- a) values, faith;
- b) safe expression of strong (including negative) feelings;
- c) communication with family, friends, like-minded people, colleagues;
- d) creativity, hobby; logical and critical thinking;
- e) physical activity, body care.

### 3. Results and Discussion

Answers to the open question “Who or what inspired you to search for resources this year?” summarized, ranked and presented in Table 1.



Table 1

**Distribution by rank of students' and teachers' answers:  
"Who or what inspired you to search for resources this year?"**

Student's answers	Rank	Teachers' answers
Family	1	Family
Close ones, friends	2	Responsibility
Faith in AFU* and Victory, work, study, dreams and plans for the future	3	Work
Creativity, books, music, cinema	4	Desire to endure, see our Victory
Self-preservation, fear of death	5	Faith, nature, volunteering, desire to live, adapt

\* AFU – Armed Forces of Ukraine

The results of the responses revealed that among all respondents, the first rank belongs to "family" as the main motivator for seeking resources during the war. The second rank among students was "Close ones/relatives" and "friends", among teachers it was "responsibility". The third rank among the motivating factors for the search for resources among students is "faith in the Armed Forces of Ukraine and Victory", "work", "dreams and plans for the future", respectively, for teachers it is "work". The fourth rank in the answers of students was determined for the following answers: "creativity", "books", "music", "cinema", and teachers – "desire to persevere", "desire to see our Victory". "Self-preservation", "fear of death" received the fifth rank in the answers of students, and for teachers it was "faith", "volunteerism", "nature", "desire to live", "desire to adapt".

Therefore, for all interviewees, family is the most significant factor in finding resources during wartime. Friends and relatives are also significant motivators for students. A sense of responsibility and work have a high motivating force among teachers. Students who participated in the survey are motivated to seek out the resources of books, creativity, music and film, which distinguishes them from the answers of teachers. They turn to nature, volunteerism and the desire to adapt to find resources. This may indicate that young people more often turn to external factors, and the older generation also to internal value orientations, in particular, to a sense of responsibility.

Answers to the question "What values or faith in what/who helped you restore your resource?" analyzed, ranked and presented in Table 2.

Table 2

**Distribution by ranks of respondents' answers to the question  
"Which values or faith in what/who helped you restore your resource?"**

Student's answers	Rank	Teachers' answers
AFU	1	AFU, Zaluzhnyi
Victory, self-belief	2	Family
The future, everything will be fine	3	Victory, God
Family, God, Ukrainian people	4	Ukraine, Ukrainian people
Responsibility, love	5	Life, work, love

The data in the table show that the highest rank for all respondents was given by the answer "AFU". The second rank is set for "Victory" and "self-belief" among student responses,

and “family” for teachers. The third rank was given to “the future” and “everything will be fine” among the answers of students, and “Victory” and “God” were given by teachers. Belief in “family” and “Ukrainian people” ranked fourth among student answers, and faith in “Ukraine”, “God” and “Ukrainian people” – teachers' answers. The fifth rank was given to students' answers about “responsibility” and “love”, and from teachers – “life”, “work”, “love”.

Thus, the majority of students who took part in the survey believe most in the Armed Forces of Ukraine, Victory and their forces, in themselves. Accordingly, the majority of interviewed teachers are members of AFU and their families. What is remarkable in the answers of the respondents is that the students called “self-belief”, which indicates the presence of a strong own position, a sense of one's own potential.

Answers to the question “What activity in the last three months helps you restore your resource?” was summarized, their ranking was carried out. The results are presented in Table 3.

Table 3

**Distribution by ranks of respondents' answers about what activity in the last three months helps restore the resource**

Student's answers	Rank	Teachers' answers
Walks in nature, communication with friends	1	Work
Books, music, movies	2	Sports, family, reading
Learning, self-education	3	Hobbies, creativity
Sleep, work, hobbies	4	Volunteering, helping others
Sport	5	Walks in nature, communication with friends

The following activities received the first rank in the answers of students: “walks in nature”, “communication with friends”, and “work” for teachers. The second rank was given to the answers “books”, “music”, “cinema” for students, and “sports”, “family”, “reading” for teachers. “Learning” and “self-education” were given the third rank among the students' answers, and “hobbies” and “creativity” among the teachers' answers. “Sleep”, “work” and “hobbies” ranked fourth among students' answers, and teachers – “volunteering” and “helping others”. “Sport” received the fifth rank in student responses, and for teachers – “walks”, “communication with friends”. Therefore, in the conditions of war, the surveyed students prefer communication with friends and walks as the most effective ways to restore their own resources. For teachers, this is work. It should be noted that all respondents use reading, hobbies and sports as self-recovery tools. Among the surveyed teachers, sport is a higher priority than among students. Teachers do not use walks and communication with friends as often as compared to students, which may be due to age-related changes in life priorities.

The answers to the question about which ways of expressing feelings helped to return one's resource are summarized in Table 4.

The results of the table show that for all respondents, the most effective way of expressing emotions is to speak them. The answers of “hobbies” and “creativity” among students, and “care for loved ones” among teachers have the second rank. The third rank received the answer “tears” from students, and teachers – “sport”, “positive memories”, “tears”. Among the answers of the surveyed students, the fourth rank belongs to “hugs” and “dances”, and for teachers – “social networks”, “diary”, “restraint”, “science”, self-regulation”. The fifth rank was given to students' answers about “smile” and “caring for others”.

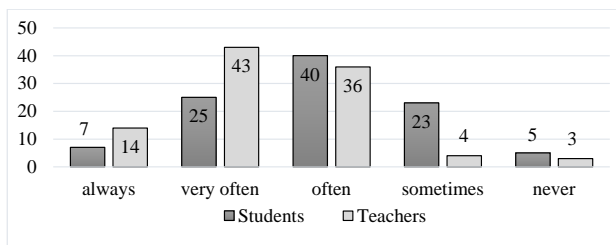
Table 4

**Distribution by rank of respondents' answers about which ways of expressing feelings helped to return their resource**

Student's answers	Rank	Teachers' answers
Conversation with friends, family	1	Talking about one's experiences and feelings, conversation
Hobbies, creativity	2	Caring for loved ones
Tears	3	Sports, positive memories, tears
Hugs, dances	4	Social networks, diary, restraint, science, self-regulation
Caring for others, smiling	5	-

Thus, all respondents use talking about their emotions as the most effective way of expressing emotions. It should be noted that among teachers, “caring for loved ones” ranked second compared to students. This may indicate that with age, interaction and communication with loved ones becomes more significant, which can become emotional support for the individual.

Respondents' answers to the question “Did critical thinking help restore the resource state?” is presented in Figure 1.



**Fig. 1. Respondents' answers to the question "Did critical thinking help restore the resource state?"**

The results showed that the answer “always” was chosen by 7% of students and 14% of teachers; “very often” – 25% of students, 43% of teachers, “often” – 40% of students and 36% of teachers, “sometimes” – 23% of students and 4% of teachers, “never” – 5% of students and 3% of teachers. So, the answers of students were distributed closer to the options “often”, “very often” and “sometimes”, 65% of them “very often” and “often” critical thinking helps to restore the resource state. In the answers of the teachers, 79% of the respondents “very often” and “often” think that critical thinking helps to restore the resource state, and 14% – “always”, which is twice as high as in the answers of students (7%). Such a situation proves that it is effective for a mature personality to use critical thinking to return to a resourceful state.

Respondents were asked to rank meaningful groups of resources according to the Mooli Lahad BASIC PH Model (faith, values; emotions and expression of feelings; society, family, interaction with others; imagination and creativity; logic and critical thinking; physical activity, body care). A summary of the responses of students and teachers is presented in Table 5.

These tables show that for students and teachers the first rank was occupied by resources of society: family, communication with others. None of the interviewees gave this semantic resource the lowest degree of importance, which indicates the crucial role of this group of

Table 5

**Ranking according to the importance of groups of resources in respondents' answers**

Resource group	Rank in students' answers	Rank in teachers' answers
Faith, values	3	2
Emotions and expressions of feelings	5	5
Society, family, communication with others	1	1
Creativity, imagination	2	3
Logic, critical thinking	6	4
Physical activity, body care	4	4

resources for the survey participants. The resources of the meaning group “creativity, imagination” received the second rank in the answers of students, and “faith, values” for teachers. The third rank was taken by the semantic resources “faith, values” for students and “creativity, imagination” – for teachers. The fourth rank was given to the meaning groups “physical activity, body care” for students and teachers, and for the latter also the meaning group “logic, critical thinking”. The semantic group “emotions, expression of feelings” received the fifth rank in the answers of all respondents. Among the students' answers, the semantic group “logic, critical thinking” ranks sixth. The peculiarity of the students' answers is that none of the respondents gave the least degree of significance to the group of resources “physical activity, body care”, which may indicate an active and conscious attitude towards maintaining a healthy lifestyle and taking care of one's health.

Therefore, for all interviewees, the most significant group of resources is related to family and communication. The answers of students and teachers differ in that the students placed “logic, critical thinking” in the last place according to the degree of importance. This may be due to the age factor, when young people more often resort to impulsive decisions and rely on their feelings.

#### 4. Conclusions

Summarizing the results of the survey of students and teachers of the Faculty of Psychology, Social Work and Special Education regarding the search for resources in wartime, we note the following conclusions.

All respondents identified social resources as the most significant for themselves, in particular, the family.

All interviewees expressed faith in the Armed Forces of Ukraine as a resource, as well as in their own forces (students) and family (teachers).

According to the results of the survey, resource activities for students were walks, communication with friends, and for teachers – work, sports and communication with family.

All interviewees recognized talking about their own feelings as an effective way of expressing them.

Critical and analytical thinking as a wartime resource is used more frequently by teachers than by students.

Unexpected resources during the war for students became the discovery of their own stress resistance, adaptability, and for teachers – creativity.

According to the results of the ranking of groups of resources, all respondents chose society, family and communication with others in the first place.

It should be noted that for teachers, the motivating factors for finding resources were family and a sense of responsibility, duty (work). Work for teachers (as a category of responsibility and duty) was the activity that helped restore resources. The three most significant groups of resources for teachers were “family, society, communication”, “faith, values” and “creativity, imagination”.

Thus, the study showed the importance and strength of interpersonal communication, family ties, high civic position and faith in the Armed Forces of Ukraine of students and teachers, motivation for work, creativity and restoration of the state. Such results can be an illustration of the so-called post-traumatic growth (Tedeschi, 2004; Tytarenko, 2019). However, this hypothesis needs further clarification and verification. The results of the survey are not exhaustive, so the research can be continued in the future.

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## EMPLOYERS' REQUIREMENTS DURING UPDATING THE CONTENT OF DESIGNERS PROFESSIONAL TRAINING

**Svitlana Borysova**

Candidate of Pedagogic Science, Associate Professor,

Luhansk Taras Shevchenko National University, Ukraine;

Doctoral Candidate, Ternopil Volodymyr Hnatiuk National Pedagogical University, Ukraine

e-mail: [svitlana.borysova@gmail.com](mailto:svitlana.borysova@gmail.com), [orcid.org/0000-0003-0610-644X](https://orcid.org/0000-0003-0610-644X)

### Summary

This research is aimed at determining the competencies expected by stakeholders from graphic designers, based on the method of analyzing job advertisements for graphic designers in Ukraine, taking into account the analysis of similar advertisements in Poland as an additional labor market (200 job advertisements in Ukraine and 100 job advertisements in Poland), to determine ways to update the professional training of graphic designers in the system of higher education. The systematized and processed results of the analysis indicate that the vast majority of employers need a universal specialist with project execution skills for static printed production, as well as developed competencies in the field of digital design to create visual communications for the online representation of companies while preserving visual identity. The results can be used to update curriculums, educational programs, the content of courses, forms, methods of teaching, methods of interaction between teachers and students of the "Graphic Design" specialty.

**Key words:** content analysis, content of education, design skills, job advertisement, future graphic designers, professional training.

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### 1. Introduction

The most important emphasis in the professional activity of graphic designers is visualization as the presentation of information in a schematic form for the visual representation of a set of data or the transformation of textual information into a graphic representation (*Kim et al., 2021; Bylinskii et al., 2017*); aesthetics, which gives the design emotional expressiveness and causes design consumers to feel satisfied with what they see (*Judelman, 2004; Quispel et al., 2018*) and the communicative aspect of presenting and implementing ideas, which involves stimulating the design consumer to informational, emotional, social, etc. exchange (*Günay, 2021; Bichler & Beier, 2016*).

Specific features of the professional activity of graphic designers are determined by several factors. Their activities benefit both non-profit organizations and enterprises of various industries related to the production of consumer goods and the application of various marketing strategies that use promotion through advertising and visualization (*Calabretta et al., 2012*). Different industries may use different software and tools for the digital workflow implemented by a graphic designer (*Li, 2021; Opoku et al., 2020; Zhao, 2020*), but the actual expansion of digital technologies (*Mohammed, 2022*), the increase in the volume of printing products, the representation of brands, organizations in the online environment has caused the gradual formation of requirements for a graphic designer as a rather universal specialist (*Dziobczenski &*

Person, 2017), whose job duties are becoming more and more complex and require a wider set of skills compared to an average company specialist (Borysov et al., 2022). To perform certain specific tasks in the field of professional duties of a graphic designer, separate software has been developed: for editing photos and images, creating scaled images, and drawings, layout, creating animated videos, editing videos, etc. (Peng & Li, 2021). From the combination of technologies mastered by a graphic designer, professional competencies, and personal qualities, both the field of professional implementation of a graphic designer and the position he can hold or the functions the employee is assigned to perform depend on him (Perks et al., 2005).

The consequence of the COVID-19 pandemic is the strengthening of the tendency to diversify the professional self-employment of a graphic designer, which is possible to implement not only in an office-production format but also in a remote one (Khlystova et al., 2022; Ibiwoye et al., 2023); both within the country and internationally (through online representative offices of companies, agencies, online platforms for project proposals), permanently or during the implementation of a separate project.

By the above-mentioned features of the modern state of the professional activity of a graphic designer, the challenges posed to teachers of higher education institutions become apparent: the expected variability of the professional environment, which takes into account changes in various software necessary for the performance of the professional duties of a graphic designer, objects design, necessary for designing, as well as changing the scope of responsibilities; covering a wide range of hard and soft skills that graphic designers need to realize themselves as professionals; formation of competences in a relatively limited period of study. Competencies should be formed actively, taking into account the practical aspects of professional activity (Tan & Melles, 2010).

The modeling of professional training of a graphic designer should take place in close connection with the needs of stakeholders (ideally – in cooperation and at the workplace in a specific employer) to stimulate the career development of students upon completion of education in this direction. One of the available ways to obtain valuable information about specific labor market requests for graphic designers is the analysis of job advertisements, which contain detailed information about employers' needs, working conditions, requirements for potential employees, and personality qualities valued by the company or the employer.

Updating the content of the professional training of future graphic designers should take into account not only updating the list of structural components, courses of the educational program, but also improving their content and structure, determining priorities in the presentation of information, foreseeing opportunities for the development of competences in adjacent, related areas, where already formed skills are useful, but not determinative; acquisition by students of soft skills leading to the chosen professional path, because a high level of development of soft skills (teamwork, interpersonal communication skills, creativity, problem-solving joint implementation of projects) under relatively equal conditions is an employment advantage (Kanupriya, 2022). In addition, critical thinking and analysis, ability to solve problems, self-control and active learning skills, stress resistance, and flexibility are identified by employers as skills that are important and leading when evaluating a job seeker (The Future, 2020).

The purpose of the article is to clarify certain ways of improving the professional training of future graphic designers through the definition of competencies expected by stakeholders (employers) from graphic designers, based on the method of analysis of job advertisements for graphic designer vacancies in Ukraine, taking into account the analysis of similar advertisements in Poland as a potential additional labor market.

## 2. The method of analyzing job advertisements

The method of analyzing job advertisements is considered an easily accessible indicator of changes in the profession, contains organic results that can be documented, measured, compared, and can be applied to real support for job seekers. This method is effective, despite certain caveats that should be taken into account in the analysis process: the excess (or lack) of information in the job advertisement, which is caused not by real requirements for the applicant, but by desired, ideal ones; or inconsistency of the provided information with real duties; legal restrictions (*Harper, 2012*).

The analysis of job advertisements from the standpoint of labor market requirements was considered in several studies. The effectiveness of job advertisements and their influence on the intention of potential workers to apply for a job were investigated (*Ganesan et al., 2018*), attention was focused on the description, the ratio of technical skills and communication skills in job advertisements in various industries (*Ooi & Ting, 2015*), in graphic design (*Nugroho et al., 2023*); a content analysis was conducted with a qualitative approach of the labor market demand for the position of secretary (*Purwanto et al., 2020*), to study the labor market conditions of event managers (*Arcodia et al., 2020*), civil engineers (*Efeoglu & Gerek, 2015*), library and information science workers (*Kim & Angnakoon, 2016*), graphic designers in Great Britain (*Dziobczenski & Person, 2017*), in Finland (*Dziobczenski et al., 2018*), the method of analyzing job advertisements was considered as an opportunity to identify current professional requirements, guidelines for participants in the educational process (*McArthur et al., 2017*).

To carry out a planned analysis of job advertisements to clarify the requirements for the position of a graphic designer in Ukraine in the initial years of career development of students or graduates of higher education institutions majoring in "Graphic Design" (with subsequent comparison with data obtained from a similar analysis of job advertisements in the neighboring Poland) research methodology was developed by the standards of theoretical and applied research. The analysis of job advertisements involved a combination of content analysis as a study of the document, which involves reading and interpreting the text to build assumptions about words based on given characteristics (*Bowen, 2009*), and thematic analysis, which allows for a more qualitative interpretation of the content of the text through the grouping of content based on the identified common characteristics (*Braun & Clarke, 2006*).

## 3. Methodology

The main stages of the research were the following. 1. The preparatory stage, which included: the definition of research tasks, selection of platforms for analysis of job advertisements, time and geographical boundaries. 2. Office study, which included: content analysis of job advertisements for graphic designers in Ukraine (collection of information about employers' expectations from graphic designers); summary of the obtained results; analysis of the current state of the graphic design market in Ukraine, events, trends affecting it; content analysis of job advertisements for graphic designers in Poland; summary of the obtained results. 3. Systematization of the data obtained during the research, comparative analysis of all the obtained results, and formation of conclusions from the obtained results, which are designed to contribute to updating the content of the training of graphic designers in higher education institutions.

The main task of the research was to create a list of basic and specialized, mandatory and desirable competencies expected by stakeholders (employers) from graphic designers, based on



the method of analysis of graphic designer job advertisements in Ukraine, taking into account the analysis of similar advertisements in Poland as a potential additional labor market. The main two research questions were: what skill set is in demand and desired by employers according to graphic designer job descriptions and what are the responsibilities of a graphic designer. To use the method of analyzing job advertisements, data was collected from July 2023 to September 2023 in four stages: the formation of predicted results of the division of the obtained results, the initial accumulation of information based on the analysis of job advertisements in Ukraine, refinement of the segmentation of information based on the search for common features, relationships connections and regularities; subsequent accumulation of information; primary accumulation of information based on analysis of job advertisements in Poland, refinement of information segmentation; subsequent accumulation of information. In total, 300 job advertisements were analyzed.

Search requests on job search platforms in Ukraine contained the phrases "hrafichnyi dyzainer" (ukr), and "Graphic Designer" (eng) in the job title or the description of professional duties; searches on job search platforms in Poland contained the phrases "Grafik" (pol), "Grafik Komputerowy" (pol), "Graphic Designer" (eng) in the job title or description of professional duties. In the selection process, alternative titles of professions that included the responsibilities of a graphic designer in the job description were taken into account, since graphic designers have various career paths related to digital communications, digital mass media, media, branding, web design, etc. In the search results, one vacancy was saved once, duplicate job advertisements were removed from the collection results. Motion Designer vacancies were also excluded from the search results, which, based on the contextual analysis, did not include the duties of a graphic designer in the job description.

#### 4. Findings

When forming the predicted results of the division of the received results, their division into two categories "Requirements" and "Duties" was provided, as well as the name of the vacancy, the name of the employer, and the location of the employer (work format) were recorded for each announcement. The "Duties" category contained 7 groups of duties related to skills: working with Internet resources; projecting images and corporate style; designing layouts, printed products, and layout; and presentations. The "Requirements" category included 5 groups of requirements: mandatory and desirable skills for working with specialized computer programs; educational requirements; competence in the field of design; soft skills, work experience. The division of skills for working with specialized computer programs into mandatory and desirable took place according to the contextual analysis of the description of the requirements in the job advertisements. Quantitative analysis of the obtained data was based on determining the frequency of mention of components in the total data set.

By the above-described phasing and features of conducting research based on searches on job search platforms in Ukraine for the keywords "hrafichnyi dyzainer" (ukr), and "Graphic Designer" (eng) in the title and/or description of the professional duties and the vacancy requirements (submitted in Ukrainian and/or in English) a list of 200 job advertisements was formed, and based on searches on job search platforms in Poland for the keywords "Grafik" (pol), "Grafik Komputerowy" (pol), "Graphic Designer" (eng) in the title and/or description of professional duties and job requirements (submitted in Polish and/or English) a list of 100 job advertisements was created.

Thus, in Ukrainian, the three job titles "hrafichnyi dyzainer" (Graphic Designer), "dyzainer hrafichnykh robot" (Designer of graphic works), and "dyzainer-hrafik" (Designer graphic) correspond to the title "Graphic Designer" in English, and the position "Hrafichnyi dyzainer pakuvannia" (Graphic designer of the packaging) corresponds to the position title "Packaging Designer" in English; in Polish, the job title "Grafik komputerowy" has a direct translation of "Computer designer", but the correct understanding is "Graphic Designer" or "Computer Graphic Designer", the title "Młodszy Grafik komputerowy" has the correct translation of "Junior Graphic Designer", the short job title "Grafik" corresponds to the English job title "Designer" and "Graphic Designer".

The resulting list, illustrated in Table 1, contained both names of professions (vacancies) that exactly corresponded to the keywords and were relevant to them.

Table 1

**Job titles in job advertisements in Ukraine and Poland, with English translation.**

Job title (Ukraine)		Job title (Poland)	
Name	qty	Name	qty
Graphic Designer (ukr)	151*	Graphic Designer (pol)	31****
	11**	Graphic Designer (eng)	21
	4***	Designer (pol)	23*****
Graphic Designer (eng)	23	Designer (eng)	2
Designer	4	Creative Designer (pol)	14
Junior Graphic Designer	2	Creative Designer (eng)	1
Graphic, Web Designer	1	Junior Graphic Designer (eng)	3
Visual, Graphic Designer	1	Junior Graphic Designer (pol)	1
Graphic Designer (SMM)	1	Graphic 2D (pol)	2
Packaging Designer	1	Graphic & Motion Designer	1
E-commerce Graphic Designer	1	Visual content creator	1
<b>Total</b>	<b>200</b>	<b>Total</b>	<b>100</b>

Original titles: \* hrafichnyi dyzainer, \*\* dyzainer-hrafik, \*\*\* dyzainer hrafichnykh robot, \*\*\*\*Grafik komputerowy, \*\*\*\*\*Grafik

At the stages of the initial accumulation of information under the two main categories "Requirements" and "Duties", the segmentation of information within groups of components was refined, as a result of which the final list of components was formed for the two countries (Table 2.). The revised list included components corresponding to job duties assigned to the graphic designer; skills in using graphic editors and other software, possession of which is mandatory or desirable for compliance with the proposed position; professional competencies necessary for the performance of functions expected by the employer in the position of a graphic designer in a specific work environment; personal traits that are extremely important for the effective performance of job duties by a graphic designer and which stakeholders-employers have formulated according to the requirements for the proposed vacancy.

Updating the content of professional training can refer to the starting, redistribution of courses in educational programs. Block of mandatory specialized training courses should provide for the formation of competencies in the field of: social network design (expansion of skills is possible due to elective courses with the study of digital marketing); website design (as potentially important design competence together with prototyping skills for example Figma should

Table 2

**Component division of graphic designer job advertisements content**

<b>Category "Duties"</b>	<b>Category "Requirements»</b>
<i>Working with online resources group:</i>	<i>Group Design Technology Use:</i>
Design of landing pages, sites;	Photoshop; Illustrator; InDesing;
Design for social networks.	Coral Draw; Figma, Adobe XD**,
<i>Group Image creation work:</i>	html**, SketchUp; 3-D;
Creation of illustrations;	ZebraDesigner*, Google Slides,
Taking photos;	Canva; Animation, After Effects*;
Photo processing.	Video *; AI*.
<i>Branding group:</i>	<i>Educational characteristics group:</i>
Creation of logos;	Higher Education; Art education;
Branding, corporate style.	Ability to draw/paint by hand * **,
<i>Group Advertising, visualization:</i>	on the tablet * **, English level.
Creation of outdoor advertising;	<i>Design and Marketing Knowledge Group:</i>
Creation, editing of layouts	Design principles; ***
for advertising; Visualization.	Color science, typography,
<i>Printed products group:</i>	composition; Knowledge of trends;
Design of printing products;	Pre-press preparation;
Packaging design development;	Digital marketing.
Layout; Printing.	<i>Soft skills group:</i>
<i>Group Presentation:</i>	Teamwork in the project,
Creation presentations;	Communication skills,
Animation ****, video. **	stress resistance, organization.
<i>Group Creativity:</i>	<i>Group Experience:</i>
Generating ideas.	Experience; Portfolio.

Application features: \* desired components (Ukraine), \*\* desired components (Poland), \*\*\* typical for job advertisements in Ukraine, \*\*\*\* typical for job advertisements in Poland

be provided in the block of main courses, but can be proposed for the block of elective courses); creation of illustrations, taking photographs, their processing, logos, branding (possible interdisciplinary approach in the formation of competences together with mastering the skills of working with Adobe Photoshop and Adobe Illustrator, if necessary, meeting the requests of students to master the skills of digital painting using graphic tablets); design of advertising and printing products (it will be necessary to ensure the formation of competencies in pre-press preparation and printing, materials science, process technologies, packaging design, which can be implemented both in a number of elective courses and in the content of mandatory courses for the formation of work skills in graphic editors); presentation of projects (competency can be manifested in various areas, from the presentation of ideas during conceptual search, presentation, visualization of design results to the customer, design of the completed project for adding it to the portfolio of the graphic designer, the relevant such a wide field of application can also provide for a variety of implementation of means of competence formation in the educational process); 3D design, animation and video processing (trends that need to be taken into account when determining the place of the courses that forms the specified competencies in the general structure of professional training); principles and means of design, composition, typography,

working with color (as competencies that directly and indirectly affect the quality of executed projects). Students' activities should include such a format of work that will contribute to the formation of soft skills that students must acquire for effective future work as graphic designers.

## 5. Conclusions

The development of the graphic design market demonstrates a steadily growing demand for both traditional and digital graphic design services. Companies whose main activity is meeting the needs of clients in the design and production of printed and static, digital and interactive design, provide the development of visual communication for the transmission of messages, design of visual identification, branding, the provision of services for the design of printed materials, design of shop windows in retail outlets, development of packaging and creation of corporate identity. The increase in the number of means of communication and media (personal computers, laptops, tablets, mobile phones) also led to the expansion of the area of graphic designers' professional responsibilities. The analysis of graphic designer vacancies is useful for the analysis of current educational practice in terms of meeting the needs of employers, the requirements and criteria for evaluating student projects, and the formation of proposals for updating the content of education in the field of graphic design for higher education institutions, bringing the professional training of future graphic designers closer to the real needs of employers, which at the same time should support students on the path of formation and development of their professional career. According to the data obtained from the analysis of graphic designer job advertisements in Ukraine and Poland, it can be concluded that today employers are looking for graphic designers who can design both printed and digital products and have developed competencies in various areas, from idea generation skills to project management skills, mastery of software application skills, which is inherent in the implementation of projects in the field of graphic design and related areas. Also, for employers, formed soft skills, personal characteristics that ensure independence in decision-making, stress resistance, and timely completion of tasks are important.

When updating the content of educational programs in the "Graphic Design" specialty, it is advisable to take into account the trend of increasing demand for design for social networks as a component of the professional duties of a graphic designer, website design and animation, designing products that support brand identity and their presence on the Internet. The improvement of technology leads not only to the expansion of the functions in graphic editors (for example, as with the Adobe Creative Cloud package), but also to the offer of simpler, but convenient tools for the high-quality performance of professional duties (Google Slides, Canva), one cannot but predict familiarization with template graphic editors. To meet the needs of students in the acquisition of competencies corresponding to the career path predicted by students, the formation of the structure and content of the courses can be developed taking into account the division of skills into mandatory and desirable, basic and specialized with a breakdown into mandatory and optional courses according to the degree of priority and the projected change in the scope of executed projects from the traditional sphere of duties to the virtual space, digital products.

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## SUCCESSFUL CASES OF BRANDING THROUGH GRAPHIC DESIGN: ANALYSIS OF SPECIFIC CASES WHERE GRAPHIC DESIGN INFLUENCED BRAND SUCCESS

**Diana Buryk**

Student, School of Communications, Media, Arts, and Design,  
Centennial College, Toronto, Canada  
e-mail: [diana.buryk@ukr.net](mailto:diana.buryk@ukr.net), [orcid.org/0009-0000-6025-270X](https://orcid.org/0009-0000-6025-270X)

**Iryna Holubets**

Senior Lecturer, Candidate of Culturology, Private Higher Educational Establishment  
“Kyiv University of Culture”, Ukraine  
e-mail: [iruna\\_golubets@ukr.net](mailto:iruna_golubets@ukr.net), [orcid.org/0000-0002-3491-0155](https://orcid.org/0000-0002-3491-0155)

### Summary

Over the past decade, graphic design has become a pivotal element in the formation and management of brands. Its influence on consumer perception is gaining increasing significance in saturated markets and growing competition. The research problem revolves around the necessity for a thorough analysis of specific cases where graphic design emerged as a key factor in achieving success for brands. The aim of this study is to explore the impact of graphic design on the success of brands through specific cases, analyzing elements that led to positive changes in consumer perception. The object of the study encompasses brands from various market segments, where graphic design played a decisive role in achieving a high level of recognition and success. The subject of the research includes specific elements of graphic design, such as logos, packaging, and visual components, which have influenced the creation of a strong brand image. To attain the objectives, qualitative and quantitative research methods were employed, including consumer surveys, interviews with designers and brand representatives, as well as an analysis of visual elements in graphic design. The findings of the research underscore the importance of graphic design in shaping successful brands.

**Key words:** brand, successful brands, brand influence factors, brand design.

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### 1. Introduction

In recent years, amidst rapid technological development and shifts in consumer preferences, graphic design has become a defining element in branding strategies. In a world saturated with visual stimuli, it may seem challenging to stand out, but concurrently, new opportunities and challenges emerge for graphic design. Current trends indicate a growing significance of graphic design in the context of consumer perception of brands. In the digital environment and social media, where visual content takes precedence, successful branding through graphic design becomes a necessity. The rising popularity of adaptive and minimalist design, the use of animation to capture attention, and the incorporation of interactive elements are just a few of the contemporary trends influencing the graphic design of brands.

It is assumed that brands successfully leveraging innovative applications of modern graphic design trends have a higher likelihood of positive reception and audience engagement.



High interaction and emotional appeal through graphic design are believed to positively impact brand image. Survey data underscores the importance of graphic elements in shaping a unique brand image and determining its competitiveness in the market. The overarching goal of this research lies in integrating modern graphic design trends into branding strategies and examining their influence on the success of brands through the analysis of specific cases.

## 2. Purpose and objectives

The article aims to explore the impact of graphic design on the success of brands in the modern digitized world, particularly through the analysis of key cases. The primary objective is to identify and elucidate the role of contemporary graphic design trends in shaping brand image and competitiveness in the market. Article tasks:

- Analysis of contemporary trends in graphic design.
- Examination of the influence of graphic design on brand perception.
- Evaluation of interaction and emotional perception.
- Development of recommendations for the practical implementation of modern graphic design trends in branding strategies to enhance the success of brands in the digital environment.

## 3. Analysis of literary sources

Let's analyze key literary sources that encompass diverse studies and approaches to this topic. Examining these works will help identify current trends, essential aspects, and conclusions that can be considered in our own research on the interaction between graphic design and the success of brands in the contemporary digital environment. Zihagh, F., Moradi, M. and Badri-narayanan, V. focus on crowdfunding success for aftermarket offerings from a brand prominence perspective. The paper delves into the role of textual and visual brand elements in influencing the success of crowdfunding campaigns (Zihagh, 2023). The paper by Foroudi, P., Foroudi, M.M., Palazzo, M. and Nguyen, B. explores the relationship between corporate branding orientation, retailer preference, and business performance. The study investigates how a corporate brand orientation impacts retailer preference and, subsequently, business performance (Foroudi, 2022). This study (Zhao, 2023) focuses on the expert-centric design inspection of branded apps, particularly examining marketing and interface design features. The research provides a detailed examination of the design aspects of branded apps with an emphasis on expert evaluation. The paper by Balmer, J.M.T. and Gray, E.R. delves into the concept of corporate brands, exploring what they are and their significance. It provides a foundational understanding of corporate branding, discussing its various dimensions (Balmer, 2003). The study by Ewing, M.T. addresses the intersection of brands, artifacts, and design theory, calling for action in the field. It emphasizes the importance of considering brands within the context of design theory (Ewing, 2006). This study by Wakimoto, D.K. focuses on graphic design best practices and approval processes in library settings. It provides insights into the design considerations and approval workflows for graphic elements in libraries (Wakimoto, 2016). The research by Magrath, V. and McCormick, H. explores the branding design elements of mobile fashion retail apps. It investigates the specific design aspects contributing to the branding of mobile applications in the fashion retail sector (Magrath, 2013). The paper by Kent, T. offers management and design perspectives on retail branding, emphasizing the interplay between 2D and 3D elements. It discusses the management considerations and design perspectives in the context of retail branding (Kent, 2003).

#### 4. Analysis of contemporary trends in graphic design

In the rapidly evolving technological landscape and changing consumer preferences, the study of contemporary trends in graphic design becomes a crucial task for professionals and researchers. One key direction is adaptive design, which responds appropriately to various devices and screens, offering new opportunities for brands to establish a consistent image across interaction channels. Minimalistic design is also gaining popularity, emphasizing simplicity and conciseness, contributing to clear information perception and fostering an elegant style.

Animated effects in graphic design enable the creation of emotional and dynamic perceptions. Specifically, interactivity in design becomes part of audience engagement strategies, making interaction with the brand more captivating and personal.

The analysis of current trends in graphic design also addresses the use of fonts, color palettes, and content structuring. In a visually saturated world, the proper selection of these elements becomes strategically important for attracting and retaining the attention of the target audience (*Zihagh, 2023, Foroudi, 2022*).

Studying these trends and their impact on the graphic design of brands will unveil key aspects to consider in developing branding strategies in the competitive digital environment. Understanding these trends becomes an essential element for the successful adaptation of brands to the demands of modern consumers and the construction of a resilient market image (*Zhao, 2023, Balmer, 2003*).

Research on the Impact of Graphic Design on Brand Perception has necessitated the analysis of key aspects of the visual representation of various brands. The table provides an overview of graphic design elements for several different brands, including their characteristics and the specifics of their influence on the perception of the target audience.

The results of the brand analysis underscore the significance of graphic design in shaping brand perception and positioning in the eyes of consumers. Thoughtfully crafted design can decisively influence the success of a brand, providing it with distinctiveness and a competitive edge.

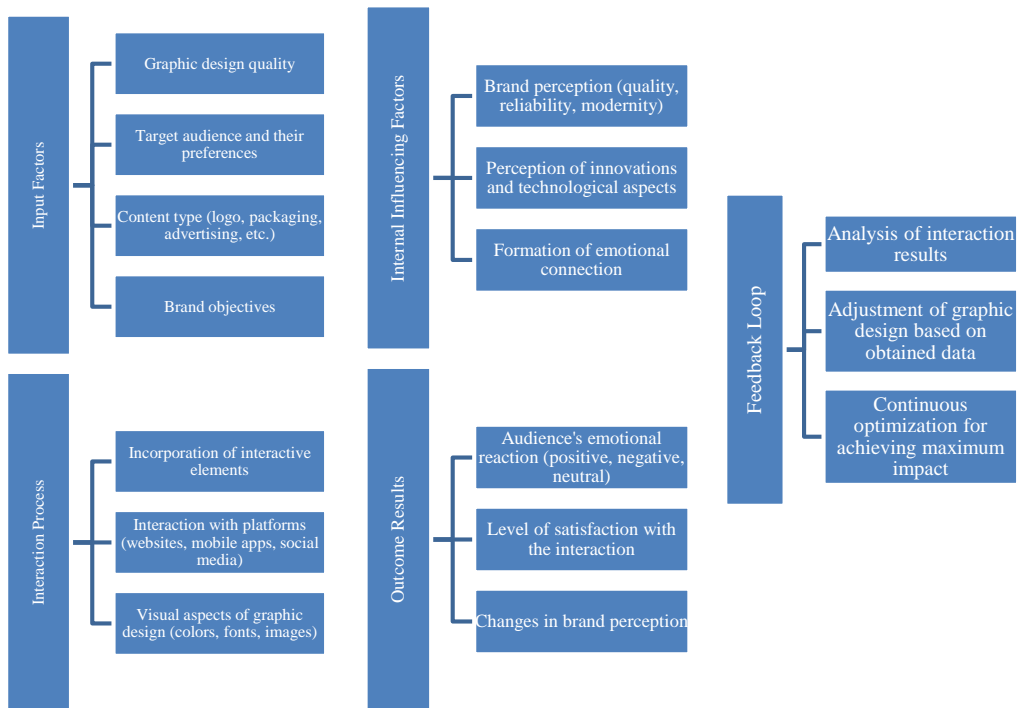
Table 1

**Examination of the influence of graphic design on brand perception**  
(Ewing, 2006, Wakimoto, 2016, Magrath, 2013, Kent, 2003)

Brand Name	Brand Characteristics	Description of Graphic Design Elements	Specifics of Graphic Impact on Brand
XYZ Fashion	High fashion and style	Clear lines and contrasting colors in the logo, elegant font.	Noted for creating a fashionable and elegant image, attracting attention to sophistication.
TechGenius	Technological giant	Futuristic logo, use of LED colors and geometric shapes.	Creates an impression of innovation and advanced technology, enhances the sense of modernity.
GreenLife	Environmentally friendly products	Natural colors, use of natural images and ecological symbols.	Focuses on ecological sustainability, promotes perception as a brand caring for nature.
FoodJoy	Restaurant industry	Appetizing logo, use of vibrant colors and stylized images of dishes.	Stimulates appetite and is associated with delicious and exquisite dishes, creating a joyful dining atmosphere.

### 5. Analysis of contemporary trends in graphic design

The multifactorial system encompasses input factors that define the context and conditions of interaction, the interaction process, internal influencing factors, output results, and feedback. Input factors include the quality of graphic design, characteristics of the target audience, content type, and brand objectives. The interaction process covers visual aspects of design, interaction with platforms, and the utilization of interactive elements. Internal factors consider brand perception, attitudes towards innovation, and the formation of emotional connections. Output results are determined by the audience's emotional response, satisfaction level, and changes in brand perception. Feedback involves the analysis of obtained results and continuous adjustments to graphic design for achieving maximum impact. The developed system reflects the complex nature of interaction, putting all aspects influencing brand perception through its graphic representation under control and optimization.



**Fig. 1. Multifactorial System of Graphic Design Impact on Brand**

This scheme reflects the multifaceted nature of the interaction between graphic design and emotional perception of a brand, considering various aspects that influence this process.

### 6. Follow-up recommendations

In the ever-evolving digital landscape, staying abreast of contemporary graphic design trends is imperative for brands seeking sustained success. This section provides actionable recommendations for effectively incorporating these trends into branding strategies, ensuring relevance, and fostering a strong digital presence.

1. **Embrace Adaptive Design:** as technology diversifies, brands must prioritize adaptive design to ensure a consistent and engaging user experience across various devices and platforms. Tailor your graphic elements, such as logos and visual assets, to seamlessly respond to the diversity of user interfaces.

**Recommendation:** Conduct regular audits to assess the responsiveness of your design across devices and invest in adaptive design tools for optimal user interaction.

2. **Leverage Minimalist Design:** the popularity of minimalist design continues to rise, emphasizing simplicity and clarity. Implementing clean visuals and straightforward aesthetics can enhance brand recognition and communicate a refined brand image.

**Recommendation:** Streamline your visual elements, focusing on essential design elements and decluttering unnecessary details to create a visually compelling and easily digestible brand identity.

3. **Harness the Power of Animation:**

Animated graphics are captivating and provide an opportunity to infuse emotion and dynamism into brand communication. Incorporate subtle animations in your design elements to capture attention and convey brand personality.

**Recommendation:** Experiment with animated elements in web design, social media, and marketing materials to enhance user engagement and create a memorable brand experience.

4. **Prioritize Interactive Elements:** in the age of social media and digital interaction, incorporating interactive design elements can set your brand apart. Encourage audience participation through quizzes, polls, and interactive content, fostering a sense of connection.

**Recommendation:** Develop interactive features on your digital platforms to encourage user engagement, collect valuable insights, and create a more immersive brand experience.

5. **Optimize Typography, Color, and Content Structure:** the choice of fonts, color palettes, and content structure significantly influences brand perception. Ensure that these elements align with your brand identity and evoke the desired emotional response.

**Recommendation:** Regularly evaluate and update your typography, color schemes, and content layout to maintain visual coherence and resonate effectively with your target audience.

By implementing these recommendations, brands can strategically navigate the dynamic realm of graphic design in the digital landscape. Embracing adaptive, minimalist, animated, and interactive design elements, alongside optimizing typography and color, empowers brands to build a compelling and successful presence in the digital environment.

## 7. Conclusions

The conducted research has revealed a significant impact of graphic design on the success of brands in the contemporary digital environment. The analysis of key literature sources and the exploration of current trends in graphic design have provided deep insights into the mechanisms of forming a brand image and its interaction with the target audience.

The literature review indicates the diversity of approaches to investigating the influence of graphic design on brands. Works by authors such as Zihagh et al. (2023), Foroudi et al. (2022), and Zhao and Huang (2023) have become crucial sources of information regarding the importance of textual and visual elements for brand success.

Relying on the analysis of statistical data and expert assessments, the substantial impact of graphic elements on brand perception by the target audience has been confirmed. The findings of studies by Balmer and Gray (2003), Ewing (2006), and Magrath and McCormick (2013)

underscore the importance of creating aesthetically appealing and logically structured designs to enhance competitiveness.

Given the changes in the technological landscape and the growing significance of the digital environment, recommendations for the practical implementation of modern graphic design trends in branding strategies are identified as a key stage in ensuring brand success. The examination of these trends and their impact allows for the identification of optimal strategies to build a robust brand image and enhance its competitiveness.

In further research, it is recommended to explore the impact of graphic design on brands across different industries and sectors. Additionally, a more in-depth investigation of consumer reactions to emerging graphic trends is encouraged. This will contribute to a deeper understanding of the mechanisms of interaction between graphics and brand perception, which is crucial in the rapidly evolving digital landscape.

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## HARMONY OF LIGHT AND SHADOW: KEY ASPECTS OF LIGHTING IN PORTRAIT PHOTOGRAPHY

**Ruslana Buryk**

Student, School of Communications, Media, Arts, and Design,  
Centennial College, Toronto, Canada  
e-mail: [ruslana.buryk@ukr.net](mailto:ruslana.buryk@ukr.net), [orcid.org/0009-0005-6518-4538](https://orcid.org/0009-0005-6518-4538)

**Maryna Bratitsel**

Candidate of Cultural Studies, Lecturer at the Department of Hotel, Restaurant  
and Tourism Business, Kyiv National University of Culture and Arts, Ukraine  
e-mail: [frog2014137@gmail.com](mailto:frog2014137@gmail.com), [orcid.org/0000-0001-9206-3479](https://orcid.org/0000-0001-9206-3479)

### Summary

The article analyzes the role of lighting in portrait photography, emphasizing how the harmony between light and shadow can affect the emotional depth and visual appeal of an image. Photography, presented as an art and science of light, requires not only professional skills, but also the talent and skill of the photographer. The skill of a photographer lies not only in technical execution, but also in the ability to convey life and emotions through the image, revealing the true character of a person. Thus, a portrait photographer should be able to capture the soul and inner world of the model, which is a sign of his or her true skill. The article pays special attention to lighting under artificial lighting. It further discusses such aspects as distance between the subject and the light source, directionality of light, the size of light source and the distance to the subject, as well as the importance of shape of reflector. The different types of lighting in portrait photography are also discussed: back, side, front, diffused, and hard light, each of which affects the final image. The study includes analysis of current trends and innovative lighting techniques in portrait photography. It emphasizes the importance of the photographer's ability to use different light sources to create images that reflect uniqueness and personality of the model. This study aims to expand the theoretical knowledge and practical skills of photographers, striving to improve the quality and expressiveness of portrait images.

**Key words:** portrait photographer, artificial lighting, aperture, light rays, light experiment, illuminator reflector, natural details.

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### 1. Introduction

It is hard to imagine modern society without photography, which has become an integral part of our lives. Photographic portraits, including portraits of people, are everywhere – on advertising posters, in photo exhibitions, magazines, and even in our passports. Most of us have our own photo collections, with portraits of ourselves and our loved ones taking up a significant share. Photographic portraits are widely used in advertising, forensics, science, and journalism, and have become an integral part of our everyday lives. This is one of the reasons why the profession of photography, especially portraiture, is so popular. Photography is not only an art but also a science of light. This is especially true in portrait photography, where right lighting plays

a key role in creating an image (Douglas, 2011). In this article, we look at how the harmony between light and shadow can affect the emotional depth and visual appeal of a portrait, and analyze different techniques and approaches to lighting in portrait photography.

Photographic portraiture is a complex form of photographic art, but it has gained great popularity in our society, especially in the form of staged portraits. Masters in this field are valued for their ability to highlight advantages and minimize disadvantages in the images, meeting the needs of clients. Today, a simple camera can create an excellent portrait of a child, man, or woman. However, using expensive equipment does not guarantee success, and image editing programs cannot always correct imperfections or create a natural look. Photographic portraits are widely used in science, forensics, advertising, and glossy publications. This emphasizes that the profession of photography and the skill of lighting involves numerous complexities and important nuances (Fried, Shechtman, Goldman, & Finkelstein, 2016). It is important not only to capture a person's appearance, but also to convey a part of their soul, the sparkle in their eyes, and their sense of life through the photograph. The main task of a portrait photographer is to feel and capture a person's character, to find a way to adequately embody it in the picture. The ideal result is when physical and psychological images are harmoniously combined. The photographer's ability to convey model's inner world through the lens is his or her true merit.

The relevance of the study lies in the growing interest in portrait photography among both professional and amateur photographers. In today's world, where images are of great importance in social media, advertising, journalism, and personal creativity, the ability to work with light and shadow is an integral part of creating impressive portraits. Knowing and understanding the basics of lighting helps photographers express their ideas, emotions, and characters of models, emphasizing their uniqueness and individuality (Makedon and Ilchenko, 2021). Therefore, this study not only expands theoretical knowledge in the field of photography, but also has practical applications for those who seek to improve the quality and expressiveness of their portrait images.

The purpose of the study is to review and analyze the main aspects of light and shadow harmonization in portrait photography. We aim to identify how different lighting techniques affect the aesthetic and emotional aspects of a portrait, and how this can change the perception of the model's image. This research aims to combine theoretical knowledge and practical experience to develop a comprehensive approach to creating high-quality portraits using different lighting techniques.

Research objectives: 1) to study the basic principles of lighting, their influence on image formation, as well as the analysis of different types of light and shadows; 2) to conduct practical experiments with different light settings to determine their impact on portrait photography; 3) to study the impact of lighting on the emotional expression of portraits by analyzing how changes in lighting can affect the transmission of emotions and character of the model in the photo; 4) based on the obtained data, to formulate practical recommendations for photographers on the use of lighting to achieve the best results in portrait photography; 5) analysis of current trends in portrait photography: research of modern approaches and techniques in portrait photography, with an emphasis on innovative lighting methods.

## 2. Features of shooting under artificial light

There are certain nuances when shooting with artificial light. The distance between the subject and the light source is extremely important, and usually does not exceed a few meters. Any change in this distance directly affects the level of illumination of the object. This

illumination changes according to the square of the distance: for example, doubling the distance between the light source and the subject will result in a fourfold decrease in illumination. This pattern should always be taken into account when taking photos.

In addition, an important characteristic of light is its directionality. This aspect directly depends on both the size of the light source and the distance to the subject (*Mitsukova, Onykiyenko, 2020*). The following rule can be formulated: if the size of the light source is approximately equal to or close to the distance from it to the subject, the lighting will be soft and uniform; if the size of the light source is much smaller than the distance to the subject, such lighting will be directional (Table 1).

Table 1

**Size of the light source and distance from the source to the subject (Hameed, 2023)**

<b>The nature of lighting</b>	<b>The ratio of the size of the light source and the distance from the source to the subject</b>
Soft light-toned lighting without pronounced shadows	1:1
Soft lighting with subtle blurred shadows	From 1:1 to 1:3
Soft lighting with smooth transitions from light to shadows	From 1:3 to 1:6
Sufficiently contrasty lighting with fuzzy shadow contours	From 1:6 to 1:10
Contrast lighting with clear shadow boundaries	1:10

First of all, based on the data provided, it becomes possible to determine the required size of reflectors for lighting lamps to create the desired type of lighting. For example, to achieve a soft and diffused light that does not create harsh shadows on the face, you need to use reflectors which size is approximately equal to the distance from the lamp to the subject.

That is why professional photo studios and film sets use lighting fixtures with large radiating surfaces, often exceeding 1-2 meters in size, to create soft and diffused light. Conventional LED soffits provide such lighting only at a short distance of 30-70 cm; at a longer distance, the light becomes more focused and harsh. This is especially noticeable in the case of flash lamps, where reflectors are small – from 5 to 10 cm (*Jane, Fried, & Agrawala, 2019*).

The directionality of light flux depends to a large extent on the characteristics of the reflector surface that reflects the light. The smoother and more mirrored this surface is, the less light it scatters, which leads to a greater directivity of the light flux. The shape of the reflector is also important: deeper reflectors create a narrower beam of light. This effect is usually not so noticeable when using conventional incandescent bulbs, but when shooting with short-focus lenses and using a flash directly from the camera, the narrow light beam can lead to uneven lighting: the center of the image may be normally exposed and the edges underexposed.

However, soft and diffuse lighting has a drawback: illumination of the subject is reduced several times compared to direct light, which is caused by both light losses due to reflection (up to 50%) and the distance from the light source to the subject. Because of this, more powerful light sources must be used to create this type of lighting.

Instead of using a screen, wall, or ceiling as a reflector, you can use a special umbrella covered with a white, thick fabric. Thick satin silk or other similar fabric is best suited for this purpose. Such umbrella is held open on a tripod with a clamp. The light source is placed near the umbrella handle. When the umbrella is folded, it takes up little space, and can be quickly placed in the right place during the shooting process.



Creating a directional light beam is a much easier task. In order to do this, one can put a cylindrical tube made of thick paper or thin cardboard, the diameter of which corresponds to the diameter of the illuminator reflector, on the photo illuminator. The length of this tube is determined by the desired degree of directionality of the light rays, which is usually 50–60 cm. The inner surface of the tube should be covered with black paper to prevent light scattering (Lebedyeva, 2022). One can also use the illuminating part of a photomagnifier as a source of directional light.

### 3. Light sources in portraiture and their features

Light sources can be classified according to their direction and location relative to the subject and the photographer (back, side, front) and the state of the light source (diffused, directional, combined).

**Backlighting.** This type of lighting occurs when the subject is located between the light source and the photographer, for example, when the model is facing the photographer but with her back to the sun. To create the backlight effect, you need to use directional light in the frame, since it is impossible to achieve the desired effect with diffused light (Fig. 1).



**Fig. 1. Example of a portrait using backlighting**

Such type of lighting makes it easy to create contour images. Using this type of light in special atmospheres, such as fog or dust in the air, can create striking effects in the frame. This type of lighting is very attractive in terms of its ability to create images with a special mood, which can be tender, romantic, or fun, allowing to play with glare and reflections (Hirsch, 2017).

**Side light.** Side lighting means that the light falls on the object from the side. This type of lighting provides excellent contrast, creates long shadows, and gives the image a sense of depth. Side lighting is often used to create dramatic effects in architecture photography and portraits (Figure 2).

**Frontal lighting.** This is a type of lighting where the light source is placed directly in front of the subject and, at the same time, directly behind the photographer. When working with frontal light, one needs to be especially careful, because it creates almost no shadows (especially when the sun is above your head), the shots can be somewhat flat and shallow) (Fig. 3).

**Diffuse light.** This type of lighting is often found in cloudy weather conditions or at dusk. Diffused light is usually the most convenient to work with because it does not require complicated exposure settings – measurements can be taken at almost any illuminated point. It provides uniform illumination of the object, creates soft shadows, and helps to preserve detail in shadow areas (Fig. 4) (Horevalov, Zykun, 2020).



**Fig. 2.** An example of a portrait using side lighting



**Fig. 3.** An example of a portrait using frontal lighting



**Fig. 4.** An example of a portrait using diffused lighting

As a disadvantage of diffused light, many people point out that sometimes the object may not look three-dimensional due to the low contrast level in the image, especially in landscapes. However, it is important to keep in mind that it all depends on the purpose of the shot and the atmosphere you want to recreate. Diffused light is ideal for creating images that are not overly dramatic, but have a lot of detail.

When shooting outdoors, it is harder to control diffused light than indoors. When taking pictures near a window, one can work with both frontal and soft side lighting. Although this type of lighting is less suitable for backlighting, it can also be used to create soft images with vaguely defined contours (Lu, & Liu, & Bai, 2022).

**Hard light.** Hard sunlight is the lighting that occurs when the sun is at or near its zenith. This means that the light source is located directly above the object or slightly to the side of the top (Figure 5).



**Fig. 5. An example of a portrait using hard lighting**

This type of natural light can be difficult to work with. It is harsh, creates sharp shadows in which details can completely disappear, and often there is a problem with exposure measurement: black “dips” in shadow areas are possible. Also, this light often causes overexposure. However, this has its advantages. First, the same hard shadows can sometimes add extra volume to the frame, dividing it into visual layers. Secondly, these shadows can achieve very interesting effects: for example, if you place the subject at the same level as the background, you can get a distinctly “flat” and graphic shot, as if drawn with a pencil on paper. Such lighting is well suited for creating stylish and contrasting fashion portraits (Doble, 2013).

**Light at dawn or sunset.** This type of lighting is a favorite of many photographers. It can be observed about an hour after sunrise and an hour before sunset. At this time, the sun is low above the horizon, the light has a warm orange-golden color, and the shades in the photos are bright and saturated. The shadows in this lighting are long and soft, they fall more beautifully than during the midday hours (Fig. 6).

This type of lighting allows you to create portraits that look bright, warm, and three-dimensional. Sometimes it can be difficult to measure exposure due to possible overexposure. Thus, when shooting in natural light, it is important to remember that the direction of light depends on the position of the sun.



**Fig. 6. An example of a portrait using light at dawn**

Diffuse light. Stray light often creates “flat lighting,” which can be unattractive for a shot because it muffles glare and creates indistinct shadows. If you place the light source behind your back, you can get a very brightly lit subject. It is important to choose the right shooting angle relative to the light source. By experimenting with changing the angle between the subject and the light source during shooting, you can achieve desired results. Ideal natural light is achieved when it is positioned behind the subject at a certain angle, creating a striking effect on the image. In most cases, this requires the use of reflectors or light reflectors.

Transillumination. This lighting method can also be effective. In this case, light passes through translucent objects, creating a unique effect (*Karmazina, 2020*). This is especially effective with portraits such as those surrounded by blond hair or leaves that become almost transparent when exposed to light (Fig. 7).



**Fig. 7. An example of a portrait using transillumination**

Window light is a light source that can transmit a significant amount of light that can be easily controlled. Using such lighting helps to achieve the right balance between light and dark areas in a photo.

When taking photos, it is important to maximize the use of natural light. Many professional photographers use artificial light sources even when shooting outdoors. This emphasizes the fact that lighting is one of the key elements in photography. For portrait photography, it is recommended to choose the brightest places, but it is important to remember that the light should be soft and diffused. Another important aspect is to avoid taking portraits outside at

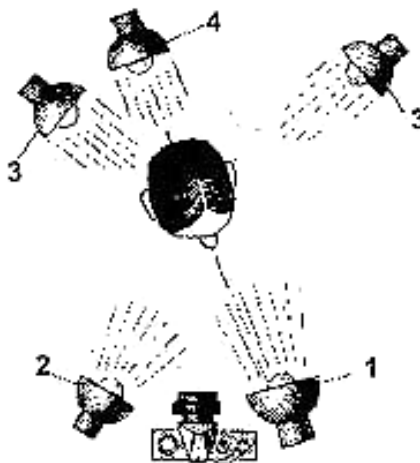
noon. The southern sun standing high in the sky, especially in a city with little greenery and shade, can create too much contrast. Such lighting with its rough light and shadow pattern can easily ruin the image of even the most beautiful model. If you have the opportunity to work with a model outdoors in the early morning or late afternoon, you should definitely take advantage of it. During such time of the day, the lighting becomes especially soft and inviting, creating a charming chiaroscuro pattern on the face. It is not for nothing that the hours of sunrise and sunset are called the “golden hour” in photography (Kotliar, and Zaspá, 2021).

When taking a portrait indoors, such as in a room, place the model as close to a natural light source as possible, such as a window. You can also use additional lighting from artificial sources. However, much depends on the budget and availability of lighting equipment. Do not forget about weather protection. When shooting outdoors, there is always a risk of unexpected weather changes, such as sudden rain. You should consider shelter, such as cafes, shops, bridges, or underpasses. However, in nature, bad weather can sometimes become not an obstacle but an auxiliary element in creating a unique portrait, where rain is one of the key elements. Much depends on the photographer’s creativity and imagination.

#### 4. Features of artificial lighting when shooting a portrait

The light source that forms the main light and shadow pattern on the face of the person being photographed is called the “drawing” light source. It is always located in the anterior hemisphere relative to the face, meaning that the person can see it without turning their head. The main property of the light from this source is the way it distributes light and shadow areas on the face.

Of course, even if several lighting devices are used in portrait photography, there is always only one “drawing” light source. Its use significantly changes the nature of the lighting, and turning on or off other light sources with the active “drawing” source does not affect the overall nature of the lighting (Vershovs'kyj, 2010).



**Fig. 8. Specific technical features of artificial lighting during portrait shooting (1 – drawing light, 2 – filling light, 3 – modeling light, 4 – backlight) (Zhang, 2018)**

Lighting from the front and side and slightly from above is considered the most familiar to our perception, and also best emphasizes the three-dimensional shape of the face. Therefore, the “drawing” light source is usually located at or above the face of the portrait subject, in front of it along the line of symmetry or within 60 to 70 degrees to the right or left of this line. It is this placement of the light source that provides the effect of front, top, and side lighting.

Even within the above parameters, there are many options for placing lighting fixtures in space. The positioning of this lighting device in the horizontal plane depends on the shape and volume of the face. The more the nose protrudes and the deeper the eyes are located, the closer to the line of symmetry of the face the drawing light source should be located. Of course, a lot depends on the angle: the most noticeable relationship between the shape of the face and the position of the light source is observed in full-face photography, and the least in profile photography (Zhang, et al. 2021).

Despite the creative nature of the process of creating a light and shadow pattern on the face, there are proven techniques for the optimal location of the drawing light source. For example, if the illuminator is located along the line of symmetry of the face, its height is determined by the length of the shadow under the nose – it should not exceed half the distance from the nose to the upper lip, as well as by the illumination of the eye sockets – it is desirable that the upper eyelids are illuminated. When the light source is positioned anteriorly and laterally, its height and position are usually adjusted so that the shadow from the nose crosses the cheek that is further away from the light source, leaving a light spot on its upper part. Portraits where the nose shadow crosses the lip line and the eyes are in shadow do not look very aesthetically pleasing. However, this distribution of chiaroscuro can be used to achieve certain artistic effects (Ozimek, Lainas, Bierhoff, et al., 2023).

When taking portraits, relative position of the camera and the main light source is important. If they are located on the same side of the symmetry line of the photographed person's head, the part of the face looking at the camera will be more illuminated. In this case, as with all types of front lighting, the volume and shape of the face in the photo may appear less defined and flattened. If the camera and the main light source are on opposite sides of the head symmetry line, the part of the face facing the camera will be in shadow, and the three-dimensional shape of the face will be better reproduced in the photo.

Thus, we conclude that one needs at least one lighting device – a source of background lighting – when taking portrait photos. This device can be of any type, depending on the creative task facing the photographer. Illumination of the background compared to the illumination of the face can vary widely. For example, to get a completely white background without details, its illumination should be 0.5 to 1.5 stops higher than the illumination of the lightest part of the face. If the background illumination is 2 stops higher than the face illumination, the face may blend into the background. On the contrary, if the background illumination is 1-2 stops lower than the face illumination, the white background in the image will look gray (Khynevych, Sklyarenko, Slityuk, 2022).

Using only a pure white or completely black background in portraiture is only one way to organize the background. Often, uneven lighting of a light background helps to better highlight the human figure against this background. For example, if the more illuminated side of a portrait face is more visible, it is desirable to project it onto the less illuminated part of the background. This not only creates a greater volume of the image, but also forms a rhythmic pattern of alternating light and dark areas.

A detailed light and shadow pattern of the background is usually undesirable, as it can distract attention from the main object of the image – the face of the portrait subject. In addition, light or dark areas of the background can create unexpected and strange patterns, merging with

the image of a person. Therefore, considerable attention should be paid to the organization of the background during portrait photography. It is worth remembering that a dark object against a light background is visually perceived as smaller than it actually is, and vice versa, a light object against a dark background appears larger (Andhika Putra Herwanto, 2020). For example, a person wearing light clothes against a dark background will look larger and more massive. Likewise, a face with large, expressive features looks better against a dark, neutral background, giving a calmer impression.

When photographing delicate female faces, especially those of blondes, it is advantageous to use a light background. In such cases, the overall tone of the picture, as well as the lighting and color of the clothes, should be light, without deep dark shades and shadows. Light and bright lighting is best. When setting up lighting devices, it is important that the light covers all parts of the face and figure as much as possible, while being as diffused as possible. Therefore, in such shooting conditions, you should either bring the main light source as close as possible to the camera lens, intensively highlighting the resulting shadows with diffused supplementary light, or use screens or umbrellas as illuminators that effectively diffuse light and are proportional to the distance from them to the model.

In order to get interesting effects, try placing the light source behind the model or behind an object in the frame (for example, behind a tree leaf), minimize the background, and adjust the exposure to match the illumination of the model's face. Play with angles to affect the distribution of glare in the frame. Although sometimes glare can be an undesirable side effect, reducing the contrast of the image, as in the case of backlighting. Thus, we can conclude that natural light is better at conveying a certain mood, so it is important to be able to use all its capabilities and adjust the time and style of shooting depending on the original idea and the tasks at hand.

## 5. Conclusions

Summarizing research, we can highlight the main aspects and features of shooting under artificial light. Important factors are the distance between the object and the light source and the directionality of the light. Changing the distance between the light source and the subject directly affects the level of illumination, changing in proportion to the square of the distance. It is also important to understand how the size of the light source affects the nature of the lighting – soft light is achieved when the size of the light source is approximately equal to the distance to the subject.

It is also important to be careful when organizing background for portraiture. Using only a white or black background is only one option. Uneven lighting of a light background can emphasize the model's figure, and using different levels of background illumination can achieve different visual effects. When shooting with artificial light, special attention should be paid to the "drawing" light source, which forms the main light and shadow pattern on the face. Its location and height should be carefully considered to achieve the desired result.

The peculiarities of portrait photography are to take into account specifics of the subject, such as delicate female faces or blondes, and to use a light background to achieve a light tone of the image. The conclusion of the study emphasizes the importance of the photographer's ability to adapt to different lighting conditions and use a variety of light sources to achieve a spectacular result in portrait photography. It is important to take into account not only the technical aspects of lighting, but also the aesthetic side of shooting, when focusing on specific tasks and ideas.

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## CRISIS MANAGEMENT OF AN EDUCATIONAL INSTITUTION IN CONDITIONS OF MARTIAL LAW

**Yevheniia Hrevtseva**

Candidate of Science in Public Administration, Associate Professor,  
Associate Professor at the Department of Education Management and Psychology,  
Zaporizhzhia Regional Inservice Teacher Training Institute, Ukraine  
e-mail: kealex@ukr.net, orcid.org/0000-0002-8777-3043

**Tetiana Kravchenko**

Candidate of Science in Public Administration, Associate Professor,  
Associate Professor at the Department of Education Management and Psychology,  
Zaporizhzhia Regional Inservice Teacher Training Institute, Ukraine  
e-mail: november74t@gmail.com, orcid.org/0000-0003-0436-0882

### Summary

The article reveals the peculiarities of crisis management of educational institutions in conditions of martial law. The current state of functioning of educational institutions in Ukraine is analyzed. The problems of educational institutions that have arisen as a result of Russia's armed aggression against Ukraine are outlined. An analysis of the research of Ukrainian scientists on the problems of crisis management of educational institutions in wartime is carried out. The essence of the concept of "crisis" is revealed, the causes, factors, symptomatic indicators and consequences of the social crisis in Ukraine are determined. The purpose of anti-crisis management of an educational organization and the peculiarities of performing the main management functions (planning, organization, motivation, control) in the context of the crisis associated with military operations on the territory of Ukraine are outlined. The ways to ensure the results of the educational institution's activities in the context of crisis in the context of systemic and crisis management are revealed. An algorithm for creating an anti-crisis management plan for an educational institution is proposed. Examples of the use of tools for analyzing the impact of environmental factors on the activities of an educational institution, projecting potential risks and threats are given. An indicative list of tasks of the crisis management team of an educational institution is presented. Attention is focused on the importance of the psycho-emotional state of teachers and support staff and the main tasks of the manager to maintain the microclimate in the team during the war.

**Key words:** crisis management, educational institutions, martial law, management functions, anti-crisis plan, risks, threats.

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### 1. Introduction

In the context of the military aggression of the Russian Federation, Ukrainian education has suffered losses that have significantly affected its subjects, infrastructure, and functioning mechanism (*Ministry of Education and Science of Ukraine, 2023*).

According to experts of the KSE Institute's project "Russia Will Pay", the education sector is one of the most affected. As of the beginning of September 2023, this sector was damaged

in the amount of \$10.1 billion as result of the war. Compared to June 2023, this amount has increased by more than \$400 million. The total number of damaged and destroyed educational facilities already exceeds 3,500, including more than 1,700 secondary schools, more than a thousand preschools, and 586 higher education institutions (KSE, 2023). In particular, as of the end of October 2023, 3,793 educational institutions were bombed and shelled, of which 3,428 were damaged and 365 were completely destroyed. Most damaged and destroyed educational institutions were registered in Donetsk region. Kharkiv, Kherson, Dnipro, Mykolaiv and Zaporizhzhia regions also suffered significant losses (*saveschools.in.ua*).

The destruction and losses in the educational infrastructure were caused by hostilities, during which schools were directly targeted or suffered collateral damage, as well as looting. Destruction occurred as a result of direct hits by shells or bombs, shrapnel and shell fragments, and fires. In addition to school buildings, school property and buses were also destroyed, damaged and/or stolen. Therefore, even in cases where school buildings and territories were not damaged or moderately damaged, the loss of property limits the return to full-time education, even when the security situation allows it (*Cedos, 2023*).

Today, the educational process in Ukraine takes place offline, online, or in a mixed mode. Forms of education in educational institutions are determined by regional military administrations on the ground, taking into consideration the security situation. According to a survey conducted by the Ombudsman's Office in the summer of 2023, majority of parents were in favor of full-time education for their children.

Of course, full-time education is the most desirable and effective form of education, and it also has a social component. However, to ensure it, it is necessary to consider the availability of protective structures in educational institutions and possibility to interrupt the educational process in the case of an air raid alarm.

Due to the increase in defense spending and funding for the Ukrainian army, spending on education has been reduced. Overall, in 2022, consolidated budget expenditures on education amounted to UAH 290.76 billion (6.2% of GDP), and in 2023 – UAH 302.25 billion (4.8% of GDP).

Changes in the form of education, the transfer of institutions from full-time to distance and blended learning, unstable conditions for organizing the educational process (air raids, power outages, Internet interruptions) – all this has affected the learning outcomes of students and led to losses in the educational process. The problem of educational losses is real and is likely to only get worse due to the difficult conditions for children's education during martial law.

It should be noted that secondary education is an important public good and a right guaranteed by the Constitution of Ukraine. Restoring access to it is one of the state's priorities. Teachers and school administrators, representatives of central and local authorities, as well as Ukrainian and international organizations, have already begun work to restore educational infrastructure, the educational environment, and learning opportunities in general (*Cedos, 2023*).

At the same time, it should be noted that Russia's military aggression against Ukraine continues, and no military expert or war analyst can predict how long it will last. Considering this, there is a high probability that the problems of functioning of educational institutions will only get worse. Therefore, in our opinion, the issue of crisis management of educational institutions is becoming more and more relevant in today's conditions.

The **purpose of the article** is to outline the peculiarities of crisis management of educational institutions under martial law.

## 2. Analysis of recent research and publications

Certain aspects of crisis management of educational institutions have been currently broadly discussed in academics.

Scientists S. Markova, O. Holovan and A. Khmelnytskyi focus on the practical aspects of conducting an internal audit of the development of the environment of an educational institution (educational and upbringing) and the development of an anti-crisis strategy for the development of the institution with the definition of markers by which the results of the relevant system will be evaluated (*Markova, Holovan, Khmelnytskyi, 2022*).

V. Baidyk and O. Kliuchka reveal the psychological aspect of crisis management in an educational institution in wartime. In particular, the researchers define the peculiarities of managing an educational institution in the context of hostilities in Ukraine with an emphasis on the personal characteristics of the head; identify effective styles and methods of management during crisis events; outline practical psychological advices on supporting the teaching staff in a difficult time of uncertainty (*Baidyk, Kliuchka, 2022*).

O. Zavhorodnia, L. Kozyrieva and S. Hil reveal practical methodological steps to form the basis of crisis management in secondary education institutions under martial law, provide recommendations for the actions of the head of an educational institution in a crisis situation, under the war conditions in particular (*Zavhorodnia, Kozyrieva, Hil, 2023*).

L. Vozniuk and O. Dobrohorskyi reveal the main content of the activities of an education manager under martial law, actualize the need to solve problems related to the management of teaching staff under martial law, adaptation of students (internally displaced children, in particular ) to new learning conditions, professional development of teachers under martial law (*Vozniuk & Dobrohorskyi, 2022*).

O. Poliak in her study focuses on the innovative activities of the head of an educational institution in the context of crisis management (*Poliak, 2022*).

T. Bondarieva's research is devoted to the crisis management of an educational institution under occupation and blockade. In particular, the researcher presents a project on a specific example of crisis management of an educational institution that was under absolute blockade and occupation for 200 days, and after de-occupation is located in a particularly dangerous territory and is involved in direct hostilities (*Bondarieva, 2023*).

O. Kotenkova and M. Maksymenko in their study analyze the legal support for the effective management of an educational institution of Ukraine in wartime, which, according to the authors, consists of the effective use of situational management and elements of crisis management (*Kotenkova & Maksymenko, 2023*).

Despite the existence of a solid scientific body of work on the issues of crisis management of educational institutions, in our opinion, this issue requires further systematic study in order to develop clear recommendations for planning educational activities in times of crisis.

## 3. Causes, factors, symptomatic indicators and consequences of the social crisis in Ukraine

The current realities of Ukrainian society, in general, and education, in particular, are marked by the features of a systemic social crisis that has arisen in the situation of war and social risks, the deepening of which provokes further escalation of the military conflict. The situation is complicated by the uniqueness of the socio-political situation and the lack of analogues

and experience (except for the experience of Israel) of its immediate diplomatic solution and the developed methods of establishing stable economic activity, including educational, in the circumstances of active hostilities, bombing of civilian settlements and occupation of certain territories.

In the context of our study, we understand a crisis as an extreme aggravation of contradictions in a socio-economic system that threatens its sustainability in the environment. A sharp change in the normal state of affairs; a breakdown, aggravation of the situation (*sum.in.ua*). The existence of a social crisis is evidenced by the presence of such signs as a sharp change in the life of society, uncertainty and difficult predictability of the future, a new reality in the understanding of the concept of "security", and the traumatic impact of events on the psyche of every member of society.

Referring to the classification of common causes of social crises, we note that the main feature of the onset of a social crisis is the violation of the integrity and instability of forms and relationships within society and its subsystems, which destroys the normal state of life of all members of society. This description perfectly characterizes the current state of social relations in the Ukrainian community. However, it should be noted that crisis phenomena are an integral element of social development of a metamodern society, which is characterized not only by the presence of a plurality of views, but also by the possibility of making various management decisions taking into account the changing external environment.

The cause of the current social crisis in Ukraine is the military aggression of the Russian Federation, as an external objective cause independent of the subjects of educational activity. The factors of the crisis are military actions or occupation of the territory where the educational institution is located and all other events that arise as a result of these circumstances. Symptomatic indicators are determined by the termination or change in the forms of educational services, evacuation of students, teachers and support staff, reduction of funding, emergence of additional functional responsibilities and new public roles, etc.

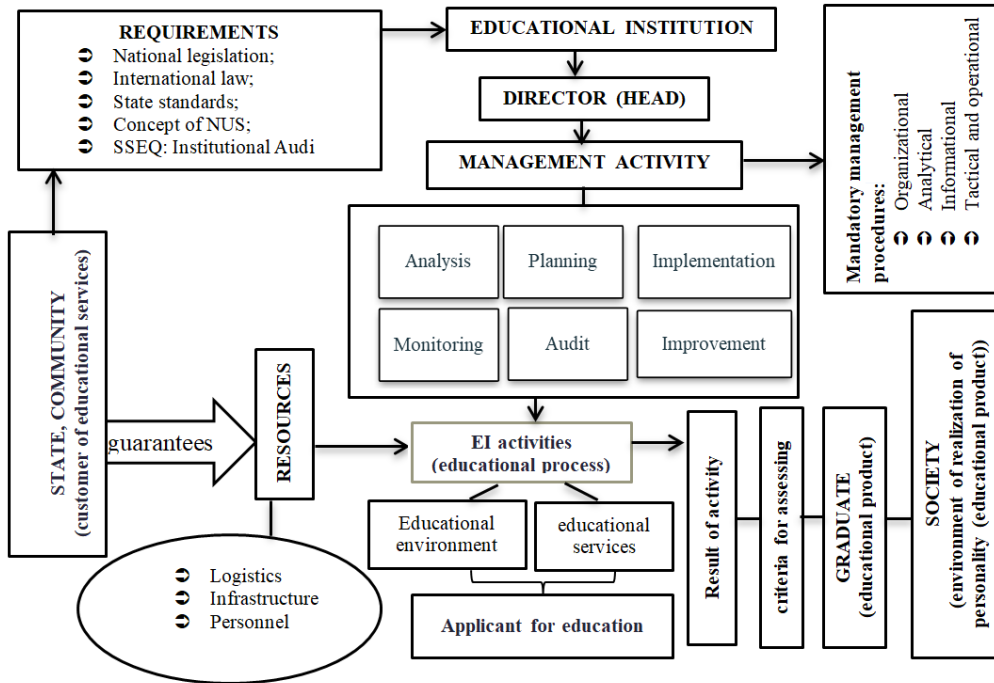
The consequences of the crisis in the context of the aggressive influence of the modern external environment in Ukraine are predicted at the level of probable determination, namely: deepening of crisis phenomena, sharp exacerbation of the crisis, the possibility of transition to a long-term and indefinite period, sharp uncontrolled changes, signs of systemic changes, careless changes, irreversible changes, destruction of the educational organization.

Regulatory and legal support for the activities of an educational institution under martial law is based on national legislation on activities under martial law, in particular, the Law of Ukraine "On Approval of the Decree of the President of Ukraine "On the Introduction of Martial Law in Ukraine" (2022, 24 February), the Law of Ukraine "On the Organization of Labor Relations under Martial Law" (2022, 15 March), and all sectoral regulations taking into consideration the requirements of wartime.

#### **4. Implementation of crisis management tools in the activities of an educational institution**

The activities of a modern educational institution in the context of war require changes in the forms, methods and tools of management. The most appropriate in the conditions of martial law is the introduction of mechanisms for crisis management of an educational organization. The purpose of crisis management is to ensure the results of the activities of an educational institution, whether planned or accidental, through reasonable and productive organizational

activities, by attracting the available resources of an educational organization on the basis of effective people and information managing (communication) (Fig. 1). This goal is realized in the context of achieving the most appropriate balance between the requirements of the state and martial law and the personal qualities of the head, taking into account his/her professional and personal maturity – competence and experience, and the readiness of the team – teachers and support staff – to cooperate.



**Fig. 1. Ensuring the performance of an educational institution in a crisis in the context of systemic and crisis management**

\*Source: developed by the author

The process of implementing crisis management tools in the activities of an educational institution is accompanied by an analysis of the forms and methods of pre-crisis management and the formation of the head of an educational organization's vision of post-crisis management mechanisms, in fact, his vision of restoring the viable functioning of the educational process after the end of hostilities.

The content of pre-crisis management of an educational institution in peacetime was based on the following components:

- determination of the system of activity goals;
- search for resources for the formation of educational potential and their distribution in accordance with the tasks set;
- determination of norms, performance criteria and limitations related to the management process.

The management of the educational organization was guided by the fundamental principles of management and the requirements of the Concept of the New Ukrainian School, including:

- focus on the needs of parties concerned (participants in the educational process, society);
- distributed leadership and participatory management;
- application of modern approaches and innovative technologies in the organization of the educational process;
- continuous improvement;
- team approach to decision-making;
- mutually beneficial cooperation with the founder, society, and public authorities.

The presented principles have not lost their relevance under martial law and are the basic elements of crisis management of an educational institution. Such important functions as planning, organization, motivation, and control are integral components of the crisis management of an educational institution.

The planning function, in our opinion, is the most difficult in the context of uncertainty and risks caused by military actions due to the Russian invasion of Ukraine. Under such conditions, the planning function is associated with the process of setting goals for an educational institution in the context of changes that have already taken place, as well as taking into consideration potential risks and threats; developing strategies and programs for crisis management; determining the need for resources to ensure their implementation. When managing an educational organization in a crisis, the role of operational planning and decision-making, taking into account the current situation, increases dramatically. Strategic long-term planning due to changing environmental conditions and the presence of unforeseen events fades into the background. Operational planning takes place, taking into account the current situation for a short-term period (month, week, day).

### **5. Algorithm for creating an anti-crisis management plan for an educational institution**

In our opinion, special attention should be paid to the development of an anti-crisis management plan for an educational institution that would consider potential risks and threats and contain clear instructions for responding in the event of their occurrence with a list of responsible persons. We suggest that the process of developing an anti-crisis plan be carried out according to the following algorithm:

**Step 1.** Analysis of the impact of environmental factors on the activities of the educational institution. Projection of potential risks and threats.

It is advisable to analyze the impact of environmental factors on the activities of an educational institution using the PEST analysis method. This is a tool that assesses the political, economic, socio-cultural and technological factors that affect the development of an educational institution.

The *political factor* is studied in order to have an idea of the general state policy in the field of education, strategic vectors of education development at the state, regional and local levels, and regulatory and legal support for education.

The *economic factor* determines the factors influencing education related to the economic situation in the country, in particular, the amount of expenditures of the consolidated budget of Ukraine on education, the level of salaries of pedagogical staff, the distribution of educational subventions, the availability of additional sources of funding for educational institutions, per capita income, etc.

The *socio-cultural factor* is related to the study of the specifics of the labor market in the field of education, the number of students and their parents; infrastructure of the territory where the educational institution is located; the demographic situation in the country; the impact of processes related to the spatial movement of the population (both within the country and abroad), etc.

The *technological factor* provides an analysis of the level of scientific and technological progress, digitalization of education, availability of innovative technologies that can be used in the educational process in order to modernize the educational service delivery system in a timely manner.

In today's conditions, the negative factors within the political, economic, socio-cultural and technological factors that influence (or will potentially influence) educational institutions include (Table 1):

Table 1

**PEST-analysis of environmental factors that negatively affect/potentially affect the activities of an educational institution (example)**

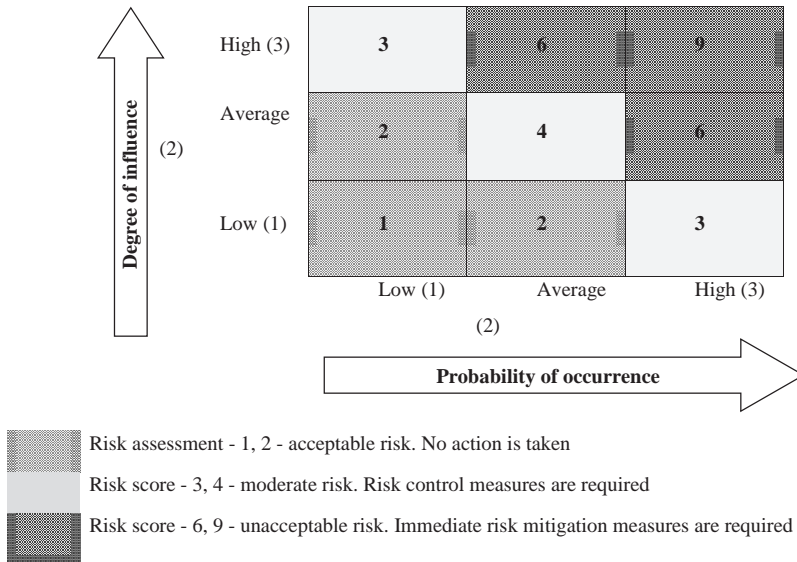
<p style="text-align: center;"><b>Political</b></p> <ul style="list-style-type: none"> <li>– change in the institutional and legal framework for ensuring the educational process in the face of challenges caused by the armed aggression of the Russian Federation against Ukraine;</li> <li>– lack of an anti-crisis strategy for the development of education in the community;</li> <li>– incompetence/lack of support of educational institutions by local authorities</li> </ul>	<p style="text-align: center;"><b>Economic</b></p> <ul style="list-style-type: none"> <li>– large-scale destruction of educational infrastructure: damage to educational institutions, material and technical facilities, training and production bases of practice;</li> <li>– reduction of state and local budget expenditures on education;</li> <li>– lack of opportunities for some families to purchase digital equipment for distance learning</li> </ul>
<p style="text-align: center;"><b>Socio-cultural</b></p> <ul style="list-style-type: none"> <li>– threat to the life and health of participants in the educational process, restriction of access to basic human needs;</li> <li>– forced large-scale displacement of participants in the educational process within Ukraine and abroad, which leads to significant losses of students and teaching staff;</li> <li>– severe psychological state of participants in the educational process</li> </ul>	<p style="text-align: center;"><b>Technological</b></p> <ul style="list-style-type: none"> <li>– exacerbation of the problem of access to education due to interruptions/absence of electricity, instability/absence of the Internet and mobile communication;</li> <li>– aggravation of the problem of ensuring the continuous professional development of pedagogical staff related to power outages/absence, instability/absence of the Internet and mobile communication;</li> <li>– organization of the educational process through distance learning.</li> </ul>

*\*Developed based on the source (Shkarlet, 2022)*

It should be noted that these factors may differ significantly for educational institutions depending on their location (relatively safe areas, frontline territories, temporarily occupied territories, areas of active hostilities).

To analyze the risks, it is advisable to build a map (Fig. 2).





**Fig. 2. Building a strategic risk map**

**Step 2.** Determine the list of legal acts regulating the activities of the educational institution under martial law.

In addition to the laws mentioned above, the regulatory framework governing the activities of educational institutions under martial law should include: The Law of Ukraine "On Amendments to Certain Laws of Ukraine in the Field of Education", the Law of Ukraine "On Amendments to Certain Laws of Ukraine on State Guarantees in the Conditions of Martial Law, Emergency or State of Emergency", explanations of the Ministry of Education and Science of Ukraine on the operation of educational institutions under the legal regime of martial law, recommendations of the State Education Quality Service on the operation of educational institutions under martial law, in difficult situations, etc.

**Step 3.** Identify areas of the internal system of quality assurance that need to be adjusted in the context of the crisis.

Despite the difficult situation in Ukraine due to military operations on its territory, the focus of educational institutions on providing quality educational services remains unchanged. At the same time, external challenges and threats caused by the war leave their mark and lead to consequences that have a powerful negative impact on the internal quality assurance system in educational institutions. Therefore, the anti-crisis plan should also take into account the provisions that will allow maintaining the proper level of quality of educational services under martial law.

**Step 4.** Formation of an anti-crisis team of the educational institution and determination of its main tasks. For example, the tasks of the crisis management team include:

- identification of key problems and available resources to address them;
- discuss and design possible scenarios for responding to a crisis situation (adaptation to a specific situation);
- determining the need to involve external experts in the crisis team, establishing team interaction;

- development of protocols of actions in crisis situations;
  - identification of funding sources, search for additional resources;
  - familiarizing participants of the educational process with the protocols of actions in crisis situations;
  - conducting briefings and training, selecting the necessary educational and methodological literature;
  - development of a mechanism for synchronizing actions in crisis situations with participants in the educational process;
  - implementation of a plan to eliminate the crisis and return to a stable state;
  - implementation of the plan to eliminate the crisis and return to a stable state;
  - evaluation of the results of crisis management;
  - adjusting the crisis management plan and crisis action protocols (if necessary).
- The crisis management team may also include external experts (Table 2).

Table 2

**External specialists who may be involved in the crisis management team (example)**

External experts	Expected contribution to the activities of the crisis management team	Ways to involve external specialists in teamwork
<i>Employee of the State Emergency Service</i>	Assist in the development of emergency protocols.	Conducting briefings and training
<i>Police officer</i>	Assist in the development of action protocols in crisis situations, including those related to violations of the law, etc.	Conducting briefings and training
<i>Medical worker</i>	Assistance in developing protocols for providing medical care to participants in the educational process.	Conducting trainings
<i>Lawyer</i>	Tracking the legitimacy of anti-crisis measures	Providing legal advice

**Step 5.** Identify sources of funding to support the anti-crisis management plan of the educational institution. Search for additional resources.

**Step 6.** Developing an anti-crisis management plan for an educational institution.

**6. Other functions and tasks of the management of an educational institution in the context of crisis management**

All the steps outlined in the anti-crisis planning of an educational institution are intertwined with other management functions – organization, motivation and control.

The *function of organizing* the activities of an educational institution in wartime is related to the formation of the optimal structure and amount of available funding, management apparatus and staffing for the effective use of labor, material and financial resources within the functioning of the educational institution. The organization of the activities of an educational institution during anti-crisis measures also involves providing conditions for the creation of a permanent anti-crisis team or temporary headquarters, which may include various subjects of the educational process, external specialists and other stakeholders united by a common goal.

*Motivation* is an important functional component of crisis management at the current stage of development. In the context of crisis management, motivation is seen as a system of incentives that creates the interest of the staff as a whole and each teacher in particular in improving the quality of educational services and the efficiency of the educational institution in order to overcome the crisis phenomena arising from the military situation as soon as possible.

Undoubtedly, the *function of control* is not the least important. However, control as a component of effective crisis management is changing its vector and becoming a tool for predicting deviations from the goals set out in the Development Strategy of an educational institution for timely operational adjustments aimed at improving the effectiveness of anti-crisis measures.

An urgent and fundamental issue of crisis management and the effective functioning of an educational institution in times of war is the psycho-emotional state of teachers and support staff. In this direction, crisis management requires a high level of environmental friendliness of communication and fulfillment of the manager's obligations to the staff, namely:

- using his/her legal powers and levers of influence to maintain staff and salaries;
- creating conditions for effective interaction of the staff of the educational institution, in particular with the use of online technologies;
- focusing on the most important and priority tasks of the educational institution in order to effectively plan their implementation and reduce the workload on the staff by postponing those tasks that are not strategically important and can "wait";
- support for the initiatives of teachers and the morale of each member of the staff;
- acceptance and understanding of the value of each employee, regardless of their choice of location and forms of activity;
- formulation of new adequate goals of educational activities, taking into account the current context of the external environment;
- creating a unifying sense of the existence of an educational organization to achieve a national result.

## 7. Conclusions

Thus, the functioning of Ukrainian educational institutions in today's conditions is characterized by a number of negative phenomena and problems caused by Russian armed aggression. The situation is complicated by the fact that military operations on the territory of Ukraine continue, which exacerbates existing problems and makes new challenges more likely. The uncertainty of the situation makes long-term strategic planning of educational institutions impossible. Under these conditions, it is advisable to focus the attention of educational managers on setting operational tasks and developing an anti-crisis management plan for the educational institution.

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## THE THEME OF THE DEPORTATION OF CRIMEAN TATARS IN POPULAR SONGS

**Mariia Kuleshir**

Lecturer, Kyiv National Linguistic University, Ukraine

e-mail: maria\_kuleshir@ukr.net, orcid.org/0000-0002-6538-8857

### Summary

In the article an attempt of the analysis of two songs composed and performed by Jamala, a Ukrainian singer of Crimean Tatar origin, has been made. The songs under the study – ‘1944’ and ‘The way home’ – are both dedicated to the deportation of Crimean Tatars in 1944. The annexation of Crimea in 2014 forced many Crimean Tatars to leave the peninsula as protestors against Russian colonial regime were persecuted, threatened, killed. Jamala together with her dissident compatriots had to leave their ancestors’ land in 2014. Crimean Tatars including the singer’s grandparents underwent ruthless mass deportation in 1944. Jamala like other Crimean Tatars of her age represents the generation who were born in deportation, returned home and were doomed to experience the repeat of the forced exile. The singer knows the tragic collisions of her family history from her parents and grandparents who passed down to her their invaluable legacy – Crimean Tatar language, traditions, stories, memories, music, songs – the core of their identity. Jamala and her family are the witnesses and keepers of historical truth and authenticity which serves the foundation for the investigated texts.

**Key words:** colonialism, totalitarianism, ethnic groups, identity, memory, home, 1944, Jamala.

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### 1. Introduction

The Ukrainian popular song sensitively reacts to the warfare events in our country. Ukrainian performers take an active part in charitable and humanitarian activities aimed at providing material and financial assistance. Some singers also joined the ranks of the Armed Forces of Ukraine. The influence of a song, in particular a popular song, is great, so almost all Ukrainian artists are actively working to bring victory closer. They produce content that gives Ukrainians the opportunity in difficult wartime to reflect on the real traumatic experience of wartime reality, to comprehend the large-scale tragedy at the epicenter of which is Ukraine and the Ukrainian people. The representation of war by all possible means of culture and art, among which literature occupies a prominent place due to the multifaceted possibilities of textual expression and image, is a necessary, natural reaction of the actors of the cultural front, the purpose of which is to create a high-quality, authentic aesthetic multifunctional narrative, which has, among others, a powerful cathartic and therapeutic effect.

**The aim of the article** is to reveal the interdisciplinary aspect of two popular songs created and performed by ‘the voice of the deported Crimean Tatars’ Jamala: ‘1944’ and ‘The way home’. The interrelation between history and literature has been acquiring special attention recently in Ukrainian literary and culture studies. This fruitful and relevant interaction of these two powerful fields of humans’ knowledge and experience has been **the focus of attention of many researchers** to name a few: N. Honcharenko, N. Horbach, O. Puchonska. Jamala’s

interviews became a trustworthy documentary source in terms of understanding the messages incorporated in her songs and the authentic background which stipulated their production. The works of S. Mallett, R. Friedman contributed to the interpretation of the symbolic images represented in the songs. The works by the historians O. Bazhan, K. Korostelina, V. Marayev, P. Potichnyi dedicated to the topic of the deportation of Crimean Tatars shed the light on the epoch which proliferated with persecution of identity and other traumas.

## 2. '1944' – in memory of the ruthlessly deported

In 2016, the jury of the international Eurovision Song Contest awarded first place to Ukraine for the song '1944', a bright original performance of which was executed by a young Ukrainian singer of Crimean Tatar origin, known by the stage name Jamala, and her real name is Susana Jamaladinova. The special award 'Eurostory Award 2016' from 'Eurovision 2016' was awarded to a line in the competition song '1944'.

Jamala's song resonated in various aspects. The singer herself seems to be the embodiment of this powerful song, chosen to be the perfect medium, like a well-tuned instrument capable of producing pure sound. A lot of good enthusiastic reviews were written about Jamala's performance right after the successful premiere in Stockholm. The composition became expectedly relevant in 2022. In April 2022, Jamala took fourth place in fundraising to support Ukraine in the war with Russia. In 2023, 'The Guardian' conducted a poll, according to the results of which '1944' took an honorable third place in the ranking of winning songs throughout the history of 'Eurovision', starting from the first contest held in 1956 in the Swiss city of Lugano (*Petridis, 2023*).

The song '1944' is special in many aspects. First of all, the composition is original, since Jamala is both the author of the text and the composer of the music. The text is inspired by the singer's family history, and therefore is the result of Jamala's collective-family-genealogical and personal experiences as a keeper of family history and memory, which is passed down from generation to generation and is part of the ethnic national history and memory. It was to the fate of Jamala's grandparents that the difficult trials of the tragic events of the Second World War fell, in the context of which mass acts of deportation of ethnic groups, in particular, Crimean Tatars, took place in 1944 – in this way the title of the song acquires symbolic and polyphonic semantics.

The text of the song is bilingual: the main verses are written in English, and the refrain is in Crimean Tatar. The composition became the first 'Eurovision' song with lyrics written in the Crimean Tatar language. And Jamala became the first representative of the Crimean Tatar ethnic group to take part in Eurovision. The use of the Crimean Tatar language in the text of the composition gives it authenticity. Also, lines in the Crimean Tatar language create the effect of the presence of the Crimean Tatar ethnic group and the effect of the voice of this people. These lines are written on the basis of the well-known Crimean Tatar folk song 'Ey, güzel Qırım', translated into English 'My beautiful Crimea' or 'Hey, beautiful Crimea!'.

'When strangers are coming... // They come to your house, // They kill you all // and say // We're not guilty // not guilty //'. This is how the composition begins and, in fact, this is how the long journey of the Crimean Tatars into exile and the even longer history of their return to their native home began. The words in these lines accurately reflect the deportation events of 1944. Strangers come to the house and take all the residents to the station and force them into the freight cars. Deportation is equivalent to the death of a person. Depriving a person

of their native home and homeland literally means depriving them of their identity, which metaphorically, and often literally realistically, leads to death (*Bakulina, 2022*).

The author-singer is the successor and heir of the family of Crimean Tatars who fell under the pressure of the Soviet totalitarian deportation machine. Jamala shares numerous memories obtained from her grandparents about living in deportation. Her grandfather used to tell her that when they came to the Central Asia they didn't have bread, they had to drink rain water from the puddles because they didn't have access to drinking water (*Petsa, 2022*). Jamala is adamant about the value of authentic history and memory: 'Thank God, in my family since childhood, I have been told the history correctly, despite what was said on television. My family had a clear understanding of everything that was happening. Why? Because we are witnesses of everything that the Soviet authorities did to my family. It was so painful and so obvious that I could not even help but say about it and write a song about it – '1944'. ...Because if we forget it, we become dead souls' (*Petsa, 2022*).

Many of the deported couldn't survive the harrowing travel in the cattle cars. A lot of Crimean Tatars died when they arrived in the hungry steppe (*Ziitdinova, 2023*). Historians give a spin-chilling statistics concerning the deportation. Potichnyi P. indicates: 'Thus, a population of approximately 250,000 was made homeless and transferred great distances at a very high cost in human life. ... Crimean Tatar sources quote the figure of 46.3 per cent deaths in the deportations and eighteen months following' (*Potichnyj, 1975, p. 308*). Korostelina K. writes: 'The secrecy of Soviet institutions kept the general population ignorant of the numerous atrocities committed by the Soviet government against its people. Those who expressed disapproval of inhumane treatment of minority groups were denounced as enemies of the people. Nevertheless, stories about mass deportation and arrests began to circulate unofficially throughout the country. ... But few realized the scale of the tragedy, or the full extent of demonization campaign against the Tatars and other minorities' (*Korostelina, 2015, p. 40*). Korostelina K. describes the unfair and cruel treatment of Crimean Tatars by Russia as 'identity-based conflict' (*Korostelina, 2015, p. 33*).

The lyrics of the song read that the perpetrators of the deportation operation may have had different beliefs. Employees of those infamous Soviet punitive 'bodies' could even sympathize with the Crimeans who were sent to a foreign land. They only carried out the order and tried to justify themselves by saying that 'we're not guilty'. Also, there can be another interpretation of this phrase which is especially obvious in the light of current war in Ukraine. That is infamous Russian propaganda which proclaims Russia the liberator and its war campaign in Ukraine denazification.

The following lines are no less dramatic. Here, the theme of death is further developed, and a shrill call to stop illegal, anti-human criminal acts is also heard. In fact, the text is so intense that the words and message are extrapolated from the events of 1944 to the events of 2014 in Ukraine, as well as the events of 2022. That is, in the text of the composition '1944' the trauma of World War II, as well as the trauma of the Russo-Ukrainian war, is revealed (*Insaidy*).

'Where is your mind? // Humanity cries. // You think you are gods. // But everyone dies. // Don't swallow my soul. // Our souls //'. In these lines, it is said that the totalitarian regime is based on the ideas of deification of power, as well as, as a result, total submission and service to power. Personality, the individual and his values have no weight in a totalitarian society. Person is perceived as a cog in the imperial system. Actually, identity becomes a category that acquires dangerous signs and threatening potential in the dimensions of the totalitarian system. People must be faceless, obedient, follow the instructions and ensure the functioning of a totalitarian regime. Propaganda feeds the existence and prosperity of totalitarianism. Identity, O. Bazhan remarks, on the contrary, threatens totalitarianism, undermines it. Therefore, the absorption of



identity, the destruction of the individual and collective soul is an indispensable, immanent and obligatory function of totalitarianism (*Barsukova*).

‘We could build a future // Where people are free // to live and love. // The happiest time. // Our time //’. These lines embody the goal of people who believe in the values of a humane society, which prioritizes development, harmonious relationships, balanced interpersonal and international interaction, and caring for the environment. Also, these lines express sadness and regret over the fact that the false priorities of the anti-human totalitarian system prevent the actualization and legalization of the humanistic axiological code.

The text of the song ‘1944’ represents the period of the history of the Crimean Tatar ethnic group, during which this people suffered a collective trauma that arose as a result of a violent break in the geographical and physical connection with the homeland and native home, which caused a traumatic impact on the psycho-emotional and mental level and also affected the domestic, linguistic, traditional and cultural spheres, which can be generally defined as identity. The powerful message of the composition ‘1944’ warns against crimes against humanity and the individual, which occurred during the catastrophic 20th century and continue to be repeated in the 21st century. The reverberations and consequences of trauma caused by the totalitarian system are expressed in literature (*Honcharenko, 2020; Puchonska, 2020*), art, and cultural heritage, which is also an effective form of psychotherapy that helps to reflect on the traumatic experience and integrate it as an organic part of individual and collective existence.

Jamala’s expressive performance of her original song ‘1944’ draws attention to both the text and the context of the composition. It is worth noting that the singer’s performance at the ‘Eurovision Song Contest’ aroused great interest both in Ukraine and in other countries. The aesthetics of the performance were thought out carefully and thoroughly. Attention was paid to the singer’s stage costume and stage lighting during her performance. After all, when Jamala performed the song, there was only her on the stage – no dancers, no ballet or pantomime. Light projections on the stage created an atmospheric visualization that symbolically revealed and complemented the content and message of the song.

When Jamala decided to present her song ‘1944’ at the ‘Eurovision Song Contest’, she faced numerous comments that suggested that this composition might not receive a proper reception at the contest. Opinions were also expressed that perhaps the song has a political vector and therefore is not suitable for the contest (*Stephens, 2016*). Even the performer’s mother, Galina Tumasova, who is a musician herself, expressed fears and doubts whether Jamala would be able to convey her message embodied in her song to the listeners (*Astakhova, 2016*). However, the singer noted that her original song ‘1944’ was written on the basis of her personal experiences, caused by her personal history and the life experiences of her close relatives. ‘A song of memory’ – this is a brief and substantial description that the singer attached to her composition (*BBC News Ukraina, 2016*).

Jamala’s grandfather Ayar Jamaladinov and paternal grandmother Ediye Chabanova were both born in the village of Kyuchuk-Ozen (Crimean Tatar – Küçük Özen), which in 1945 was renamed Malorichenske, in Crimea. On the mother’s side, the performer’s grandfather Mykhailo Osyovich Tumasov was born in Nagorno-Karabakh, and grandmother Polina Ivanovna Ladanova was born in Voronezh, Russia. The singer herself says that her maternal grandmother is half Ukrainian and half Russian. Her maternal grandfather is a pure-blooded Armenian (*Manila, 2016*). Paternal grandparents are Crimean Tatars and they were deported from Crimea on May 18, 1944 to Kyrgyzstan. In 1944, Crimea was occupied by the Germans, then the Soviet troops performed de-occupation, after which acts of mass deportation of the inhabitants of the peninsula were executed, and then Russians were resettled in Crimea.

So Jamala's father was born in deportation and met his wife there. Both Susana and her older sister Evelina were born in the city of Osh in Kyrgyzstan, then the Kyrgyz SSR (*Petsa, 2022*).

In the singer's genealogy, different ethnic groups are intertwined. Jamala grew up in a family where multiculturalism was manifested, among others, in musical preferences. In addition to European music, the family cherished the musical heritage of the Crimean Tatars, the musical and song diversity of Armenian, Ukrainian, Russian, Azerbaijani, Iranian, and Turkish cultures. Classical music occupied a prominent place among the preferences of the singer's family (*Kravchenko, 2020*).

The music school where Jamala studied is located in the premises of a house that was previously owned by deported Crimeans. The singer recalls that the memory of how these people returned from deportation and presented documents certifying their right to property, and how they were explained that now there is a music school there and they had to look for housing on their own, was imprinted in her memory – no one provided them with compensatory accommodation (*Kravchenko, 2020*).

### 3. 'The Way Home' – struggling to return to the roots

It was not easy for Jamala's parents, like other Crimeans, to return to their native land. People were forced to settle not in Crimea itself, but in settlements of neighboring regions, for example, Zaporizhzhia or Kherson. In one of her recent interviews, the performer shared the story of her family's return to Crimea. Thus, Jamala's father had always wanted to return to the land of his parents, which he knew about from their stories, as well as traditions and language – the heritage that was carefully nurtured in a strange land in forced deportation (*Kravchenko, 2020*).

The 'exile ideology' formed in exile became the basis of the Crimean collective memory of the peninsula. It nourished the identity of the Crimean Tatars, was a powerful resource that inspired survival in extremely difficult conditions (*Barsukova*). Jamala's father always felt this strong connection to the homeland of his ancestors – the oikumene, which he inherited in exile.

In 1984, when Susana was nine months old, the family settled in Melitopol, Zaporizhzhia region. The singer's parents made a difficult decision due to numerous obstacles faced by Crimean Tatars who wanted to return to Crimea. Officially, the authorities allowed deported Crimeans to return to the peninsula. But it was the Crimean Tatars who were not given back their former property in Crimea, and they were actually deprived of the opportunity to buy other property with housing in the region from where they were expelled and robbed. Jamala's parents were forced to officially divorce by law. After the divorce, the situation looked like the mother of the singer, who is half Armenian, one quarter Ukrainian and one quarter Russian, had no relation to Crimean Tatars, and this visible and official non-affiliation with Crimea made it possible for Galina Tumasova to find a house and buy it. The singer notes that after the documents for the house had already been signed up, the owner was horrified and angry to the point of hysterics because she had actually sold the property to Crimean Tatars (*Kravchenko, 2020*). This situation is indicative of the actual attitude towards the Crimean Tatars who were returning home. However, all these obstacles and difficulties were overcome tenaciously and resolutely, because returning home was a long-term goal.

About this difficult experience of returning to her homeland, Jamala created another song in the Ukrainian language 'The Way Home', once again acting as the author of words and music. The composition was released on May 18, 2015 – on the anniversary of the deportation

of the Crimean Tatars. The singer dedicates the song to Crimean deportees, as well as to all those who had to leave their homes under the pressure of circumstances, and who never get tired of looking for their way home (*TabloID*, 2015).

It should be noted that the performer left her beloved Crimea in 2014, when the war actually began, and has not visited the peninsula since then. Therefore, the singer experiences a forced separation from her native home, the land of her ancestors, as a result of the criminal actions of the aggressor country, which spreads false propaganda and once again hides its true intentions under the guise of a 'liberator' (*Insaidy*). Jamala is convinced that home is where it is 'comfortable and light', where relatives and loved ones will warm her with their warmth, share their support, and surround her with their care. Home is like a place of strength, an incessant source that nourishes, heals, restores one who constantly returns from their travels. In the lines of the song, the lyrical heroine is looking for her way home despite obstacles, difficulties and fatigue. She is confident that she will achieve her goal. Memories of home motivate, empower and inspire her. Winged by the memoir visions of her oikumene, she will not go astray. 'I will find, // I will find my way home, // Although it will be difficult to walk // Through the memories of mad fatigue, // There will be comfort and light //'. The following lines refer to the tactile sensations associated with home, which are probably repeated since childhood. 'Birds in the palms, // As if in a dream //'. The connection with nature is also emphasized here. Also, the image of birds has an interesting and deep symbolic and metaphorical meaning, which explains and complements and unfolds the semantics of the house. Birds symbolize the universe with all its secrets and charms. The air element under the control of birds is invisible, transparent, weightless and omnipresent. They are the connecting link between the earth and the sky. Moreover, water birds serve as mediators between the earth, the sky, and even the water world. Here it is also worth mentioning mythological and fairy-tale birds, for example, the phoenix, who controls the fiery element. Also birds are associated with hope, aspiration, destiny (*Baba*, 2023). Knowledge of the universe is closely related to the space of one's home.

The image of birds in the palms appears polyphonic. This polysemantic image can also be interpreted as a charm, as an invocation of a blessing. The emphasis on the palms in the text is important. The palm is an ancient, even archaic symbol that has maintained its relevance and popularity throughout the ages. Thus, in the Christian religious tradition, 'Hand of God' or 'Right hand of God' means protection, protection for those who are on the move.

Many different cultures have a deep reverence for the symbol of the symmetrical hand, i.e. the palm. In the 'pantheon' of the Slavic pagan system, a special place is occupied by the goddess Dolonka, Palmy in English, who takes care of the house and household members. Ukrainian women hold an ancient tradition of making a special hand-made doll called 'motanka'. These dolls are meant to protect household, adults and children. Sometimes they can be given names of ancient pagan goddesses. Before Easter it is possible to buy such a doll near a cathedral or temple in Kyiv with a label on which its name is indicated and its 'power' or specific protective function is described. The dolls can be stuffed with special herbs as well. The author of the article happened to be presented a hand-made doll named Dolonka, Palmy in English. Hands also can 'represent strength, power and protection as well as generosity, hospitality and stability' (*Friedman*, 2023).

The bird is also a symbol of the human soul. For example, in S. Zhadan's poem 'The Bird' a metaphor of the human soul embodied in the image of a bird can be read. Jamala's repertoire includes the song 'Wings', for which she created music. The singer also likes to perform in stage costumes, the style of which is consistent with the image of a bird. Like, for example, at

her solo concert under the open sky in August 2023 (*JetSetter*, 2023). In this connection, ‘birds in the palms’ can be interpreted as householders under the protection of their native home.

The line ‘as if in a dream’ represents the oneiric paradigm of the narrative. Far from home, the heroine sees her home in her dreams, which indicates her organic eternal connection with home. The onirias in which she sees a home are mediators between her and her oikumene. The oneiric actualization of the house, symbolically represented by the birds in the palms, is a symbolic energy umbilical cord connecting the heroine to her place of power.

Then she talks about parents and the walls of the native home. ‘The way home is waiting for me, // Parental look, // Stone walls // Already as the norm of my life//’. Parents are the owners of the house, its guardians. They take care of the house in many ways. They fill the house with prosperity and raise the heirs so that they continue to support the house in a proper way. Life wisdom and care are concentrated in the parental view.

Stone walls are another interesting image in the text. The connection with nature is read again – stone is natural material. In addition, the Crimean Tatars traditionally built houses from stone – nurturing the architectural tradition – establishing a living identity. Metaphorically, the stone means power, reliability, protection, naturalness. Values nurtured in the space of a native home become the basis of the vitality of its owners.

Finally, the heroine has arrived home and staying in her native space becomes for her a regular, constant experience – the norm of her life, which she, in fact, sought and achieved. The refrain of the song repeats the title – thus intensifying the message of the composition. ‘At a time when // We were left alone, // Like children lost // Among the stars, // Only this path can save us //’. These lines emphasize how important it is to nurture a connection with one’s home, which is an essential component of our identity, our personality. It is especially important to return to one’s origins at a time when there is no end to the difficulties, or when in the vortex of the daily routine, or when confused, it seems that it is time to restore balance. Home becomes a point of stabilization in difficult times of challenges and trials (*Mallett, 2004*). In the entire universe, the heroine sees the light of her own home. Among the multitude of bright twinkling stars that attract strongly, she recognizes the cozy light of her native home. She sees the light and knows the path, she remembers the way home. The way home is a source of strength for her. She is filled with this power intended for her. She knows the way that saves her in the storms of life – the way home.

The image of the trail, which has rich symbolic semantics, attracts attention. The path can mean a person’s life, their destiny, their life story, which begins in the space of their native home, surrounded by close relatives. Also, the path has the semantics of searching for truth, knowledge, development, elevation to spirituality, acquisition of personal integrity.

In fact, the texts of Jamala’s songs contain messages that primarily appeal to the history of the Crimean Tatars, the singer’s family, and her personally on the one hand. And organically, these messages are extrapolated to the global level, universally resonating with every similar experience, both collective and individual, on the other hand. In this way, the axiological code incorporated in the texts is actualized discreetly with permanent attractiveness.

#### 4. Conclusions

The problem-thematic vectors encoded in Jamala’s song compositions can be characterized as complicated complexes with different semantics and powerful appealing and attractive potential. The interpretation of the analyzed texts created by the performer testifies to

the active functioning of symbols that, thanks to their polyphonic nature, enrich the narrative both aesthetically and discursively, raising the textual codes to a universal and global level. The metaphorical, figurative, and symbolic nature of the narrative gives it a nativeness that is widely recognized and versatile. The historical background of the texts is intensified by the wealth of verbal means and at the same time is subtly aestheticized, appealing to the addressee with a multiplicity of reception and interpretation. The historical truth is represented in the songs authentically, expressively and aesthetically. Cultural and historical memory is perceived in these songs. These texts actualize the knowledge of the past, which seems to repeat itself with the tortures and stigmas of colonial trauma.

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## WAYS OF USING ARTIFICIAL INTELLIGENCE IN EDUCATION

**Serhii Maksymchuk**

Postgraduate Student, Vasyl Stefanyk Prykarpattia National University, Ukraine  
e-mail: smaksimcuk07@gmail.com, orcid.org/0009-0001-2369-2703

**Halyna Voitkiv**

Ph.D., Assistant at the Department of Physics and Methods of Teaching,  
Vasyl Stefanyk Precarpathian National University, Ukraine  
e-mail: h.voitkiv@gmail.com, orcid.org/0000-0002-2158-9577

### Summary

Artificial intelligence today not only plays an important role in various industries, but also continues to integrate into all spheres of life at an extremely rapid pace. The educational sphere must also respond to these challenges, which must prepare future generations not only for living and working in such an environment, but also for conscious influence on it and its creation. The article describes the directions of artificial intelligence development, state policy regarding its implementation and use, ethical principles in the field of artificial intelligence, the perceived incompetence of the pedagogical community regarding artificial intelligence, and practical ways of using it in the educational process. Taking into account the concept of the development of artificial intelligence in Ukraine, the readiness of the pedagogical community and the results of observations of the educational process, the following methods of using artificial intelligence in the educational process are distinguished: improvement of the formation of the individual educational trajectory of the acquirer, improvement of the system for monitoring the process and results of training with the provision of feedback, diversification of the didactic tools for the educational process. Attention is drawn to the principles of using artificial intelligence that are common to all, namely: inclusive growth, sustainable development and well-being, human-centered values and justice, responsibility for the proper functioning of artificial intelligence systems.

**Key words:** artificial intelligence, education, ethical principles, individual educational trajectory, formative assessment.

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### 1. Introduction

Artificial intelligence is becoming increasingly important in today's world due to the rapid development of technology and has become a key element in many industries. One of the areas where artificial intelligence is expected to be actively used is education. The introduction of innovative technologies into the educational process creates new opportunities for increasing the efficiency and accessibility of education.

The latest research by UNESCO in the field of using artificial intelligence in education talks about the benefits of using artificial intelligence – covering learning for people with disabilities or representatives of linguistic and cultural minorities, promoting personalized learning, creating flexible school systems, creating exciting content for learning, and risks that

are mostly associated with the lack of approbation of the use of artificial intelligence systems in education and their analysis (UNESCO, 2019). Most of the publications of scientists are devoted to the possibilities of artificial intelligence. However, highlighting the experience of its practical use in the educational process is relevant today. Therefore, the purpose of our article is to research and generalize examples of practical use of artificial intelligence in education, state policy on the introduction of systemic artificial intelligence and ethical principles of its use.

## 2. Challenges that artificial intelligence poses to the pedagogical community

The researches of scientists: R. Gurevich, V. Bakhrushin, N. Morse, S. Sysoeva, V. Osadchyi, E. Polat, L. Chen, P. Chen and others are devoted to the issue of introducing artificial intelligence into the educational process. They focused their attention around defining the content of the basics of artificial intelligence, which is related to machine learning, algorithmic efficiency, image and voice recognition, and natural language processing systems. All studies also emphasize the challenges that need to be addressed when using artificial intelligence systems: technical reliability; data privacy; transparency; non-discrimination and fairness; accountability (recognizing that artificial intelligence is not always accurate); understanding responsibility when using artificial intelligence. Focusing on opportunities, we highlighted the following research results, in particular:

- the mechanization of teaching already today requires additional forms of pedagogical activity, adaptation of pedagogical approaches to work with automated technologies (Holmes, 2022);
- the use of artificial intelligence is related to management and planning in the educational process, which is created on the basis of monitoring and evaluation of education results, learning analytics, using algorithms of predicted decisions (Hutson, 2021);
- artificial intelligence has the potential to improve tracking and recognition of learning outcomes, as well as assessment and quality assurance, especially for competencies acquired in non-formal and informal contexts (LearnDash Collaborator, 2020);
- artificial intelligence is a tool for an innovative learning environment, as well as a set of skills that need to be learned for work and life (Skrypnyk, 2022);
- artificial intelligence is an «accelerator for education» – when used appropriately and responsibly, artificial intelligence can contribute to the equity and quality of education and promote lifelong learning.

From the analysis of the literature, it becomes clear that the issue of using artificial intelligence in education is moving to another stage of the development of the competence of teachers and scientists in this field, namely the stage of «perceived incompetence», by which we mean that some participants in the pedagogical process already know about artificial intelligence, some have used it, many want to use it, but for this you need to develop.

## 3. The concept of artificial intelligence development

Regarding the state policy in the field of artificial intelligence, the Concept of the Development of Artificial Intelligence (until 2030) has been approved in Ukraine, which defines the purpose, principles and tasks of the development of artificial intelligence technologies as one of the priority areas in the field of scientific and technological research. In the Concept,



«artificial intelligence» is understood as «an organized set of information technologies, with the use of which it is possible to perform complex tasks by using a system of scientific research methods and algorithms for processing information obtained or independently created during work, as well as to create and use own knowledge bases, decision-making models, algorithms for working with information, and determine ways to achieve set goals» (*Verkhovna Rada Ukrainy, 2021*). According to the Concept, «artificial intelligence technologies should contribute to the transformation of the economy, the labor market, state institutions and society as a whole». The analysis of the problems of the development and implementation of artificial intelligence technologies shows that the priority areas in which the tasks of the state policy for the development of artificial intelligence are implemented are: education and vocational training, science, economy, cyber security, information security, defense, public administration, legal regulation and ethics, justice (*Verkhovna Rada of Ukraine, 2021*). In the field of general secondary education, first of all, attention should be focused on intellectual pedagogical workers of the basics of artificial intelligence and the possibility of working with it in the educational process. Today, such opportunities lie in the improvement of the educational and methodological base with the help of artificial intelligence, the organization of courses for pedagogical workers on working with data and the basics of artificial intelligence, the expansion of digital literacy among schoolchildren (the use of digital tools for solving applied tasks, searching for information on the Internet, personal data protection, media literacy, digital hygiene, etc.).

#### 4. Principles of implementation of artificial intelligence

The introduction of artificial intelligence is relevant all over the world, so it is important to implement uniform policies regarding the ethics of its use. The Organization for Economic Cooperation and Development on Artificial Intelligence has developed the following principles for the use of artificial intelligence:

- inclusive growth, sustainable development and well-being, which consists in creating conditions for reducing economic, social, gender and other inequalities and protecting the natural environment;
- human-centric values and justice, which consists in respect for the rule of law, human rights and democratic values throughout the life cycle of the artificial intelligence system;
- strength, reliability and security, consists in creating conditions regarding the impossibility of unauthorized use of data, ensuring their confidentiality;
- responsibility for the proper functioning of artificial intelligence systems by all its participants, in accordance with their roles (*OECD/LEGAL/0449, 2023*).

#### 5. Ways of using artificial intelligence in education

Despite the great possibilities of artificial intelligence, in Ukraine, the practice of the educational process in institutions of general secondary education shows a small number of directions for its use. Artificial intelligence provides great advantages and opportunities to ensure:

- **individual educational trajectory**, thanks to the analysis of the needs of students, the pace of learning and the level of understanding of the material. An example of artificial intelligence for learning is the foreign language learning application Duolingo (*LearnDash Collaborato, 2020*), which is used by both adults and children to improve the key competence

of mastering native and foreign languages. The main parameters with which the artificial intelligence system works in this application and others like it are the «engagement» of the student and the «difficulty» of learning. Student engagement and difficulty are interrelated: material that is too easy engages students early on, but encourages them to drop out due to a lack of tangible learning outcomes. Too complex material is a reason for many students to stop studying due to learning difficulties. Duolingo uses artificial intelligence to keep its students in a zone where they stay engaged and learn at their best;

- **automated evaluation of training results and provision of feedback**, in particular when conducting formative evaluation. Most educators are familiar with digital programs and resources that provide automated assessment and reporting. For example, Mentimeter, Wooclap, etc. In most educational subjects, there are platforms (intelligent systems) where students can undergo diagnostics of their knowledge in order to detect learning difficulties in time and improve results;

- **methodological support of the educational process**. Constructors of educational tasks and programs, which save time spent on the development of methodological materials for lessons, have become an important assistant to the teacher.

Such services, which are already used in education, are:

- services for creating a story: Bedtimestory – creates a story for children to read before bedtime; MakeMyTale – creates a story according to the chosen genre, style, works; Tome - creates entire stories from scratch;

- services for working with text content: Pictory – extracts content from Zoom, Teams and webinar recordings; ChatGPT – ready to pick up information upon request; Talk to Books – creates a text, namely gives answers to questions, quotes from books;

- services for working with media and audio content: Mubert – creates music on text request; Kaiber – creates an animated video clip;

- services for creating voice assistants to improve the perception of information: Amazon Alexa and Microsoft Cortana – voice assistants that can create an integral role in the field of education, can create a barrier-free environment;

- services for performing administrative tasks: organization of work with personnel: Atoms.ua, E-schools – electronic journals and diaries; driving the learning environment and materials in the group.

- translation services: use of artificial intelligence to improve the quality of translation of foreign texts;

- chatbots that work in online education: Thinkster – uses artificial intelligence for individual mathematics training – users start with an assessment test, after which artificial intelligence adapts questions depending on the level of knowledge and mastery of the material; Querium – excellent use of artificial intelligence for virtual learning and analysis of student actions in solving STEM problems. The program provides instant feedback correctly regarding the incorrect performance of tasks, which allows you to avoid incorrect learning of the material;

- adaptive learning services: Aita by Knewton – uses adaptive learning to identify gaps in student knowledge and then fill them with high-quality learning materials. Artificial intelligence acts as a learning tool that identifies and exploits knowledge gaps (*LearnDash Collaborator*; 2020).

We believe that the listed digital opportunities complement the educational process and are the initial steps in the introduction of artificial intelligence in education. Their further use will be improved in the following areas: provision of individual feedback when evaluating a specific student, and when all information is available in the system about his academic success

and preferences; increasing the effectiveness of distance learning platforms by ensuring their interactivity and improving communication methods with them; providing a tool for the teacher to create an interesting learning environment. These directions are the topics of our further research (Maksymchuk, 2023).

## 6. Conclusions and suggestions

Thus, artificial intelligence today is present in all spheres, including education. The implementation of artificial intelligence in all sectors is supported by state policy, as evidenced by the Concept of the Development of Artificial Intelligence of Ukraine until 2030. Ethical issues related to the use of artificial intelligence are regulated by the principles of economic cooperation organizations. There is no specific system of using artificial intelligence in education, however, certain directions of its use are followed due to its practicality, convenience and assistance to both the teacher and the student. These directions are: methodical - used as an interactive teacher's assistant to improve the teaching of the material; personalization of learning – to provide feedback, to create a learning environment adapted to the individual. Further research will be directed towards the use of artificial intelligence to predict future states in education through the analysis of existing educational data sets, the selection of optimal actions for a specific institution.

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## PHRASEOLOGISMS OF AMERICAN ENGLISH IN THE WORLD'S LANGUAGE SPACE

**Anna Maksymova**

Ph.D., Senior Lecturer, Dnipropetrovsk State University of Ukraine, Ukraine

e-mail: maximova250@gmail.com, orcid.org/0000-0002-8332-4988

### Summary

The aim of this paper is to determine the role and place of American English in the world. American English has taken a leading place in the world, but its development is very specific, because on the one hand it is leading and at the same time integrated into the world community. Anthropocentrism is present when describing the general trends in the creation of American idioms of the English language. All processes are characterized by human worldview and human problems. The areas of creation of American phraseological units of the English language are ecology, architecture, IT technologies, leisure. During the study of phraseological units of the American English language, the inductive (when describing the American English language) and the deductive method (when predicting the development of the American English language) were used. Telescopy, new phraseology, and word formation are used in the word formation of modern phraseological units of the American English language. In general, analyzing the phraseology of the American English language, new phraseology (word combinations) are mostly used in their creation. However, among the phraseological units of the American English language, you can find affixation, abbreviation, and reduction. The modeling method helped predict the directions of development of American English phraseology.

**Key words:** American English, transformation, modernization, globalization, world trend.

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### 1. Introduction

Language in today's world is a dynamic system that develops according to internal and external canons, which is influenced by global development (views, values of other states). The purpose of this work is to determine the rules and place of American English in the world. During the study of phraseological units of the American English language, the inductive (when describing the American English language) and the deductive method (when predicting the development of the American English language) were used. The modeling method helped predict the directions of development of American English phraseology.

American English was formed in the 20th century, which was reflected in word formation and spelling. A similar situation actualizes the need to study American English. Yu. A. Zatsnyb, I. K. Bilodid, A. V. Botsman, L. A. Bulakhovskyi, A. Bengt, B. Harald, A. P. Cowie, M. Everaert, Erik-Jan van der Linden, A. Schenk, R. Schrader, R. Glaser, S. Bally contributed to the development of phraseology, but the American English language is dynamically changing, which makes today's research relevant.

## 2. Characteristics of American English

Despite the increasing amount of research within phraseology in the past fifty years, and the consequent improvement regarding the delimitation of the units that constitute its object of study, there seems to be still a great diversity of criteria. This hinders the consolidation of a systematic and scientific study of this topic (*Toffol, 2011: 5*).

In connection with the development of science and technology all over the world, the vocabulary began to change dynamically. Scientific and technical terms from different languages are introduced into the language. When forming words, word formation, word combinations, expanding the meaning of a word, etc. are used. New terms appear in medicine, sports, science, and education. American English reflects the history of modernity and aspirations because American English is global. Through language, you can see the history of mankind, research fashion trends, preferences of the population, and study promising areas of development. Among them are the observance of ecological standards of living and the introduction of environmentally friendly technologies. Human life is built on respect for nature and understanding the importance of preserving the environment. At the same time, IT technologies penetrated into all spheres of life: architecture, everyday life. American English has taken a leading place in the world, but its development is very specific, because on the one hand it is leading and at the same time integrated into the world community. The language of science and technology is China, Taiwan, the UAE, the USA, creating a certain product is given a corresponding national name, which is introduced into the American English language. Recently, the formation of new words has become a leading trend due to the development of science and technology. IT technologies had a special influence on the formation of American phraseological units of the English language. A certain role in this process was played by COVID-19, which contributed to the active use of the Internet and computer technologies. This situation with the massive spread of COVID19 has led to the development of remote work and fitness. During non-working hours, leisure time in the conditions of Covid 19 was also online, which led to the emergence of new idioms in this direction. Vocabulary in the fashion industry is influenced by European and Asian countries, which also brings a special highlight to the formation of American phraseological units of the English language. The vocabulary in the field of food is currently influenced by China, in particular the popularization of sushi and rolls.

Anthropocentrism is present when describing the general trends in the creation of American idioms of the English language. All processes are characterized by human worldview and human problems. The areas of creation of American phraseological units of the English language are ecology, architecture, IT technologies, leisure.

## 3. Features of word formation of the American phraseology of the English language

The development of a language is largely determined by the development of its word-forming system, the formation of new word-forming models, the change of existing ones, an increase or decrease in their productivity, and many other factors of the word-forming process. Thus, it is noted in the study that when studying phraseological units «should be analyzed as consisting of individual wordlevel lexical entries» (*Sailer, 2018: 37*). The process of formation of new words reflects in the language the needs of society in expressing new concepts, which are a peculiar product of the development of science, technology, culture, social relations, etc. Linguists associate the reasons for the emergence of new words with new discoveries, a deepening of the idea of previously known facts and phenomena of reality.

Telescopy, new phraseology, and word formation are used in the word formation of modern phraseological units of the American English language.

In the American press, you can find the following examples of phrases: *cyber mercenary* – a cyber mercenary is a person who is paid by an organization to use the Internet to illegally enter a computer system without permission, for example, to obtain classified information or damage the system;

*work from anywhere* remote work activity from anywhere, not necessarily at home;

*climate tech* is the use of technologies to create products and services that will allow society to adapt to the effects of climate change. In connection with the development of information technologies, COVID-19 and the strengthening of the role of the climate, the following phrases appeared: *cyber mercenary*, *work from anywhere*, *climate tech*. In addition to word combinations, telescoping and word formation, abbreviation and affixation play an important role in American phraseology.

Abbreviations can also be found in American idioms:

*exit memo* is a message to employees of a certain company on behalf of their colleague who is going to resign from this company;

*skyscraper* ad metaphor for an ad that is placed vertically on a website page.

In general, analyzing the phraseology of the American English language, new phraseology (word combinations) are mostly used in their creation. However, among the phraseological units of the American English language, you can find affixation, abbreviation, and reduction.

Epithets and metaphors are used to color the American idioms of the English language.

Metaphorical transference is aimed at the address, therefore, when using it, the speaker must be sure that his real or potential listener, using visual and sensory images, will reveal the meaning hidden behind the metaphorical shell in accordance with his intention. A metaphor is a product of the cognitive work of thought, a means of knowing and reflecting the surrounding reality.

*checkbook environmentalist* (*checkbook environmentalist*) a person or company that finances various environmental protection projects and thus contributes to environmental protection;

*clicks and bricks* (*clicks and mortar*) a commercial enterprise that uses both conventional and "virtual" forms of its commercial activity;

*clockless worker*, a worker who is ready to work as long as needed, at any time of the day or night;

*fat tax* is an additional tax on food products that are considered unhealthy, especially on so-called "fast food";

*gray matter* experienced managers hired by a new company to give that company more prestige;

*pink slip party*, a party attended mainly by former entrepreneurs and employees of the Internet economy (the expression to get the pink-slip means "to receive a notice of dismissal");

*silicon-chip capitalism* metonymy capitalism in the conditions of the information revolution – a symbol; *silver industry* metonymy of enterprises that manufacture goods for older people;

*two-pizza team* metonymy a small staff of company employees (which can be fed with two pizzas, as it were).

Symbolism is also inherent in the formation of American idioms: lipstick effect symbolism, the tendency to buy inexpensive, but badly needed goods during an economic downturn; lipstick indicator symbolism, the tendency to increase the sale of small but necessary goods before and during economic stagnation;

*pin-drop syndrome* extreme silence in the office, when even the slightest noise starts to annoy those present and causes a stressful state;

*Sofa Sunday* is a metonymy for the Sunday after Thanksgiving in the US, when people relax at home and shop online or on TV;

*windshield time* metonymy part of working time spent behind the wheel of a car.

As a feature during the formation of American phraseology, metaphor and metonymy are used at the same time.

For example,

*billionaire bait* is a product, an item designed for very rich people;

*blue-collar warfare* is outdated, non-modern, "physical war";

*blue-collar, blue states* American states with a significant concentration of workers engaged in manual labor.

metonymy + metaphor + ellipsis. By studying American innovative phraseology, you can find an analogy:

*chief content officer* analogy administrator, manager responsible for the effectiveness of the functioning of the corporation's website;

*chief hacking officer* analogy manager (at the level of the highest, management level), responsible for systems and programs for protecting the corporation from hackers;

*chief knowledge officer* analogy director of a corporation, responsible for the creation and operation of the information system;

*chief learning officer* analogy director of a corporation, responsible for improving the qualifications of personnel;

*chief privacy officer* analogy manager responsible for preserving the company's commercial secrets; *chief risk officer*, a manager responsible for protecting the corporation from potential risks (lawsuits, hacker attacks);

*death care industry* – analogy (cf. health care industry) industry of "ritual services";

*glass wall* analogy of obstacles that prevent women or representatives of ethnic minorities from expanding their business experience (example – glass ceiling) – allusion;

*insider nontrading* analogy of the decision not to buy or not to sell shares based on information received from "insiders" (the innovation was created by analogy to the phrase insider trading);

*rainbow ceiling* (pink ceiling) analogy biased attitude in the business world towards workers with non-traditional sexual orientation, which prevents them from promotion;

*rush minute* analogy is the period of the day when people go to work or from work, and there are not enough vehicles;

*stay-at-work mom* analogy (stay-at-work mother) a woman who returns to work after the birth of a child (the innovation was created by analogy to the phrase stay-at-home mom);

*sticky floor* analogy is an unofficial practice followed by business enterprises, which consists in getting workers, especially women and representatives of ethnic minorities, in low-paid positions and not giving them real prospects for their promotion (cf. glass ceiling);

*waitress mom* analogy is a representative of the lower classes who raises children (often without a husband) and works at several jobs (a typical "side job" for such women is performing the duties of a waitress in restaurants, cafes, canteens).

Examples of euphemisms

*lifestyle center* euphemism large outdoor shopping center;

*vanity sizing* (*size inflation*) evf practice of marking by trade firms on the label of an item of clothing a smaller size than it actually is.

## Examples of irony

*litter on a stick* irony of billboards, various signs and announcements on both sides of the road;

*pollution on a stick* irony advertising boards, billboards (a contemptuous name that is especially used by environmentalists and opponents of globalization);

*post and pray* the irony of posting job vacancies in the mass media, hoping to get a response from qualified candidates; post your resume on a job site, hoping for a positive response from companies;

*splicing power center* euphemism, irony a large complex of retail trade of goods, which consists of many separate stores;

*urban miner irony* a person or business company that extracts metals from decommissioned or discarded electronic equipment.

*fallen angel* company whose shares were quoted very high but suddenly fell to a critical minimum;

*return on talent* material and other benefits that the company receives from hiring and stimulating the work of valuable employees;

*billionaire bait* product, item designed for very rich people;

*secret shopper* is a person who, under the guise of an ordinary buyer, observes the operations of this company and the work of employees;

*shopping boyfriend*, a man who is hired to escort women who go shopping;

*seagull manager* a leader, a manager who communicates with subordinates only when problems arise or to criticize their work;

*soft benefits* are not material, but moral forms of benefits and incentives for employees;

*virtual manager*, a manager who manages employees at a distance, staying at home or in the central office;

*street spam* advertising placed on telephone poles, traffic lights, etc.;

*eat what you kill* get what you earned;

*open-collar* worker a person who performs work at home;

*orange collar (worker)* representative of professions that require workers to wear an orange safety belt during work;

*diversity factor* factor related to racial and ethnic diversity;

*diversity fatigue*, stress that occurs in the process of working with an international team;

*dress-up Thursday* is a certain day of the week when employees must be dressed formally;

*drive-through cuisine* food that can be purchased without leaving the car;

*dropout factory*, an educational institution with a significant "dropout" of pupils and students;

*emotional labor work* that requires workers to identify false positive emotions (especially in the service sector);

*Flu day "quarantine day"*, that is, a day when schools are closed;

*free agent* is a person who works for himself and does not have a permanent job;

*garbage time* – the last minutes of a sports match, which cannot change its result;

*get off my lawn* unfriendly, grumpy;

*golden ghetto*, an area of the city where wealthy people live (HELLO, GOODBY handcuffs);

*good money* is a competent person, a person who does his job well;

*a grab and goer* man who does not like shopping and does not consciously choose any goods, but "grabs" the first things that catch his eye as soon as possible;



*gray-sky thinking* (grey-sky mentality) pessimistic psychological state of a person;  
*guerrilla gardening* "guerrilla" gardening, secret planting of bushes, flowers and vegetables on free pieces of land within the city limits.

In our opinion, word combinations will be a promising means of creating American idioms of the English language.

#### 4. Conclusions

The phraseological stock of American English will be constantly filled with new phraseological expressions. Previously, at the beginning of the 20th century, the USA was the only leading country, which determined the only influence on the development of the phraseological stock of American English. China's growing role has influenced the phraseology of American English through the creation of new global technical solutions, gadgets, food, toys, and leisure. Prospects for further scientific research are the study of sociolinguistic parameters of the English language.

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## MIT KUNDENORIENTIERTER MULTILINGUALER TECHNISCHER DOKUMENTATION ZUM GLOBALEN KOMMERZIELLEN ERFOLG

**Alla Mishchenko**

Doktor der philologischen Wissenschaften, Dozentin,  
Nationale Taras-Schewtschenko-Universität Kyjiw, Ukraine  
e-mail: [alla.mishchenko@knu.ua](mailto:alla.mishchenko@knu.ua), [orcid.org/0009-0009-4701-3275](https://orcid.org/0009-0009-4701-3275)

### Überblick

Effiziente mehrsprachige Hersteller-Kunden-Kommunikation beseitigt Missverständnisse und Unzufriedenheiten, reduziert die Zahl der Anwendungsfehler und Serviceanfragen bei der Bedienung technischer Geräte, sichert die Usability von Produkten und stärkt die Markentreue. Zur Optimierung der Experten-Laien-Kommunikation wurden zahlreiche Normalisierungs- und Standardisierungsmaßnahmen eingesetzt. Der Beitrag analysiert exemplarisch deren Ziele und Funktionen, Konzepte und Ansätze, Erfolgsfaktoren und Herausforderungen. Bei der Erstellung mehrsprachiger technischer Dokumentationen hat übersetzungsgerechtes Schreiben einen erheblichen Einfluss auf die Effizienz des Übersetzungsprozesses und damit auch auf die Übersetzungskosten. Die komplexe Verknüpfung intelligenter Informationen im informationsgetriebenen digitalen Zeitalter führt zu einem Wissenszuwachs von Rezipienten. Marken schaffen professionell gemanagte Kunden-Communities, sprechen ihre Kunden über alle bestehenden Kommunikationskanäle an, liefern passende Informationen zu jeder Zeit, an jedem Ort, auf jedem Gerät.

**Stichwörter:** globale Gesellschaft, Kommunikationsmittel, kundenorientierte mehrsprachige Kommunikation, natürliche und kontrollierte Sprachen, intelligente Informationen und technische Dokumentation.

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### 1. Einführung

Alles beginnt mit dem Wort. Das gesprochene oder geschriebene Wort ist die Grundlage der Kommunikation und somit der Information, das in der Informationstheorie nur eine der Übermittlungsformen neben der Körpersprache, Code, Signalen etc. darstellt. Ohne Information wären die höchsten kulturellen Leistungen der Menschheit wie die Beherrschung und die Nutzung des Feuers, die industrielle Revolution sowie die moderne Informationsgesellschaft undurchführbar. Die kulturelle und ethnische Vielfalt hat die sprachliche Vielfalt zur Folge. Aus diesem Grund hat die multilinguale Gesellschaft das Bedürfnis nach effizienten Verständigungsmitteln zur Überwindung von Sprachbarrieren und Missverständnissen. Solche „Hilfssprachen“ waren und sind stets aus ihrem zeitlichen Kontext heraus zu verstehen und dienen jeweils der Verfolgung spezifischer Ziele.

### 2. Natürliche Sprache versus kontrollierte Sprachen

Die Geschichte der Suche nach einer „Lingua franca“ findet heute in der Geschichte der kontrollierten Sprachen statt. Um begriffliche Klarheit zu schaffen, müssen die Termini „natürliche Sprache“ und „kontrollierte Sprache“ definiert werden und ihre gegenseitigen Bezüge sowie Abhängigkeiten skizziert werden.

„Natürliche Sprache“ ist „die Bezeichnung für historisch entwickelte, regional und sozial geschichtete Sprachen im Unterschied zu → Künstlichen Sprachen, wie sie zur internationalen Verständigung als → Welthilfssprachen sowie zur Formulierung komplexer wissenschaftlicher Zusammenhänge konstruiert werden. Von diesen »Kunstsprachen« unterscheidet sich die N. S. vor allem durch ihre lexikalische und strukturelle Mehrdeutigkeit bzw. durch die Vagheit oder Bedeutungsvielfalt ihrer Ausdrücke, außerdem durch ihre historische Wandelbarkeit.“ (Bußmann 1983, 4. Aufl. 2008: 466)

Die Mehrdeutigkeiten und die Vagheit der natürlichen Sprache werden in der Computeringuistik und im Natural Language Processing mit dem Terminus „Ambiguität“ bezeichnet. Diese zieht sich wie ein roter Faden durch alle Sprachebenen der natürlichen Sprache und lässt sich in lexikalische, syntaktische und pragmatische Mehrdeutigkeiten differenzieren. Dieses Sprachphänomen soll an den ausgewählten Beispielen veranschaulicht werden:

Die lexikalische Ambiguität existiert in zwei Arten, nämlich Polysemie und Homonymie, die nicht immer leicht zu unterscheiden sind. Diese Art der Mehrdeutigkeit lässt sich anhand des Wortes *Schloss* demonstrieren, das ins Duden-Universalwörterbuch mit zwei unterschiedlichen Bedeutungen eingeht:

- (1) (Tür)verschluss, Riegel‘ oder
- (2) Burg, Kastell‘

(Duden – Deutsches Universalwörterbuch, 6. Aufl. Mannheim 2006)

Die lexikalische Ambiguität existiert in zwei Arten, nämlich Polysemie und Homonymie, die nicht für die Disambiguierung der lexikalischen Mehrdeutigkeit sind Weltwissen und Kenntnis des Kontextes erforderlich, was die Beispiele unten deutlich veranschaulichen:

- (1) Das Schloss liegt auf dem Fensterbrett.
- (2) Das Schloss liegt hoch auf dem Berg.

Die syntaktische Ambiguität in Form einer Wortzusammensetzung, die mehr als eine Lesart ermöglicht, kann am Beispiel *Internetumfrage* gezeigt werden:

- (3) die Umfrage mit Hilfe des Internets‘ oder
- (4) die Umfrage zum Thema Internet‘

Strukturelle Mehrdeutigkeiten solcher Art lassen sich überwiegend mit richtigem Kontext, Fachwissen und kulturgeprägtem Weltwissen lösen.

Die pragmatische Ambiguität kann am Beispiel mehrdeutiger anaphorischer Verweise veranschaulicht werden. Entscheidend ist dabei, dass satzübergreifende pronominale, lokale oder temporale Bezüge kaum einen Beitrag zur Textverständlichkeit und zu deren richtiger Deutung leisten, die ihrerseits mit Textverstehen sowie mit Fachwissen und Allgemeinbildung zu tun hat:

- (5) Der Fahrer des letzten Wagens verursachte einen Unfall. Er war zu schnell.
- (6) Der Fahrer des letzten Wagens verursachte einen Unfall. Er war nicht angeschnallt.

Unter kontrollierter Sprache versteht man „eine natürliche Sprache, die in ihrem Wortschatz und den zur Verfügung stehenden grammatikalischen Mitteln eingeschränkt ist. [...] Die kontrollierte Sprache ist ein Teilsystem einer natürlichen Sprache mit den folgenden Bestandteilen: 1) Regelwerk mit festen Schreibregeln (v.a. Vorgaben zur Formulierung von Sätzen); 2) vorgegebener Wortschatz aus Basiswortschatz und Fachwortschatz in Form eines Lexikons“ (Drewer / Ziegler 2001: S. 192)

Der entscheidende Unterschied zwischen kontrollierter und natürlicher Sprache besteht also in ihrer Entstehung. Während natürliche Sprachen historisch gewachsen sind, werden kontrollierte Sprachen willkürlich geschaffen. Überdies sind kontrollierte Sprachen im Gegensatz zu natürlichen Sprachen über das Lexikon in Form eines vorgegebenen Fachwortschatzes

sowie gemeinsprachlichen Wortschatzes eingeschränkt, über ein Regelwerk mit festen Regeln und Vorgaben zur Satzformulierung unifiziert, über festgelegte Schreibung für Realien standardisiert. Die Regeln für kontrollierte Sprachen werden für jede Sprache klar festgelegt zwecks mehrdeutiger Lesarten von Textsegmenten auszuschließen. Ein breites Spektrum an kontrollierten Sprachen lässt uns nur exemplarisch und ausgewählt ihre Ansätze sowie Anwendungen veranschaulichen.

### 3. Prototypen von kontrollierten Sprachen

Die prototypischen kontrollierten Sprachen resultieren überwiegend aus politischen und kommunikativen Einflüssen dominierender Länder und Kulturen, die in bestimmten geschichtlichen Epochen zu großer Macht gelangt sind. Als die erste "kontrollierte Sprache" wird die griechische Koine („dialektos, gemeinsame Ausdrucksweise“) angesehen, die schon im 4. Jahrhundert v. Chr. unter dem politischen Einfluss Alexanders des Großen in Griechenland geschaffen worden war und als das Instrument zur Erleichterung der Verwaltung in der Antike angesehen wurde. Die Koine basierte auf dem allgemein verständlichen attischen Dialekt und diente als die wichtigste Lingua franca sowie als Kanzleisprache für die östliche Mittelmeerküste bis in die römische Kaiserzeit (*Lehrndorfer 1996, S. 42*). Die „Koine galt als imperial begründete Weltsprache der Antike, ähnlich dem heutigen Englisch in seiner weltwirtschaftspolitischen Funktion“ (*Lehrndorfer / Reuther 2008, S. 98*). Die alte Gemeinsprache wurde in Grammatikschulen gelehrt und entwickelte sich später zur offiziellen Sprache im Mittelmeerraum und im Orient.

Zu dem gleichen Zweck, nämlich als internationales politisches und wirtschaftliches Verwaltungsmittel, wurden auch andere Hilfssprachen konzipiert, unter denen das *Basic English* (Basic American Scientific International Commercial) am bekanntesten ist. Die Forderung nach der Einführung des *Basic English* erhoben Churchill und Roosevelt, um die wirtschaftliche und politische Kommunikation in den Kolonien zu gewährleisten. Diese kontrollierte Sprache war von Ch. Ogden aufgrund der Lexikonrestriktion im Jahre 1930 entwickelt worden. Als Grundwortschatz lagen dem *Basic English* 850 Wörter zugrunde, darunter 600 Substantive (things: 400 „necessary nouns“ und 200 „names of common things“), 150 Adjektive (qualities: 100 Adjektive und 50 adjektivische Antonyme), 100 Operators (18 Verben sowie 9 Konjunktionen, 26 Präpositionen, 16 Pronomen, 29 Adverbien und 2 Artikel). Hinzu kommen 100 allgemeinwissenschaftliche Wörter sowie 50 spezifische wissenschaftliche Wörter (*Ogden 1930, S. 8*). Diese 1000 Wörter sollten internationale Kommunikation gewährleisten.

### 4. Entwicklungsansätze für kontrollierte Sprachen

Aufgrund unzureichender Verkehrswege und mangelnder Kommunikationsmöglichkeiten beschränkten sich internationale Kontakte früher auf geografisch benachbarte Länder. Im 20. Jahrhundert wurden kontrollierte Sprachen weltweit als vorrangiges Instrument zur Optimierung der technischen Kommunikation angesehen und ihre Vielfalt dient als deutlicher Beweis dieser Tendenz:

Für Englisch:

- AECMA: AeroSpace and Defence Industries Association of Europe, früher – Association Européenne des Constructeurs de Matériel Aérospatial

- Avaya: Avaya Controlled English (ACE)
- Research Project of the University of Zürich supported by the Department of Informatics and the Institute of Computational Linguistics: Attempto Controlled English
- KANT Controlled English (CTE)
- Nortel: Nortel Standard English
- Océ: Controlled English
- Perkins Approved Clear English
- Sun Microsystems: Sun Controlled English
- Xerox: Xerox Multilingual Customized English
- Ericsson: Ericsson English
- General Motors (GM): Controlled Automotive Service Language (CASL)
- IBM: Easy English
- Kodak: International Service Language
- Saab Systems: Simplified Technical English (STE)

Für andere Sprachen:

- Siemens: Siemens Dokumentationsdeutsch (SDD)
- Dassault Aerospace: Français Rationalisé
- Scania: Scania Swedish
- Controlled Chinese
- Plain Japanese
- Simplified Technical Spanish

Im Allgemeinen wurden kontrollierte Sprachen implementiert, um

- Unternehmenssprache zu standardisieren und zu pflegen,
- Rechtssicherheit multilingualer technischer Dokumentation für das internationale Publikum zu gewährleisten,
- die Übersetzbarkeit von Texten durch Menschen oder Maschinen effizienter zu machen sowie
- die Wiederverwendbarkeit vorhandener Text- und Satzsegmente für das Erstellen neuer Dokumente zu ermöglichen.

Als künftige Ziele und Funktionen lag man der Entwicklung kontrollierter Sprachen unterschiedliche Konzepte zugrunde.

Als Welthilfssprachen für die internationale Kommunikation wurden die kontrollierten Sprachen überwiegend auf der Basis von *Simplified English* konzipiert, um Sprachbarrieren für Nichtmuttersprachler mit geringeren Englischkenntnissen überwinden zu können.

Die maschinenorientierten kontrollierten Sprachen wurden implementiert, um den effizienten Einsatz von Systemen für die maschinelle Übersetzung zu gewährleisten. Dafür sind Maßnahmen zur Auflösung von Ambiguitäten von großer Relevanz. Erreichen lässt sich dies durch einen strikten und formalisierbaren Regelsatz sowie durch die Vermeidung elliptischer Konstruktionen, von Pronomen, polysemen und homonymen Wörtern.

Als eines der bekanntesten Beispiele einer maschinenorientierten kontrollierten Sprache ist Caterpillar Technical English (CTE) zu erwähnen, das 1991 eingesetzt wurde, um

- Textproduktionsprozesse und -strukturierung zu optimieren,
- die Übersetzung durch den Einsatz von Maschinellem Übersetzung ohne Post-Edition zu erleichtern,
- die Textqualität zu erhöhen,
- den Schreibprozess durch den Einsatz moderner computergestützter Tools zu automatisieren.

Das CTE-Lexikon besteht aus 70 000 Termini mit klar definierter Bedeutung, einigen verbotenen Wörtern und zeigt keine weiteren Einschränkungen (*Hartley / Paris 2001, S. 310*). CTE wird bei der Caterpillar Tractor Company zur Erstellung technischer Dokumentation für ihre Produkte effizient implementiert und verdankt seinen Erfolg den folgenden Faktoren:

- hohes Textproduktionsvolumen bei der Caterpillar Tractor Company (ca. 800 Seiten pro Tag),

- Übersetzung in über 30 Zielsprachen,
- zentralisierte Textproduktion in einer Abteilung mit mehr als 150 Autoren,
- hoher Automatisierungsgrad bei Textproduktion und Übersetzung,
- vollständige sprachliche Analyse von Input-Sätzen,
- Terminologiekontrolle,
- Erfahrung mit kontrollierten Sprachen durch den Einsatz des CTE-Vorläufers Caterpillar Fundamental English (CFE),

- Controlled Language Checker (Clear Check, entwickelt an der Carnegie Mellon University): die Software für die Kontrolle der Regeleinhaltung, Diese prüft die mehrdeutigen lexikalischen und syntaktischen Strukturen, die für die Maschinelle Übersetzung problematisch sind. Alle mehrdeutigen Strukturen des maschinellen Inputs werden interaktiv von einem Autor disambiguiert und anschließend der Maschinellen Übersetzung übergeben (*Hebling 2002, S. 127*).

Einen guten Überblick über das Konzept, die Entwicklung und die Architektur von Controlled Language Checker für Caterpillar Fundamental English geben Teruko Mitamura und Eric Nyberg in den Artikeln „Controlled Language for Multilingual Document Production: Experience with Caterpillar Technical English“ (1999), „Automatic Rewriting for Controlled Language Translation“ (2001), „Controlled English for Knowledge-Based MT“ (1995).

In Bezug auf die verwendeten Methoden liegen der Entwicklung kontrollierter Sprachen zwei unterschiedliche Ansätze zugrunde: der präskriptive und der proskriptive.

Der präskriptive Ansatz ist viel restriktiver als der proskriptive und verbietet alles, was im Regelwerk und im terminologischen Datenbestand nicht verfügbar ist. Deswegen werden alle für das Texterstellen verwendeten Wörter, die im Lexikon und im Regelwerk nicht vorhanden sind, als „unzulässig“ markiert und alle Sätze, deren Struktur den konfigurierten grammatikalischen und stilistischen Regeln widerspricht, zur Umformulierung in Controlled Language Checker angezeigt. Dieser Ansatz leistet aber einen wesentlichen Beitrag zu Konsistenz und Uniformität der zu formulierenden Texte, schließt allerdings die Kreativität der Autoren aus.

Eines der weltweit bekanntesten Beispiele für die präskriptive kontrollierte Sprache ist AECMA Controlled Language (die Kurzform von AeroSpace and Defence Industries Association of Europe; umbenannt aus frz. Association Européenne des Constructeurs de Matériel Aéropatial). Die AECMA-Geschichte begann 1979, nachdem die AEA (Association of European Airlines) die Lesbarkeit ihrer Handbücher hatte prüfen lassen, weil dieses Unternehmen schon damals Probleme mit der technischen Dokumentation für ihre Luftfahrzeuge hatte. Als Hauptgründe für diese Probleme wurden die steigende Komplexität von Maschinen und das permanente Wachstum des Dokumentationsvolumens erkannt. Das letztere hat P. Quintal, der lange Jahre als Technischer Redakteur bei AECMA tätig war, auf der PLAIN-Tagung in Toronto 2002 mit folgenden Zahlen veranschaulicht: Schon 1910 umfasste die technische Dokumentation für eine Maschine ca. 100 Seiten, 1930 1000 Seiten, 1950 20 000 Seiten, 1970 250 000 Seiten, 1990 bereits 500 000 Seiten (*Quintal 2002, S. 12*).

Nach Ergebnissen dieser Studie wurde eine Richtlinie für die widerspruchsfreie und standardisierte AEA-Dokumenten-Erstellung entwickelt, die seit 1987 obligatorisch für den Einsatz im Bereich der kommerziellen Luftfahrt implementiert wurde. Nach der Fusion von

AECMA, AeroSpace (europäische Luftfahrtorganisation) und Defence Industries Association of Europe zum Konzern ASD<sup>1</sup> im Jahre 2004 wurde diese Richtlinie zur einheitlichen internationalen und regionalen Spezifikations-sprache AECMA S 1000D weiterentwickelt.

Der AECMA-Spezifikations-sprache liegen zwei Ziele zugrunde. Einerseits strebt man nach leichter Lesbarkeit technischer Texte auf Englisch, die für Techniker und Mechaniker, deren Muttersprache nicht Englisch ist, optimale Wartungsarbeiten an Flugzeugen sicherstellen; andererseits lassen sich durch den Einsatz von Simplified English die Kosten für die multilinguale technische Dokumentation senken, die von Mitarbeitern, die an verschiedenen Orten und zu unterschiedlichen Zeitpunkten arbeiten, eindeutig, konsistent, übersetzungsgerecht und rechtssicher erstellt werden können.

Ursprünglich wurde S 1000D für den militärischen Bereich (Fluggeräte und -systeme) konzipiert. Später wurde es aber auch für zivile Dokumentationsprojekte in der Land-, See-, Luft- und Raumfahrtindustrie eingesetzt, etwa für Lloyd's Schiffsregister in London, für den Boeing B-787 "Dreamliner" oder den Airbus A-350. Derzeit wird AECMA S 1000D weltweit als eine internationale Spezifikation zur modularen und verteilten Erstellung technischer Dokumentation unter Verwendung einer Common Source Data Base (CSDB) implementiert. Die Datenmodule werden unter Verwendung der Markup-Sprachen SGML bzw. XML erzeugt, die in CSDB gespeichert werden. Jedes Modul besteht aus zwei Teilen: aus Meta-Daten und einem Inhaltsteil. Eine alphanumerische Kodierung von Meta-Daten ermöglicht eindeutige Identifizierung und Verwaltung von Datenmodulen. Zur Beschreibung jeder Inhaltseinheit werden Module in Form von festgelegten Textsorten verfasst und zugeordnet, z.B. deskriptive, präskriptive, instruktive und andere Texte. Ein skizzierter Überblick über die AECMA-Restriktionen hilft, die AECMA-Spezifikations-sprache deutlicher zu erläutern.

Das AECMA-Lexikon wurde nach dem Prinzip „nur eine Benennung pro Begriff und nur ein Begriff pro Benennung“ eingeschränkt. Diesem Lexikon liegen 900 Wörter als Grundwortschatz und eine unbegrenzte Menge technischer Fachwörter und Ausdrücke zugrunde. Technische Bezeichnungen dürfen nur in den Wortarten Substantiv oder Adjektiv sowie technische Verben nur als Verben auftreten und Konversion wird dabei ausgeschlossen. Die neu aufgenommenen Termini dürfen nur in ihren festgelegten Bedeutungen und Wortarten verwendet werden. Außerdem werden weitere Wortarten eingeschränkt und festgelegt:

- Präpositionen und Konjunktionen,
- „Technische Verben“ für Bezeichnung der Fertigungsprozesse,
- „Technische Bezeichnungen“ bei den Wortarten Substantiv und Adjektiv,
- 2000 verbotene synonymische Termini, explizit mit Verweis auf ihre Vorzugsbenennungen.

„Technische Verben“ definiert man als „[...] words used to name actions that are related to your industry or your company in a specific context. Because there are so many Technical Verbs, and because each manufacturer may use a different verb for the same process, there is not a complete list of Technical Verbs in the Specification. Instead, we give you below a list of categories, with some examples, to help you decide if a verb expresses a technical operation. [...] If there is already an approved verb in the Dictionary that accurately describes the action, use the approved STE word. Do not create additional verbs unless it is necessary“:

Example:

- |              |  |
|--------------|--|
| (7) Non-STE: | Cracks radiate from the center of the shaft. |
| (8) STE:     | Cracks go out from the center of the shaft.  |

(ASD-STE100, P. 1-1-7)

<sup>1</sup> AeroSpace and Defence

„Technischen Bezeichnungen“ wurden 20 Kategorien von Wörtern zugeordnet, die sich exemplarisch an folgenden Beispielen veranschaulichen lassen:

Example:

(9) Names of locations on machines, vehicles and equipment: cabin, fuselage [...]

(10) Names of facilities and infrastructure: airport, apron, building [...]

(11) Names of technical records, standards, specifications, regulations: Compass correction card, engine logbook, Federal Aviation Regulations [...]

(ASD-STE100, pp. 1-1-3 – 1-1-4)

Das AECMA-Regelwerk basiert auf neun Gruppen von Regeln, die gemäß den Erkenntnissen der Verständlichkeitsforschung zusammengestellt worden sind:

1. **Words** (14 Regeln), e.g.: RULE: 1.14 Use consistent spelling.

2. **Noun Phrases** (3 Regeln), e.g.: RULE: 2.1 Do not make noun clusters of more than three nouns.

3. **Verbs** (7 Regeln), e.g.: Rule: 3.2 Use the approved forms of the verb to make only:

- The infinitive
- The imperative
- The simple present tense
- The simple past tense
- The past participle as an adjective
- The future tense

4. **Sentences** (4 Regeln), e.g.: RULE: 4.1 Keep to one topic per sentence.

5. **Procedures** (Regeln), e.g.: RULE: 5.1 Keep procedural sentences as short as possible (20 words maximum).

6. **Descriptive Writing** (8 Regeln), e.g.: RULE: 6.3 Use paragraphs to show your reader the logic of the text.

7. **Warning, Caution, Notes** (6 Regeln), e.g.: RULE: 7.4 Identify your command correctly as a warning or caution.

8. **Punctuation and Word Counts** (11 Regeln), e.g.: RULE: 8.1 Use colons (:) and dashes (-) to make vertical lists.

9. **Writing Practices** (3 Regeln), e.g.: RULE: 9.1 Use a Different Construction to rewrite sentences in Simplified Technical English when a word-for-word replacement is not sufficient.

(ASD-STE100, pp. 1-0-5 – 1-0-8)

Zu jedem im AECMA-Lexikon hinterlegten Wort soll die Wortart angegeben werden sowie eine festgelegte Definition oder das alternative empfohlene Synonym. Jede Regel wird dabei mit positiven und negativen Beispielen veranschaulicht.

Der S 1000D Standard ist ein „lebendiges Dokument“. Die Verantwortung für die Pflege der Spezifikation trägt der Lenkungsausschuss, an dem sich Mitglieder aus dem Militär und der Industrie aus verschiedenen Ländern beteiligen. Außer AECMA S 1000D stehen den Kunden auch andere AECMA-Standards zur Verfügung.

Maschinenorientierte Spezifikationssprachen wie Caterpillar Technical English, AECMA Simplified English u.a. werden also als „kontrollierte natürliche Sprachen willkürlich geschaffen, um komplexere technische Informationen zwischen Fachleuten und Laien auf eine verständliche Art zu vermitteln [...]“ (Schwitzer 1998, S. 52).

Der proskriptive Ansatz wurde ursprünglich intern in Form von Redaktionsleitfäden zur Sprachkontrolle und Sprachpflege ausgearbeitet und implementiert, um als effizienter Kontrollmechanismus Unternehmenssprachen zu standardisieren und zu pflegen, und zwar in Bezug



auf Rechtschreibkonventionen, Wortschatz und Terminologie, auf morphologische Strukturen und stilistische Formulierungen. Der proskriptive Ansatz genehmigt alles, was explizit nicht verboten ist.

Um Unternehmenssprache zu pflegen, wird in erster Linie ein Lexikon zusammengestellt, in dem der unternehmens- und fachsprachenspezifische Wortschatz als bevorzugt markiert wird, unzulässige Wörter und Termini werden dabei explizit festgestellt. Auf der grammatikalischen Ebene könnten in instruktiven Texten Passivkonstruktionen und pronominale Wörter verboten werden. Syntaktische Restriktionen beziehen sich überwiegend auf die Satzlänge sowie elliptische Formulierungen, Alternativen werden dabei nicht vorgeschrieben. So leistet auch der proskriptive Ansatz einen wesentlichen Beitrag zur Steigerung der Konsistenz und der Verständlichkeit erstellter Texte sowie zur Erleichterung ihrer Übersetzbarkeit und Lesbarkeit.

## 5. Kontrolliertes Deutsch

Nicht alle Sprachen sind jedoch in gleichem Maße für die Entwicklung der kontrollierten Sprachen einschränkbar. Das hat der Fall „kontrolliertes Deutsch“ deutlich veranschaulicht. Der erste Versuch, kontrolliertes Deutsch zu entwickeln, wurde 1960 von J.A. Pfeffer an der Universität Buffalo im „Institut for Basic German“ in New York begonnen und scheiterte (Pfeffer 1975). Diesen Fehlschlag sieht A. Lehrndorfer in den Einschränkungsproblemen des Deutschen, insbesondere aufgrund der reichen Flexions- und Deklinationssysteme, der komplizierten Syntax mit Satzklammern, verschachtelten Sätzen, flexiblen Wortstellungen im Satz [...]. (Lehrndorfer 1996, S. 27).

Für technische Dokumentation ist aber kontrolliertes Deutsch als technisches Deutsch von großer Relevanz, weil sich viele deutsche Unternehmen als „Global Player“ entwickelt haben und ein effizientes Mittel für Optimierungsverfahren im Bereich „Technische Redaktion“ und „Multilinguale Übersetzung von Technischen Dokumenten“ benötigen. Um diesen Bedarf zu decken, wurde „Leitlinie Regelbasiertes Schreiben – Deutsch für die Technische Kommunikation“ erarbeitet. Diese Leitlinie bezieht sich auf das Qualitätsmanagement, die Unifikation der technischen Dokumentation und die softwaregestützte Implementierung eines Standards. Diese Leitlinie steht allen Autoren zur Verfügung, die sich mit technischer Kommunikation befassen. Die Einhaltung dieser Regeln verspricht die standardisierte Schreibweise von Texten; die Annäherung der Schreibstile während der Dokumenten-Erstellung und die anschließende widerspruchsfreie Wiederverwendung von Texten; Kostenreduzierung für die Erstellung und Übersetzung der technischen Dokumentation; leichtere Verwaltung und Recherche in Datenbanken; Qualitätsüberwachung mit Content-Management-Systemen; Senkung des Produktionshaftungsrisikos.

Die Autoren der Leitlinie haben Sprachrestriktionen auf der Strukturebene entwickelt und zwar Vorschriften zur Verwendung bestimmter Wortformen, zur Wortbildung, zum Satzbau, zur Bildung von Abkürzungen, zur Zeichensetzung, sowie Regeln zur Festlegung von Benennungen. Dabei sind 15 Basisregeln aufzuführen, die durch viele andere ergänzt werden:

T 101: Definieren Sie eine einheitliche Schreibweise von Überschriften pro Überschriftenebene

S 102: Eindeutige pronominale Bezüge verwenden

S 103: Missverständliche Genitivkonstruktionen vermeiden

S 201: Bedingungen als „Wenn“- oder „Falls“-Satz definieren

- S 301: Häufungen von Nominalphrasen vermeiden
- S 302: Zu lange Sätze vermeiden
- S 304: Häufungen von Präpositionalphrasen vermeiden
- S 306: Aufzählungen als Liste erstellen
- S 307: Einen Satz nicht durch eine Liste unterbrechen
- S 311: Häufungen von Nebensätzen vermeiden

S 401: Lern- und sachlogische Reihenfolge einhalten (d.h. ein Handlungsziel soll der Handlungsaufforderung vorangestellt werden. [...] Wichtige Einführungsinformationen werden durch die Zielangabe dem Leser gegeben. [...] Die lernlogische Reihenfolge spiegelt die wirkliche Entscheidungen und Handlungsabläufe des Bedieners und die Prozessschritte der Maschine wider. Die sachlogische Reihenfolge wird vom Aufbau der Maschine vorgegeben.) (*Gesellschaft für Technische Kommunikation (Hg.) 2011, S. 55*)

S 504: Passiv in bestimmten Informationseinheiten vermeiden (Verwenden Sie in folgenden Informationseinheiten kein Passiv: Anweisungen und Anweisungssequenzen sowie Sicherheits- und Warnhinweise) (*Gesellschaft für Technische Kommunikation (Hg.) 2011, S. 58*)

S 505: Nominalisierungen vermeiden.

S 510: Einheitliche Satzmuster verwenden.

B 101: Definieren Sie die Schreibweise von Wörtern mit Bindestrich.

(*Regelbasiertes Schreiben – Deutsch für die technische Kommunikation: Leitlinie. 2011, S. 81*)

Dieser Leitfaden wird zeitgemäß überarbeitet und erweitert. In der zweiten Auflage sind z.B. wichtige Themen hinzugekommen: Rechtschreibung, Zeichensetzung, platzsparendes Schreiben und übersetzungsgerechtes Schreiben (*Regelbasiertes Schreiben – Deutsch für die technische Kommunikation : Leitlinie. 2013*).

## 6. Controlled-Language-Checker

Die Befolgung unternehmenskonzipierter Redaktionsleitfäden und Regelwerke lässt sich mit Controlled-Language-Checkers (CLC) überprüfen. Der begrenzte Umfang der hier vorliegenden Arbeit erlaubt jedoch keine präzise Analyse dieser Software. Es ist jedoch unerlässlich, ein paar ausgewählte CLC als effiziente Tools zur Zeit- und Kostenersparnis sowie zur Konsistenz-Sicherung hier kurz zu erwähnen und cursorisch ihre Funktionen zu erläutern.

Diese Tools lassen sich differenzieren in frei konfigurierbare wie CLAT (Institut der Gesellschaft zur Förderung der Angewandten Informationsforschung e.V. an der Universität des Saarlandes (IAI), Saarbrücken) und Acrolinx Suite (acrolinx GmbH, Berlin) sowie in für bestimmte kontrollierte Sprachen festgelegte Software-Arten wie CTE-system (Carnegie Group Incorporated, CGI & Carnegie Mellon University's Center for Machine Translation: Caterpillar Technical English, implementiert für die Produktion und Übersetzung von Texten der Caterpillar Tractor Company), BSEC (Boeing: Boeing Simplified English Checker, implementiert zur Produktion von Texten in AECMA Simplified English), MAXit, Smart Communications – Einhaltung der Regeln von ASD STE und CE, EEA (IBM: EasyEnglishAnalyzer, eingesetzt als fester Regelsatz bei IBM) usw.

Diese Tools zur Sprachkontrolle sind dazu geeignet, jedes Modul (z.B. bezgl. Rechtschreibung, Stil, Terminologie, Konsistenz u.a.) separat zu prüfen und Fehlerprotokolle zu erstellen, wodurch die Autorenkompetenzen überwacht werden können. CLC werden als

erfolgsversprechende Werkzeuge angesehen, um sprachliche Standardisierung zu erreichen, die Qualität der Ausgangstexte zu sichern, ihre spätere Übersetzbarkeit zu verbessern und Übersetzungskosten zu reduzieren.

## 7. Kontrollierte Sprachen und Übersetzung

Kontrollierte Sprachen sind branchen- und unternehmensorientiert. Herkömmlicherweise wurden sie für „Global Player“ und große Sprachdienstleister für technisches Schreiben konzipiert und als ein effizientes Mittel zur Erstellung von multilingualen Gebrauchstexten angesehen. Dieser Prozess lässt sich in zwei Phasen unterteilen: (1) die Erstellung der Ausgangstexte und (2) deren Übersetzung in die dementsprechenden Zielsprachen. Die Qualität der zu übersetzenden Ausgangstexte hat dabei einen wesentlichen Einfluss auf die Qualität der Zieltex-te sowie auf die Effizienz des Übersetzungsverfahrens und dadurch auf die Übersetzungskosten, und zwar deswegen, weil logische, sprachliche oder inhaltliche Originalmängel sogenannte GIGO-Effekte (garbage in – garbage out) zur Folge haben. Aus diesem Grund sind die Einhaltung der kontrollierten Sprachen sowie effiziente Methoden zur Standardisierung der Ausgangstexte, mit denen das Translation-Memory-System eingespeist wird, von Relevanz.

Mit verstärktem Einsatz serverbasierter, computerunterstützter Übersetzungstools (Translation-Memory-Systeme, Lokalisierung-Software, maschinellen Übersetzungssysteme) trat ein großer Wandel in der Übersetzungsbranche ein, der mit Kollaboration, Outsourcing, Crowdsourcing usw. einherging. Durch diese CAT-Tools wurden globale Arbeitsmärkte für viele Beteiligte eröffnet: für Auftraggeber, große Sprachdienstleister, selbstständige Korrekto-ren, technische Autoren, Freelancer usw. Doch örtlich und zeitlich differenzierte Teilprozesse eines Projektes stellen für alle Beteiligten und in allen Phasen der Dokumenten-Erstellung sowie ihrer Übersetzung hohe Ansprüche an Standardisierungsmaßnahmen.

„Es existiert nunmehr auch der Ansatz, eine Kontrollierte Sprache auf übersetzte Texte anzuwenden („Controlled Translation“), wo sie jedoch das gleiche Ziel der Standardisierung und Normierung sowie der besseren Verständlichkeit verfolgt, wie in ihrer ursprünglichen Intention für den Ausgangstext.“ (Lehrndorfer / Reuther 2008, S. 109)

So erlangt die Qualitätssicherung im Erstellungsverfahren multilingualer technischer Dokumente immer größere Bedeutung, was eine permanente Echtzeitkontrolle seitens der Projektmanager erfordert. Die Fähigkeit, Texte übersetzungsgerecht zu schreiben, ist für global agierende Unternehmen unverzichtbar geworden, weil die Anzahl von Exact-Matches bei der Übersetzung mit Translation-Memory-Systemen durch die identischen Formulierungen der Ausgangstexte deutlich steigert. Mithin werden die Zeit und die Kosten für Post-Editing seitens der Übersetzer rasant reduziert. Die einheitliche und konsistente Übersetzung der Ausgangstexte vereinfacht deren Lesen und Verstehen, optimiert die Usability von Produkten sowie Dienstleistungen und verringert die Anzahl von Supportvorfällen.

## 8. Ein Blick in die Zukunft

Unternehmen aber auch viele Branchen sind vom Erfolgsfaktor Sprache abhängig: Behörden, Versicherungen, Banken etc. Je verständlicher Sie mit Ihren Kunden kommunizieren, desto weniger Nachfragen kommen, die den zusätzlichen Bearbeitungsaufwand fordern und letztendlich den Zeit- sowie den Geldverlust zur Folge haben. Aus der Perspektive der

inter- und intrakulturellen Experten-Laien-Kommunikation wurden die kontrollierten Sprachen entwickelt, um Expertenwissen an Laien zu vermitteln sowie verwendete Begriffe, Konzepte und Prozesse ihrem Verständnis anzunähern. Rasant wachsende Inhalte könnten mit technologiegeprägtem Verfahren schneller, rentabler und effizienter erstellt werden.

Im informationsgetriebenen digitalen Zeitalter entwickeln Marken intelligente Konzepte, um ihre Kunden über alle vorhandenen Kommunikationswege anzusprechen nämlich per Brief, E-Mail, SMS, Newsletter, Social Media, Smartphones mit mobilen Apps oder im Chat. Jedes einzelne digitale Element des Produktionsprozesses erzeugt Daten. Durch ihre Vernetzung, Bearbeitung, Analyse, (Re-)Kombination und Verteilung wird neues Wissen in wenigen Minuten geschaffen, das das Lern- und Entwicklungspotenzial von Kunden exponentiell steigert. Im Zuge dessen erhalten traditionelle Geschäftsmodelle eine neue Ausrichtung, die Synergie-Effekte zur Folge haben.

Die digitale Transformation hat die Arbeitsprozesse fundamental verändert. Soziale Medien und Apps sammeln Informationen und das Internet der Dinge bündelt alle gesammelten Daten. Ihr smarterer Einsatz macht das Leben von den Benutzern einfacher, denn überschaubare, individualisierte und termingerechte Informationen werden auf Knopfdruck zu jeder Zeit, an jeden Ort, auf jedes Endgerät geliefert. Dies hat die Erwartungshaltung von Konsumenten stark verändert, die mehr relevante Inhalte erwarten sowie ausführlich und schnell möchten informiert werden. Die Anbieter-Kunden-Kommunikation entwickelt sich in Richtung "Monolog zum Dialog".

Seinen Siegeszug hat auch das Thought-Leadership-Marketing seinen Siegeszug angetreten. Die Thought-Leadership-Strategie wird zum Beispiel von den Marken wie Apple und Tesla implementiert, die ihr ganzes Geschäftsmodell für die Positionierung auf dem Markt optimieren. Diese setzen Storytelling-Strategien an, definieren ihren Markt selbst, verbalisieren Probleme und bieten schlaue Lösungen an, bieten wertvolle Inhalte an, sprechen Menschen über alle vorhandenen Kommunikationswege hinweg an. Mit den eigenen Kundenportalen und Apps begeistern sie ihre Kunden mit After-Service-Dienstleistungen und entwickeln mittels der erwähnten Aktivitäten feste Beziehung zu den Kunden. Die Kommunikation ist auf kundenorientierte Bedürfnisse ausgerichtet. Der proaktive Gießgefäß-Kommunikationprinzip und die Always-On-Kultur erzielen die gewünschte Wirkung: die Kundenzufriedenheit, ihre Einbindung und ihr Treue, weil Verbundenheit und Kooperation sind fundamental in uns Menschen angelegt. Aus dieser Perspektive ist das iPhone kein weiteres Smartphone aber ein eigener Erlebnisbereich der mobilen Freiheit mit App Store, FaceTime, iTunes und eigener Cloud. Das Tesla ist keine Alternative zu Porsche aber ein bewusstes Zukunftsdenken.

Die Marken schaffen eigene Markenplattformen und gründen weltweite digitale Kunden-Communities, in denen sich zu deren Fans gewordene Kunden zu zahlreichen Aktivitäten treffen, Wissen austauschen, persönliche Beziehungen zueinander und zu der Marke aufbauen. Ihre Kunden kaufen die Markenwaren nicht wegen des Produktgefühls, sondern wegen des Gefühls der Zugehörigkeit. Mit den Bedürfnissen Ihrer Kunden im Blick und mit klaren Visionen beachten, begeistern und inspirieren die Marken ständig neu. Das Thought-Leadership-Marketing erreicht dadurch seine maximale Wirkung: eine dauerhafte Alleinstellung im Markt.

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## ZASTOSOWANIE WYDZIAŁÓW O TEJ SAMEJ NAZWIE I PEŁNIĄCYCH RÓŻNE FUNKCJE W MUGHAMACH AZERBEJDŹAŃSKICH

Nijat Paszajew

Doktorant, Akademia Muzyczna w Baku im. Uzeyira Hajibeyli, Azerbejdżan

e-mail: Nicat.pashayev.81@mail.ru, orcid.org/0000-0001-9993-8848

### Abstrakcyjny

Badanie mughamów azerbejdżańskich jest istotne w muzykologii. Sztuka Mugham rozwinęła się na podstawie tradycji ustnych od średniowiecza do czasów nowożytnych i wypracowała unikalną formę strukturalną i treść muzyczną. W praktyce wykonawczej udoskonalono instrumenty mugham, mughamy małych rozmiarów i mughamy perkusyjne. W pracach naukowych wybitnych muzykologów-naukowców, w tabelach mughamów i programach edukacyjnych mistrzów wykonawców można prześledzić powstawanie wydziałów o tej samej nazwie w mughamach. Charakterystyka języka muzycznego mughamów azerbejdżańskich – podstawa chwili, struktura kompozycyjna, melodyka dostarczają bogatego materiału do badań i pozwalają na odkrycie ważnych prawidłowości języka muzycznego mughamów.

Kwestię zastosowania wydziałów o tej samej nazwie w strukturze mugham dastgah można rozpatrywać z wielu aspektów. Wykorzystanie działów o tej samej nazwie w Mugham dastgah ma ogromne znaczenie w strukturze kompozycyjnej i objawia się w różnych aspektach. Szereg działów o tej samej nazwie istniejących w dziedzictwie mughamów jest używanych w różnych mughamach i mają znaczenie przejścia z jednego punktu do drugiego w strukturze szeregowej dastgah. Z tego punktu widzenia szczególne miejsce zajmuje szereg działów mugham zarówno w mughamach opartych na tym samym momencie, jak i w mugham dastgah opartych na różnych momentach: 1) Charakteryzują się takie działy jak „Bardasht”, „Maya” używane w mugham dastgah jako wydziały o ustalonej funkcji, funkcja tych wydziałów nie zmienia się w mugham. 2) Szereg działów – „Araq”, „Shikasteyi-fars” itp., pełni podwójną funkcję w zależności od użytego mughama: w mughamach opartych na tym samym momencie charakteryzują się one funkcją stałą, a w mughamach opartych na różnych momentach, charakteryzują się one jako działy modulowane.

**Słowa kluczowe:** mugham, wydział, forma, struktura serii, język muzyczny.

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### 1. Wstęp

Problematykę badania struktury i cech gatunkowych mughamów podjęto w szeregu opracowań. Na podstawie prac badawczych Uzeyira Hajibeyli, Mammadsaleha Ismayilova, Ramiza Zohrabova i innych muzykologów-naukowców dokonaliśmy przeglądu cech strukturalno-kompozycyjnych mughamów związanych z podstawą maqamu. W naszych badaniach za główny cel postawiliśmy sobie zbadanie działów o tej samej nazwie stosowanych w odrębnych mughamach. Z tego punktu widzenia staraliśmy się przeprowadzić analizę porównawczą różnych mughamów, grupując je według punktu widzenia, korzystając z wydań nutowych. Przegląd wariantów mughama w wydaniach nutowych „Rast”, „Shur”, „Zabul Segah”, „Chahargah”, „Byati-Shiraz”, „Shustar”, „Humayun” itp. mugham dastgahs pokazuje, że kompozycja każdy z nich składa się z tradycyjnych działów, które mają ogromne znaczenie w strukturze

mugham i koniecznie są zachowane. Zauważalne są jedynie pewne wariantowe zmiany w kompozycji i treści melodycznej mughamów.

## 2. Dyskusja

Stół mugham ma złożoną konstrukcję kalenicową ze względu na swój kształt. Posłużono się tutaj przykładami różnych gatunków – działów mugham, klasyfikacji i kolorów. Struktura formularza składa się z kolejno rozwijanych departamentów mugham na podstawie statusu, ogólnie rzecz biorąc, wprowadzenia (Daramed, Bardasht), departamentu mayi, departamentów mugham ułożonych w linii rosnącej według poziomów statusu i składają się one z naprzemiennych klasyfikacji i kolorów. Główną jednostką jednoczącą formę jest temat i rytm działu płynów. Jednocześnie każda sekcja ma swój własny temat melodyczny i charakterystykę rytmu i zajmuje swoje miejsce w sekwencyjnym rozwoju mugham dastgah.

Zatem w ogólnej strukturze mughama zachodzi kilka etapów rozwoju. Pierwszy z nich to etap rozwoju melodycznego wokół fazy płynnej. Na ten etap składają się działy „Bardasht”, „Maya” oraz działy z nim powiązane pod względem mode-tonalności i uzupełnione kadencją Maya. Etap drugi – jako nowy etap rozwoju, wiąże się z oddaleniem się od drożdży na pewną odległość i objęciem wyższych stadiów trybu. Na tym etapie przejawia się przetworzenie tematu działu „Maja” w nowej tonacji (w środkowym rejestrze), a także modulacje do różnych momentów. Trzeci etap związany jest z przejściem do nowego, wyższego rejestru – powrotem do głównej modiczności na górze, zapewniającej kulminację mugham i zakończenie jej na scenie majowej. Struktura ta pojawia się we wszystkich dastgah mugham z różnymi odmianami w zależności od trybu.

M. Ismayilov scharakteryzował przejścia wewnątrz mugham dastgah w następujący sposób: „Jedną z zasad organizacji mughamów według ich formy (tworzenie gałęzi) jest przeniesienie tego samego trybu (i niektórych melodii) o oktawę wyżej, w kwintę lub kwartę. W niektórych przypadkach górny czwarty lub piąty ton danego momentu zmienia tonację, stając się niezależną wysokością tonu, a zatem w tym trybie formowana jest modulacja lub kierunek (Ismayilov, 1984: 98).

Zgodnie z naszym głównym celem badawczym staraliśmy się zbadać główne cechy funkcjonalne działów tworzących strukturę mugham dastgah. Zatem działy ważne na etapach rozwoju mugham można podzielić na dwie części:

Po pierwsze, istnieją stałe działy utworzone w trybie głównym i bezpośrednio stanowią podstawę mugham dastgah.

Drugi to działy mugham, które zapewniają przejścia z punktu głównego do innych trybów, wśród których można wymienić „Araq”, „Shikasteyi-fars” i inne działy. Musimy zauważyć, że takie wydziały mają podwójne znaczenie w mugham dastgahs. W pierwszym przypadku przełączenie na określony rejestr jest ważne w urządzeniach Mugam z własną bazą trybu stabilnego, natomiast modulacja i kierunek są ważne w Mugamach z różnymi bazami modów. Z tego punktu widzenia interesujące jest zbadanie wydziałów, których nazwy powtarzają się w mugham dastgah.

Wśród wydziałów, których nazwa powtarza się w mugham dastgahs, można wymienić przede wszystkim „Bardasht”. Dział ten występuje we wszystkich mughamach i jest scharakteryzowany jako dział o ustalonej funkcji i przyciąga uwagę jako dział o zróżnicowanej treści.

„Bardasht” to ważny wydział, który ma obowiązek wjazdu do mugham dastgahs. Należy również wspomnieć, że dział „Bardasht” ma specjalne nazwy w wielu maszynach mugham. Na

przykład w „Rast” dastgah „Bardasht” nazywa się „Novruzzi-Ravanda”, „Bazmigah” w „Mahur-hindi”, a „Amiri” w „Shushtar”.

R. Zohrabov szerzej opisał główne cechy wydziału „Bardaszt” i jego miejsce w mughamie: „Bardaszt” to epizod-preludium rozgrywane w swobodnym, improwizacyjnym stylu. Wykonanie improwizacji na mugham dastgah rozpoczyna się od utworu „Bardasht”. To nie przypadek, że „Bardasht” oznacza kolekcję. Bo w „Bardasht” ucieleśnia się ogólny nastrój mugham dastgah, świata figuratywno-emocjonalnego (Zohrabov, 2013: 149). Tutaj ukazane są główne cechy „Bardasht” – jego rola jako improwizowanej przedmowy instrumentalnej na początku dastgah, ogólna treść mughama oraz podstawa trybu-intonacji.

Ta część, która służy jako wprowadzenie, zawiera inną treść muzyczną w każdym mugham. „Bardasht” jest ustalany na początku każdego mugham w odniesieniu do płynu głównego punktu. Pod tym względem gałęzie „Bardasht”, „Rast”, „Shur”, „Chahargah” i innych mughamów opierają się na etapach majów trybu głównego, zaczynając od punktu kulminacyjnego (zil-maya), kończąc na niskim rejestrze (bam) w mayi, intonacja melodyczna „Maya” jest powiązana z działem i przygotowuje brzmienie tego działu.

Dział „Bardasht” ma unikalną strukturę, przyciąga uwagę podobieństwami w niemal wszystkich mughamach. „Bardasht” składa się z dwóch etapów, z prezentacją tematu opartego na istocie chwili w rejestrach Zil i Bam. Ważna jest rytm nadawany na końcu zdań tworzących strukturę „Bardasht” – „noga”. Ta kadencja znajduje odzwierciedlenie także w innych działach i ma w pewnym sensie znaczenie jednoczące.

F. Chalabijaw w swoich badaniach scharakteryzował strukturę „Bardasztu”. Autor zauważył, że „Bardasht” grany jest w stylu instrumentalnym lub wokalnie-instrumentalnym, co ma początkowo, wprowadzające znaczenie, jako specjalny dział funkcyjny w ramach dastgah. Pokazuje, że forma „Bardasht” składa się z dwóch części: pierwsza część jest podstawą „Bardasht” i składa się z jednego lub dwóch rogów zbudowanych wokół zil-maya; druga część jest częścią dodatkową „Bardasht” i łączy część główną z działem „Maja”. Ta część również zaczyna się od tympaanu i kończy na „mai” i otrzymuje nogę. Ta struktura jest główną (poważną) formą „Bardasht”. Istnieje kilka rodzajów „Bardasht” w wykonaniu mugham. Są to: „Rozszerzony Bardasht”, „Usun Bardasht”, „Bam Bardasht”, „Redukcja Bardasht”, „Zmienny Bardasht” (Cheliabyev, 2009: 2).

Jak widać, główne cechy i struktura wydziału „Bardasht” zostały szeroko scharakteryzowane w literaturze naukowej. Na tej podstawie sprawdziliśmy podstawy trybów, zawartość muzyczną i strukturę działu „Bardasht” w kilku mugham dastgah. Na przykład dział „Bardasht” w instrumencie „Rast” jest powiązany z trybem rast ze względu na jego podstawę modową i cechy melodyczne, a jego struktura melodyczno-intonacyjna przejawia się także w dziale „Maya” mughama „Rast” i można powiedzieć, że działy te są ze sobą powiązane tematycznie.

Należy zauważyć, że struktura oddziału „Bardasht” mughama „Rast” składa się z trzech etapów. Po pierwsze, odniesienie do zil-maya w głównej części i kontynuacja wokół tego kroku; po drugie, rozwój melodyczny – obejmujący wyższe stopnie trybu i zatrzymujący się na piątym tonie; i trzecia, kadencja „mai” – reprezentuje zejście od dzwonu do bemy i ugruntowanie się w maji, dając w ten sposób dostęp do następnej gałęzi „Mai”. W dziale „Bardasht” omówiono podstawowe cechy intonacji trybu, rozwoju melodycznego i rytmu mughama „Rast”, a aspekty te znajdują odzwierciedlenie w strukturze kompozycyjnej i zawartości muzycznej mughama. Takie cechy strukturalne przejawiają się również w departamentach „Bardasht” w „Shur”, „Zabul-Segah”, „Chahargah” mugham dastgahs.

W przeciwieństwie do innych mughamów, w „Bayati-Shiraz” „Bardasht” i „Maya” brzmią na tym samym poziomie rejestrów. Należy wspomnieć, że gałąź „Amiri” jest używana



w dwóch mughamach „Bardasht”: w mughamach „Shustar” i „Rahab”. Mamy tu do czynienia ze wspomnianym przez F. Chalabijawa typem „Bama Bardashta”. Istota tego polega na tym, że zamiast „Bardasht” w dastgah używana jest inna gałąź oparta na trybie, która brzmi w dolnym rejestrze.

Mistrz Tarzan Bahram Mansurow opisał strukturę mughama „Shustar” w następujący sposób: W mugham „Shustar” klasyczna khananda i nasi muzycy wykonują sekcje „Amiri”, „Shustar”, „Masnavi”, „Molavi”, „Bidad”. Zamiast „Bardasht” śpiewacy zaśpiewali sekcję „Amiri”. Ciekawym aspektem było to, że zaczęli „Amiri” jako „Rahab”, a następnie zmienili je na „Shustar” (Mansurov, 2003: 151). Z tego punktu widzenia, choć zachodzą zmiany w treści aktualnie wykonywanego mugamu „Shustar” w powiązaniu z innymi działami, możemy zauważyć, że dział „Amiri” zachowuje swoje wprowadzające znaczenie. Jednak w przeciwieństwie do podstawy trybu Sheshtar, na którym opiera się mugham, podstawą działu „Amiri” jest następujący punkt. „Amiri” powstał jako część mughamów opartych na trybie Shur, a później zaczęto go używać w mughamach „Shustar”.

Oprócz wydziału „Bardasht” duże znaczenie ma wydział „Majów”, jeden z wydziałów o stałej funkcji w strukturze dastgah. Dział „Maya” stanowi podstawę platformy opartej na jej modzie i treściach muzycznych. Chociaż baza modowa działu „Maya” w każdym instrumencie mugham jest inna pod względem cech melodycznych, w strukturze tego działu widoczne są pewne wspólne cechy. Wśród nich, bazując na śpiewaniu kroku „maya” tematu, wznoszącej się linii ruchu rozpoczynającej się od dolnego rejestru i powracającej do poziomu „maya”, sekwencyjnie w linii rozwojowej, poszerzając zakres wokalny w oparciu o kroki referencyjne trybu, kończąc zdania muzyczne w „maya”, na końcu sekcji „koniec maji” – szeroko podając rytm „maya” i należy odnotować zakończenie. Obserwujemy te aspekty oddzielnie w strukturze wydziałów „Majów” wszystkich dastgah.

Szereg działów używanych w mugham dastgah pełni podwójną funkcję. Z jednej strony, gałąź brzmi w swoim rodzimym środowisku w mughamach, które są takie same w zależności od trybu, na którym się opiera, co bezpośrednio obserwujemy w mughamach należących do tych samych rodzin mughamów opartych na modach. Z drugiej strony dział ten jest zawarty w składzie innych mughamów opartych na modach i ma znaczenie w zakresie modulacji nowego trybu.

Takie departamenty obejmują „Arak” („Khavaran”), „Shikasteyi-fars” („Khojasta”), „Dilkesh”, „kurdyjski”, „Mukhalif” („Manandi-mukhalif”), „Uzzal”, „Nishi- departamenty można nazwać „faraz”. Działy te mają modulujące znaczenie w strukturze różnych mughamów. Na przykład w różnych mughamach służy do przełączania z działu „Arak” do trybu rast i z departamenty „Shikasteyi-fars” i „Uzzal” do trybu segah. Przyjrzyjmy się tym departamentom w mughamach.

Dział mugham „Arak” oparty na trybie Rast jest uważany za dział o ustalonej funkcji w serii mugham „Rast”. Przede wszystkim dział ten brzmi w kulminacyjnym punkcie platformy „Rast”. Treść muzyczna „Araq” polega na powtórzeniu tematu z sekcji „Maya Rast” w wersji wyższej o oktawę. Temat sekcji „Araq” i punkt kulminacyjny w mugham pozostają niezmiennione we wszystkich przypadkach (w różnych mughamach opartych na różnych trybach), w których używana jest ta sekcja.

Na platformie „Rast” motyw „Maya Rast” stanowi podstawę całej kompozycji jako główny temat mugham. Wersja tego tematu po raz pierwszy pojawia się w „Bardasht” w wysokim rejestrze, a następnie jest szeroko rozwijana w dziale „Maya Rast”. Ten sam motyw jest przedstawiony w sekcji „Araq” w kulminacyjnym momencie mugham. Gałęzie „Bardasht” i „Arag” brzmią na tym samym poziomie. Z tego punktu widzenia, jeśli „Bardasht” jest

motywującym punktem wyjścia rozwoju, „Maya Rast” jest interpretowany jako jego istota, a „Arag” jest interpretowany jako wysoki i końcowy etap rozwoju.

Strukturę kompozycyjną Mugham dastgah możemy podzielić na trzy etapy. Pierwsza z nich to scena „maya”, składająca się z działów „Bardasht”, „Maya Rast” i „Ushshag” oraz „Huseini” zbudowanych wokół „mai”. Drugi to etap rozwoju oparty na przejściach trybów Shur i Segah takich jak „Vilayati”, „Dilkash”, „Kurdish”, „Shikasteyi-Persian”. Trzeci to kulminacja, powtórka i ostatni etap oparty na trybie głównym, składający się z gałęzi i typów „Araq”, „Rak”, „Panjgah”, „Qarayi”.

Jak widać głównym zadaniem działu „Araq” jest zapewnienie kulminacji i modowej powtórki sceny. Ten aspekt jest również widoczny w innych mughamach opartych na trybie „Rast”. Tak więc, jeśli chodzi o tonację modową, o czwartą wyższą niż „Rast” mugham dastgah – „do” w „Mahur-Hindi” mugham dastgah opartym na trybie Rast z „maya”, gałęzią „Araq”, opartą na odpowiednio oktawie „maya” stanowi kulminację i odzwierciedla etap powtórki. W mugamie „Orta Mahur” opartym na trybie rastowym „Fa” „maya” sekcja „Arag” nie jest już używana, ponieważ ze względu na jej brzmienie pokrywa się z bardzo wysokim rejestrem.

Sekcję „Araq” można także usłyszeć w kulminacyjnym momencie mughama „Rahab”. „Rahab” to mugham oparty na trybie shur, dlatego użycie gałęzi „Arak” charakteryzuje się przejściem od shur do rasta. W tym przypadku ważny jest dział modulacji „Araq”. Stąd oczywista jest podwójna funkcja tego wydziału w mugham.

W dzisiejszych czasach dział „Araq” nie jest stosowany w mughamach należących do rodziny mughamów „Segah”. Jednak w programach mugham z początku XX wieku dział „Arak” znajduje się w mugham „Segah”. W tej chwili zadaniem tego działu jest przejście z trybu zegarka na tryb rast.

Zatem gałąź „Araq” – używana w mughamach opartych na tym samym trybie i różnych mughach opartych na modach, pełni inną rolę w zależności od swojej pozycji i znaczenia: w mughamach opartych na trybie Rast gałąź „Arak” – wykonuje punkt kulminacyjny i powtórzenie trybu, w mughamach opartych na trybie shur i segah oraz gałęzi „Araq” znaczenie modulacji rasta.

Jako jeden z wydziałów dwufunkcyjnych, interesujące jest również zastosowanie działu „Shikasteyi-fars” w mughamach. Ta gałąź opiera się na trybie segah i jest jedną ze stałych gałęzi w mughamach opartych na trybie segah. W mughamach „Zabul Segah”, „Kharij Segah”, „Mirza Huseyn Segah”, „Shikasteyi-fars” jest zdecydowanie używany jako jedna z głównych gałęzi. W wielu mughamach opartych na różnych momentach – mughamach „Rast”, „Shur”, „Rahab”, „Chahargah”, „Bayati-Shiraz”, włączenie „Shikasteyi-fars” jest oznaką przejścia do trybu segah. Dlatego dział modulacji jest ważny.

W związku z przejściem do trybu segah w środkowej części mughama „Rast”, modulacja z trybu rast do trybu górnego segah trzecji wielkiej następuje podczas korzystania z sekcji „Shikasteyi-fars”. Charakteryzując tę gałąź muzykolog-naukowiec Mammad-saleh Ismayilov zauważa, że melodia gałęzi „Shikasteyi-fars” opiera się na diatonicznych krokach trybu, nawiązując do piątego tonu trybu Rast (*İsmayilov, 1991: 9*). Proces przejścia odbywa się poprzez kontynuację stopni skali rastowej, nawiązującej do tonu piątego i trzeciego skali. Trzeci ton rastu staje się „mają” segah.

Modulacja prawa do segah w relacji trzeciorzędowej stała się stałym aspektem mughamów. Zatem tradycyjnie przełącza się z „Sol” „maya” Rast na „si” „maya” sega, „do” „maya” rast na „mi” „maya” sega.

Przejście z jednego punktu do drugiego w obrębie mugham powoduje zmianę jego treści muzycznej. Uzeyir Hajibeyli opisał przejście od Rast do segah w swoim artykule „O muzyce

Turków azerbejdżańskich” w następujący sposób: „Powrót Shikasteyi-fars” z bazą „Segah” i duchem „Segah” w środku „Rast” do „Rast” ukazuje i ogłasza zwycięstwo umysłu nad zmysłami (*Hacıbəyli, 2005: 39*).

W ten sposób dział „Shikasteyi-fars” utworzony w trybie segah tworzy przejście do środowiska segah w obrębie mugham „Rast” i służy wzbogaceniu treści i emocjonalnego charakteru dastgah.

Ponadto na uwagę zasługuje dział mughamów „Shikasteyi-fars” jako dział, którego znaczenie ma przejście do trybu segah w różnych mughamach opartych na trybach.

W strukturze mughama „Shur” ważne są także przejścia do trybów rast i segah, a te modyfikacje przeprowadzane są przez odpowiednie działy. Należy zauważyć, że na etapach rozwoju mughama „Shur” dwukrotnie obserwuje się modulację do trybu segah. W pierwszym przypadku przejście na segah odbywa się poprzez dział „Shikasteyi-fars”, a w drugim przypadku poprzez dział „Saranj”. Chociaż gałąź „Shikasteyi-fars” jest używana jako tradycyjne narzędzie modulacji wśród mughamów, gałąź „Saranj” jest jedynie gałęzią należącą do mughamów „Shur” i nie występuje w innych mughamach. Tym samym skromny plan tonalny mughama „Shur” przyciąga uwagę swoją wyjątkowością.

Ogólnie rzecz biorąc, dział mugham „Shikasteyi-fars” jest godny uwagi jako dział, dla którego ważne jest przejście do trybu segah w różnych mughamach opartych na trybach.

### 3. Wniosek

Zatem badanie kwestii wykorzystania działów o tej samej nazwie w mugham dastgahs ujawnia różnorodność metod ich stosowania. Działy o tej samej nazwie używane w mugham dastgah można podzielić na dwie części w zależności od ich cech funkcjonalnych: wydziały o stałych funkcjach i wydziały o podwójnej funkcji. Działy o ustalonej funkcji mają dwoisty charakter w mughamach z tym samym punktem w strukturze mugham dastgahs. Z jednej strony gałąź brzmi w swoim rodzimym środowisku w tych samych podstawowych mughamach ze względu na punkt jej założenia. Z drugiej strony dział ten wchodzi w skład innych mughamów opartych na momencie i ma znaczenie modulacji do nowego momentu.

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## CHATGPT IN THE PARADIGM OF MODERN EDUCATION

**Iryna Nikitina**

Senior Lecturer, Dnipropetrovsk State University of Internal Affairs, Ukraine  
e-mail: N.I.P@i.ua, orcid.org/0000-0003-3767-7034

**Tetyana Ishchenko**

Senior Lecturer, Dnipropetrovsk State University of Internal Affairs, Ukraine  
e-mail: ishchenkotatiana76@gmail.com, orcid.org/0000-0002-3103-978X

### Summary

The article deals with the impact of the application of the ChatGPT tool in education. There is a contradictory attitude towards chatbots in the world. Some countries ban its use, others try to maximize its potential. Reports from teachers around the world show that the use of ChatGPT in education has a positive impact on teaching and learning. However, special attention should be paid to the importance of training teachers in the correct use of this tool. It is necessary to familiarize teachers with the operating principle of ChatGPT, which can significantly improve the quality of learning and the creative component of the lesson, and, consequently, increase students' interest in learning. When deciding to use AI in education, it is critical to recognize that it brings significant issues with it, such as data privacy, equity in access to education, and the impact on the educator's role in teaching. All this needs to be addressed before AI finally enters the educational process around the world. Modern education necessitates innovation, and GPT technologies provide unique instruments for fostering critical thinking and a creative approach.

**Key words:** ChatGPT, technologies, artificial intelligence, education, innovative teaching methods.

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### 1. Introduction

We live in an era of globalization when everything new is quickly becoming available to millions of people around the world. Information technology and the Internet have accelerated the exchange of ideas, culture and technology, creating unique opportunities for global interaction and cooperation. This rapid exchange impacts not only the economy, but also education, enriching our society with diversity and perspectives from all corners of the planet (*Nikitina, Ishchenko, 2023*). Over the past few months, generative intelligent systems have been rapidly introduced into educational technologies, the flagship model of which is ChatGPT today. Time has passed since the first “shock”, in which schools and universities around the world introduced total bans on the use of ChatGPT. Some countries are blocking ChatGPT, some are taking a wait-and-see approach, and some are looking for ways to use it. Many teachers believe that it is pointless to fight artificial intelligence technologies. Therefore, it is necessary to make artificial intelligence work for education, telling students how to correctly use ChatGPT so that it becomes an assistant in the learning process, and not a tool for plagiarism.

The advent of GPT chat technologies represents a groundbreaking tool for learning and research, opening new avenues in the realm of education. GPT chats also provide a personalized approach to learning, adapting content to the knowledge level and needs of each learner. The relevance of GPT chat for education lies in its ability to generate content and respond to queries, thereby rendering learning more interactive and accessible.

Overall, the purpose of the article is to analyze the essence of chatGPT as to its capabilities for learning and research. In accordance with the goal, the following research objectives were identified:

- 1) determine the essence of the ChatGPT
- 2) consider the present situation and attitude to it in the globalized world
- 3) focus on benefits and shortcomings of the ChatGPT for dynamic learning processes
- 4) consider the prospects for the educational environment

## 2. Definition of ChatGPT and its capabilities

ChatGPT (from the English Generative Pre-trained Transformer) is a chatbot with generative artificial intelligence developed by OpenAI and capable of working in conversational mode, supporting queries in natural languages (*ChatGPT, 2023*). The system is capable of answering questions and generating texts in different languages related to various subject areas. What sets ChatGPT apart from other conversational tools is its knowledge area. The chatbot is equally well versed in various fields such as mathematics, history, geography, art, medicine, finance and cooking. This is a universal model that you can turn to with any question. The service was launched in November 2022, but its basic algorithm, GPT-3, was created back in 2020. At the time of writing, the current version is GPT-4, released in March 2023. Unlike its predecessors, the developers are positioning it as a large multimodal model. Such algorithms can analyze not only text, but also other types of content such as images, videos and audio. ChatGPT is free to register and use for free. There is also a premium version, which provides priority access to new models, increased generation speed and guaranteed operation during high loads.

The text generation capabilities in ChatGPT are almost unlimited. He can:

- write poems and songs;
- solve mathematical and logical problems;
- write texts in various styles and genres;
- summarize information;
- select recipes based on the list of ingredients;
- create program code;
- search information from your own database;
- to have a dialog;
- adapt to the style and tone of the interlocutor (*Hillelblog, 2023*).

This is not a complete list of ChatGPT features. Some of its features, such as creating simple games, were discovered by users by accident.

Thanks to multimodality, the chatbot can process images and recognize the author, genre, style and other characteristics of pictures and art objects. It can also provide step-by-step solutions to math problems, perform calculations and analysis based on data tables and graphs, check program code, help with language learning, and much more.

### 3. The attitude towards ChatGPT in the world

In general, Europe was not ready for systems like ChatGPT. In the EU, discussions about the impact of ChatGPT on education emerged about a month later than in the US. This is due to the fact that ChatGPT is an English-language education system. Currently, the discussion about the use of ChatGPT in education has completely stopped, but there are concerns about global risks from the use of the education system. Before the complete ban of ChatGPT in Italy, which is caused by the leakage of user data, there is talk of a ban on ChatGPT in Spain and Germany. At the same time, as it turned out, control over the system was more important than development prospects.

The attitude towards ChatGPT in EU education is manifested both in interest in innovative teaching methods and in a careful attitude towards the ethical and safe aspects of using artificial intelligence for educational purposes. The EU is actively exploring the use of technologies such as ChatGPT to improve the learning experience, personalize the student experience and make education more accessible. At the same time, the EU also pays attention to issues of data security, transparency of algorithms and ensuring equal access to educational resources, taking into account the diversity of cultures and languages in its member states.

Great Britain (UK) is showing a tendency to embrace innovation in the educational process. In the UK, educational institutions are closely monitoring developments in technology and are actively exploring the use of ChatGPT to personalize learning, support students and stimulate creative thinking. Important aspects include data security, ethics, and a focus on ensuring that technology not only serves efficiency, but also enhances the educational experience of students.

The adoption of ChatGPT in education in the United States demonstrates a desire for innovation and the use of advanced technologies to improve the educational process. A number of US schools and universities use ChatGPT as a tool to personalize learning, support students with special educational needs and stimulate creative thinking. However, there is also a focus on ethical issues, including algorithm transparency, data security, and ensuring equality of opportunity in the use of technology in education to ensure a fair and accessible educational experience for all students.

China has entered the AI race with the States. The Chinese technological analogue of the generative dialogue system was presented the other day. The Chinese government then published requirements for the development, operation and maintenance of such systems in China. The closedness of the Chinese information space and the closedness of China do not allow us to assess the impact of ChatGPT on the Chinese educational system. However, in general, it is clear that the Chinese will use artificial intelligence systems in education (*Технології, 2023*).

Japan and South Korea show a balanced approach to the introduction of new technologies into the educational process. Both countries, as leaders in the field of education, are interested in integrating ChatGPT to enrich the educational experience of students and provide access to personalized learning materials. Along with this, an important aspect is also attention to ethical issues, data privacy and maintaining a balance between technological innovation and traditional teaching methods, maintaining a high standard of educational quality.

#### 4. Benefits of ChatGPT for education

After its appearance on the market, ChatGPT made an extremely negative impression on teachers. Students actively used it as a cheat sheet for exams, a homework guide, and a resource for writing creative papers.

But many teachers also recognized its benefits. In a traditional education system, students are often limited in resources, such as access to tutors and teachers or high-quality learning materials. ChatGPT can help bridge this gap. Available 24 hours a day, 7 days a week, he can answer questions and teach on a wide range of topics. Students will no longer have to wait to get to class or depend on textbooks.

American schools and universities are reacting differently to the GPT chatbot. For example, to prevent students from cheating on assignments, access to ChatGPT was blocked on all computers, tablets and other devices in Seattle schools in Washington state and Montgomery County schools in Alabama. Other schools, such as in the city of Dallas, Texas, do not consider the introduction of all kinds of bans to be a way out of the situation, and on the contrary, they call for accepting the fact that artificial intelligence technologies are now becoming part of the modern educational process.

An example of trying some creative ideas in education is Peninsula High School in Gig Harbor, an hour outside of Seattle. In a geometry class, students were tasked with using ChatGPT to generate a Kanye West-style rap about vectors and trigonometry, while geometry students used the program to write rap-style math proofs. In an English class, the teacher allowed students to use ChatGPT to translate Shakespeare's *Othello* into modern English. This helped them understand the text and discuss the plot of the work and the themes raised in the tragedy (*Time*, 2023)

Using AI, students can access greater knowledge, but of course, checking all this information and comparing it with other sources. In this way, critical thinking develops. For example, a teacher can ask a student to write his solution to a given question, and then ask him to compare it with the solution written in the GPT chat, and draw conclusions from this analysis. Another task: check the essays created by the program for errors. This provides an opportunity to test students' knowledge of a topic and show them the challenges associated with using AI to do delicate work.

In Panama, International Baccalaureate teacher Anna May Drake asked high school students to critique an essay created by ChatGPT that compared George Orwell's *1984* to Margaret Atwood's *The Handmaid's Tale*. This task aroused keen interest among students who wanted to defeat the AI "tearing" the essay created by the chatbot.

The problem remains: how to recognize whether a student is passing off a paper written by artificial intelligence as his own? It's still not resolved. And although many services for detecting AI plagiarism – such as Turnitin, whose services are used by schools and universities around the world – claim that their programs work quite accurately, they cannot give one hundred percent guarantees (*Yam GPT-4*, 2023). A number of American universities have decided not to use such programs due to concerns that it could lead to students being falsely accused of cheating.

## 5. Identified ChatGPT shortcomings

Despite the wide range of advantages, the chatbot has a number of disadvantages.

As mentioned earlier, ChatGPT understands Russian, Ukrainian, Spanish, German and other common languages. However, when processing non-English requests, the chatbot demonstrates low speed. In addition, in the Russian and Ukrainian languages the algorithm often makes errors such as incorrect declensions or tautologies.

ChatGPT's accuracy is not always as expected. This is especially true for historical events and statistical data. To create the language model, the developers used datasets with texts, the relevance of which dates back to September 2021. Thus, the chatbot is not unaware of some current events, such as the death of Queen Elizabeth II of Great Britain or the collapse of the FTX exchange.

Because of this, it is worth carefully checking the information provided by the chatbot. Errors can be due not only to lack of knowledge, but also to the “hallucination effect” – the mixing of different data, leading to the generation of false statements.

ChatGPT has no limits on the number of messages per conversation. However, the basic model cannot produce texts longer than 3000 words. In GPT-4, the limit was increased to 25,000 words.

The service also often refuses to communicate on certain topics. This is due to internal OpenAI restrictions aimed at combating the generation of offensive and malicious text (*Hillelblog, 2023*).

Almost immediately after the release of ChatGPT, the academic community in many countries expressed deep concern. Schools and universities around the world have reported a sharp increase in students using the algorithm to write essays and homework.

Academics believe this reduces students' critical thinking skills. In addition, the problem of inaccuracy of the algorithm threatens the emergence of scientific papers containing gross errors, fakes and unconfirmed data.

In response, some universities and schools in the US, Australia, France and other countries have banned the use of ChatGPT on educational premises and devices.

## 6. ChatGPT Perspectives

The race for artificial intelligence in education has begun in full force. First place goes to the USA and the English-speaking world. Second place goes to China.

UNESCO has recently been actively involved in the use of AI technologies in education. According to a survey of 450 schools and universities, only about 10 percent have so far developed policies and guidelines for the use of technologies like GPT chat. To make things easier for teachers and students, UNESCO has released its guidance on the ethical and safe use of artificial intelligence in schools and is calling on world governments to start using it in educational settings (*UNESCO, 2023*). Based on a humanistic approach, the Guidance proposes key steps to regulate the GenAI tool, including mandatory data privacy protections and setting age limits for independent negotiations with GenAI platforms. To ensure the appropriate use of tools in education and research, this Guide proposes a participatory and age-appropriate approach to the ethical validation and instructional design processes. Can AI replace live communication between a teacher and a student? The teacher is always next to his students, he is happy and sad with them, he hugs, supports, extends his hand. A computer will never do this. It will never replace the warmth of human communication.



The perspectives of using ChatGPT for learning and research are highly promising. As an innovative language model, ChatGPT offers a versatile and adaptive platform for interactive learning experiences. Its ability to generate contextually relevant responses enhances the efficiency of information retrieval and facilitates a dynamic exchange of knowledge.

In the realm of research, ChatGPT holds significant potential for aiding scholars and scientists in information synthesis, literature review, and idea generation. Its capacity to comprehend and generate coherent text across diverse subjects streamlines the research process, offering valuable insights and accelerating the pace of discovery.

Moreover, the interactive nature of ChatGPT makes it an engaging tool for collaborative learning and brainstorming sessions. Students and researchers can benefit from real-time assistance, personalized guidance, and the exploration of innovative ideas, thereby fostering a more productive and enriched educational environment.

As the technology behind ChatGPT continues to evolve, its integration into learning management systems and research platforms is likely to redefine traditional approaches to education and inquiry. The perspectives for leveraging ChatGPT in learning and research are characterized by efficiency, adaptability, and the potential to enhance both the educational and research landscapes.

## 7. Conclusion

ChatGPT offers several notable benefits, including its ability to generate coherent and contextually relevant text across a wide range of topics. It serves as a versatile tool for tasks such as content creation, brainstorming, and language translation. Additionally, ChatGPT facilitates natural language interactions, enhancing user engagement and accessibility. However, its shortcomings include occasional generation of inaccurate or nonsensical information, sensitivity to input phrasing, and potential biases present in its training data.

From a broader perspective, ChatGPT represents a significant leap in natural language processing technology, paving the way for improved human-computer interactions. It holds promise for applications in customer support, education, and creative writing. Nevertheless, ongoing efforts are necessary to address its limitations and refine its performance for more nuanced and reliable outputs. The ethical considerations surrounding the responsible use of AI, potential misuse, and the need for transparency in its development and deployment remain crucial aspects of its broader perspectives.

Thus, the application of GPT in education offers students and educators the opportunity to exchange ideas, broaden knowledge, and create more dynamic learning processes. GPT chat is becoming a pivotal element in the educational revolution, providing access to an extensive knowledge base and facilitating learning at any time and from any location.

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## ONOMASIOLOGISCHE ANSÄTZE ZUR UNTERSUCHUNG DER ENTWICKLUNG DER PHRASEOLOGISCHEN SEMANTIK

Iryna Orel

PhD., Dozentin, Rivneer Staatliche Geisteswissenschaftliche Universität, Ukraine

e-mail: Orel\_i72@ukr.net, orcid.org/0000-0002-7258-1444

### Überblick

Die Studie beschreibt semantische Wandel der deutschen Redewendungen, die die deutschen Stereotype bezeichnen. Als Grundlage der inneren Form der Phraseologismen werden die Gestalt und die Präsupposition betrachtet. Auf der Basis der Merkmale von der inneren Form werden die phraseologischen Redewendungen gebildet. Die onomasiologische Grundlage der Semiose ist ein Merkmal des Gestaltes oder der Präsupposition. Dieses Merkmal formt die innere Form der phraseologischen Bedeutung. Die Semantik der Phraseologismen wird in dem diachronen Aspekt untersucht. Die extralinguistischen Faktoren der Entwicklung der phraseologischen Bedeutung werden aufgedeckt. Die Änderung der Gestalt bewirkt eine Modifikation ihrer Merkmale, deren Neubewertung und Neuinterpretation zu den semantischen Modifikationen der Phraseologismen beiträgt. Die nichtsprachlichen Faktoren semantischer Transformationen werden bestimmt. Die Entwicklung der phraseologischen Bedeutung erfolgt im Zuge der Veränderung extralingualer Faktoren. Zu diesen Faktoren gehören politische, ideologische, wirtschaftliche und kulturelle Faktoren, die zu Veränderungen in Fragmenten des nationalen Weltbildes führen. Fragmente des nationalen Weltbildes spiegeln nationalspezifische Bilder wider, deren Zeichen als Grundlage der Phraseologiesemiose dienen.

**Stichwörter:** Phraseologismen, Stereotype, die Gestalt, die Präsupposition, außersprachliche Faktoren.

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### 1. Einführung

Die Semantik der phraseologischen Einheiten enthält kognitive Informationen über die objektive Welt. Das sind die historischen, sozialen, kulturellen, interkulturellen, politischen, wirtschaftlichen Objekte und Ereignisse, die sich in Sprache widerspiegeln. Diese Objekte und Ereignisse der außersprachlichen Welt werden im Erkenntnisprozess klassifiziert. Der Prozess der Klassifizierung findet auf einer unterbewussten Ebene statt, um die Wahrnehmung der Welt zu vereinfachen und zu verlichten. Die stereotypisierenden Objekte und Ereignisse werden von den Sprechern als die vereinfachten Gestalte oder Situationen wahrgenommen. Sie werden auf der Grundlage des ausdrucksstärksten Merkmals kategorisiert, das von den Sprechern aufgrund des Wertes für die ethnische Gruppe ausgewählt wird. Das ausgewählte Merkmal wird im Nominierungsprozess verwendet, den wir aus der Sicht der Onomasiologie untersuchen.

Wir halten es für relevant, den Bedeutungswandel deutscher Redewendungen, die Stereotype bezeichnen, zu untersuchen, da Stereotype in der internationalen Kommunikation eine große Rolle spielen. Die Untersuchung der Gründe für die Änderung der Phraseologiebedeutung wird ein korrektes Verständnis der Änderung der stereotypen Weltanschauung der Sprecher ermöglichen. Die Sprache zeichnet alle Veränderungen in der Weltanschauung, den Bedürfnissen von Muttersprachlern und ihren geistigen Eigenschaften auf. Die Veränderung

der Bedeutung von Sprachzeichen spiegelt diese Veränderungen wider. Die Untersuchung semantischer Veränderungen unter Berücksichtigung externer Faktoren, die semantische Transformationen beeinflussen oder verursachen, ermöglicht es, die Veränderungen im Wertebild der Sprecherwelt zu verstehen.

Die Studie der Semantik von Sprachzeichen im Kontext von der Onomasiologie zieht die Aufmerksamkeit vieler Linguisten auf sich (L. Weisgerber, F. Dornzeif, O. Espersen, L. Kapnadze, N. Klymenko, V. Matezius, V. Nikitevych, O. Selivanova, O. Taranenko, R. Jakobson). Zu Beginn des 20. Jahrhunderts fokussieren sich auf die Ansätze zur Untersuchung der Semantik auf die Beziehung zwischen dem Signifikanten (Wort) und dem Signifikat (Objekt) dank der Arbeiten der deutschen Wissenschaftler R. Meringer, G. Schuchardt.

Allerdings hat sich die Onomasiologie als eigenständiger Forschungszweig erst Mitte des 20. Jahrhunderts auf der Basis der Forschungen von F. Dornzeif, V. Krause, B. Quodi, L. Weisgerber herausgebildet.

Die Onomasiologie untersucht Spracheinheiten unter dem Gesichtspunkt ihrer Implementierung von Nominativfunktionen. Sie erlernt die Fragen der Nominativtechnik und Methoden zur Bildung von Nominierungseinheiten auf verschiedenen Stausebenen und bei der Theorie der Nomination. Diese Theorie spiegelt einen der Aspekte der Semantik als Wissenschaft wider, die die Natur, Regelmäßigkeiten, Arten der sprachlichen Bezeichnung von Elementen der Realität untersucht (*VTSSM*).

Gegenstand der Onomasiologie sind nominative Einheiten als Ergebnis eines komplexen Denkprozesses, der sowohl psychologische, biologische, physiologische als auch sprachliche Grundlagen hat. Als die theoretische Grundlage für die onomasiologische Forschung benutzen wir die Ideen der inneren Form von O. O. Potebnja (*Potebnia, 1989*).

Das Ziel der vorgeschlagenen Studie ist es, den Einfluss außersprachlicher Faktoren auf die Veränderung der Phraseologie zu identifizieren und Möglichkeiten zur Veränderung der Semantik der Phraseologismen zu untersuchen. Als Untersuchungsgegenstand sind die deutschen Redewendungen, die die deutschen Stereotype verbalisieren. Um das gesetzte Ziel zu erreichen, ist es notwendig: 1) eine onomasiologische Analyse des Bildes der inneren Form der Phraseologie durchzuführen, die das Stereotyp verbalisiert; 2) Anzeichen eines stereotypen Bildes identifizieren, das als Grundlage für die Phraseologiesemiose diente; 3) Veränderungen in der Phraseologiebedeutung des untersuchten Sprachzeichens fördern; 4) die Ergebnisse des Einflusses nichtsprachlicher Faktoren ermitteln, die zur Überschätzung eines stereotypen Zeichens geführt haben; 5) die Arten extralingualer Faktoren semantischer Transformationen identifizieren; 6) Methoden zur Änderung der Bedeutung von Ausdruckseinheiten bestimmen.

Zur Durchführung der Forschung kamen eine Reihe von Methoden zum Einsatz, die zur Erreichung des gesetzten Ziels beitragen: 1) deskriptiv (eine Reihe von Verfahren zur Inventarisierung, Klassifizierung und Interpretation der untersuchten sprachlichen Phänomene), 2) Komponentenanalyse (Aufspaltung der semantischen Struktur in Komponenten, Identifizierung der konnotativen Komponente, Isolierung der bewertenden Komponente, Festlegung der Bewertungsbedeutung), 3) kognitive und onomasiologische Analyse (Ermittlung von Motivatoren der Phrasenbildung, Rekonstruktion der Motivationsbasis von Phraseologieeinheiten)

Die Relevanz und die Neuheit der Forschung sind die Identifizierung und die Beschreibung der Transformationen der phraseologieschen Bedeutung in der Diachronie. Die Veränderung außersprachlicher Faktoren werden verursacht, die die Bildung und Entwicklung der phraseologieschen Semantik beeinflussen. Die außersprachlichen Faktoren werden unter Berücksichtigung der Mentalität der Sprecher und der Besonderheiten des nationalen und wertvollen Bildes der Welt betrachtet. Die Forschung ist auf dem Material der deutschen Redewendungen zur

Bezeichnung von Stereotypen durchgeführt. Der onomasiologische Ansatz zum Studium der Semantik sprachlicher Zeichen besteht darin, die Motivatoren der Nominierung zu identifizieren und die Merkmale des Objekts, dessen Name in einer neu interpretierten Bedeutung für die sekundäre Nominierung verwendet ist.

## 2. Die kognitive Grundlage des Prozesses der Phraseologisierung

Die Bildung der Bedeutung ist ein langer Prozess, der auf kognitiven und gedankensprachlichen Operationen basiert. Die Semiose besteht in der Semantisierung von Begriffen, Objekten der objektiven Realität, d. h. in der Schaffung eines sprachlichen Zeichens und einer Bedeutung. Ein Begriff oder ein Gestalt ruft im Gedächtnis des Sprechers ein bestimmtes Bild hervor, das in der Sprache einen dem Bild entsprechenden Impuls aktiviert – ein Sprachzeichen (*Sossiu, 1998: 23*).

Es ist bekannt, dass Stereotype als Ergebnis der Kategorisierung von Objekten, Phänomenen, Tatsachen der außersprachlichen Realität entstehen (*Tajfel 1981: 68*) als emotional gesättigtes Bild, das im Kopf des Sprechers geformt oder von anderen Personen übertragen wird (*Lippmann 1921: 65-67*) als kognitive Information.

Die Kategorisierung basiert auf den Merkmalen des Objekts, die eine bestimmte Gestalt erzeugen, die sich aus der Sicht der Sprecher unterscheiden. Die Merkmale des Objekts werden aufgrund ihrer Bedeutung, ihres Wertes für die ethnische Gruppe unterschieden und hervorgehoben (*Potebnia, 1989: 65*). Daher wird ein stereotypes Objekt nicht als detaillierter Eindruck der Realität wahrgenommen, sondern in der Vorstellung von Sprechern in Form eines vereinfachten Bildes, Schemas oder einer Situation fixiert, was durch die Besonderheiten des menschlichen Denkens erklärt wird (*Badahina; Zahalni problemy psichologii*).

Gründe für die Phraseologisierung sind das kommunikative Bedürfnis, die Zweckmäßigkeit, die Relevanz der benannten Themen oder Phänomene oder Fakten. Das erklärt, warum nicht alle stereotypisierte Vorstellungen phraseologisiert sind.

Die Phraseologisierung erfolgt als Resultat des Zusammenwirkens nichtsprachlicher und sprachlicher Faktoren im Prozess der Metaphorisierung. Auf der extralingualen Ebene spiegelt sich dies in der Wahl des Objektmerkmals und seiner Umdeutung wider; auf sprachlicher Ebene handelt es sich um eine Neuformatierung des Sem-Systems, das in der Struktur der Bedeutung eines sprachlichen Zeichens enthalten ist, das ein nicht-sprachliches Objekt bezeichnet. Die Wahl eines umgedeuteten Zeichens – die onomasiologische Grundlage – sichert die Wahl einer neuen Denotation, die durch ein der latenten Sememen der semantischen Struktur des Bildes der inneren Form verbalisiert wird.

Die Wahl eines onomasiologischen Zeichens ist nicht zufällig. Dies liegt an den Wertorientierungen der Sprecher, die sich in dem wertvollen Bild der Welt widerspiegeln, weil sie für die Sprecher wichtig sind.

Als Grundlage der Phraseologisierung von Stereotypen ist eine Gestalt oder eine Präsupposition bestimmt, deren Zeichen einen Wert für die Volksgruppe haben und daher umfassend bekannt sind. Jedes erkennbare Merkmal einer Gestalt oder einer Präsupposition wird auf der Sememebene in der Struktur eines sprachlichen Zeichens (Wort oder Wortverbindung) verbal ausgedrückt, was die Ableitungsgrundlage der phraseologischen Semiose ist. Das heißt, dass jedes Merkmal der Gestalt oder der Präsupposition durch das entsprechende Semem dargestellt ist.

Der Prozess der Phraseologisierung erfolgt durch Aktivierung eines der verborgenen latenten Semems, die implizite Merkmale einer Gestalt/ einer Präsupposition abbilden.

Je nachdem, welches Merkmal der Gestalt herausgegriffen wird, kommt das entsprechende Semem in der semantischen Struktur der neu geschaffenen Bedeutung zum Vorschein. Die Wahl des Bildmerkmals richtet sich nach dem Wertesystem, den Wertorientierungen und Bedürfnissen der Sprecher.

### 3. Die onomasiologischen Grundlagen der Entwicklung der Bedeutung von den phraseologischen Einheiten zur Bezeichnung deutscher Autostereotypen

Das stereotypisierte Selbstbild der Deutschen spiegelt die Redewendung „*der deutsche Michel*“ wider. Man begegnet ihm in humoristischen Texten, Karikaturen, Bildwitzen und Witzen (Szarota 1998, zitiert in Engel 2020).

Der Frage nach der Entstehung der Gestalt von dem *deutschen Michel* ging der Forscher Karl Riga nach. Seine Kulturuntersuchungen kommen zu einem Ergebnis, dass es nicht einfach zu definieren, wofür *der Michel* steht „*Er gilt als nationale Personifikation der Deutschen. Sein Charakter wandelt sich ständig seit 475 Jahren im Laufe der Zeiten*“ (Im Jahr 1541).

Ausländische Reisende beschreiben Michels Charakter und meinen darunter alle Deutschen: „*Schlafrunkene, blöde, schnarchende Geschöpfe sind es, niemals nüchtern*“ –, hat der italienische Gesandte Gian Francesco Poggio im 15. Jahrhundert festgestellt. „*Ob sie leben oder todt sind, kann man nicht unterscheiden, wenn sie von Wein und Speise überwältigt daliegen.*“ (Im Jahr 1541). Die Gestalt hatte total negative Bedeutung.

Franck S. schreibt erstmals 1541 von dem *deutschen Michel*. In Buch „*Sprichwörter/ Schöne/ Weise Klugredenn*“ beschrieb er den „*teutsch Michel*“ als *tumben Bauern und Dummerjan, als trunk- und schlafsüchtigen Provinzler, der keine Sprache spricht außer der eigenen, erst recht kein gelehrtes Latein* (Franck 1541: 386, zitiert in Im Jahr 1541). Die Gestalt wird durch neue Merkmale modernisiert. *Deutscher Michel* ist schon nicht nur *schlafrunken, blöd*, sondern auch *ungebildet*.

Das Entstehen der neuen Eigenschaften der Gestalt ist durch die weitere Entwicklung der kategorisierten und metaphorisierten Merkmale zu erklären. Die Gestalt entwickelt sich weiter und sein Charakter bekommt neue Anzeichen.

Die ersten Erwähnungen über den „*deutschen Michel*“ sind in Wörterbüchern Jahr 1574 – doch schon 1541 datiert. Hier wird er mit „*Dummkopf bzw. tölpelhafte Person*“ erklärt. Die gleiche oder zumindest sehr ähnliche Definition gibt es in anderen zeitgenössischen Werken (*Wer war DM*). Die Gestalt bekommt weitere Merkmale. *Deutscher Michel* ist schon eine *tölpelhafte Person*. Die Gestalt ist mit den neuen Eigenschaften ergänzt. Nicht nur die intellektuelle, sondern auch die physische Charakteristik sind dargestellt.

*Der deutsche Michel* ist die Personifikation der Deutschen, welche seit dem XVI – Anfang XVII Jahrhundert belegt ist. Etwas *dicklich*, etwas *tumb* und *ziemlich ernst*; vor allem aber mit einem Attribut der *Schläfrigkeit* ausgestattet (*Wer war DM*). Das Konnotat in der Struktur der phraseologischen Semantik wird sich wegen des neuen Merkmals der Gestalt verändert. Seit dem Anfang XVII Jahrhundert sieht *der deutsche Michel* ziemlich ernst aus. Das ruft teilweise positive Bewertung der Gestalt hervor.

Die Beschreibung der Person *des deutschen Michels* war in der Renaissance auch mit anderen Merkmalen verbreitet. Damals war das Volk noch stark in Schichten zerlegt. Die, die sich Schulbesuche leisten konnten, wollten sich von den anderen abheben. Sie reisten viel und ihre Kinder bekamen ihre Ausbildung im Ausland. Die *ärmeren* Daheimgebliebenen wurden oft *abfällig* geschätzt, weil das deutsche Volk „*nur die wenig gebildeten Bauern*“ war (*Wer war*

DM). So entwickelt sich *deutscher Michel* weiter. Neue Bedeutung ist *arme* neben dem *wenig gebildeten Bauern*. Negative Bewertung in dem Konnotat der Redewendung bekommt abfällige Nebenbedeutungen.

Während des Dreißigjährigen Krieges wandelte sich Michels Image grundlegend. Er erhielt die Eigenschaften eines fähigen, tapferen Kriegers (*Im Jahr 1541*). Die Bewertung der Gestalt hat sich total geändert und sie hat positive Zeichen der Wertschätzung bekommen. Außerdem wurde sie im Dreißigjährigen Krieg (1618–1648) zum Symbol für den Kampf um eine einheitliche Landessprache, deswegen behielt die Michel-Figur „den Status als Sprachpolizei“ (*Wer war DM*). In diesem Sinne spielt er die Rolle eines Verteidigers, Verfechters nationaler Interessen. Eine positive Beurteilung der Gestalt bleibt erhalten.

Im 19. Jahrhundert leitete *der Michel* die Gestalt wieder in die andere Richtung. Im Gebiet der modernen Bundesrepublik Deutschland fanden kleine Aufstände statt. Ziel des Kampfes war die Abschaffung der Adelsprivilegien und die Schaffung einer deutschen Verfassung. Der Adel, der es nicht mochte, erinnerte sich an den alten Vergleich mit dem *Bauernbrötchen*. Die Rebellen wurden als *dumme Menschen* dargestellt, die *nicht ernst zu nehmen seien* (*Wer war DM*). *Der Michel* erlebt Wiederneubewertung und bekommt deswegen neue Merkmale. Die Bewertung der Gestalt hat sich teilweise negativ geändert.

Im 20. Jahrhundert hatten die deutschen Nationalsozialisten mit dem *Michel* das größte Problem. „Denn für Hitlers Rassenwahn vom deutschen Übermenschen“, sagt der Historiker Ulrich Op de Hipt, „war gerade die deutsche Nationalfigur des Michels aufgrund ihrer Schwächlichkeit, eine „*Persona non grata, eine Unperson*“ (Gerbig-Fabel). Dieses betonte Merkmal der Gestalt (seine Schwächlichkeit) versteht man als eine negative Eigenschaft.

„Es sollte nicht mehr vorkommen, dass als Sinnbild des heutigen Deutschen die Vorkriegsfigur des zwar kräftigen, aber gutmütigen und etwas dämlichen deutschen Michels erscheint“, verordnet 1936 ein Anti-Michel-Erlass. Doch die deutsche Symbolfigur ist nicht tot zu kriegen. Erst nach dem Untergang von Nazi-Deutschlands konnte „*der Michel*“ eine kleine Renaissance erleben. So erfreut sich das tumbe Männchen mit der Zipfelmütze heute wieder vor allem bei deutschen Karikaturisten einer großen Beliebtheit (Gerbig-Fabel). Erfolgreich übersteht sie das Dritte Reich, den Kalten Krieg, die deutsche Einheit und bleibt ein deutscher Typ für jede Zeit (*Im Jahr 1541*).

In modernen Wörterbüchern hat diese Redewendung eine neutrale Bedeutung – *der deutsche Spießbürger d.h. Durchschnittsmensch* (WPRRASU).

#### 4. Die onomasiologischen Grundlagen der Entwicklung der Bedeutung von den phraseologischen Einheiten zur Bezeichnung deutscher Heterostereotypen

Ein Beispiel für einen Heterostereotyp kann die Gestalt eines Polen sein, der in dem wertvollen Bild der Welt der deutschen Volksgruppe erhebliche Veränderungen erfahren hat. Als Beispiel analysieren wir die Redewendung *Eine polnische Wirtschaft* – (wirtschaftliche) *Unordnung; Schlampererei; Durcheinander; ineffektives Tun; Misswirtschaft. umgangssprachlich, abwertend, veraltet*. Redensartliche Bezeichnung spiegelt die Wahrnehmung der Deutschen über die Unfähigkeit der Polen Unfähigkeit zu effizientem und zielgerichtetem Handeln sowie die moralische Empörung über Verschwendung und die ästhetische Abscheu gegen Unsauberkeit und Unreinheit wider (WPRRASU).

Den ersten schriftlichen Nachweis für die redensartliche Verwendung von „*polnische Wirtschaft*“ finden wir 1784 bei Johann Georg Forster, der schreibt: „*Doch ganze Bogen*

reichen nicht zu, um Ihnen einen Begriff von dem zu geben, was in den angrenzenden Gegenden Deutschlands, mit einem emphatischen Ausdruck, polnische Wirtschaft genannt wird“ (Forsters 1978: 232 zitiert in WPRRASU). Empathie bezeichnet nicht negative Bedeutung und Bewertung. Trotzdem können die Deutschen solche Lebensweise nicht unterstützen. So entstand die neue Wertschätzung der phraseologischen Bedeutung wegen der verschwundenen Empathie. Die Redewendung mit der Bedeutung „Unordnung“ wird negativ gebräuchlich.

Während der Zeit der Teilungen diente das Stereotyp *polnische Wirtschaft* als Instrument der Propaganda zum Beweis der kulturellen Überlegenheit der Deutschen (einschl. Österreicher) gegenüber dem *schlechteren* und *schwächeren* Nachbarn. Als Erklärungsmuster für die wirtschaftliche und auch zivilisatorische Rückständigkeit Polens wurde diese Gestalt oft verwendet. Auf solcher Weise wurden Erniedrigung betont. Die Bedeutung war scharf negativ.

So veranschaulichte Gustav Freytag in seinem 1855 erschienenen Roman „Soll und Haben“ die angeblich in Polen herrschenden Verhältnisse, indem er die von Polen bewohnte Gegend als „*trostlose[n] und verwahrloste[n] Landstrich*“ beschrieb, in dem „*würdelose, schmutzige, untätige und „unkultivierte“* Bauern leben. Auch polnische Adelige, die den Aufstand von 1848 anführten, wurden als „*schmutzig*“ dargestellt; sie behandelten ihre Untergebenen „*wie Hunde*“ (PW). Der Begriff der Unordnung in der Wirtschaft wurde verwendet, um körperliche Besonderheiten, intellektuelle und moralische Prinzipien der Polen zu charakterisieren. Auf der Ebene der onomasiologischen Grundlage der Semiose erfolgte die semantische Veränderung der Phraseologie durch die Umwertung der Gestalt. Es kam zu einer Verschlechterung der sprachlichen Bedeutung aufgrund der Verschlechterung der Einschätzung der Gestalt von Polen.

Die Redewendung wurde bis ins 20. Jahrhundert oft verwendet und bezieht sich auf die Verarmung und den wirtschaftlichen Niedergang in den unter Fremdherrschaft stehenden polnischen Gebieten, für den man den angeblich fehlenden Ordnungssinn der Polen verantwortlich machte. Mitgetragen vom aufkommenden deutschen Nationalismus, sah man mit dem überheblichen Stereotyp in verächtlicher Weise auf die Polen herab. Dass die Redensart heute nicht mehr verwendet wird, lässt sich als positives Zeichen der Wertschätzung deuten (WPRRASU).

## 5. Schlussfolgerungen

Die Gründe für die semantische Entwicklung von Phraseologieeinheiten werden als Folge des Einflusses von Änderungen in nichtsprachlichen Faktoren der Phraseologiesemiose betrachtet, die ein wertvolles Weltbild widerspiegelt: 1) Änderung der Ideologie, Änderung der politischen Ansichten; 2) Änderung von Normen, Moralregeln, Verhaltensweisen; 3) historische Veränderungen; 4) Veränderung in den internationalen und zwischenstaatlichen Beziehungen; 5) wirtschaftliche Faktoren (Entwicklung oder Niedergang); 6) technischer Fortschritt (Innovationen in Wissenschaft und Technik); 7) Veränderungen im sozialen Leben (Geschlechteraspekt, familiäre Beziehungen, Altersgruppen, Veränderungen der Lebensbedingungen); 8) Entwicklung im Bereich der Kultur (Malerei, Literatur, Musik, Theater und Film).

Unter Berücksichtigung der onomasiologischen Grundlage der Semiose werden die Arten der semantischen Entwicklung von Phraseologieeinheiten zur Bezeichnung von Stereotypen aufgezeigt: 1) Verschlechterung der Bedeutung; 2) Verbesserung der Bedeutung; 3) Weiterentwicklung der Gestalt (Entstehen der neuen Bezeichnungen); 4) Enantiosämie (Entwicklung von positiv in negativ und umgekehrt); 5) Verschwinden der Phraseologie aus dem Sprachgebrauch.



Die Untersuchung der Gründe für den Wandel der inneren Form im diachronen Aspekt legt die onomasiologischen Faktoren der Semiose offen und zeigt Wege auf, die phraseologische Semantik zu modifizieren.

Die Aussichten für weitere Forschungen sind die Untersuchung des Einflusses sprachlicher Faktoren auf die Änderung der Phraseologiebedeutung.

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## AZERBAIJANI REALITIES MANIFESTED IN “ONE THOUSAND AND A QUARTER OF AN HOUR. TATAR TALES”

**Rahila Sadiqova**

Scientific Worker, National Azerbaijan Literature Museum  
named after Nizami Ganjavi, Azerbaijan  
orcid.org/0000-0002-2936-6159

### Summary

At the beginning of the 18th century a new literary trend with an Eastern orientation was emerging in Europe, especially in French literature. This innovation began when Antoine Gallen first translated “One Thousand and one nights” into French in 1704, and Western readers showed great interest in that ancient Arabic monument. As orientalists and translators of the time saw that Arab tales that caused a stir in Europe were loved and gained with fame, they turned to Eastern sources and tried to create new translated works in this style. Over time, the readers, who were impressed by the tales about the mysterious Eastern environment, eagerly waited for the continuation of the topic, and deeply sympathized with the new works created in the example of “One Thousand and one nights”. As a result of contemporary studies, it has become clear that the mentioned examples are not independent works, but imitations of translations. One of the translation imitations created within the framework of that period, when such a literary trend flourished, is “One Thousand and a quarter of an hours. Tatar tales”. This article entitled “One Thousand and a quarter of an hours. Tatar tales” illuminates a number of important points related to the history, geography, culture and literature of Azerbaijan.

**Key words:** “One thousand and one nights”, “One thousand and One quarter of an hour”, “The Book of Dede-Gorgud”, Azerbaijani literature, translation imitations.

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### 1. Introduction

Tales of "One Thousand and One Nights", one of the rarest pearls of ancient Eastern literature, played a major role in the creation of many valuable works. The influence of this collection of tales has not escaped the literature of various nations, including the Turkish people. In 1704, after the French-born Orientalist Antoine Gallant translated the "One Thousand and One Nights" tales into French, this ancient Arab monument quickly began to gain fame in Europe.

Western readers' great interest in the Eastern world gave rise to the emergence of new literary examples in the French cultural environment of that period. Those works created in the image of "One Thousand and One Nights" and imitating their predecessor in terms of theme and structure can be grouped under the title "One Thousand and Ones". Although the mentioned literary examples are related to the name of one or another author, it has been determined as a result of research conducted in the modern era that these works are not the product of the imagination of any writer or storyteller. On the contrary, studies show that the mentioned works are imitations of translation and originate from different sources.

Among the "One Thousand and Ones" mentioned above "One thousand and one days Persian tales" ("Les mille et un jours Contes Persans"), "One thousand and one hours Tales of Peru" ("Les mille et une heures Contes Peruviens"), "The story of the Sultan of Persia and

his viziers" ("Histoire de la sultane de Perse et des vizirs"), "Interesting adventures of General Fum-Hoam Chinese tales" ("Les aventures merveilleuses du mandarin Fum-Hoam Contes Chinois"), "Guzarat princes, or dreams of wild people Mongolian tales" ("Les sultanes de Guzarat, ou les songes des hommes éveilles Contes Mongols"), "One thousand and one follies" ("Mille et une bêtises") are examples of translation imitations. Among those "one thousand and ones" are "One thousand and a quarter of an hour. Tatar tales" deserve special attention.

Thus, this literary example created in French by Thomas Simon Gallet in 1714 closely resonates with the ancient Turkish folklore traditions, especially "«Kitabi-Dada Gorgud» epic.. This is evident both in the system of images and in parallel similarities in the direction of subject and style. The aforementioned similarities were not only related to "Kitabi-Dada Gorgud" epic, but also manifested themselves in a number of moments related to the history, geography, and culture of Azerbaijan. So, based on the results obtained from the conducted studies, it can be said with confidence that "One thousand and a quarter of an hour." Tatar Tales" is based on an unknown Turkish source.

The mentioned collection of fairy tales is rich in Turkish literary motifs and contains valuable information about the history and geography of Azerbaijan. Here, it is possible to find interesting information about old Azerbaijani cities, Baku oil, "Iron Gate Darband", one of the ancient settlements of Oghuz Turks, underground roads of Baku.

## **2. "One thousand and a quarter of an hour. Tatar Tales" as a continuation of "One Thousand and One Nights"**

The "One Thousand and One Nights" tales, which are considered to be one of the most valuable pearls of the world's folklore treasure, have left a deep mark on the word creativity of various peoples and have given impetus to the emergence of colorful literary examples. The influence of this collection of fairy tales did not bypass Turkish literature and gave rise to the creation of large-scale works. "One thousand and a quarter of an hour. Tatar Tales" is one of the brightest examples formed on the basis of "One Thousand and One Nights" traditions in the 18th century. The work was created using Turkish-Tatar literary traditions. Thus, after the "One Thousand and One Nights" tales were translated into French by Antoine Galland in 1704, the fame of this ancient Arab monument spread throughout Europe, and it was received with great sympathy by readers of various classes. The Western reader who falls under the magical spell of "Arabian Nights" does not want to be satisfied with "One Thousand and One Nights". At this time, the French orientalisks and prolific storytellers of the time tried to create imitative collections like "One Thousand and One Nights". Just as "One Thousand and One Nights" is related to the name of the Arabs, these collections are also related to the history and literature of various nations. It is no coincidence that interest and attention to Eastern manuscripts increased during that period leading intellectuals of the time took the initiative to acquire more manuscripts. Making use of these manuscripts, quoting various passages and benefiting from real encyclopedic information, a series of "thousands and ones" is achieved. In this sense, works like "One Thousand and One Nights" that appeared in the French literary environment of the 18th century can be called translation imitations. Among such translation imitations is "One thousand and a quarter of an hour. Tatar tales" deserve special attention. Although the "One Thousand and a quarter of an hours" fairy tales were created on the basis of "One Thousand and One nights" characteristic and structural mechanism, they are rich in specific literary formulas belonging to Turkish folklore. This is evident both in the system of images and in parallel similarities

in the direction of subject and style. There are quite a lot of elements that resonate with ancient Turkish literature in terms of ideas and content, and they directly affect the overall ethnopoetic status of the work. There is no doubt that the mentioned work is based on an unknown Turkish manuscript.

The main line of "One Thousand and a quarter of an hour. Tatar Tales" is the main border tale called "The Story of Shamseddin". This literary example consists of five secondary frame tales spanning 74 quarter hours. According to the traditional structure formula of "One Thousand and One Nights", the parts into which the tales are divided are called "four hours". In "One Thousand and One Nights", these parts are sorted by the word "night". Quantitatively, in "One Thousand and a quarter of an hour. Tatar Tales" are less than the nights in "One Thousand and One Nights".

Unlike its predecessor, "One Thousand and a quarter of an hour" is rich in fairy tales with didactic content, in particular, father-son, marital relations are more prominently described here, which fundamentally distinguishes it from "One Thousand and one nights". The development of social relations in the family background is considered one of the bright motifs close to Azerbaijani folklore, and in this direction, the similarity between "One Thousand and a quarter of an hour" and Azerbaijani literary examples is clearly noticeable.

### 3. Similar points between "One Thousand and a quarter of an hour. Tatar Tales" and "Kitabi-Dada Gorgud" epic

As mentioned above, "One Thousand and a quarter of an hour" is a collection based on all-Turkic literary traditions and bearing traces of ancient Turkish thought. In this sense, the work we are talking about clearly reflects a number of features and aspects of the all-Turkish literary heritage. Those similar and common points are embodied both in the description of this or that image and in the expression of various cults. Several copies found in the system of images of the work, especially, are closely related to the "Kitabi-Dade Gorgud" epic. Among such images, the image of Tepegoz attracts attention.

The mentioned image can be found in the literature of many peoples of the world. One of the oldest images of Tepegoz is found in Homer's "Odyssey" (character of Polyphemus). However, it should be noted that the image of Tepegoz reflected in the folklore of the Turkic peoples differs from the parallel images in non-Turkish literature by its characteristic features. In the "One Thousand and One Nights" tales, especially in "Sindibad's first journey" (nights 538-542) and "Seif al-Muluk" (nights 756-778), the image of a giant cannibalistic giant, the cyclops, also occurs (*Binbir gece*, 1977: 5; 233). However, as noted by the Turkish researcher-writer Dursun Jan Eyuboglu, this image should not be confused with Tepegöz, which exists in the folklore of the Turkic peoples (*Eyüboğlu*, 2023: 17). Thus, the image of Tepegoz and the related story of Turkish origin literature have unique features and a similar plot, which distinguishes it from the images of giants and cannibals typical of other nations.

Let's consider the specific moments that are typical in the stories about Tepegoz found in ancient Turkish folklore. So, this legendary monster always lives in a cave near the village and makes a living by eating the sheep and lambs of the community. A certain number of sheep are given to this terrible creature every day to prevent it from eating people. According to the classic plot, the young hero who came to defeat Tepagoz blinds his only eye and leaves the cave in a sheepskin. We have repeatedly witnessed the motif of sheep in the narratives about Tepegoz belonging to the literature of different Turkish people, which we reviewed during the research.

In the "One Thousand and a quarter of an hour" stories, in the story "Blue Centaur", the centaur, a mythical figure with a human head and a horse's body, is not depicted as a Tepegoz, but the characteristics of the Tepagoz are transferred to him; he also lives in a cave near the village and eats the sheep of the population. Here too, a brave young man is sent to defeat the evil that is damaging the property of the people. By the order of the ruler, the young brave man tied the hands and arms of the centaur and brought him to the palace. Because this ogre, who has prophetic abilities, informed about the ruler's lost son, the king spared his life and released the centaur, who promised not to touch the herds of the village again (*Les Mille et un Quart-d'Heure, 1730: t.2, 58*).

It is true that the Cyclops depicted in "One Thousand and one Nights" does not have the same external appearance as Tepegoz, but the plot of the story related to him is completely different. The image of Tepegoz reflected in "One Thousand and a quarter of an hour" is closely aligned with traditional Turkish folklore.

It is possible to see the compatibility of both mentioned literary monuments in the system of images in the example of female images. The female images reflected in "One Thousand and a quarter of an hour" are remembered for their intelligence, fighting spirit, courage and loyalty, as in the epic "Kitabi-Dada Gorgud". If the female figures found in "One Thousand and One Nights" tales are remembered for their light morals, treachery, and propensity for debauchery, the heroines in "One Thousand and a quarter of an hour" attract attention with their positive human qualities. They are women distinguished by their sharp mind, loyalty and bravery. Due to this specific character, the images of women reflected in "One Thousand and a quarter of an hour. Tatar Tales" can be considered a continuation of the female images in the ancient Turkish epic. As it is known, because the images are the product of the thinking of the nation they belong to, they incorporate the important thoughts, ideas, beliefs and behaviors of that ethnic group. The conclusions of Kamran Aliyev, an Azerbaijani folklorist who conducted research on the ladies of the Oghuz region, give reason to say this: *"Dade Gorgud" epic, together with all the heroism and patriotism known to us, also sufficiently demonstrates the thinking system of the Oguz people. But the point is not that every example of folklore or folklore monument is a living form of folk thought, but also the meaning and point is that the epic text, which is the guardian of folk thought, is also a place of protection for a number of ideas that the people cannot express clearly in that text. In the "Dada Gorgud" epic, along with the heroic Oghuz heroes, there are also female characters appear in a more prominent form and are the bearers of some ideas*" (Aliyev, 2010: 24-25). The scientist rightly considers the female characters in the "Kitabi-Dada Gorgud" epic to be the main idea bearers of the village, the village, in short, the society they belong to. Among those characters who put their own honor and zeal above all else, and are remembered for their love and loyalty to their husbands, we can mention the images of women such as Zabd al-Qaton, Gulkhuller, Gulhindi, and Gulguli Shamama.

"One thousand and a quarter of an hour" When the images of women in Tatar tales are examined at the level of the "Kitabi-Dada Gorgud" epic, the image of the mother in both literary examples becomes one of the points that attract attention. Both in "Kitabi-Dada Gorgud" and "One thousand and a quarter of an hour" the image of a mother is described as a protective woman who protects her child and, if necessary, saves her from death. If the mother of the ruler Shamseddin, who is the main character in the main border tale of "One thousand and a quarter of an hour", Duyma khanum and the wife of Dirsa Khan, who is considered one of the important female characters in the "Kitabi-Dada Gorgud" epic, are compared, then it is possible to observe that both mother characters develop on a rising line. Thus, both the mother of ruler Shamseddin, Duyma Khanum, and the wife of Dirsa Khan, prevent her husband from becoming

a son killer and always support her son, making him feel that she is behind him. The interesting part of the story is that both female heroes manage to cope with such a difficult task by hiding their sons and saving the fathers from such a heavy burden of conscience. The achievement of peace and tranquility by female characters with their intelligence is considered to be one of the typical and frequently encountered moments of Turkish folklore.

#### **4. Ancient Azerbaijani territories mentioned in "One Thousand and a quarter of an hour. Tatar Tales"**

Geographical names play an important role in the lexical system of both folklore and artistic works. The roots of the close connection between folklore and geography go back to ancient times. It should be noted that toponyms acquire a stylistic character when they are included in the work. Let's take a look at the following opinion expressed by I. Valiyeva, Ph.D. in Philology, about toponyms: *"Ordinary, neutral toponyms become stylized when they fall into the artistic environment, acquire stylistic shades, and are painted in stylistic colors. There are no stylistic toponyms outside the artistic environment and it is impossible to have them"* (Valiyeva, 2002: 5). We agree with this opinion of the author and we want to state that although most of the toponyms reflected in "One Thousand and One Nights" and the series of works created by its influence, including "One Thousand and a Quarter of an Hour" are real place names, after entering the work, they become part of magical fairy tales has changed its essence with charm, created the impression of an imaginary world.

The toponyms used in "One thousand and a quarter of an hour" are mainly: Astrakhan, Arabia, Mecca, Medina, Cairo, China, Hormuz, Damascus, Suez, Sarandib, Aden, Egypt, Baghdad, Tbilisi, Tigris River, Caucasus Mountains, Caspian Sea, Baku, Damavand, Shirvan, Brunei, Sumatra, Nanjing, India, Brava, Tatarstan, Shiraz, Kandahar, Darband, Tabriz, Isfahan, Indian Ocean, Arabian Sea. It is clear from the mentioned toponyms that the stories in the fairy tales take place in the most diverse corners of the East, as well as in the holy cities of Muslims. The mention of the important religious centers of Islam in "One Thousand and a quarter of an hour" can be considered both as an embodiment of the tradition filtered from "One Thousand and one nights" and as an emphasis on the Islamic faith that prevails among Turks.

"One Thousand and a quarter of an hour" which appeared as a continuation of the tradition of "One Thousand and One Nights" "Tatar Tales" echoes its predecessor both in terms of its structure and the topics it covers, and it does not lag behind it in terms of the wealth of anthroponyms and toponyms found in the work. However, unlike "One Thousand and one Nights", the geographic names reflected in the mentioned work are closely related to the history of Azerbaijan. Thus, ancient Azerbaijani cities are often found among the toponyms mentioned in "One Thousand and a quarter of an hour". Those cities and historical places are presented in a separate sections, interesting information about their location and what they are famous for is also brought to attention. "One Thousand and a quarter of an hour" while deeply researching "Tatar Tales", it became known that this literary example is based on an unknown Turkish source. However, at the same time, the storyteller T.S. Gallet, who created "One thousand and a quarter of an hour", benefited from historical facts and accurate information by referring to various encyclopedias. Among the mentioned sources is the "Oriental library or the universal dictionary covering all the knowledge of the peoples of the East" by the French orientalist Barthelmy Herbalo Molenville. Let's consider a few comparative points to justify our point. Thus, although T.S. Gallet did not mention Azerbaijan directly in the collection "One Thousand and a

quarter of an hour", a number of points related to the history, literature and culture of Azerbaijan were clearly reflected. In our opinion, it was not difficult for the developer to obtain this information. From our research, it became clear that B. Herbelo mentions the name of Azerbaijan (l'Adherbigian) 49 times in his encyclopedic dictionary called "Oriental library" and provides various information about it. That information is more historical and covers the battles that took place in this area, Arab and Mongol invasions. The storyteller Gallet, on the other hand, skillfully used this valuable information about Azerbaijan, which is both an ancient Turkish settlement and located at the junction of East and West.

Speaking about the powerful Atabays of Azerbaijan, the talented orientalist Herbelo touches on the reigns of such rulers as Shamseddin Eldeniz, Muhammad (Mohammed Jahan Pahlavan), and Gizil Arslan. In "One Thousand and a quarter of an hour" we also see the name of Atabay (it is not known which Atabay we are talking about), but we also witness a scene that points to his power; In "The Story of the Chinese Prince Uchim-Oxantei" we see that the ruler of Kufa organized a tiger fight in honor of Atabay (*Les Mille et un Quart, 1730: t2, 27*). In general, we are of the opinion that the main character in "Shamseddin's Narrative", which is the main side story of "One thousand and a quarter of an hour", got his name from Atabay ruler Shamseddin. A number of parallels between the image of the ruler in the work and the real Shamseddin attract attention. This can be observed especially in their wise and competent management of the state and in their gentle attitude towards their wives. So, as it is known from history, after the death of his wife Momina Khatun, Shamseddin Eldeniz ordered the construction of a magnificent tomb in her honor. This example of art is considered one of the rare buildings built for women in the Muslim Eastern world. Shamseddin Khan in "One Thousand and a quarter of an hour" while on a trip with his wife Zabd al-Qaton, because his wife passed away, he puts her in a coffin and decorates her with expensive jewels and rare jewels. Thus, it is possible to observe that both rulers' love and respect for their women is expressed in a unique way.

As mentioned above, "One thousand and a quarter of an hour. In the French version of "Tatar Tales", the names of several ancient Azerbaijani cities and historical places can be found. Among them, Baku, Ateshgah temple in Baku, Ganja, Shirvan, Darband, Tabriz, Damavand can be mentioned. Backgrounds are presented about these ancient Azerbaijani settlements, whose names are mentioned in various stories, and information about their location is given.

One of the events reflected in the fourth volume of "One Thousand and a quarter of an hour" takes place in the city of Baku. Unlike the Russian translation version of this work, a footnote about Baku is also mentioned in the French text (*Les Mille et un Quart-d'Heure, 1737: t4, 20*). Considering that the work was created in the 18th century outside of Azerbaijan, let's review this border in the original: "*Backu. Ville capitale de la Province de Schirvan en Perse, qui donne fon nom à la Mer de Backu; elle est fur la Côte de la Mer Caspie. It y a une chose assez finguliere auprès de cette Ville, c'est une fontaine qui jette continuellement une Jiqueur noire dont on se ferr par toute la Perse au lieu d'huile*" – "Baku is the capital of Iran's Shirvan province. It is located on the coast of the Caspian Sea. A very interesting issue attracts attention. "There is a fountain in this city that constantly emits black liquor, and it is used throughout Iran instead of oil."

As it can be seen, in the margin included in this literary example by T.S. Gallet, Baku is presented as a part of the territory of Iran. Because "One thousand and a quarter of an hour. When the French version of "Tatar Tales" was created (1714), Azerbaijan was part of the Safavids (1501-1722), known as the Iranian state. Therefore, the French-born storyteller shows Baku as an Iranian territory, not because of its geographical location, but because of its political status. However, unlike the European reader, the Russian reader, who knows well where the city

of Baku is located, does not need an additional explanation, so this footnote is not encountered in the Russian translation version of the work.

However, "One Thousand and a quarter of an hour" talks not only about the location of our city, but also about the narrow streets of Baku, which at that time consisted only of the Old City. Thus, the old dervish who narrated the events that took place in Baku ("The Story of the Old Qalander") reports that an underground tunnel was dug in the narrow streets that made it difficult to travel: "...As I was a treasurer in the temple, I was not in financial trouble. For this reason, I found some reliable people and made an underground passage from my cell to her (the woman's) bedroom. You can reach the top of the apartment in six minutes through this narrow road. However, to get to his house by ground road, I had to go through the neighborhood, which was long enough, and I had to open and close the gate." (*Les Mille et un Quart-d'Heure. Contes Tartares, 1737: t.4, 31*).

At the same time, other real information about Azerbaijan can be found in "The Story of the Old Qalander". In this story narrated by Darvish Hanif, when talking about the dervish temples in Baku, most likely, the Ateshgah temple in Surakhani is meant. Thus, in the encyclopedic dictionary "Eastern Library", which is one of the main sources of information of "One Thousand and a quarter of an hour", B.Herbelo, speaking about fire worship, points to Azerbaijan as one of the main places where this philosophical movement flourished, and states that the main temples and pyres of fire worshipers are located here (*Herbello, 1697: 144*). For this reason, we think that when we say the temple of the fire worshiper in Baku, we are talking about "Ateshgah" in Surakhani. Indeed, dervishes always lived in the cells of this fire worshipping temple (*Kasimov, 1983: 104–107*). Narrating the story of "Old Qalander", Hanif was five years old when one of the old dervishes living in the temple took him under his protection. When he reaches the age of nineteen, he learns that that dervish is his own father. Hanif falls in love with Jenciara-Nara, the daughter of neighbor Kalem, after which his love affairs begin. He marries Cenciara-Nara and leads a happy married life for thirteen years. However, during these years, both his parents, and finally his beloved wife, died. Thus, tired of loneliness, Hanif "wears dervish clothes and leaves Baku" (*Les Mille et un Quart-d'Heure. Contes Tartares, 1737: t. 4, 42*).

It is possible to see Darband among the cities of Azerbaijan that can be found in "A thousand and a quarter of an hour". Darband is one of the ancient Turkish settlements. Until it was occupied by Tsarist Russia in the 19th century, this city was considered the gateway to Azerbaijan. It is no coincidence that the name of "Iron Gate" Darband, the ancestral home of the Turkic tribes, is often mentioned in the "Kitabi-Dada Gorgud" epic. "One Thousand and a quarter of an hour" in the third volume, page 341 of the French copy of "Tatar Tales", the footnote about the city of Darband is noteworthy: "A city at the foot of the Caucasus Mountains, in the Shirvan province of Iran. It is called *Temir-Kapi* or iron gates. In this place there are huge gates that block the enemy" (*Les Mille et un Quart-d'Heure, 1753: t. 3, 341*).

It is noteworthy that the word *Demir-kapi* (Iron-Gate) has not been translated into French, but is presented as it is in the original ("*Demir-kapi*"). As mentioned above, keeping certain words as they are in the original without subjecting them to translation, on the one hand, stems from the intention to add an "Oriental atmosphere" to the work, on the other hand, it indicates that it is a "false translation work", that is, an imitation of a translation.

Damavand is one of the ancient geographical places of Azerbaijan that happened in the French version of "One thousand and a quarter of an hour". This area is mentioned among the places where the events took place in the work. Here, Damavand Mountain is presented as a part of the ancient land of Azerbaijan. Thus, in the footnote in the work, it is said about the mentioned toponym: "Damavand - a city that was once part of Azerbaijan, and currently belongs to



Persian Iraq (Iraqi-Ajam-R.S.)" (*Les Mille 2*, p. 236). According to modern information, Mount Damavand, which has a special place in Iranian mythology and folklore, is the highest peak in the Alburz or Elburs mountain range, which is located in the north of the Islamic Republic of Iran and starts from the borders of Azerbaijan in the northwest. If we look at the historical sources, it turns out that during the Sassanid era, this area really belonged to the lands of Azerbaijan. Islamic geographer Ibn Khordadbeh (9th - 10th century) and thinker from Kharazm Abu Reyhan al-Biruni (9th century) reports that the mentioned geographical area was under the control of Azerbaijan during the early Medieval Period. Ibn Khordadbeh in his work "كل اسما ل ا و ك ل ل م ل ا م ل ا ب ا ت ك و" (The Book of Roads and Countries) shows that Mount Damavand and the city of Damavand were part of the administrative division called "Azerbaijan" at that time (*Ibn Khordadbeh, 1889: 118-119*). Undoubtedly, the European orientalists who benefited from these ancient authoritative sources, by including such information in their encyclopedic collections, played an important role in the penetration of historical facts into fiction. In any case, the preservation of historical information about Azerbaijan in "One Thousand and a quarter of an hour", which was created in the framework of the French literary environment at the beginning of the 18th century, is one of the points that attract attention. We think that this topic can determine the direction of a separate research work by itself.

## 5. Conclusions

In this article, it is pointed out that "One Thousand and a quarter of an hour", including the series "Thousand and Ones", is related to a new tradition that emerged in the French literary environment of the XVIII century. Thus, due to the influence of the Arab monument we are talking about, new works similar to it, but reflecting the literary characteristics of different nations, were created, and it was known that the basis of those works included certain plots and motives derived from unknown sources, parallel to real encyclopedic information. Among those literary examples that we call **translation imitations** are "One Thousand and a quarter of an hour. Tatar tales" has a special position. In the article, the reason for the creation of this literary example is investigated, the system of images here, correspondences related to Azerbaijan at the level of anthroponyms and toponyms are highlighted, and brief information about each of them is given. At the same time, in the system of images of the work, traces of Azerbaijani, including all-Turkic folklore were discovered, and the similarities that emerged as a result of comparisons were considered. Based on the findings, it can be said that although "One Thousand and a quarter of an hour" is composed in the structure of "Thousand and one nights", the approach to the topics covered here, as well as the form of expression that manifests itself during the resolution of events, closely resonates with ancient Turkish thinking. Thanks to the common aspects found in this literary collection and Azerbaijan folklore, history and geography, it became clear that "Thousand and a quarter of an hour" is not an author's work, but an imitation of a translation.

In general, the ethno-poetics of "One Thousand and a quarter of an hour. Tatar Tales", the specific features of the Turkish ideology contained in it, and the points closely related to the history of the Turks confirm the thesis that the ancient Turkish source is at the root of the work.

As a result, it is possible to say that "One Thousand and a quarter of an hour" is a valuable source that contains a number of valuable information about the literature and history of all Turks, including Azerbaijan. In our opinion, a deeper study of the mentioned literary sample will open new horizons in the direction of obtaining satisfactory results.

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## STRATÉGIES COMMUNICATIVES POUR LA REPRÉSENTATION DE LA GUERRE D'ISRAËL CONTRE LE HAMAS 2023 DANS LES MÉDIAS FRANÇAIS

**Liudmyla Shapovalova**

Ph.D, professeur associé du département de philologie romano-germanique  
“l’Université nationale Taras Shevchenko de Louhansk”, Ukraine  
e-mail: mila3466@gmail.com, orcid.org/0000-0001-8707-996X

### Summary

The aim of this scientific research is to determine what communicative strategies are used by French mass media representing different political forces in France and how this shapes society's attitudes towards the Israel-Hamas war in 2023. Articles from the French online newspapers “Le Figaro” and “Le Monde”, representing conservative and liberal-minded French citizens, were analyzed in order to obtain a balanced understanding of the current situation. The findings of the study reveal the state of French society in relation to challenges such as terrorism and anti-Semitism.

During the research, the following methods of mass communication analysis were used: discourse analysis, propaganda analysis, pragmatic analysis - studying human parameters of communication reflected in language: communication strategies and tactics, evaluations, laws and rules of communication.

The conducted research through the identification of communicative strategies used by journalists to present information allows for diagnosing French society regarding contemporary challenges such as anti-Semitism, terrorism, Islamism, and its readiness to continue supporting and defending the democratic values of the Fifth Republic.

**Key words:** media discourse, language code, messages, decoding, communicative strategies, Israel-Hamas war.

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### 1. Introduction

La langue comme miroir de l'histoire et de la modernité reflète la mentalité nationale et enregistre les événements, en montrant l'attitude de la société à leur égard et en formant une position nationale sur les défis émergeant. Les événements du 7 octobre 2023, qui ont secoué le monde entier, ont révélé les problèmes des pays européens, en particulier de la France, dans leur politique concernant des immigrants du Moyen-Orient. En raison des manifestations pro-paléstiennes soutenant les actions terroristes du Hamas en Israël et de la montée de l'antisémitisme en France, on peut dire que la politique d'accueil des réfugiés et des fuyards du Moyen-Orient, qui devaient maîtriser la langue française, adopter les valeurs françaises et s'assimiler dans la société française, a subi un échec. Les événements ont été reflétés dans les médias français, qui non seulement rapportent des informations, diffusent le point de vue français, mais éclairent également l'état de la société française par rapport à la tragédie du 7 octobre et contribuent à la compréhension de la situation, à la prise de conscience des conséquences et à la recherche de solutions pour surmonter le terrorisme et l'antisémitisme.

**La pertinence** de cette étude réside dans la clarification des stratégies de communication pour présenter l'opinion publique française et leurs influences sur la prise des décisions concernant la guerre d'Israël contre le Hamas en 2023.

**L'objectif** de cette recherche scientifique est de déterminer quelles stratégies de communication sont utilisées par les médias français représentant les forces politiques principaux en France et comment cela montre et forme l'attitude de la société envers la guerre d'Israël contre le Hamas en 2023.

**L'objet** est le processus de représentation de la guerre d'Israël contre le Hamas en 2023 dans le discours médiatique français.

**Le sujet** de l'étude sont les stratégies de communication reflétant la guerre d'Israël contre le Hamas en 2023 dans les médias français.

Pour atteindre l'objectif, les tâches suivantes ont été formulées et résolues :

1. Identifier les contextes des journaux français qui actualisent la question de la guerre d'Israël contre le Hamas en 2023.

2. Analyser les contextes identifiés du point de vue de l'utilisation des stratégies de communication.

3. Examiner quelles stratégies de communication sont propres aux journaux de différentes forces politiques.

4. Déterminer l'attitude de la société française à l'égard de la guerre d'Israël contre le Hamas en 2023 ; comment les stratégies de communication utilisées reflètent l'attitude de la société française et vers quoi elles la dirigent.

**Mots clés:** discours médiatique, code linguistique, message, décodage, stratégies de communication, guerre d'Israël contre le Hamas.

Pour l'analyse, des articles ont été pris dans les journaux en ligne "Le Figaro" (représentant les forces politiques de droite et de centre-droit, le libéralisme et le conservatisme social, avec un tirage de 329 462 exemplaires) et le quotidien du soir "Le Monde" aux vues libérales de gauche (avec une diffusion de 364 240 exemplaires) afin d'obtenir une idée générale de l'attitude de la société française à l'égard de la guerre entre Israël et le Hamas.

Lors de l'étude, les méthodes d'analyse de la communication de masse suivantes ont été utilisées : l'analyse du discours, l'analyse de la propagande, l'analyse pragmatique – l'étude des paramètres humains de la communication reflétés dans la langue, en particulier, des stratégies de communication, évaluations, lois et règles de communication. Cette analyse est propre aux chercheurs de l'école britannique tels que John Austin, John Searle, Paul-Grice. Par exemple, des stratégies de conflit telles que l'invective (réduction de la tension par des insultes, des querelles) sont connues ; la stratégie courtoise (recherchée) d'une personne éduquée, où le moyen de se débarrasser de l'agression est de pleurer ; la stratégie rationnelle-heuristique (rationnelle-recherchée), dans ce cas le bon sens et l'humour deviennent des moyens de réduire la tension. (*Lapycheva, 2016: 7*).

## 2. Particularités du discours médiatique et décriptage du code linguistique qu'il contient

Le discours médiatique se distingue d'autres types de discours par le fait qu'il représente l'opinion publique et la façon.

Les lecteurs de journaux et de magazines reçoivent des informations qui sont souvent présentées à l'aide d'unités linguistiques émotives contenant une certaine connotation,

transmettant ainsi des opinions d'auteurs, d'éditeurs, de journaux et de magazines, de certaines forces politiques dont les opinions sont exprimées par ces médias.

Afin de déchiffrer des messages du discours médiatique, il faut tout d'abord que les lecteurs (destinataires de l'information) aient un fond commun qui leur permette d'avoir certaines émotions sur ce qu'ils lisent, de former une attitude à

l'égard des informations reçues et de les pousser à certaines actions.

Le destinataire d'un message issu du discours médiatique, décode ses composantes implicites et explicites.

Les composantes explicites incluent l'expression directe de la position d'auteur, l'appréciation ou l'indication sur l'opinion d'une autre personne ou d'un groupe de personnes, et les composantes implicites incluent la manière dont cela est fait (quelles unités linguistiques et stratégies communicatives sont utilisées et dans quel but).

“En linguistique moderne, la stratégie de communication est comprise comme la mise en œuvre optimale de l'intention du locuteur d'atteindre un objectif de communication spécifique en choisissant des mouvements de parole efficaces, ainsi que leur modification flexible dans une situation concrète” (*Maslova, 2015: 81*).

“Les tactiques de communication c'est une certaine ligne de comportement à une étape spécifique de l'interaction communicative ; méthodes linguistiques pour atteindre l'objectif” (*Liapicheva, 2016: 34*).

Selon L.V. Zaval'ska, “Une stratégie de communication est un plan, un schéma pour la mise en œuvre par le locuteur d'une intention communicative, qui implique l'utilisation étape par étape de moyens linguistiques pour obtenir le résultat souhaité ou influencer l'interlocuteur. La stratégie de communication n'est seulement la prérogative du locuteur qui initie la communication, mais aussi du destinataire, qui opère des stratégies de réponses, d'évitement de réponse, de réaction émotionnelle, etc. Les stratégies communicatives ont une incarnation concrète à travers des tactiques communicatives – une action de parole dirigée vers la mise en œuvre de l'intention communicative du locuteur dans le cadre de la stratégie communicative choisie” (*Zaval'ska, 2017: 59-64*).

“À ce jour, une typologie généralement acceptée des stratégies de communication n'a pas encore été créée, car en raison de la variété des situations de communication, il existe un problème de choix des critères optimaux pour leur stratification” (*Semeniuk, Parashchuk, 2010: 8*).

“La plus générale est la classification de T. Van Dijk et V. Kinch, qui compte tenu de la nature des processus de génération et de compréhension du discours, distinguent: les stratégies propositionnelles, les stratégies de cohérence locale (connectivité), les macrostratégies, les stratégies schématiques, les stratégies de production, les stratégies stylistiques, les stratégies rhétoriques, les stratégies non verbales, les stratégies conversationnelles” (*Maslova, 2015: 81-82*).

### **3. Stratégies communicatives des journaux français “Le Figaro” et “Le monde” comme moyen de sonder l'attitude de la société française face au terrorisme et à l'antisémitisme**

Dans le journal en ligne “Le Figaro”, qui représente les forces politiques de droite et de centre-droit, nous avons identifié les stratégies communicatives suivantes:

1. L'utilisation de messages très émotionnels sur les attentats terroristes et la multiplication des actes antisémites. Le choix d'un vocabulaire émotif qui les décrit et les condamne (terrorisme, ...) et d'un vocabulaire qui démontre le rapport à la résistance des Juifs:

“la résistance héroïque des kibboutzniks de Nir Am”.

Un vocabulaire qui fait appel à la composante émotionnelle de la conscience pour susciter des sentiments d'indignation, de colère, etc.

“Les juifs d'Europe “vivent de nouveau dans la peur” ; recrudescence des actes antisémites ; déclenchement du conflit au Proche Orient ; nous condamnons des actes ignobles ; des périodes les plus sombres de l'histoire; le macabre bilan des victimes étrangères depuis l'attaque du Hamas en Israël ; guerre Hamas-Israël” (<https://www.lefigaro.fr/>).

2. L'utilisation d'un vocabulaire qui montre de quel côté regarde les événements l'auteur de l'article:

“la résurgence des actes antisémites ; l'éclatement du conflit au Moyent-Orient ; nous condamnons les actes ignobles ; les périodes les plus sombres de l'histoire ; nombre effroyable de victimes étrangères après les attaques du Hamas contre Israël ; la guerre Hamas- Israël” (<https://www.lefigaro.fr/>).

3. L'émergence du slogan “Je suis Juif”, qui fait référence à l'attentat terroriste de “Charlie Hebdo” en 2015, et montre une analogie entre les actes de terrorisme et leur condamnation (<https://www.lefigaro.fr/>).

4. La caractéristique de l'attitude de la société française face aux événements mentionnés comme apathie et renaissance de l'antisémitisme: “Philippe Torreton dénonce l'apathie en France et la résurgence antisémitite: “La guerre Gaza révèle 30 ans d'impuissance et de fracture française. Immigration, Islamisme, antisémitisme...La guerre à Gaza révèle 30 ans d'impuissance et de division en France” (<https://www.lefigaro.fr/>).

5. La démonstration de la division de la société française dans la qualification des actions des terroristes palestiniens en Israël et en France.

“Le président d'Amnesty France refuse de qualifier le hamas de groupe “terroriste”. Le refus de la France insoumise de participer à la marche contre l'antisémitisme prévue dimanche, en raison de la venue des cadres RN, tranche avec sa présence à la “marche contre l'islamophobie” en 2019, analyse Fatiha Boudjahlat”. “Pour le philosophe, directeur de l'Institut européen Emmanuel Levinas, en proclamant la négation de la légalité internationale de l'existence d'Israël, la gauche “radicale, tapageuse et infantile” adopte le mantra islamique du Hamas” (<https://www.lefigaro.fr/>).

6. L'utilisation d'un grand nombre de messages chargés d'émotions sur un événement afin d'y immerger profondément les lecteurs et de créer une certaine opinion sociale et résonance publique.

7. Les appels à s'unir contre l'antisémitisme, dans un contexte de montée des actes antisémites en France depuis l'attaque du 7 octobre du Hamas en Israël.

8. La quantité beaucoup plus importante de messages condamnant le Hamas par comparaison à ceux qui le soutiennent.

“257 actes antisémites recensés dans l'agglomération parisiennes, selon le préfet de police de Paris Laurent Nuñez”. “le nombre d'actes antisémites a explosé en France depuis l'attaque du Hamas en Israël le 7 octobre, assure Gérard Darmanin sur France”. “Selon le ministre de l'Intérieur, 1040 actes antisémites ont été recensés, et ont donné lieu à 486 interpellations” (<https://www.lefigaro.fr/>).

9. L'utilisation des opinions de personnalités françaises en lien avec la guerre du Hamas contre Israël.

“La ministre française des Affaires étrangères, Catherine Colona, a appelé dimanche à une “trêve humanitaire immédiate”, au 30<sup>e</sup> jour de la guerre entre Israël contre le Hamas palestinien”.

“Un ministre ultranationaliste israélien a estimé dimanche que recourir à la bombe nucléaire contre la bande de Gaza dans la guerre en cours contre le mouvement palestinien Hamas était “une option””.

“L’ancien Premier ministre Édouard Philippe a critiqué dimanche “l’attitude d’un certain nombre de leaders actuels” qui “a pu décapsuler” l’antisémitisme en France, visant sans les nommer des responsables de La France insoumise Radio J le patron du parti Horizons” (<https://www.lefigaro.fr/>).

10. L’utilisation des avis de condamnation des actions du Hamas dans d’autres pays.

“Sunak a rencontré la police de Londres sous pression pour interdire une marche pro-Palestine prévue samedi” (<https://www.lefigaro.fr/>).

11. La banalisation des événements en les dissolvant entre d’autres, en y opposant des points de vues antisémites, sous prétexte que chacun peut exprimer sa vision, tout en manipulant la conscience des lecteurs et en faisant taire le fait que le point de vue antusémitique est une manifestation du fascisme.

Georges Bensoussan dans son œuvre “Cessons de voir le conflit israélo-arabe sous le prisme victimaire occidental” dit: “Le poète palestinien Mahmoud Darwich s’adressait en ces termes à la poète israélienne Helit Yeshurun: “Savez-vous pourquoi nous sommes célèbres, nous autres Palestiniens? Parce que vous êtes notre ennemi. L’intérêt pour la question palestinienne a découlé de l’intérêt porté à la question juive. Oui. C’est à vous qu’on s’intéresse, pas à moi ! Si nous étions en guerre avec le Pakistan, personne n’aurait entendu parler de moi” (<https://www.lefigaro.fr/>).

12. L’utilisation des recherches géopolitiques faites par des personnes d’influence concernant la guerre spécifiée.

“La deshumanisation des victimes, leur ciblage et leur dénomination par les bourreaux (“J’ai tué deux Juifs!”): tout démontre un changement de paradigme. Le 7 octobre le Hamas n’est pas allé “plus loin”, comme on l’entend trop souvent, mais “ailleurs”. Son attentat n’a pas changé d’ampleur, mais de nature. Certes, il a été militairement plus efficace, mais il a surtout commis autre chose qu’une “simple” opération militaire. (Frédéric Encelest le docteur en géopolitique habilité à diriger des recherches à la “Paris School of Business” et maître de conférences à “Sciences Po Paris”, auteu des “Voies de la puissance” (prix du livre géopolitique, Odile Jacob 2023) (<https://www.lefigaro.fr/>).

Pour avoir une vue objective, considérons les stratégies communicatives identifiées dans le journal en ligne “Le monde”.

1. Les reportages sont peu émotionnels, le ton calme, presque indifférent.

“La diplomatie française contrariée par les choix d’Emmanuel Macron sur le Proche-Orient” (<https://www.lemonde.fr/>).

2. La banalisation des événements en les utilisant dans des contextes différents.

“Après le conflit en Ukraine, la guerre entre Israël et le Hamas menace à son tour de freiner une croissance mondiale déjà anémiée” (<https://www.lemonde.fr/>).

3. L’utilisation d’un petits nombre de messages sur la guerre Israël-Hamas.

4. L’exposé sec de faits.

“A la veille de la conférence internationale humanitaire organisée à Paris, treize ONG demandent à ce que soit garantie “l’entrée de l’aide humanitaire à Gaza et le respect du droit international humanitaire”. Le président français a appelé à ne pas “confondre le rejet des musulmans et le soutien des juifs”, en allusion à l’extrême droite” (<https://www.lemonde.fr/>).

5. L’implication des opinions des étrangers.

“Des crimes de guerre dans les deux camps du conflit Israël-Hamas, dit Türk” (<https://www.lemonde.fr/>).

6. La démonstration de la prise d'une position en condamnant l'antisémitisme. Le refus de banaliser l'antisémitisme.

“Chez les juifs français, la peur et le sentiment d'un grand isolement: “Il n'y a pas beaucoup de monde pour nous soutenir” (<https://www.lemonde.fr>).

#### 4. Conclusions

Dans le journal “Le Figaro”, qui représente les forces politiques françaises de droite et conservatrices, les informations sont présentées avec émotions, on voit clairement de quel côté sont les sympathies du journal, il y a des appels à lutter contre le terrorisme et l'antisémitisme, et la volonté de défendre les valeurs françaises, qui sont menacées par les actions terroristes du Hamas et par la flambée de l'antisémitisme.

Dans le journal “Le monde”, la présentation d'informations tend à une énonciation impassible des faits ce qui témoigne de l'apathie de la société française, en particulier du public cible de ce journal, sur la question de la guerre d'Israël contre le Hamas et d'une certaine indifférence d'une partie des Français.

L'absence de vocabulaire émotif, le ton calme des reportages banalise les événements. On peut dire que le journal ne reflète pas l'état de la société mais rapporte des faits secs ce qui ne suscite pas une forte réaction émotionnelle des lecteurs de ce journal.

Les recherches menées à partir de stratégies communicatives identifiées dans le discours médiatique français dans le journal en ligne “Le Figaro”, et leurs analyses qualitative et quantitative permettent de conclure que la société française a connu un nouvel effondrement de sa politique à l'égard des émigrés du Moyen-Orient, est assez apathique et divisée en attitudes envers la guerre entre le Hamas et Israël.

Compte tenu des stratégies communicatives révélées dans des discours médiatiques analysés, on peut dire que la société française est divisée dans l'appréciation des événements spécifiés et dans l'attitude face à la vague d'antisémitisme. Les lecteurs du journal de centre-droit “Le Figaro”, condamnent pour la plupart le Hamas et ses actions et soutiennent Israël. Concernant l'augmentation significative du nombre d'actions antisémites, les lecteurs de “Le Figaro”, se prononcent, en général, en soutien du peuple israélien.

Le public cible des opinions libérales de gauche est déterminé par une certaine apathie et indifférence, qui se manifestent à travers les stratégies communicatives du discours médiatique dans le journal “Le monde”.

À travers l'identification des stratégies communicatives utilisées par les journalistes pour fournir les informations, les recherches menées permettent de sonder la société française face aux défis modernes qui sont l'antisémitisme, le terrorisme, l'islamisme ainsi que sa volonté de défendre les valeurs démocratiques de la Ve République.

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## STRUCTURAL-SEMANTIC FEATURES OF SEMI-AFFIXES IN ENGLISH-FRENCH LANGUAGES

**Vusala Aliyeva Arif**

Head Lecturer at the Department of Foreign Language Teaching Methodology,  
Azerbaijan University of Languages, Azerbaijan  
e-mail: [vusala.aliyeva79@gmail.com](mailto:vusala.aliyeva79@gmail.com), [orcid.org/0009-0002-4825-7991](https://orcid.org/0009-0002-4825-7991)

### Summary

The semi-affix is widely used in the language to create different forms of the word. There are a number of studies related to semi-affixes both in general linguistics and in Azerbaijani linguistics. In the works written on this or other occasion, half-photographers were also given a place, and opinions were expressed about their characteristics and types. As it can be seen, the role of half-images in enriching the vocabulary of the English language with new words and in word creation is very large. Therefore, a more detailed study of the processing of words with lexical meaning as suffixes is very important for both modern linguistics and grammar. The article will examine the relevant direction based on the English and French languages where semi-affixes are most active.

**Key words:** linguistics, semi-affixes, English, French, structural-semantic features.

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### 1. Introduction

It should be noted that in English some semi-affixes can be attached to the beginning of the word stem like prefixes. I. V. Arnold refers to such semi-affixes as mini-, midi- maxi- type elements. Thus, a word that names something shorter or smaller than anything of its kind is called mini- (short skirt). The same can be said about midi- and maxi- semi-affixes: midi-coat, maxi-coat, etc. R.S. Ginzburg characterizes semi-affixes as suffixes and writes that they can carry the function of both a suffix and a free morpheme. For example, the elements "well and half" are used as free words in expressions such as "sleep well", "half an hour", and on the other hand, as non-free morphemes in the combinations "well-known", "half-eaten", half-done". R.S. Ginzburg includes out-, over-, up-, under- and other prefixes in the group of semi-affixes and notes that they are used both as independent words and word-correcting suffixes. Semi-affixes play an important role in modern English word creation. However, as with verbs, they have little ability to form adjectives. These semi-affixes were acquired with certain words in Romance and Greek languages and did not form any new words in the English language.

### 2. Main part

Unlike compound words, words formed with the presence of semi-affixes do not break up within the compound. Prepositions are also distinguished by their ability to form parts of speech. For example, K.V. According to Piottukh's conclusion, only one of the forty-two word-correcting preforms is out- (outpour – to empty; outspread – to spread), in the formation of verbs, for- in the formation of both nouns and verbs, over- (to overload, over-curious – very

interested in something, very interesting, over-delicate – very delicate, very sensitive) and under- (underact – do not finish, underestimate – do not evaluate, underpay – do not pay in full, underproduce – do not produce the product sufficiently, underborn – underdeveloped, underbred – badly brought up, underhand – secret, behind the scenes, underarm – to put under the hand) are involved in the formation of verbs, nouns and adjectives.

R.S. Ginzburg in his book "A Course in Modern English Lexicology" divides affixes into prefixes and suffixes and writes that prefixes come at the beginning of root morphemes, and suffixes come at the end of roots. However, many grammarians include infixes in this division. Sh. V. Arnold divides affixes into prefixes, suffixes and infixes according to their place, and into word-correcting and functional suffixes according to their function. It should be noted that both prefixes and suffixes are characterized as productive affixes. They talk about prefixes in detail and show that prefixes change the meaning of a word, but do not change the word from one part of speech to another part of speech. for example: the prefix over- creates the meaning of multiplying: to load – to overload; to produce – to overproduce etc. The prefix under- means little: to value-to undervalue, to underestimate; to pay – to underpay, etc. The semi-affix post- then forms the meaning: revolutionary – postrevolutionary and so on. The semi-affix anti- produces the opposite meaning: fascist – antifascist, imperialist – anti-imperialist etc. The semi-affix Counter- gives the opposite meaning: attack – counter-attack; blow – conter-blow etc. (*Zemskaya, 2014:171*). The semi-affix inter- forms the meaning between: national – international; dependent – interdependent, etc. Front semi-affixes in English are mainly: well-, ill-, under-, out- over-, up-, etc. These semi-affixes are sometimes considered by researchers as the first component of compound words. Considering these half-images as the first component of complex words, it seems that they are written with a hyphen and the accent of the second component is pronounced with an equal emphasis. For example, well-appointed, well-balanced, well-connected, etc. However, these characteristics of them are formal and do not always have a leading role in the formation of this or that element.

In the dictionary of linguistic terms D.E. Rosenthal prefixation is defined as a method of word formation and morphology by attaching prefixes to roots and stems (*Rosenthal, 2008: 361*). Some researchers emphasize that semi-affixes, unlike suffixes, serve mainly not to translate one part of speech into another, but to change the lexical meaning of a word. So, for example, N.N. Amosova writes: "...in the English language, prefixes perform only the exclusive function of a means of restructuring the lexical meaning of a word...". I.V. Arnold in the book "Lexicology of the Modern English Language" gives the following formulation to the term prefix: "Semi-affixes are word-forming morphemes that precede the root and change the lexical meaning of the word, but, in most cases, do not affect its belonging to one or another lexicogrammatical class" (*Meshkov, 1976: 91*). However, other authors are inclined to admit that a number of prefixes are still capable of translating one part of speech into another; they are called "converting". For example, the semi-affix de- can form verbs from nouns: deplane (to disembark, unload from an airplane), detrain (to disembark, unload from a train). Using the semi-affix anti- you can form adjectives from nouns: antinoise. V.I. Shkarupin identified 25 "converting" semi-affixes in the prefix system of the English language, which form two large groups:

- semi-affixes that form verbs from substantive and adjectival stems: be-, de-, dis-, en-/in, inter-, out-, over-, re-, un-;
- semi-affixes forming adjectives from substantive stems, phrases and participles: ante-, anti-, inter-, intra-, multi-, over-, poly-, post-, pre-, pro-, sub-, super-, supra-, un-, under- (*Meshkov, 1976: 96*).

According to another classification, semi-affixes can be divided into:

- original – borrowed;
- transposing – non-transposing;
- negative – non-negative,

• monovalent – multivalent. As for English and French, it should be noted that most of the semi-affixes in these languages are borrowed from Latin and Greek. In addition, many prefixes in English are borrowed from French. A large number of prefixes express a negative meaning, which led to the identification of a special class of negative prefixes. The presence of a large number of such semi-affixes often causes some difficulties in choosing a specific prefix in a certain situation, since the addition of a prefix often depends not on a specific rule, but on the established practice of word usage. Some prefixes can be combined only with the stems of one part of speech, while others can be combined with the stems of several parts of speech.

According to K.V. Of the forty-two word-formation semi-affixes of the English language, five prefixes are involved only in the word-formation of verbs (en-, out-, be-, de-, un-), five only in the word-formation of nouns (ex-, arch-, ana-, dys-, per-); three (for-, sur-, re-) form verbs and nouns, etc. (*Meshkov, 1976:94-95*). Prefixes can form various transposing (Pref + N = V; Pref + A = V; Pref + N = A) and non-transposing schemes and models (Pref + N = N; Pref + A = A; Pref + V = V). In modern English, there are a large number of words with prefixes that have partially or completely lost their meaning; when these prefixes are separated, the remaining part cannot be recognized as an independent word (*Vargo, 2010:85-87*). Such words are recognized as non-derivative. For example, arrive, become, dispatch, precise, prepare, reduce, remember, subject, understand, etc.

Of the negative semi-affixes of the English language, the prefix un-, which is used with both native English words and verbal forms, is the most productive and can be used not only with adjectives, but also with verbs: unapproachable, unbelievable, unending, unknown. A significant difference between the functions of prefixes and suffixes in French is that, since the stress in French always falls on the last syllable, when suffixes are at the end of words, they are more closely connected with the generating stem. Semi-affixes, which have word-formation meaning, are more independent of the word-formation base than suffixes, which contributes to the process of lexicalization, that is, their use as independent words. For example, ultra; super (*Tsibova, 2008: 71*).

As a rule, French semi-affixes, unlike suffixes, do not serve to translate words from one part of speech to another: succès (noun) – insuccès (noun), composer (noun) – recomposer (noun); ho enchanter (verb) – enchantement (noun), observer (verb) – observateur (noun), triste (adj.) – tristement (adv), simple (adj.) – simplement (adv.) etc. L. Gilbert divides all prefixes into three groups depending on their activity: active, to which he includes, for example, the prefixes anti-, hyper-, super-, re-, de-, sur-; semi-active: a-(ad-); inactive, which can only be distinguished etymologically: ab-; pour-; pro-, par-, per-; co- and others (*Tsibova, 2008: 72*). Inactive prefixes are actually quasi-prefixes.

Charles Bally wrote about the presence in the French language of a fairly large group of words with meaningless, inactive prefixes devoid of word-formation meaning, which he called “conventional labels” (*Tsibova, 2008: 72*), for example: prefixes pro-, per-, co-(con-, com-, cor-) in the words promettre – promise; permettre – to allow; commettre – to commit. Just like in English, words with such prefixes are perceived by modern native speakers as non-derivative. Among the active prefixes of the French language, several main semantic groups can be distinguished:

- negative privative semi-affixes;
- intensity semi-affixes;

• semi-affixes of local meaning. The group of negative privative prefixes can in turn be divided into several subgroups:

• negation semi-affixes: (a-(+noun, adj.) – anormalité (abnormality), asocialité (asociality), asymetrique (asymmetrical), atemporel (timeless); non-(+noun, adj., adj.) – non-assistance (refusal to assist), non-participation (non-participation), noncombattant (non-fighting), non-concerté (uncoordinated), non-recevable (unacceptable); in-(im-; il-; ir-)(+ noun, adj., adverb) – inégalité (inequality), incoutable (harassing), immodest (immodest), illégitime (illegal), irresistible (irresistible);

• antonymic semi-affixes: anti-(+ noun) – antiphrase (antiphrase), antimatière (antimatter), de-(dis-)(+ noun, adj., verb) – disproportion (disproportion), déforestation (deforestation), dégelant (de-icer), déloyal (disloyal), défaire (destroy what has been done), dégarnir (empty), disparaître (disappear);

• semi-affixes of opposition: anti-(+noun, adj.), which in this case acts as an antonym of the prefix pro-. So, for example, antimilitariste (anti-militarist, anti-militarist), antimissile (anti-missile), antiterroriste (anti-terrorist). Prefixes of intensity (L. Guilbert calls them “préfixes à valeur de superlatif”), denoting the highest degree of quality, include: super-, hyper-, extra-, sur-, archi-, ultra-. L. Guilbert and J. Dubois expressed the opinion that there is a tendency to form a system of degrees of comparison in modern French in a synthetic way, that is, through prefixes that thereby compensate for the absence of intensity suffixes. However, we should not forget that French is an analytical language, and degrees of comparison can also be expressed analytically (Tsibova, 2008: 75).

Having studied this group of semi-affixes in more detail, the authors found that, for example, the prefix super- is more often used in cinema vocabulary, military vocabulary, etc., for example, super-vedette (superstar), superfestivale (superfestival). The semi-affix hyper- is rather inherent in scientific terminology (medicine, psychology, mathematics): hyperalgésie (increased pain sensitivity), hypersomnie (increased drowsiness), hyperplan (hyperflatness), etc. The prefix extra- “something unusual, extraordinary, excellent quality” is quite common in advertising vocabulary: extra-fin (extra-thin), extra-fort (extra-strong), extra-sensible (extra-sensitive). The semi-affix sur- (one of the most active and productive prefixes) is characteristic of economic terminology, and is also found in political, technical terminology and in words of popular vocabulary: surinvestir (to make excessive investments), surplus (remainder, surplus), surintensité (overcurrent). Antonymous to this prefix is the prefix sous-, which means “lower degree, lower quality”, for example, sous-alimentation (malnutrition), sous-développement (backwardness) (Picton, 2008: 87–90). The semi-affix ultra- is largely found in political, scientific, advertising and colloquial vocabulary. The prefix archi-, meaning “to the highest degree, greatest, highest, extreme,” may also have the greatest degree of expressiveness with a hint of irony and even familiarity, which explains its use mainly in colloquial vocabulary. So, archi- (+ noun, adj., adverb) – archimillionnaire (arch-millionaire), archiplein (packed to the brim), archiconnu (long known to everyone), etc. (Kracht, 2018: 94).

It should be noted that intensity semi-affixes do not have unambiguous word-formation meanings and clear functional and grammatical differences; they can be synonymous and polysemic. For example, the semi-affixes super-, extra-, sur-, sous- also have a local meaning: superstructure (superstructure), extrascolaire (extra-terrestrial), extra-terrestre (extraterrestrial), surrénal (adrenal), sursol (platform above underground structures), sous-vêtement (underwear), sous-marin (underwater). The semi-affix sous- can have a private word-formation meaning “subordinate position”: sous-agent (junior agent), sous-secrétaire (assistant secretary), sous-inspecteur (assistant inspector), etc. The third semantic group of semi-affixes includes prefixes of local meaning a-, en-, trans-. The prefix a-(+verb) denotes approximation: apporter (bring),

approcher (approach); en-(+verb) can denote removal: enfuir (to run away, get away), entraîner (to drag away, take away), etc. The semi-affix trans-(+ noun, adj., verb) has the meaning of re-, through, trans- : transhorizon (over-the-horizon), transmigration (relocation), transpercer (pierce through). Note that most words with the semi-affix trans- are of Latin origin, many of them are non-derivative and indivisible (transmodulation, transfuser). The prefix inter- (+ noun, adj., verb) has the word-formative meaning “between, inter”: interchangeabilité (interchangeability), interétatique (interstate), interligner (to write between the lines). The prefix re-(+ noun, verb) belongs to the category of active prefixes, it has the word-formative meaning of repetition or resumption of action and corresponds to the semi-affix re-: réunifier (reunite), reutilization (reuse) (Picton, 2008: 87-90).

However, in quite a few cases the semi-affix re has lost its original word-formation meaning. So, for example, in the verbs regarder, recommander, which in modern French have no semantic connection with this prefix and are perceived as non-derivative words. Thus, we can conclude that the prefix systems of English and French are somewhat similar, based on the fact that most prefixes in these languages have Latin and Greek roots (Gazdar, 1985: 61). Classification of semi-affixes into original and borrowed; transposing and non-transposing; negative and non-negative, intensity prefixes and local prefixes, relevant for both languages studied.

### 3. Conclusions

It should also be noted that the highly productive types of prefixes in both languages freely form derived words, they are usually associated with a large number of producing stems, and they have standard meanings. These are prefixed nouns, which correspond to the semi-affixes anti-, super-, non-; adjectives with prefixes archi-, anti-, over; verbs with prefixes re- and others. Idiomatic meaning can be inherent in any prefix derivatives. So, for example, surmouillage (casting into a mold made from a finished object) or non-activité (military temporary stay without a position, behind the staff), where the meaning of the word cannot be accurately determined by the derivational meaning of the prefix and the lexical meaning of the generating word. There is no doubt that determining the lexical meaning of prefixed derivative words is possible if these semi-affixes have a certain word-formation meaning.

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## INNOVATION, WORK, SOCIETY

WASTE SORTING IN A FRONT-LINE CITY:  
OPINIONS OF KHARKIV RESIDENTS**Artem Lytovchenko**

Ph.D. in Sociology, Associate Professor at the Department of Political Sociology,  
V. N. Karazin Kharkiv National University, Ukraine  
e-mail: A. D. Litovchenko@karazin.ua, orcid.org/0000-0002-1439-5213

**Summary**

The article is devoted to the analysis of the problem of social attitude towards waste sorting in exceptional conditions. The author considers this problem within the framework of the general problematic of positions and practices of environmental consumption. The focus of the study is the peculiarities of attitudes towards environmental waste management practices in atypical conditions. The article examines Kharkiv as a front-line city in which military security threats come to the fore, create additional threats to food security, and at the same time disguise them as less important. The goal is to find out how mass consciousness in war conditions distributes empirical material for analysis – an online survey of 309 Kharkiv residents. The results of the study show that a positive attitude towards environmental waste sorting practices has been formed in the minds of Kharkiv residents. However, there is a gap between the declarative level of attitude and the implementation of practices. This gap can be explained both by the lack of a materially designed environment for the formation of sustainable waste sorting practices, and by the shortcomings of the information environment. At the same time, military living conditions in a front-line city do not affect the opinions of citizens about the importance of waste sorting.

**Key words:** eco-consumption, waste sorting, zero waste, Kharkiv, public opinion, practice, declarative gap

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**1. Introduction**

The issue of environmental consumption in modern cities has attracted the attention of both the Ukrainian public and Ukrainian researchers since the beginning of the 2000s of the twenty-first century. At the same time, the number of sociological publications on this topic is relatively small. In some cases, the authors only indirectly address the social aspects of environmental consumption, focusing on the food and environmental security of the state (see Starychenko 2018; Boiko & Boiko 2022; Skydan, Hrynyshyn 2020). Research interest in the topic has grown in connection with the pandemic: some sociologists analyzed the problems of environmental consumption in the specific practical context of waste recycling in collaboration

with public organizations (Kul'chyts'kiy 2020); others studied the sociocultural level of the problem (Komykh 2020). However, these studies and publications remained isolated in Ukrainian sociological discourse. Meanwhile, the events of February 2022 sharply aggravated the relevance of the issue of environmental consumption for the whole of Ukraine, and especially for front-line cities, in particular for Kharkiv.

As we already pointed out in an article about urban farming in Kharkiv (Lytovchenko & Nekhaienko 2023), Russia's military actions against Ukraine became the final link in the chain of events of a large-scale food crisis, making this crisis irreversible. This crisis is unfolding in different dimensions and at different levels. For Ukraine, it is embodied: 1) in macroeconomic problems such as the difficulty of international transportation of agricultural products; 2) in the difficulties of specific agricultural activities caused by mining of fields and soil contamination by shell fragments; 3) in micro-level food safety violations faced by residents of border settlements. In our previous publication, we already indicated that for Ukrainian citizens the slightest deviations from a stable picture of food supply turned out to be a completely new challenge; For Ukrainian sociology, the need to study this problem field became an equally new challenge. In that article, we illustrated the sociological potential of the issue with an analysis of urban farming in front-line Kharkiv. This time we turn to the non-obvious social, group and personal aspects of food safety in a front-line city, namely the issue of environmental consumption.

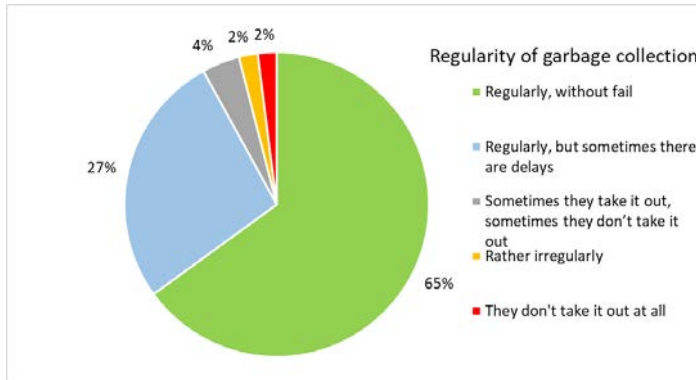
We call this issue "non-obvious," meaning the point of view of the masses, not the experts. We mean that the masses are confronted directly with the problems of healthy eating or food supply, and because of this, they are more likely to problematize them in their consciousness. However, higher-level difficulties, such as the long-term consequences of disruptions in waste collection and recycling chains, are much less visible to the masses at the initial stages of problematization. That is why it is important for us to find out what the current ideas of Ukrainian citizens are about those problems of environmental consumption that are "hidden" behind more obvious and urgent violations of food safety (the threat of hunger, supply deviations, etc.). The insufficient level of problematization of waste recycling entails a low degree of participation of citizens in improving the environmental friendliness of this area, which jeopardizes all the goals of environmental consumption at the general social level. Residents of front-line Kharkiv today continue to face the challenges of war (threats of missile strikes, logistics disruptions) – which hypothetically mask second-order problems, such as waste recycling. Therefore, we consider Kharkiv to be an indicative research site in this case.

So, our goal is to determine the attitude of residents of a front-line city to such an aspect of environmental consumption as rational waste recycling. For this purpose, within the framework of the project FUSILLI (this project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101000717) we surveyed 309 adult residents of Kharkiv and the region in October-November 2023 using a spontaneous online sample; method – formalized online survey. The representativeness of the survey results is limited due to the specifics of the selection of respondents; there is no point in applying statistical procedures; therefore, we consider our study as exploratory. However, the results of our survey are indicative as a reflection of individual elements of the position of Kharkiv residents on given topics (without taking into account the stability or correlation of these elements). Based on the analysis of the results, it is possible to determine areas in which it makes sense to conduct further clarifying research.



## 2. Results

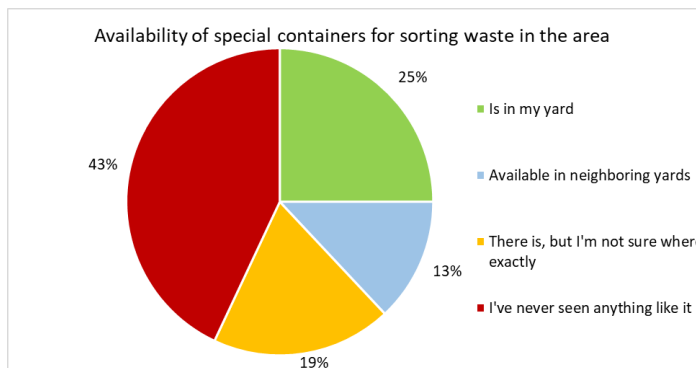
Let us immediately pay attention to the high assessment of centralized waste removal: 65% note that waste is removed regularly, 27% indicate that sometimes delays occur; Less than 5% of citizens chose negative answer options (Fig. 1).



**Fig. 1. Regularity of waste removal**

This suggests that the general municipal waste management policy is quite effective. Accordingly, all possible problems of environmental waste processing will have a specific nature. We can consider them a consequence of inattention specifically to this aspect of waste processing, and not to the problems of waste management as such.

In this regard, we emphasize that Kharkiv residents' assessments of the organization of waste sorting at the municipal level differ markedly. 43% have never seen special containers for different types of waste; only a quarter of all respondents note that such containers are located right in their courtyards of apartment buildings (most often these are mesh chambers for collecting plastic), another 13% have seen them in neighboring courtyards. The remaining 19% know that there are such containers somewhere, but they have no idea where exactly (Fig. 2). This means that we can add them to the first group. As a result, more than 60% of citizens are guaranteed to have no access to waste sorting at the municipal or house management level. The difference with the general organization of waste removal is obvious.



**Fig. 2. Availability of special containers for sorting waste in the area**

At the same time, unique and revealing results provide answers to questions about collection points for secondary raw materials (glass, plastic, waste paper, scrap metal). On the one hand, the vast majority of respondents (almost 80%) know about the existence of such points: some see them in close proximity to their homes; others know where they are located in the city. Only 21% have never encountered such items in principle. Nevertheless, at the same time, almost 80% have never used recycling collection points (see Table 3).

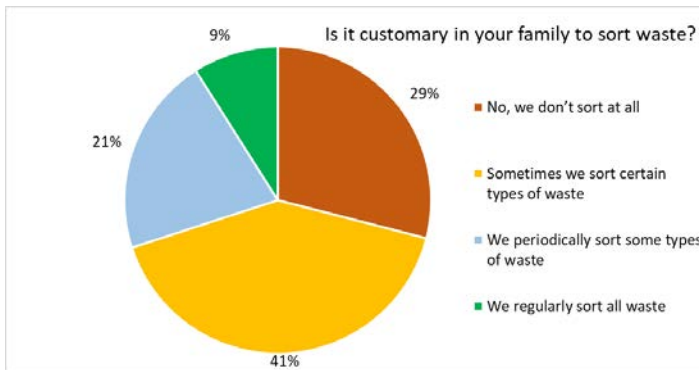
Table 3

**Recycling collection points\***

	Availability		Usage
Is in my yard	4%	I sold raw materials for money	9%
Available in neighboring yards	32%	I gave away raw materials for free	12%
There is, but I'm not sure where	43%	Never used it	79%
I've never seen anything like it	21%	*data in % of all respondents	

This gap between awareness and action is very telling. It is unlikely that we can explain it by the lack of need for the majority of Kharkiv residents to use recycling collection points. As we have already noted, the majority of respondents do not have access to municipal or household containers for separate waste collection. This means that they cannot even throw away plastic and glass waste separately. Consequently, at a minimum, a significant part of the population of Kharkiv has a need for collection points for plastic and glass waste. Another question is whether Kharkiv residents are aware of this need. The gap between the level of awareness of the availability of recycling collection points and the frequency of use of these points suggests that they are not aware.

This gap corresponds to the situation with a personal approach to waste sorting (see Fig. 4).

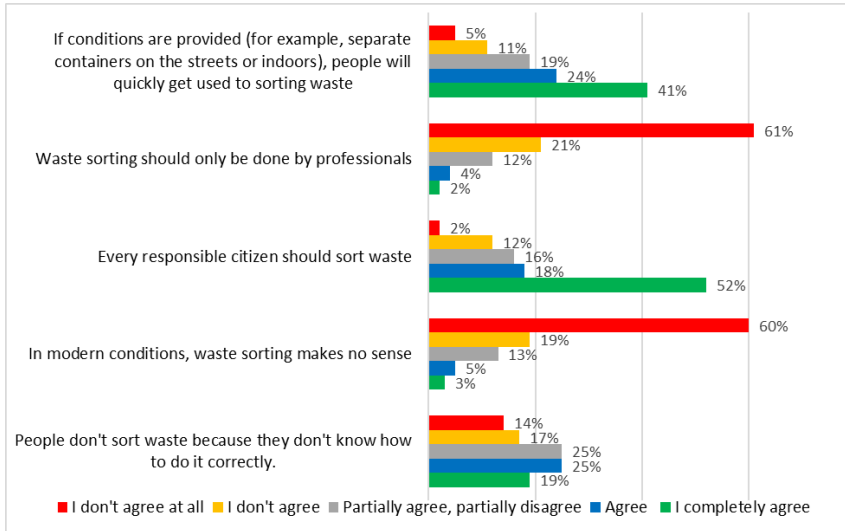


**Fig. 4. Family waste sorting**

Less than ten percent regularly sort garbage, while almost thirty percent do not sort garbage at all. Certain types – glass, paper and metal waste – are sorted by 41% of respondents; but they do this only sometimes. These results show that there is social potential to encourage waste sorting. It is quite possible that an important factor is the level of meaningful information about the meaning of waste sorting and what possibilities of such sorting exist in the city. The difference between the answers to the question about the availability of recycling collection points

and the question about their use perhaps shows that Kharkiv residents do not always grasp the connection between the points and their sorting capabilities.

We can partly verify this hypothesis based on the results of respondents’ responses to a series of statements dedicated to attitudes towards waste sorting (see Fig. 5).



**Fig. 5. Respondents’ attitude to theses about waste sorting**

Let us pay attention to the statement “If conditions are provided (for example, separate containers on the streets or indoors), people will quickly get used to sorting waste.” The vast majority of respondents – a 65% – agree with this statement in a varying degree. Only 16% disagreed. This is a clear illustration of the readiness of city residents for environmental waste recycling practices, given the availability of objective opportunities. Even more – 82% in a sum – of respondents do not believe that “only professionals should be involved in sorting waste”; 70% believe that “every responsible citizen should sort garbage.” Kharkiv residents do not support shifting responsibility for waste sorting to specialized organizations – this is another argument in favor of the social potential of waste sorting. The realities of war are not a reason for Kharkiv residents to abandon waste sorting: 79% of respondents believe that modern conditions do not make waste sorting meaningless.

We see in these responses an indication that conditions exist for the formation of sustainable mass practices of waste sorting even in the military conditions of a front-line city. Note that the first statement included the word “get used to”: it is the formation of a habit that becomes the basis for the sustainability of practices. We saw earlier that the presence of collection points for secondary raw materials is not a self-sufficient incentive for their use by Kharkiv residents. We hypothesized that this may be due to a lack of awareness. However, the number of people who agree and disagree with the statement “People don’t sort waste because they don’t know how to do it correctly” is not as radically different as with other statements: 44% agree, 31% disagree, and 25% of those who are undecided answer. This cannot be said to clearly support our hypothesis of a lack of awareness. Perhaps the reason is more prosaic: the reception points are not conveniently located and require special actions. While the presence of containers in courtyards or in store premises makes it possible to root regular practice in everyday life.

However, information about the possibilities of environmental consumption in general is still far from perfect. Thus, a little more than ten percent know about specific initiatives for environmental consumption in Kharkiv. Despite the fact that this was an open question (for which such a result is not clearly low), this is additional evidence of an insufficient level of information. Leveling up can be expected to have an effect. We have already noted the potential for expanding the number of carriers of environmental practices in relation to waste. Let us give another example. 65% of respondents indicated that they would choose a product in eco-friendly packaging if the price was the same as the price of a product in regular packaging. At the same time, only 15% consider price more important than packaging, and they will choose a cheaper product. The same percentage of respondents will choose environmentally friendly packaging regardless of price. In itself, this figure is not very high; however, the first 65% can also be targeted by stimulating their choice through non-price methods.

### 3. Conclusions

Let us summarize. The majority of Kharkiv residents declare a positive attitude towards rational waste recycling. They consider it necessary even in military conditions in a front-line city. At the same time, Kharkiv residents are not inclined to completely shift responsibility for such processing to city services or professionals, but consider it necessary for every citizen to participate in different stages of processing. However, at the same time, the vast majority of Kharkiv residents do not practice even the simplest elements of rational waste processing, such as sorting. The discrepancy between the declarative and practical levels, in our opinion, can be overcome by intensifying information work. At the same time, excessive promotion of the environmental consumption agenda and, in particular, waste recycling can cause rejection. Mass consciousness has elasticity, and in response to obvious pressure, it can react contradictory.

The results of the survey suggest that the formation of sustainable environmental waste sorting practices through the creation of everyday accessible elements for organizing such sorting – for example, special containers in immediate access – is of particular importance. This hypothesis needs further empirical testing.

We also suggest, based on our previous research, that an integrated approach that combines aspects of environmental consumption such as recycling and urban farming may have some promise. In urban farming, typical urban resources – organic waste as well as city wastewater – can be used to grow organic vegetable products. This approach could be an important component in information campaigns to promote green consumption in a frontline city that faces immediate food safety threats.

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**OBJECTS AS A FACTOR IN THE TRANSFORMATION OF SOCIAL REALITY****Oksana Nekhaenko**

Postgraduate Student at the Department of Political Sociology,  
V. N. Karazin Kharkiv National University, Ukraine  
e-mail: O.V.Nekhaenko@karazin.ua, orcid.org/0000-0001-5201-8200

**Diana Usenko**

Student at the Faculty of Sociology,  
V. N. Karazin Kharkiv National University, Ukraine  
e-mail: dianausenko558@gmail.com, orcid.org/0009-0001-6498-7356

**Lada Perekhodchenko**

Student of the Faculty of Sociology,  
V. N. Karazin Kharkiv National University, Ukraine  
e-mail: perehodchenko.lada@gmail.com, orcid.org/0009-0003-4850-0485

**Summary**

This article attempts to problematize objects in the context of changing social reality. An object is considered within the framework of the work, among other objects, as something with extension (i.e., the property of occupying a certain place in space), impenetrability, and the ability to resist external influences, which brings us to the possibility of considering an object as a subject.

The problems of interaction between objects and social agents in modern society are considered. The phenomenological approach and the theory of social constructivism were chosen as the methodological basis, putting forward a thesis. The authors pay special attention to the study of the influence of the transformation of material elements on the characteristics of social space through social interaction.

The authors analyze the process of adapting the operational potential of an object in the context of a game. The influence of objects on the social environment and interaction with agents is considered. The role of objects in communication and their social significance is determined.

The authors define objects through three aspects: activity, discursive and spatial levels. The main focus is on studying the influence of objects on social interactions and their symbolic structures. It is argued that objects determine the boundaries of a social act and influence the process of socialization, and also gives examples of their regulatory impact on communication. The work also examines the symbolic content of objects and their influence on the nature of interaction.

**Key words:** constructing social reality; Berger and Luckmann; phenomenology; post-structuralism; simulacrum; subjectivity; commodification; objects.

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## 1. Introduction

The problem of an object as a social phenomenon is updated with a change in sociocultural paradigms of society, which, in turn, are determined by the transformation of socio-economic and political-legal relations. This, for example, happened during the period of the collapse of the monarchy and the development of socialist society, then the collapse of the Soviet Union and the restoration of private property relations. This is what is happening now, when Ukraine finds itself in a state of military conflict. Of course, in different societies the consequences of such social changes are fundamentally different from each other, but in the conditions of capitalism one object remains stable – the relationship between man and the eternal world is elevated to an absolute, and objects are entrusted with the role of authorized exponents of human essence. This situation brings us to the ontological problem – the mutual influence of objects and social reality still remains unrevealed.

As for the epistemological side, the problems of materiality and social interpretation of objects in the research space have long been outlined, but are not exhausted. The merging of the field of economic production and the social field, which is expressed in the increasing commodification of the community, the spread of the ideology of consumerism, commodity fetishism in the media environment, as well as the increasing actualization of material elements in the process of social interpersonal and group interaction, force us to consider in more detail the specifics of including objects in various forms of social.

The study of objects through a sociological prism begins with the works of I. Goffman "Frame analysis: An essay on the organization of everyday experience" (*Goffman, 1974*), G. Simmel "Handle. Aesthetic Experience", "Picture Frame. Aesthetic Experience" (*G. Simmel, 1999*), B. Latour "Where are the missing masses? Sociology of one door" (*Latour, 1992*), "On inter-objectivity" (*Latour, 1996*), R. Harré "Material Objects in Social Worlds" (*R. Harré, 2002*). The understanding of objects as elements of symbolic, and not just physical systems as a full-fledged object of study can be observed in the philosophical works of Heidegger. Today, the tradition of sociological consideration of objects has acquired a specific angle of consideration – as an object, the central characteristic of which is its availability. Examples of such consideration of objects can be the works of Artemenko A. P. "Speech, object, topos in social topology" (*Artemenko, 2012*) or Zoska Y. V. "Social significance of external effects of speeches in marriage: institutional analysis" (*Zoska, 2010*). The instrumentalization of objects in social interaction is largely based on the Heidegger's tradition, and is more than justified, however, in our opinion, it is not exhaustive when it comes to representing an object in the social field. We concentrate on those characteristics of objects that make them similar to social subjects. This approach doesn't exclude the instrumentality of an object as its main characteristic, and doesn't imply the identification of objects with social agents in their fundamental properties, but allows us to expand the representation of objects in social space, thereby deepening the understanding of objects as a social phenomenon. Namely, to consider "subjectivity" as a trait, a specific characteristic, manifested in different ways in objects and agents, without excluding the recognition of agents (individuals, groups, organizations) as the subject of social interaction; we are only talking about similar traits in the manifestation that We will cover this in more detail in the next section of the work. This will allow us to consider in more detail the specifics of the transformation of the role and meaning of objects in social space, as well as to trace the influence of these transformations on social reality. The role and meaning of objects is determined by the idea of objects and the manifestation of objects, which is part of social interaction. As a consequence, we can assume that changes in social space can be caused, among other objects, by the reinterpretation of objects common in this social space.

The relevance is due to the need to consider the mechanisms of change in social space in situations where objects act as a catalyst for transformation. First of all, this is necessary to understand the actual role of objects in social acts, which in the future will make it possible not only to conduct a detailed analysis of possible forms of relationship between people and objects, but also to determine possible representations of objects that are different in nature (goods, artifacts, objects of memory, symbols) in during interaction with them and in the process of how they mediate the interaction of social agents.

The purpose of the study is to characterize the influence of the transformation of material elements of social reality on the essential characteristics of social space, expressed in the process of social interaction.

The theoretical basis of our analysis is the phenomenological direction in sociology, as well as the theory of social constructivism in the version of P. Berger and T. Luckman (*Berger and Luckman, 1966*). Therefore, the starting point of the work is the thesis that social interaction at the micro level is not only determined by macro-level systemic transformations, but also determines changes in the social space itself at all its levels. We also, following Heidegger, consider materiality as an incomplete process, as a becoming, and not a state. In what follows we describe this in terms of adapting objects.

## 2. Results

### 2.1. Understanding objects and their roles

In its most general form, an object can be understood as any material or materialized object with which or through which social interaction is possible. Objects can be looked at from three aspects:

- 1) Activity level, at which the main characteristic of objects is their functionality and instrumentality.
- 2) The discursive level at which objects materially anchor symbolic structures.
- 3) The spatial level where the reification of the social takes place space in the physical (*Boiko, 2019, p.9*).

In this work, we are primarily interested in the characteristics of an object arising from the possible aspects of its representation. Namely:

- An object instrumentally mediates social interaction;
- An object can include symbolic content as a carrier and as the embodiment of the latter;
- The material environment is a complex configuration of elements, which is based on materiality.

The object is therefore considered precisely as an “Object” (not “thing” or “matter”), “something physical that is perceived by a person and becomes an agent of psychological identification” (“*Object*”). In addition, not only psychological, but also social identification, which emphasizes the possibility of its influence and activity-based nature as an element of social interaction.

Being permeated with materiality presupposes the need to consider the dual interaction of social subjects and material objects, as well as to justify the convention of their separation, to which we will return later. Included in almost all social interactions, initially as an intermediary, objects to some extent determine the process of socialization, at the same time they themselves are determined by it. The object included in this process determines the boundaries of a possible social act. For example, it creates the possibility of remote communication through a mobile



device, shapes the very material environment in which interaction or action takes place, in some cases the topic of communication, with the specific material content of the situation. Also, an object is capable of regulating communication, introducing into it an element of surprise with its “behavior”. Breakdown, what Heidegger described as the exit from the ready-to-handness of an object (*Heidegger, 1927*), can cause the end of interaction. For example, the breakdown of a mobile device can cause the interaction to end, and the thickness of the walls determines the level of acceptable volume). Filling the communication environment with objects can determine the nature of interaction in this environment by filling objects with meaning. In this case, meaning can also be understood as the inevitable endowment of an object with connotations, an expression of one’s own position (or neutrality) in relation to the object, its inclusion in the history created during the process of exploitation. There is also the possibility of prescribing objects of symbolic meaning in a number of cases. For example, sacralized objects like icons imply a ritual of entering the environment in which they are located, as well as the taboo of a number of linguistic expressions; in an everyday environment, the potential for regulation is preserved, although it becomes less obvious. The mere presence of objects already presupposes sociality, as opposed to things. The use of objects is also possible outside of social relations. Since reification – the subordination of objects to some semantic structures and their inclusion in communication as intended or currently used, is possible only in an already socialized consideration of reality. The presence of characteristic objects at the place of communication seems to call for their use: for example, tea and a cup located at the place of communication are likely to “force” tea drinking, even if it is not the originally intended format. The nature of a particular object or objects can adjust behavior in social space, which is not necessarily related to the physical properties of the object. For example, rarer and more expensive objects seem to “demand” more courteous behavior towards them. An object presupposes the need to take it into account, to “reckon” with its presence, thereby, by the very fact of its existence, it makes minor adjustments to specific social acts.

The process of personal socialization has a number of similarities with the adaptation of an object. Socialization of the individual occurs, among other objects, with the use of objects, their instrumental or symbolic content. Adaptation of an object – adjusting it to a specific social situation with the disclosure of new functions, is carried out by a social agent or in the interaction of several agents. Therefore, it is necessary to consider separately the socialization of the individual (primarily the child), in relation to the object she is an agent, and the “socialization” of the object, while assuming the unity of the process.

The socialization of a person in some cases is associated with interaction with objects, as an object or mediator of social interaction, an instrument for playing roles, and playing out imaginary situations. The continuous connection between a person and an object, including at the earliest stages of life, is a reason to talk about the influence of objects on the process of socialization of individuals, about socialization through objects. This topic has been studied quite widely, from the psychoanalytic concept of S. Freud to the semiotics of toys by R. Barthes. Subsequently, we focused our attention on the reverse process – the “socialization” of objects. But consideration of the main works describing the role of objects in the process of socialization of a child is necessary for understanding how the connection between objects and social agents is realized in the learning process.

The socialization of a child, according to R. Barth, includes the process of projecting adult models and strategies onto childhood, “the child is provided with “reality” – a class of signified adults” (*Barth, 1972, p. 45*). Factory-made, industrial children’s toys primarily satisfy the needs of adults: “children comply with adult expectations, but do not experience or express

the need for a toy as such.” Based on a less radical position, we can only point out that the socialization of a child is based on bringing an unsocialized personality into conformity with an idealized image, a type, desirable for the specific community in which the child is socialized. Objects in this case serve as “transmitters” of this image, at the same time as an instrument for imitation of it. But the symbolic content of an object and its social role are more important than its actual properties (a teddy bear, a doll, or even a simple stick are suitable for performing a “mother-daughter” play), which still doesn’t contradict the possibility of its meaningful use in the process socialization of the individual. The value of a toy used in the process of its development by a child exceeds the properties intended by the manufacturer. Donald Ball identifies two functions of toys (*Ball 1967*):

1. Rehearsal tools (acting out situations, communications, imitation of processes).
2. Role model and object of personal identification at a certain stage (situational exclusion from communication with others).

As for the analysis of the process of adapting an object, in the presented work we proceed from the assumption that the use of an object is always carried out to a certain extent unpredictably, thereby expanding the functionality of the object. The operational potential (how the object was and can be used *de facto*) of an object always exceeds its production potential (what functionality was built into the object at the stage of its development and production).

However, this provision applies not only to the possibility of literal exploitation of a material object or the possibilities of handling it, but also extends to the realization of an object in symbolic space. This is expressed in its endowment with many semantic connotations, inclusion in various social and cultural relations: use in ritualized actions, implementation as a sign or symbol, projection of social systems into a material object, as well as inclusion in social interaction as not so much a tool as an intermediary. We can call the identification of the operational potential “socialization” of an object; this is where it is adapted to specific social conditions, which involves going beyond the production functionality of an object due to its symbolization (the inevitable endowment of an object with a character, depending on personal attitude and evaluation, as well as the inclusion objects into a system of signs and symbols).

Here it is important to point out that the socialization of an object and the socialization of an individual essentially have a single basis, but they also have a fundamental difference. Personal socialization is an institutionalized process, that is, it has a specific goal and is presented as a project in the sense of its ideological design, a model and image towards which the process is directed. While objects are “socialized” spontaneously, the design of an object in its socialization lies, on the contrary, in its incompleteness, the absence of final goal-setting in the process of realizing the operational potential (that is, determining the functionality and characteristics at the moment, but not completely), which is purely situational, also in the multiplicity of its representations. Behind every object there is the potential for its subsequent use in other contexts, with an emphasis on its other properties, as well as the possibility of identifying, or rather even forming (after all, we cannot talk about the presence of a function before its “discovery” and implementation).

In this sense, the spontaneity of “socialization” of an object means that the desired image of an object is constructed at the moment of its achievement, but not as a meaningful plan, since the functionality is not defined as final. An object as a socialization project is closer to Sartre’s understanding of a person as a project than a person in his socialization, in whom variability (deviation from the modeled image) is presented as something not expected, not desirable. Adaptation of objects is based on the conceptualization of a task that needs to be realized with the help of an object (which does not always happen meaningfully, and the goal can also be procedural), and which does not determine its essential properties. One task can be implemented by

different objects and different properties of one object; at the same time, one object can implement several tasks with one or its different properties. The character of the individual and the task (socialization at a certain level) are “fused” in the process of socialization, in the sense that a specific personality is initially included in a specific process of socialization (the upbringing of one specific child is only his upbringing, immersed in a social context, but including others only as external elements). From which emerges a number of properties of the socialization process that apply only to objects. This is a desirable, in a strict sense inevitable, variability in the situation of the absence of the final desired image, which is at the basis of the process. In this sense, an object in its “socialization” doesn’t undergo identification. The identification that a child performs in the process of socialization would be more accurately called imitation; it is focused on an imaginary or existing model. While any definition of an objects separates from its actual properties (productive potential), since it presupposes the possibility of another definition, it doesn’t include it in a relationship with a certain model, but rather remains a theatrical performance, a performance that doesn’t imply a model.

A form of socialization of an object is play. The game also determines the nature of the interaction between objects and social subjects in the process of socialization of the latter. Incorporating a game into a system requires us to think conceptually. Based on the works of Johan Huizinga, we can identify two specific characteristics of the game that are not typical for typical social interactions:

1. The game masks seriousness, although in essence it presupposes it. The binary opposition of play/serious action is essentially formal, and rather refers to a way of expressing the nature of the action ("serious" or "game").

2. The game itself is beyond binary oppositions and is built on the principles of unity (Huizinga, 2016). This doesn’t mean that binary oppositions cannot be included in the game as its element, or that the activity that concerns the game excludes opposition, but the game itself does not imply polarity in its implementation, only an inseparable single process of “playing”, where form and content are not separated.

The presented vague description of the game in our work will be specified as follows: a game is a form of realization of reality, and not just a situational activity that doesn’t act as an opposition with other forms. The essential characteristics of the game may therefore differ situationally, but inevitably include a procedural orientation and incompleteness (any game can be replayed, continued, repeated, changed and re-implemented).

The game can also be included in the process of social interaction and shape it. In such cases, play can also be described as a specific form of realization of the social, although it is not necessarily embodied in every moment of time, and is not the only form. Game elements in interaction can be organically combined with “serious” models, without defining the interaction, but introducing a number of properties into it. Initially, the game manifests itself in language, myth, cult (which in our time is embodied in commodity, that is, material, fetishism), and is gradually embodied in an increasing number of cultural forms. Cult and fetish are ways of understanding the real, it is a play out of the order of objects, in this sense the game is natural, as is the presence of objects in a social context. Huizinga derives a definition of a game based on its characteristics:

- Freedom (free activity).
- Repeatability.
- Conventionality (this is going beyond the ordinary framework of life).
- Disinterest (secondary benefit is not fundamental, it is secondary, it is not a goal.

The game is not pragmatic in nature).

- Isolation (every game has its own space: time, place)
- Aesthetics (unique for each game).
- Tension Rules Consolidation of players.

«... we can call the game a free activity, which is recognized as “not really” and an activity performed outside of everyday life, but it can completely take over the player, without pursuing any direct material interest, doesn’t seek benefit – a free activity that takes place within a deliberately limited space and time, proceeds in an orderly manner, according to certain rules and gives rise to social groups that prefer to surround themselves with mystery or emphasize their difference from the rest of the world with all kinds of disguises» (*Huizinga, 2016, p. 17*). However, we are interested in the subtler features of play in its definition as Huizinga describes them: “Play is not ordinary or real life. This is a way out of such a life into a transitory sphere of activity with its own aspiration <...>”, “game is the specific character of everything that surrounds us in the world,” that is, a game is precisely a form, a character, not a specific action, “a game, whatever its essence, is not something material” (*Huizinga, 2016, p. 17*) Evgeniy Fink defined play as a fundamental feature of existence: “although play as playing is an impulsively mobile being, it is aloof from any restless aspiration arising from the nature of human existence as a “task”: it has no goal, its purpose and meaning lie in herself. Play is not for the sake of future bliss; it is already “happiness” in itself, devoid of universality” (*Fink, 1982*). This allows us to expand our understanding of the game to more fully reveal the relationship between the game and objects in the future.

The game creates a new reality without being guided by imitation of a standard. In this sense, the game is a form of realization of reality, from which the above-mentioned properties emerge. In this sense, the game is not a material object or a system of signs, but rather a system of relations between a social agent, an object and social reality.

However, we can also understand a game as a completed form (idea), which can ultimately be materialized, perceived as an object. A game is therefore both a computer program, an object figure for the game (for example, a doll), and yard action systems (for example, games of “hopscotch” or “tag”). In this sense, a game is a specific (often subject-specific) system of algorithms and signs. However, in this work we are interested in the first understanding of the object, which allows us to consider the process of socialization and interaction.

## 2.2. Characteristics of subjectivity in objects and agents

Returning to the consideration of the process of adaptation of the operational potential of an object, realized in the process of socialization in the form of a game, it is worth revealing in more detail the formation of the object itself in social terms. An object, acquiring its functionality (representation) during the process of operation, presupposes a specific attitude to the environment – the possibility of its reshaping, adjustment, thereby securing transformational potential. One of the key (not without exceptions, of course) properties of the game is the possibility of a lack of goal setting, procedural self-worth, which also extends to the process of socialization of an object. We are talking about play as a form of action, but not about specific games, which are a prescribed system of actions. The operational potential of the item is also realized in the game. During the same game, an inverse relationship can be observed – an object, “socializing”, with the variety of its options, forces a diverse consideration of the social environment itself from the position of “how and where can this object be applied?”. Being included in a social relationship, an object ultimately exerts its influence both on the environment and on social relations: specific or typified interactions. This understanding allows us to talk about the possible existence of a connection between changes in objects (their

manifestations: roles and meanings, and ideas about objects) and individual elements of social reality. As a result, a change in individual elements of social reality (in the context of objects, this primarily refers to the interaction of agents, environment and objects) makes adjustments to social reality itself, introducing into it new qualitatively different characteristics. The very presence of objects with not fully defined functionality at the theoretical level introduces an additional element of uncertainty into social reality. At the level of practices, objects formalize interactions and form the potential of relationships (by defining the means and boundaries of communication, the context and subject of communication, in some cases – the possibilities of action for specific agents due to the presence or absence of certain objects). Which, as a result, introduces into social reality new variants of practices implemented in it, as well as a new logic of interaction of subjects with social reality itself – through dependence on material mediation. Since a change in one of the components (objects) leads to a change in the entire system, and objects change (“socialize”) continuously, a change in objects (their manifestations and ideas about them) becomes a catalyst for the transformation of social reality.

An object, not being initially completed, is determined in the process of interaction and as a result determines the interaction itself. By mediating communication between social subjects (agents, groups, person and environment, environment/person and other object), it acquires its own social validity. Validity, in the sense that it becomes an irreducible element of communication that must be taken into account, and which can cause change in interaction, by forcing the change in behavior that we discussed above. This brings an object closer in its characteristics to the characteristics of social subjects, but doesn't like them. We can only talk about the similarity on the basis of which social interaction is carried out, including interaction with the use of objects. Namely, an object, being an object, that is, a socially meaningful object, in interaction is assumed to be inevitable, exactly as the social subject assumes. Also, a change in the characteristics of an object (for example, the same breakdown or the discovery of new functions) provokes a change in communication. Since it is not completely possible to control, we can metaphorically say objects are “willful”. More strictly – about her active, although not meaningful and not purposeful, involvement in interaction. The object acquires features similar to the subject – the possibility of giving in interaction and the initial inclusion as a change. By surpassing the property of ready-to-hand (*Heidegger, 1927*), an object is separated from its production potential, differentiated from a materially justified operational potential, and is determined to a greater extent by its symbolic content (in some cases, iconic and symbolic). Therefore, in the operation of an object, it rejects the boundaries of its definition, presuming a not yet realized possibility of exploitation (a new function or representation of an object).

At the same time, the totality of material objects represents the conceptual unity of space, that is, the environment. Environment – the external design of communication, its contextual design in space; it can be described as a set of objects, the activity of which is characterized by the possibility of impact, making a reverse impact on social subjects, whose sociality is the starting point of their definition. This allows us to talk about subjectivity as a characteristic, and not just as the essence of an inherent object in the context of social interaction. Meaningful goal setting is the lot of social subjects in their fundamental definition, whose activity potential is beyond doubt. The similarity of agents and objects is manifested in the ability to have a reverse effect, which is a specific characteristic of an object, in the conditions of actual typified forms of interaction between persons and objects. In this case, objects mediate social interaction, not as actors, but as elements that go beyond the environment, and therefore occupy a separate place in the subject- objects-environment system.

### 2.3. The influence of objects on changing social reality

The simulation potential of the object is immediately revealed. An object in its subjectivity can force the adjustment of social space in the process of interaction, while in a playful form, constructed at the symbolic level in the same space, the object can reconstruct the initially imitated reality. Game as a form in which an object acquires social meaning subsequently extends to all elements of social space in the interaction of which and with which the object is included. At the same time, it turns not into a Baudrillard's simulacrum (since it is not excluded from communication and is not divorced from the primary meaning due to its initial absence), but only into a variable that determines a new way of constructing the social. The simulation potential of an object lies in its ability to be constructed not as feedback, but as an initial impact on social reality and/or its subjects. One more option for the relationship between game and object should be added: game as a completed form (game is a specific system of actions) is rather presented as an object, rather than as a form, which doesn't deprive its design of a playful character. Using such an object in social interaction also leads to its "playing out." Thus, reassembling the entire social space.

From which it follows that social reality, filled with objects, can be adjusted with the help of objects purposefully, but is also constructed at the moment in the process of adapting an object to specific conditions due to the presence within it of an element with "fluid" functionality (that is, a representation not as complete, and how possible). This process includes not only agents, but also willful objects that correct the system of connections between agents. Here we are faced with the inconsistency of the mechanism for constructing social reality between the materiality of form and the symbolic designation of specific objects. However, this contradiction is purely formal; the functionality of an object is realized, among other objects, in its symbolic meaning.

Thus, we can say that objects included in social interaction primarily on the basis of their operational potential, having subjective potential, determine the transformation of social reality by introducing into it a new variable – the incompleteness of its materialized elements. The transformation of social reality occurs at several levels simultaneously (material, symbolic, and also at the level of interaction), and at each level objects are included in it, which ultimately leads to a change in the mechanisms of interaction between individuals, between individuals and the environment, between individuals and objects, between objects and environment.

## 3. Conclusions

The article analyzed the connection between the transformation of social systems and the reinterpretation of objects. In the context of social interaction, where objects realize their manifestation, a rethinking of the role and meaning of objects occurs, which as a result lead to a change in the special space where interaction occurs. Materiality becomes an inevitable characteristic included in social space, on the basis of which we can talk about two-way influence – objects acquire their meaning in the process of interaction with them and through them, at the same time, objects mediate the interaction itself. The article also offered a more comprehensive consideration of the matter. Representation of it in the properties of extension, incompleteness. This made it possible to compare the essential nature of objects with the characteristics of social subjects, and to identify similar features. In the future, this can become the basis for a more detailed consideration of the subjectivity of objects. And also, to determine possible forms of representing objects in social space. In this work, it was proposed to consider an object as an

element of social reality that has a specific impact on this environment. By the very fact of their presence, as well as the need to exploit objects on the part of social agents, objects make adjustments to social interaction, and as a result, to the structure of social reality. An object, mediating communication, can thereby reveal new possible forms of interaction. As a result, we can observe more generalized changes in social space, for example, notice a transformation of the very logic of considering materiality in everyday practices, as well as new options for the execution of objects. The description of the influence of objects on a social act made it possible to determine their role and significance in the transformation of specific and typified forms of interaction. Thus, we can talk about the complication of the structure of social space as a result of the inclusion of objects in it and the influence they have on social interaction.

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## THE ADMINISTRATIVE AND LEGAL SUPPORT'S PRINCIPLES OF CIVIL-MILITARY COOPERATION IN PREPARATION FOR MILITARY SERVICE

**Oleksiy Nozdrachov**

Postgraduate Student, Scientific Research Institute of Public Law, Ukraine  
e-mail: kafedra\_prava@i.ua, orcid.org/0000-0002-7261-4381

### Summary

This article aims to define and characterize the distinctive principles of administrative and legal support for civil-military cooperation in military service preparation. Throughout the article, the author employs comparative legal, formal dogmatic, and structural legal methods, alongside modeling. These methods, based on a systematic approach, enable an integrated examination of the phenomena and processes under study, considering their interrelationships.

The author stresses the importance of principles that facilitate an optimal balance between the interests of individuals, the military, and the State. The modeling process of administrative and legal support principles for civil-military cooperation in military service preparation must account for the interplay and correlation among these categories.

Key principles identified include the consistency and efficiency of administrative and legal support, balancing private and public interests, immanence, unification, consideration of command unity and continuity in military administration, a three-component military-pedagogical goal, and an integrative nature.

**Key words:** administrative and legal support, civil-military cooperation, military service preparation, principles, Defense Forces, martial law legal regime.

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### 1. Introduction

The primary objective of the Defense Forces, alongside consolidated civil society and the State, is to overcome the aggressor state, the Russian Federation. Central to thwarting Russian armed aggression is the timely fortification of the Armed Forces of Ukraine and other military entities with well-trained reserves, possessing essential knowledge, skills, and capabilities for effective combat operations, coupled with a strong motivation to execute assigned duties. This necessitates an adaptable and comprehensive training system for Ukrainian citizens in military service, capable of encompassing a broad spectrum of service-eligible individuals and incorporating the latest advancements in military technology and armaments.

An analysis of the legal framework for military service preparation reveals eclectic and conflicting legal provisions governing the State and public authorities' actions in this area.

Principles play a pivotal role in the structure of legal support, serving as fundamental guidelines for the activities of legislators and law enforcement agencies. In the realm of administrative and legal support for civil-military cooperation in military service preparation – a field intertwined with the curtailment of human and civil rights upon enlistment – it is crucial to prioritize principles that strike an optimal balance between individual rights, military needs, and State interests. Accordingly, this article seeks to identify and elaborate on specific principles



deemed essential for administrative and legal support in this context, utilizing comparative legal, formal dogmatic, and structural legal methods, as well as modeling.

The article's goal is to define and characterize these unique principles of administrative and legal support for civil-military cooperation in military service preparation.

## 2. Main part

The category of legal support's principles attracts the attention of Ukrainian scholars, whose research reflects the understanding of the essence and content of the leading principles of law application and law-making activities. As M. Kozyubra points out, the genesis of the principles of law is inextricably linked to human activity, being the product of its implementation, because principles, like law, are the product of human activity; their formation took place in the process of interaction, communication between people, mutual coordination of their behavior and mutual responsibility for it, along with the formation of law itself (*Kozyubra, 2017, p.144*). Systems of principles inherent in various spheres of social relations are usually considered from the standpoint of emergence, the essence of which can be manifested in the fact that the action of each principle creates conditions for the action of another principle, and this, in turn, makes it impossible for them to function independently (*Shapenko, Raychuk, 2020: 28*).

Legal scholarship has developed a well-established idea that the principles that exist in law and determine the regularities and peculiarities of legal phenomena and processes are manifested at several levels. The first level of the principles implementation covers the most global ones, which are general legal principles and take into account the regularities of legal phenomena, fundamental provisions of the Constitution of Ukraine and international law. Such principles include, in particular, the principles of the rule of law, democracy, equality, humanism, etc. (*Koropatnik, 2023*). The other levels of implementation of the principles may be of a cross-sectoral, sectoral or subject matter nature, and it is their content that generates the greatest number of discussions.

The difficulty of defining the principles of administrative and legal support for civil-military cooperation in the area of preparation for military service is related to the presence of three complex social phenomena in the category under study. Firstly, it is administrative and legal support as a component of legal support, which has a number of features inherent in legal support. Secondly, it is a complex and extensive activity in the field of civil-military cooperation, which enables the military to achieve the desired end result by coordinating actions, synchronizing efforts and avoiding or timely resolving conflict situations between civilians and the military, thus combining military operations and the process of achieving the goal through political settlement (*Vasyukova, 2017: 85*). And thirdly, it is the preparation for military service, which is acutely relevant under the legal regime of martial law, which largely determines the combat capability of the Defense Forces and the effectiveness of repelling Russian armed aggression.

The process of modeling the principles of administrative and legal support for civil-military cooperation in the area of preparation for military service should take into account the mutual influence and correlation between these categories. In our opinion, taking into account the maximum subject matter and proximity to practical activities, these principles can be presented as follows.

Firstly, it is the principle of consistency of administrative and legal support, which should be understood as the absence of double interpretation of legal norms and conflicts between them. Legislation regulating military service and preparation for it includes legal

acts adopted throughout the entire period of existence of our state, respectively, their terminology, structure and focus have certain differences due to the fact that in different periods of Ukraine's formation there were different approaches to the essence of military service, its compulsory nature, etc. Differentiation of attitudes towards the preparation of civilians for military service is reflected in legal acts adopted during different cadences of the Verkhovna Rada of Ukraine or different composition of the highest bodies of state and military administration. The principle of non-contradiction should provide for the absence of conflicts of law and logical errors in the application of the provisions of various legal acts regulating preparation for military service.

*The principle of efficiency of administrative and legal support of preparation for military service* is the focus of legal regulation on achieving its goal with minimal use of the resources expended. Since the sphere of military-legal relations requires the use of a significant amount of state budget funds, legal regulation in it should be carried out with minimal costly means (Volovyk, 2021: 39). In addition to material resources, legal regulation has a significant impact on the use of time, human, intellectual, information, environmental and other resources, the saving of which should also be the focus of the Lawmaker's attention.

*The principle of balance of private and public interests in the administrative and legal support of civil-military cooperation in the field of preparation for military service* means taking into account the needs of the state, military formations, public authorities and local self-government bodies, civil society institutions, business entities, educational institutions and citizens during mobilization preparation and mobilization of persons liable for military service. The implementation of this principle remains the most difficult of all the principles of administrative and legal support in the area under study, since the interests of these subjects often differ significantly.

*The principle of immanence* is the conditionality of administrative and legal support for civil-military cooperation in the area of preparation for military service by its internal characteristics and inherent properties of this type of legal support. The peculiarity of implementing the principle of immanence in the administrative and legal support of preparation for military service is that each element of this support is conditioned by the features of objective reality which, in the legal form, acquire the character of legal abstraction of a legal provision expressed verbally, but at the same time do not lose the property of connection with the outside world and determinism by social relations. As noted by contemporary philosophers, considering immanence from the standpoint of functionalism, military activity as an element of culture performs several functions in the life of an ethnic group aimed at the latter's self-preservation, including communicative, regulatory and integrative. In addition to its main role of countering external aggression, military affairs helps to identify leaders who can ensure the safe functioning of society. It is the military that is characterized by self-sufficiency, balance and harmonious unity, which are subject to the general rule of functioning, formulated as follows: different paths to a common goal. Immanence, as one of the components of military leadership, is an example of the most important essential feature - stability, which provides the basis for interaction with other elements of the system of military institutions (Uvarkina, Puchkov, 2022: 233). Immanence allows building a system of administrative and legal support taking into account the basic characteristics of military service and its performance, the specifics of legal relations that arise between a person, a military formation and the state in the process of military service, the features of the cognitive, emotional and volitional, motivational sphere of a personality that should be taken into account when entering military service, etc.

*The principle of unification* means that the constructions used in the system of administrative and legal support of civil-military cooperation in the field of preparation for military service are consistent with the legal system of Ukraine and can be reproduced and typified externally in the form of uniform legal elements. Unification of legal support allows avoiding differences in law enforcement practice, when the same actions of a person under the same conditions lead to different legal consequences. From the point of view of NATO policy documents, unity means a higher level of standardization, i.e. the realized ability of groups or individuals, organizations or countries to use common doctrines, procedures or equipment (*Multinational capability cooperation, 2023*). Thus, the unification of administrative and legal support in the area under study allows for the creation of standard rules and algorithms for actions in specific situations, significantly saving time and efforts of right holders, which can be crucial under certain conditions, in particular, during hostilities, in the liquidation of their consequences, etc.

*The principle of taking into account the unity of command and continuity of military administration in the system of administrative and legal support* means the need to take into account such properties of the military administration system as hierarchy and permanence, which should be manifested in the absence of arbitrary interpretation of the organization of the leadership system, as well as in the permanence of legal regulation, which requires taking into account all possible scenarios, including the cessation of functioning of certain military administration bodies during hostilities, etc. This principle has its legal and methodological basis in the principles of unity of command and continuity of command, as defined in Annex 2 to the Strategic Defense Bulletin of Ukraine, approved by the Decree of the President of Ukraine of September 17, 2021 No. 473/2021, which, in particular, stipulates that the command of certain forces and means is carried out by a single commander (commander) who has the appropriate authority and responsibility. Military command and control bodies are able to respond to changes in the situation and constantly influence subordinate forces and means to successfully accomplish their tasks within a specified time frame. This is achieved by maintaining interaction between command and control bodies (structures), ensuring continuous communication and constant command of the situation by the commander (commander) (*Strategic Defense Bulletin of Ukraine, 2021*).

*The principle of the three-component military-pedagogical goal provides for the combination of three elements in the system of preparation for military service:* training, education and career development of future servicemen, which should be reflected in the system of administrative and legal support. A holistic understanding of the personality of a civilian, whose level of readiness for military service is the subject of legal regulation, requires a comprehensive approach to his/her internal attitudes, including ideological and patriotic ones, understanding their impact on the activity of acquiring knowledge, skills and abilities, as well as taking into account the need for a person to change his/her status as evidence of successful fulfillment of the requirements. In this regard, we should agree with the opinion of I. Avtushenko that the career development of servicemen is a key moment of military service. A characteristic feature of career advancement is dynamism, mobility, and the absence of stagnation. The necessary conditions for career growth traditionally include: a vacant position; necessary professional education; specialization; service experience; knowledge of legislation; necessary service in the military rank in the previous position, as well as, if necessary, passing a competition (*Avtushenko, 2018: 8-9*).

*The principle of integrity* means compatibility and interchangeability of administrative and legal support for preparation for military service with the legal support systems of other states, primarily the member states of the North Atlantic Alliance. Compatibility is understood

in NATO's standardization policy documents as the ability of two or more units or supplies (parts of equipment, materials) to function in the same system or environment without mutual interference. Interchangeability means the ability of two or more units or items of supply that have the same function or characteristics to be replaced without re-equipment or retraining (for units) or rework or modification (for items of supply) (*Standardization, 2022; NATO and standards, 2023*). Integrity in the context of preparation for military service in terms of administrative and legal support of this process requires taking into account the possibility of using the systems of preparation for military service of the North Atlantic Alliance states at any time when developing new legal documents and amending existing legal acts. This requires harmonizing the terminology of legal acts, establishing consistency between the stages of training and harmonizing the criteria for assessing its quality.

### 3. Conclusions

In conclusion, the administrative and legal support for the preparation of military service is characterized by distinct principles:

**Consistency in Administrative and Legal Support:** This entails avoiding double interpretations and conflicts in legal norms, as well as preventing logical errors in applying various legal acts that regulate military service preparation.

**Efficiency:** The focus here is on achieving the objectives of legal regulation with minimal use of resources, including material, temporal, human, intellectual, informational, environmental, and others.

**Balance of Private and Public Interests:** This principle involves considering the needs of the state, military formations, public authorities, local self-government bodies, civil society institutions, business entities, educational institutions, and citizens, especially during the mobilization training and mobilization of persons liable for military service.

**Immanence:** This refers to the conditionality of administrative and legal support by its inherent characteristics and properties, which allows for the development of a support system that takes into account the fundamental aspects of military service, the specifics of legal relationships between an individual, military formations, and the state, and the cognitive, emotional, volitional, and motivational aspects of a person's personality, particularly relevant when entering military service.

**Unification:** This principle ensures that the structures used in administrative and legal support are consistent with the legal system of Ukraine and can be externally typified as uniform legal elements.

**Consideration of Unity of Command and Continuity in Military Administration:** This principle necessitates recognizing the hierarchical and permanent nature of the military administration system, ensuring no arbitrary interpretation of the leadership organization and maintaining the continuity of legal regulation, including considering all possible scenarios like the cessation of functioning of certain military bodies during hostilities.

**Three-Component Military-Pedagogical Goal:** This involves combining training, education, and career development in the system of preparation for military service.

**Integrative Nature:** This principle emphasizes the compatibility and interchangeability of administrative and legal support with the legal support systems of other states, primarily the member states of the North Atlantic Alliance.

These principles collectively form a comprehensive framework that guides the administrative and legal support for military service preparation, ensuring effectiveness, fairness, and alignment with broader military and societal goals.

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**HEALTH, ENVIRONMENT, DEVELOPMENT****CONGENITAL AND HEREDITARY PATHOLOGY  
IN WOMEN CONTRACTED COVID-19 DURING PREGNANCY****Yaroslav Korinets**

Assistant at the Department of Radiation Diagnostics,  
Danylo Halytsky Lviv National Medical University;  
Ph.D., Researcher, State Institution “Institute of Hereditary Pathology  
of the National Academy of Medical Sciences of Ukraine”, Ukraine  
e-mail: ya.koriniec@gmail.com, orcid.org/0000-0003-4276-9769

**Natalia Prokopchuk**

Assistant at the Department of Radiation Diagnostics,  
Danylo Halytsky Lviv National Medical University,  
Geneticist at the Medical Genetics Center of the State Institution “Institute of Hereditary  
Pathology of the National Academy of Medical Sciences of Ukraine”, Ukraine  
e-mail: prokopchuknatalia1976@gmail.com, orcid.org/0000-0002-7802-2651

**Summary**

The study aimed to investigate the frequency and structure of congenital and hereditary pathologies identified through non-invasive and invasive methods of prenatal diagnostics in women who contracted COVID-19 during pregnancy, among the population of the Lviv region. The data from prenatal diagnostics results of congenital developmental defects in non-invasive prenatal diagnostics and hereditary diseases in invasive prenatal diagnostics were analyzed in women who contracted COVID-19 during pregnancy. The study demonstrated that the frequency of diagnosing congenital anomalies (CA) in the fetus among 159 pregnant women in non-invasive prenatal diagnostics (PND) was 13.8%.

In the structure of congenital anomalies, facial anomalies were the most prevalent, accounting for 5.0% in the first position, followed by anomalies of the cardiovascular system at 2.5% in the second position, anomalies of the skeletal system at 2.5% in the third position, and multiple congenital anomalies at 1.9% in the fourth position. Invasive prenatal diagnostics were performed on 12.6% of women in this group, with chromosomal pathology detected in 5.0% of women: trisomy 21 was diagnosed in 3.8%, Turner syndrome in 1.3%, and a normal karyotype was identified in 7.5% of patients. The frequency of chromosomal pathology in women who contracted COVID-19 during pregnancy was 5.0%. The results of this study will contribute to the improvement of effective medical-genetic counseling and the prediction of healthy offspring.

**Key words:** pregnancy, congenital anomaly, hereditary diseases, prenatal diagnostics, COVID-19

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## 1. Introduction

The demographic crisis observed in Ukraine is significantly exacerbated by reproductive losses, resulting in an increased frequency of offspring with congenital and hereditary pathology. This leads to early disability (*Zaporozhan V.M. et al., 2012; Tymonina M.B., 2016; Pidvysotska N.I., 2015*). In Ukraine, perinatal and child mortality rates exceed those in European countries (*Lazoryshynets V.V., 2016*). Among the causes of early neonatal child mortality, congenital anomalies (CA) incompatible with life dominate (*Verteletskyi V., et al., 2016*). The need for effective prenatal diagnostics and the study of factors contributing to congenital anomalies are determined by the scale of their prevalence and their impact on children's survival in the postnatal period.

The World Health Organization (WHO) has developed a Risk Approach Strategy aimed at identifying the causes of various complications during pregnancy and labor, as well as finding ways to improve the effectiveness of maternal and child health care. In these circumstances, reducing perinatal mortality, and preserving the lives and health of newborns is a necessary condition for the demographic development of Ukraine and a factor in national security (*Medvedev, M.V. et al., 2016; Safonova I.N., 2016*).

In 2019, the World Health Organization (WHO) confirmed the name COVID-19 (short for Coronavirus Disease 2019) for the illness caused by the SARS-CoV-2 infection (*Sonja A. Rasmussen et al., 2020*). Coronavirus Disease 2019 (COVID-19), caused by severe acute respiratory syndrome due to the infection with the SARS-CoV-2 coronavirus, rapidly spread worldwide, and on March 12, 2020, the WHO declared the outbreak a pandemic (*Dehan Liu et al., 2020*). Since pregnant women are at a higher risk of experiencing a complicated course of coronavirus infection, they have been identified as a high-risk group (*Sudheer R. Gorla et al., 2019; Heather Y. et al., 2018; Wong S.F. et al., 2004*).

As of today, there is limited and conflicting data regarding the potential for physiological adaptation of pregnancy to the conditions of infection, the severity of acute respiratory syndrome, and the likelihood of complications in pregnant women with COVID-19. Pregnant women are considered potentially vulnerable to a severe course of acute respiratory infection with SARS-CoV-2 due to physiological changes during pregnancy that significantly affect the activity of the immune system, respiratory, cardiovascular, and excretory functions, as well as blood coagulation (*Huang C. et al., 2020; Lei D.W.C. et al., 2020*).

Asymptomatic infection poses another challenge for service provision, prevention, and management. In addition to the direct impact of the disease, numerous indirect consequences of the pandemic negatively affect maternal health, including reduced access to reproductive health services, increased mental health strain, and heightened socio-economic deprivation (*Sonja A. Rasmussen et al., 2020*). It is suggested that these changes may have both negative and positive effects on the course of COVID-19, but this is not conclusively supported by evidence-based medicine. The impact of acute respiratory disease SARS-CoV-2 on pregnancy still requires extensive study and confirmation in various aspects, including its influence on implantation, fetal growth and development, as well as the health status of newborns (*Dehan Liu et al., 2020*). Severe perinatal complications (premature births, stillbirths) in COVID-19 are attributed to gestosis with characteristic disruptions in the course of pregnancy, such as preeclampsia, hypertension, and proteinuria (*Wastnedge E.A.N. et al., 2021*). In women with gestosis, insufficient reduction in vascular resistance is observed in the middle and late stages of gestation, associated with endothelial dysfunction (*Guo Z-D., et al., 2020*).

Pregnancy is a state of hypercoagulability characterized by increased thrombin generation and enhanced intravascular inflammation. During pregnancy, there are higher levels of circulating coagulation and fibrinolytic factors, which may be implicated in the pathogenesis of SARS-CoV-2 infection (Bourne T. et al., 2020). Pregnant women have an elevated risk of thromboembolic events, which could be associated with mortality (Poon L.C. et al., 2020). Therefore, pregnant women with COVID-19 may experience a synergy of thrombosis risk factors. Current recommendations suggest that all pregnant women with confirmed COVID-19 should receive thromboprophylaxis for up to 10 days postpartum, with a low threshold for investigating potential thromboembolism (Poon L.C. et al., 2020).

Despite the lack of data on placental changes in COVID-19 infection, researchers have described placental pathology in SARS in Hong Kong (Cascella M. et al., 2020). The conducted study is the first to examine pathological changes in the placenta in SARS-CoV-2 infection. The authors describe an elevated level of fibrin deposits around chorionic villi, large areas of avascular villi, and sometimes identified significant infarction in the villi, along with an increased level of erythrocytes in the fetal umbilical cord (Cascella M. et al., 2020; Di Mascio D. et al., 2020).

In studies by various researchers, the leading role of prenatal ultrasound examination of pregnant women in diagnosing prenatal pathology and congenital anomalies (CA) has been demonstrated (Cascella M. et al., 2020; Di Mascio D. et al., 2020; Safonova I.M., 2015). Ultrasound examination (UE) remains the most widely used form of mass screening for pregnant women today (Safonova I.M., 2015; Hrabar V.V., 2015; Nikolenko M.I. et al., 2018). However, the increase in the number of UE has not significantly affected the quality of prenatal diagnosis of congenital anomalies due to the relatively low overall number of prenatally detected cases (Begimbekova L.M. et al., 2015; Pasiieshvili, N.M., 2016).

Scientists have conducted several studies examining the effectiveness of prenatal diagnosis of critical congenital anomalies (CA) and errors in ultrasound examinations (UE) (Pasiieshvili, N.M., 2016). Key factors influencing the accuracy of prenatal CA diagnostics include the qualifications of the specialist and the quality of visualization. A two-tier system of prenatal diagnostics allows for a highly accurate determination of congenital heart defects. However, the system functions with limited efficiency.

Researchers emphasize in their works that early diagnostics of congenital anomalies is a significant reserve for reducing childhood morbidity, disability, and mortality (Lazoryshynets V.V., 2016; Nikolenko M.I., et al., 2018; Prokopchuk N. et al., 2023).

Qualified non-invasive and invasive prenatal diagnostics with established diagnoses of anomalies allow for timely organization of professional assistance for children with CAs, deliveries in specialized centers equipped for such therapy or surgical intervention, and contribute to improving perinatal morbidity and mortality rates (Lazoryshynets V.V., 2016; Kovalenko O.S. et al., 2016).

The prognosis for congenital anomalies is relatively favorable when detected early, and the possibilities for radical treatment are promising. In the absence of such possibilities, the outlook is dubious or unfavorable (Kovalenko O.S. et al., 2016). Therefore, the necessity for early prenatal detection of CAs is crucial. It allows for decisions on the advisability of maintaining the pregnancy and, in case of its continuation, devising the most appropriate tactics for its further management.

Since 1979, monitoring of the frequency of births with congenital anomalies has been conducted in 22 European countries. All these conditions are registered in the unified European



register – EUROCAT (European Surveillance of Congenital Anomalies). To objectify the research, EUROCAT takes into account developmental defects in the fetus that can affect the formation of prenatal and infant mortality and may also be a cause of human disability. These defects are referred to as ‘model’ anomalies (Loane M., 2011).

Only a few regions in Ukraine provide their data on the frequency of congenital anomalies to EUROCAT. Therefore, studying the epidemiology of congenital anomalies, including chromosomal disorders; researching the impact of various nosological forms of congenital pathology on perinatal and child mortality; identifying new teratogenic risk factors for CAs; and developing modern screening programs for prenatal diagnosis and pregravid prognosis for women are relevant tasks in modern medicine.

Although most developmental abnormalities are related to pathology that is relatively well diagnosed by non-invasive methods of prenatal diagnosis (ultrasound screening), unfortunately, a late manifestation of pathology often occurs. This does not allow for timely prevention of the birth of a sick child with pathology, leading to persistent disability (Nikolenko M.I., et al., 2018).

It is essential not only to obtain and accumulate data on the study of congenital anomalies but also to improve modern methods of prevention and early diagnosis of congenital pathology in families at risk (Antipkin Y.G. et al., 2018).

Prenatal diagnosis of congenital and hereditary pathology, a comprehensive examination of the fetus with the most accurate prognosis for life and health, is a necessary element of quality care during pregnancy and childbirth.

Application of modern methods of prenatal diagnostics in the comprehensive diagnosis of complex CAs in the fetus, taking into account the prospects of postnatal correction for children with congenital malformations in women who contracted COVID-19 during pregnancy, will be a reserve for reducing morbidity and disability in children (Kostiuk O.O. et al., 2020).

It is considered expedient to conduct a study on the frequency and structure of congenital and hereditary pathology diagnosed by non-invasive and invasive methods of prenatal diagnosis in women who contracted COVID-19 during pregnancy. This study aims to determine the impact of this condition on the structure of perinatal pathology in the population of the Lviv region, Ukraine.

*The aim of the research.* Investigation of the frequency and structure of congenital and hereditary pathology detected by non-invasive and invasive methods of prenatal diagnosis in women who contracted COVID-19 during pregnancy.

To achieve this, the following *tasks* were set:

1. Creation of a registry of women who contracted COVID-19 during pregnancy from Lviv city and the districts of Lviv region based on ultrasound screening data.
2. Analysis of the frequency and structure of congenital and hereditary pathology in women who contracted COVID-19 during pregnancy, based on the results of non-invasive and invasive methods of prenatal diagnostics.

## 2. Results

During the period of 2022-2023, ultrasound diagnostics (UE) was conducted for a total of 159 pregnant women who contracted COVID-19 during pregnancy: UE was performed for 97 (61.0%) pregnant women up to 22 weeks of gestation and for 62 (39.0%) after 22 weeks of gestation.

*Ultrasound examination of pregnant women* was conducted using the Voluson E8 device, operating in real-time, with the use of abdominal, linear, and sector probes (frequency 3.5 MHz). The exposure time for ultrasound examination was 15-30 minutes. During the examination, prenatal somatogenetic fetal assessment was used according to the approach to prenatal fetal assessment. The biometric, morphological, and pathophysiological features of the fetus were thoroughly evaluated. A standard fetal assessment was performed, obtaining basic biometric indicators and describing changes in the internal organs. The amount of amniotic fluid was assessed by measuring the height of its column. Placentography aimed to determine the localization, size, and echographic structure of the placenta, as well as pathological changes within it. In the case of detecting congenital anomalies in the fetus during ultrasound examination, prenatal syndromological analysis was conducted. This entails identifying, among all the pathological signs, a cluster of clinical symptoms that enables the diagnosis of a particular syndrome involving multiple congenital anomalies (MCA).

### 3. Clinical characteristics of examined women

The majority of pregnant women who contracted COVID-19 during pregnancy were in the age range of 26–30 years, comprising 63 (39.6%). The distribution across age groups was nearly equal for women aged 31-35 and 36 years and older, with 38 (23.9%) and 41 (25.8%), respectively. The smallest proportion consisted of women aged 21-25 years, with 17 (10.7%). There were no women under 20 years old among those who contracted COVID-19 during pregnancy (Table 1). Regarding the place of residence, out of 159 women, an almost equal number lived in rural areas – 75 (47.2%), and in urban areas – 84 (52.8%).

Table 1

#### Characteristics of women who contracted COVID-19 during pregnancy, by age, place of residence, and pregnancy parity

Number of women (q-ty/%)	Age (years)				Place of residence		Pregnancy parity		
	21–25	26–30	31–35	36 or >	rural	urban	I	II	III or >
159 (100%)	17 (10.7%)	63 (39.6%)	38 (23.9%)	41 (25.8%)	75 (47.2%)	84 (52.8%)	61 (38.4%)	62 (39%)	36 (22.4%)

The study of pregnancy parity showed that the number of women with first or second pregnancies was almost equal: 61 (38.4%) and 62 (39%), respectively. In 36 cases (22.4%), the pregnancy was the third or more.

Among women who contracted COVID-19 during pregnancy, a significant number were in the age group of 26-30 years – 63 (39.6%). There were 61 (38.4%) primigravidae, 62 (39%) were in their second pregnancy, and 36 (22.4%) had three or more pregnancies.

### 4. Frequency and structure of congenital pathology diagnosed by non-invasive methods of prenatal diagnosis

The structure of pathology diagnosed by ultrasound in pregnant women who contracted COVID-19 during pregnancy is shown in Table 2.

Table 2

**Structure of pathology diagnosed by non-invasive methods**

Indicators	Number of women (q-ty/%)
<i>Total women in the risk group</i>	159 (100%)
<i>No peculiarities found</i>	32 (20.1%)
<i>Total peculiarities found</i>	127 (79.9%)
Premature placenta aging	28 (17.6%)
Disturbance of uteroplacental blood flow	18 (11.3%)
Combination of placental and blood flow pathology	59 (37.1%)
<i>Congenital anomalies detected</i>	22 (13.8%)
Multiple congenital anomalies	3 (1.9%)
CAs of the cardiovascular system	7 (4.4%)
CAs of the skeletal system	4 (2.5%)
Facial CAs	8 (5.0%)

Analysis of the data in Table 2 showed that in 127 (79.9%) women who contracted COVID-19 during pregnancy, certain peculiarities and pathological changes were identified on ultrasound, especially in the structure of the placenta and changes in uteroplacental blood flow. In 32 (20.1%) women, no peculiarities (deviations from the norm) were detected on ultrasound.

Thus, in 28 (17.6%) women, premature aging of the placenta was diagnosed on ultrasound. In 18 (11.3%), there were disturbances in uteroplacental blood flow, and in 59 (37.1%), a combination of pathologies was observed (Table 2).

Prenatal fetal anomalies were diagnosed in 22 (13.8%) women in this group. In the structure of CAs diagnosed on ultrasound in pregnant women, 7 (4.4%) had cardiovascular system anomalies, 4 (2.5%) had skeletal system anomalies, 3 (1.9%) had multiple anomalies, and 8 (5.0%) had facial anomalies.

It was found that the frequency of congenital anomalies detected through non-invasive prenatal diagnostics in women who contracted COVID-19 during pregnancy was 13.8%. The structure of CAs ranks facial anomalies first (8 – 5.0%), followed by anomalies in the cardiovascular system (4 – 2.5%), skeletal system anomalies (4 – 2.5%), and multiple anomalies (3 – 1.9%).

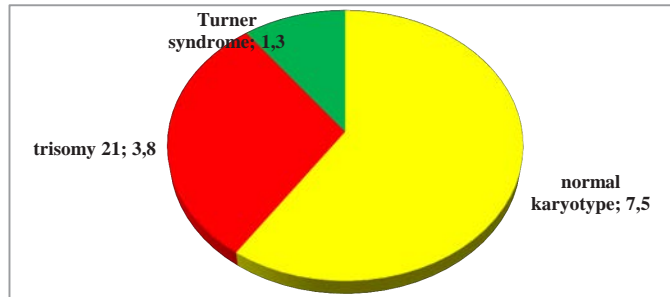
### **5. Frequency and structure of chromosomal pathology diagnosed by invasive methods of prenatal diagnostics**

A total of 20 (12.6%) women out of 159 patients who contracted COVID-19 during pregnancy underwent invasive procedures.

Indications for invasive methods of prenatal diagnostics were ultrasound markers of chromosomal pathology: increased nuchal translucency (NT) in 11 (6.9%) women; hypoplastic nasal bone (HNB) in 6 (3.8%) women; in three women (3.7%), there was a combination of ultrasound markers – increased NT + HNB. For these women, amniocentesis was performed in 8 (5.0%) cases, and chorionic biopsy (CB) in 12 (7.5%) cases.

In determining the indicators of invasive prenatal diagnostics, the following results were obtained: a pathological karyotype was detected in 8 (5.0%) women in this group. Trisomy 21 was diagnosed in 6 (3.8%) women; Turner syndrome was detected in 2 (1.3%) women, and

a normal karyotype was identified in 12 (7.5%) patients (Figure 1). NIPT was performed on two (3.3%) women, and a normal karyotype was identified (Figure 1).



**Fig. 1. Results of the fetal karyotype (invasive prenatal diagnostics)**

Thus, the frequency of chromosomal pathology in women who contracted COVID-19 during pregnancy was 5.0%.

## 6. Conclusions

Ultrasound diagnostics were performed on 159 women who contracted COVID-19 during pregnancy. The frequency of congenital anomalies identified during non-invasive prenatal diagnostics in this group of women was 13.8%. The structure of CAs ranks facial anomalies first (8 – 5.0%), followed by anomalies in the cardiovascular system (4 – 2.5%), skeletal system anomalies (4 – 2.5%), and multiple anomalies (3 – 1.9%).

2. In 32 (20.1%) women who contracted COVID-19 during pregnancy, ultrasound examinations revealed certain features and pathological changes, most frequently in the structure of the placenta and alterations in uteroplacental blood flow. Specifically, premature aging of the placenta was diagnosed in 28 (17.6%) women, disruption of uteroplacental blood flow in 18 (11.3%), and a combination of pathologies in 59 (37.1%).

3. In 20 (12.6%) of the 159 patients who contracted COVID-19 during pregnancy, invasive interventions were performed. The indications for invasive prenatal diagnostic methods were ultrasound markers of chromosomal pathology: increased nuchal translucency (NT) in 11 (6.9%) women, hypoplastic nasal bone (HNB) in 6 (3.8%) women, and a combination of ultrasound markers (increased NT + HNB) in three (3.7%) women. Among these women, amniocentesis was performed in 8 (5.0%) cases, and chorionic biopsy (CB) in 12 (7.5%) cases.

4. The frequency of chromosomal pathology in women who contracted COVID-19 during pregnancy was 5.0%. A pathological karyotype was detected in 8 (5.0%) women of this group. Specifically, trisomy 21 was diagnosed in 6 (3.8%) women, Turner syndrome was identified in 2 (1.3%) women, and a normal fetal karyotype was identified in 12 (7.5%) patients.

### Prospects for further research

The obtained data indicate the need for further refinement and improvement of the early diagnosis system for congenital anomalies, which would contribute to effective medical-genetic counseling and forecasting of healthy offspring. Individual prenatal diagnostics and monitoring the frequency of congenital anomalies can help reduce the incidence of congenital abnormalities.

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## DYNAMICS OF DISABILITY AMONG THE CHILD POPULATION DUE TO THE NERVOUS DISORDERS IN UKRAINE

**Mykhaylo Shkolnyk**

Postgraduate Student, Shupyk National Healthcare University of Ukraine, Ukraine

e-mail: myhaylo24@gmail.com, orcid.org/0000-0003-0305-4357

**Yevheniya Sharhorodska**

Junior Research Fellow, State Institution “Institute of Hereditary Pathology of the National Academy of Medical Sciences of Ukraine”, Ukraine

e-mail: gendoctor86@gmail.com, orcid.org/0000-0003-0240-4765

### Summary

In the study, data from the state statistical reporting forms ‘Report on Children with Disabilities Aged 0-18 for the Years 2010-2022’ were analyzed using the statistical analysis of medical data. The disability analysis was conducted using absolute values and widely accepted intensive measures (the rate of first-time and overall disability per 10,000 of child population aged 0-17 inclusive) as well as extensive measures (the structure of first-time and overall disability by causes). The disability of children due to nervous system disorders (NSDs) represents a significant medical, social, and economic problem. Disorders of the central nervous system cause every seventh case of disability in children in Ukraine and rank third in terms of prevalence (with a relative weight of 14.7% in 2022) among all causes of childhood disability. Approximately half of all cases of disability due to NSDs (48.5% in 2022) are associated with cerebral palsy (CP). Among children newly recognized as disabled individuals, CP is the cause of disability in almost every fourth case (27.7% in 2022). The obtained data on the rate of first-time and overall disability among children with NSDs will contribute to the development of an optimized model of rehabilitation assistance for children with this pathology and the implementation of modern rehabilitation technologies.

**Key words:** children with disabilities, cerebral palsy, central nervous system disorders.

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### 1. Introduction

A tolerant and compassionate attitude towards children requiring special attention due to disability is a traditional aspect of Ukrainian society. According to the State Statistics Service of Ukraine, as of January 1, 2020, there were 163.9 thousand children with disabilities in Ukraine (*Ministerstvo sotsialnoi polityky*).

According to researchers, in the structure of children’s disabilities during the period of 2011–2015, among the causes leading to children becoming disabled, nervous system disorders (17.0%-18.9%) rank second (*Slabkyi H.O. et al., 2016*). The disability of the child population is a leading indicator of public health, the quality of medical care and rehabilitation, and constitutes one of the significant medical, social, and economic challenges in Ukraine. Among the entire child population, children with disabilities comprise 2.0–2.1%, and the vast majority of them retain the status of a person with disability throughout their lives. This condition



necessitates substantial societal expenditures on medical social support for this group of individuals and significantly disrupts the process of ensuring the workforce potential and defense capability of the nation (Slabkyi H.O. et al., 2016).

According to the UN Convention on the Rights of the Child, to which Ukraine is a party, it is stipulated that every child, including those with functional limitations, “should lead a full life in conditions that ensure their dignity, promote self-confidence, and facilitate their adequate participation in society” (Konventsiiia OON "Pro prava dytyny", 1989). The development and improvement of rehabilitation assistance are crucial components in ensuring this right for children with disabilities.

Despite the ongoing improvement of medical technologies and the enhancement of the quality of rehabilitation services for children with musculoskeletal disorders, there is no observed trend towards a reduction in childhood disability due to central nervous system diseases in Ukraine and other countries worldwide. This type of disability constitutes a percentage ranging from 17.0% to 18.9% in the structure of children’s disabilities (Slabkyi H.O. et al., 2016; Kukuruza H.V., 2013).

The socio-economic situation that has emerged in the current stage of Ukraine’s development, along with crises in the economic and financial spheres, necessitates the strengthening of social protection for children with disabilities and the identification of priority directions in this effort (Dudina O.O. et al., 2014; Dudina O.O. et al., 2015). Alongside the disorders in psycho-physical development in children, there is observable social maladjustment, disruptions in social interactions, and a low sociometric status. Therefore, it is crucial to conduct rehabilitation for children in this category to restore impaired socio-psychological functions.

Nervous system disorders stand as the leading cause of disability among the child population in Ukraine. They consistently hold the third position (with a relative weight of 11%) in the structure of disability incidence and the second position (with a relative weight of 15%) in the overall children’s disability structure (Dudina O.O. et al., 2014; Dudina O.O. et al., 2015). According to the data from the Center for Medical Statistics of the Ministry of Health (MOH) of Ukraine for the year 2020, the total number of children with disabilities due to nervous system disorders in Ukraine was 24,876 individuals. In half of the cases (50.5%, 12,570 individuals), disability due to this class of diseases was attributed to cerebral palsy (CP) (Slabkyi H.O. et al., 2016; Dudina O.O. et al., 2014). A significant proportion of children with disabilities resulting from nervous system disorders experience substantial motor impairments that significantly restrict their activities of daily living, necessitating correction through the effective provision of comprehensive rehabilitation assistance (Voronenko Yu.V. et al., 2015; Martyniuk V.Yu., 2019).

Cerebral palsy (CP) is a severe condition leading to disability, encompassing a group of diverse syndromes with varying clinical manifestations arising from underdevelopment or damage to the brain during prenatal, intranatal, and early postnatal periods. Brain impairment manifests as disruptions in muscle tone and movement coordination, resulting in the patient’s inability to maintain a normal posture and perform various movements (Kukuruza H.V., 2013; Milieiko O.O., 2017; Lazoryshynets V.V. et al., 2014). This is attributed not only to spastic paralysis and paresis but also to multiple contractures leading to the formation of deformities in the bone segments of the limbs, progressing throughout the child’s growth and development (Williams C.M. et al., 2010; Graham H.K. et al., 2016; Woolfenden S. et al., 2018).

Attempts to combat muscle spasticity and contractures with medication do not always yield the desired results and success. Comprehensive conservative rehabilitative treatment for such patients is a complex and labor-intensive task and it does not always guarantee improvement in motor functions (ElTallawy H.N. et al., 2014; Abramenko V.V., 2014).

In recent years, numerous studies in this field indicate that only the combination of various high-tech rehabilitation methods for patients with cerebral palsy can lead to positive treatment outcomes for this category of patients. The most effective approach for these patients today involves a comprehensive set of measures encompassing socio-medical, psycho-pedagogical, and physical rehabilitation for children with disabilities due to organic central nervous system impairment. This approach is implemented with the involvement of specialists from a multidisciplinary team (*Kukuruza H.V., 2013; Dudina O.O. et al., 2015; Voronenko Yu.V. et al., 2015*).

Ukraine has made significant strides in this field, implementing modern socio-medical rehabilitation technologies. Over 45 socio-medical rehabilitation centers have been established within the system of the Ministry of Health of Ukraine (MOH), aimed at providing comprehensive rehabilitation assistance to children of early and preschool age. Additionally, 226 social rehabilitation centers operate within the system of the Ministry of Social Policy of Ukraine. Numerous centers, created by non-governmental and charitable organizations, as well as on private initiatives, are open and operational. However, each of these centers, while performing crucial work, faces specific challenges in providing assistance to families with children of the specified category (*Martyniuk V.Yu., 2019; Moiseienko R. O., 2013; Baierle H., 2016*).

Individual rehabilitation programs for children with disabilities are developed in accordance with the State Standard Rehabilitation Program by medical advisory commissions of healthcare institutions. The determination of specific volumes, methods, and timelines for rehabilitation measures that should be carried out for children with disabilities, the budgetary allocation or funding through compulsory state social insurance, as well as monitoring the implementation of the individual rehabilitation program within their jurisdiction, is conducted by socio-medical expert commissions (medical advisory commissions of healthcare institutions for children with disabilities), labor and social protection authorities, employment services, rehabilitation institutions, and administrators of the relevant funds (*Shkolnyk M.B. et al., 2022*). The provisions regarding the individual rehabilitation program for individuals with disabilities, the financing procedure, and implementation are approved by the Cabinet of Ministers of Ukraine.

The scope of rehabilitation measures outlined in an individual rehabilitation program for a person with disabilities cannot be less than what is stipulated by the State Standard Rehabilitation Program for individuals with disabilities.

Currently, there is a need for significant reform in the organization and provision of rehabilitation services for children with disabilities in Ukraine. The existing system requires restructuring based on principles of accessibility (general, territorial, and financial), and a diversity of programs and services that encompass all aspects of a child's life. Substantial changes are needed in creating a system of rehabilitation services for children, implementing an interdisciplinary approach, transitioning from a medical to a social model of disability, and introducing systematic work in the childhood protection network with an individual rehabilitation program for children with disabilities.

Therefore, justifying the possibilities of preventing the formation of disabilities and identifying the need for rehabilitation assistance require ongoing monitoring of the rates and primary causes of disability in the child population. This is a relevant issue in today's context.

*The aim of the research* was to analyze the disability among the child population of Ukraine, taking into account the structure of causes for overall disability in children, the relative weight of cerebral palsy in the structure of first-time and overall disability due to nervous system disorders in children up to 17 years of age inclusive, covering the years from 2010 to 2022.

## 2. Results

In the study, data from the state statistical reporting form No. 19 ‘Report on Children with Disabilities Aged 0-18 for the Years 2010–2022’ were analyzed using the statistical analysis of medical data. These data were compiled for Ukraine and published in statistical handbooks such as “Indicators of Population Health and the Use of Healthcare Resources in Ukraine” (Pokazyky zdorovia naseleennia ta vykorystannia resursiv okhorony zdorovia v Ukraini [20–26].

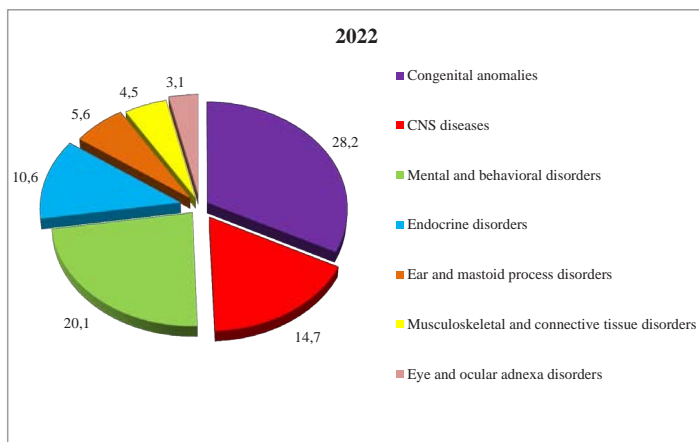
The analysis of disability was conducted using both absolute values and commonly accepted intensive indicators (the rate of first-time and overall disability per 10,000 children aged 0-17 years inclusive) as well as extensive indicators (the structure of first-time and overall disability by causes). The analysis of disability among children aged 0-17 years due to nervous system disorders (NSDs) in Ukraine was carried out dynamically for the years 2010–2022.

Comprehensive analysis of disability in the child population of Ukraine

In 2022, the population of children with disabilities in Ukraine amounted to 156,010 individuals, and the overall disability rate reached 212.3 per 10,000 of the child population aged 0–17 years. This marked an increase of 3.9% compared to the rate in 2010, which was 204.3 (Table 1).

In the structure of overall disability among the child population in 2022, the leading cause was congenital anomalies, deformities, and chromosomal abnormalities (28.2%). The second position was attributed to mental and behavioral disorders (20.1%), followed by diseases of the central nervous system (14.7%) in the third place. The fourth position was occupied by diseases of the endocrine system, eating disorders, and metabolic disorders (10.6%), while diseases of the ear and mastoid process took the fifth place (5.6%). Diseases of the musculoskeletal system and connective tissue accounted for 4.5% in the sixth position, and diseases of the eye and ocular adnexa comprised 3.1% in the seventh position (Figure 1). The relative weight of these major causes of disability amounted to 86.8% among all disability causes.

The structural distribution of the main causes of disability in 2022 has changed compared to 2015 due to an increase in the relative weight of mental and behavioral disorders. These disorders moved to the second position in 2022, displacing nervous system disorders to the third position (Figure 2).



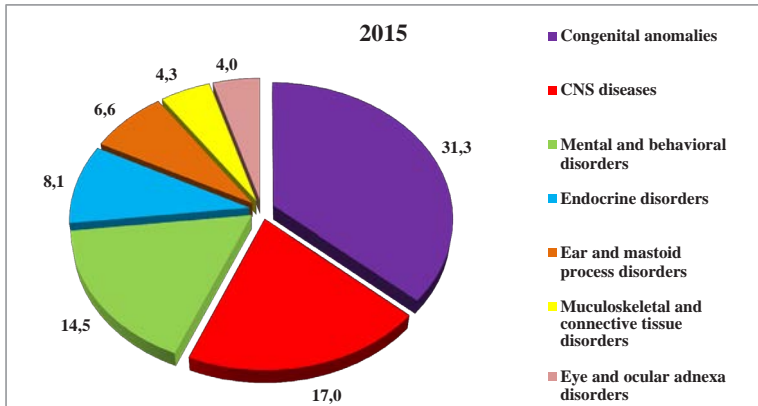
**Fig. 1. Structure of the causes of overall disability in children aged 0–17 in Ukraine in 2022**

Table 1

Disability indicators for children aged 0-17 in Ukraine from 2010 to 2022

Indicator	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	CGR*
<i>All disability causes</i>														
Overall disability (abs.)	165121	166164	167059	168280	151125	153547	156099	159044	161594	163886	162923	162214	156010	-5.5
Rate per 10,000 children aged 0-17 years	204.3	207.6	209.6	210.6	199.0	201.6	205.0	208.8	212.4	216.2	216.3	217.5	212.3	3.9
Onset of disability (abs.)	18428	18717	18157	18292	16250	16452	16311	16424	16208	16307	13149	15311	16115	-12.6
Rate per 10,000 children aged 0-17 years	22.8	23.4	22.8	22.9	21.4	21.6	21.4	21.6	21.3	21.5	17.5	20.5	21.9	-3.9
<i>Nervous system disorders</i>														
Overall disability (abs.)	30445	30233	29944	29684	25897	26119	25935	25885	25579	25422	24876	24370	22956	-24.6
Rate per 10,000 children aged years	37.7	37.8	37.6	37.1	34.1	34.3	34.1	34.0	33.6	33.5	33.0	32.7	31.2	-17.2
Onset of disability (abs.) 0-17	2502	2579	2432	2439	2028	2160	1918	1819	1847	1818	1472	1687	1854	-25.9
Rate per 10,000 children aged 0-17 years	3.1	3.2	3.1	3.1	2.7	2.8	2.5	2.4	2.4	2.4	2.0	2.3	2.5	-19.4
<i>Cerebral palsy</i>														
Overall disability (abs.)	17020	16780	16393	16147	14039	14012	13900	13699	13461	12608	12570	12326	11126	-34.6
Rate per 10,000 children aged 0-17 years	21.1	21.0	20.6	20.2	18.5	18.4	18.3	18.0	17.7	16.6	16.7	16.5	15.1	-28.4
Onset of disability (abs.)	905	958	887	897	708	772	620	592	601	595	498	555	514	-43.2
Rate per 10,000 children aged 0-17 years	1.1	1.2	1.1	1.1	0.9	1.0	0.8	0.8	0.8	0.8	0.7	0.7	0.7	-36.4

\* CGR — Compound Growth Rate 2022/2010 in %



**Fig. 2. Structure of the causes of overall disability in children aged 0–17 in Ukraine in 2015**

The dynamic analysis of the overall children disability rate in Ukraine, conducted across leading causes, indicates that between 2015 and 2022, there was an increase in the overall disability rate due to mental and behavioral disorders (by 51.6%, from 28.1 to 42.6 per 10,000 of child population) (Table 2). Additionally, there was an increase in the overall disability rate due to endocrine disorders, eating disorders, and metabolic disorders (by 38.7%, from 16.3 to 22.6, primarily driven by type 1 diabetes), and a decrease in the overall disability rate due to nervous system disorders (by 9.0%, from 34.3 to 31.2, respectively), congenital malformations, deformations, and chromosomal abnormalities (by 5.1%, from 63.1 to 59.9, respectively), and diseases of the ear and mastoid process (by 11.9%, from 13.4 to 11.8, respectively).

Table 2

**Causes of overall disability in children aged 0–17 years in Ukraine**

Classes of diseases	Rate per 10,000 children aged 0-17 years				Compound growth rate 2022/2015 (in %)
	2015	2020	2021	2022	
Some infectious and parasitic diseases	4	3.8	3.6	3.1	-22.5
Neoplasms	7	7.7	7.8	7.4	5.7
Diseases of the blood and blood-forming organs	2	2.1	2.1	2	0.0
Endocrine diseases and eating disorders	16.3	22	22.9	22.6	38.7
Mental and behavioral disorders	28.1	37.4	39.4	42.6	51.6
Diseases of the central nervous system	34.3	33	32.7	31.2	-9.0
Diseases of the eye and ocular adnexa	8.1	7	6.8	6.6	-18.5
Diseases of the ear and mastoid process	13.4	13.2	12.9	11.8	-11.9
Diseases of the circulatory system	1.9	1.9	1.9	1.9	0.0
Diseases of the respiratory system	3.7	3	2.8	2.8	-24.3
Diseases of the digestive system	2.5	2.9	3	3	20.0
Diseases of the skin and subcutaneous tissue	0.9	1	1	1.1	22.2
Diseases of the musculoskeletal system and connective tissue	8.7	9.6	9.8	9.5	9.2

Table 2 (continuance)

Diseases of the genitourinary system	3.5	3.8	3.8	3.7	5.7
Congenital anomalies (birth defects)	63.1	63.9	63.3	59.9	-5.1
Injuries, poisoning, and certain other consequences of external causes	4.1	3.6	3.3	3	-26.8
Total	201.6	216.3	217.5	212.3	5.3

### 3. Analysis of the disability incidence rate

In Ukraine, in 2022, disability status was assigned for the first time in 16,115 children, with a disability incidence rate of 21.9 per 10,000 children. Throughout the period from 2010 to 2022, the disability incidence rate remained relatively stable, fluctuating between 20 and 23 cases per 10,000 children. An exception was observed in 2020 with a lower value of 17.5, possibly associated with the onset of the COVID-19 pandemic.

The structural distribution of the main causes of first-time disability changed over the observation period due to an increase in the relative proportion of mental and behavioral disorders, which took the first place in 2022 with a relative weight of 33.5%. Congenital anomalies ranked second (18.2%), nervous system disorders ranked third (11.5%), endocrine disorders, eating and metabolic disorders ranked fourth (10.9%), and diseases of the musculoskeletal system and connective tissue ranked fifth (6.4%).

### 4. Analysis of disability in the child population due to nervous system disorders in Ukraine

Nervous system disorders (NSDs) are one of the dominant causes of disability in children aged 0–17 years. In 2022, the population of disabled children due to NSDs was 22,956 individuals or 31.2 per 10,000 children aged 0–17 years (Table 2). The initial recognition of disability due to nervous system disorders occurred in 1,854 children in 2022, representing a rate of 2.5 per 10,000 children aged 0–17 years (Table 2).

In 2022, NSDs accounted for every 7<sup>th</sup> case of disability in children in Ukraine, constituting the third-ranking cause (with a relative weight of 14.7%) in the overall disability structure. It ranked behind only congenital anomalies (28.1%) and mental and behavioral disorders (20.1%) (Figure 1). In 2015, NSDs held the second position (with a relative weight of 17.0%) in the structure of overall disability in children aged 0–17 years (Figure 2).

In the structure of first-time disability, NSDs occupied the third-ranking position, accounting for every 9<sup>th</sup> case of disability in children from 2020 to 2022 and every 7<sup>th</sup> case in 2010 and 2015 (Table 3).

Table 3

#### The relative weight of nervous system disorders (NSDs) in the structure of first-time and overall disability in children aged 0–17 years inclusive in Ukraine in 2010–2022

Indicator	2010	2015	2020	2021	2022
The relative weight of NSDs in the structure of overall disability, %	18.4	17.0	15.3	15.0	14.7
The relative weight of NSDs in the structure of first-time disability, %	13.6	13.1	11.2	11.0	11.5

Analyzing the causes of disability within each disease class plays a significant role in justifying opportunities for preventing disability development and determining rehabilitation needs.

It has been determined that half (48.5% in 2022) of all cases of children's disability due to NSDs are attributed to cerebral palsy (CP), and among children first recognized as disabled individuals, CP is the cause of disability in almost every fourth case (27.7% in 2022) (Table 4). The number of children with disability due to CP in Ukraine in 2022 was 11,126 individuals, or 15.1 per 10,000 children aged 0–17 years. The first instance of disability due to CP was established for 514 children, or 0.7 per 10,000 children aged 0–17 years.

Table 4

**The relative weight of CP in the structure of first-time and overall disability due to nervous system disorders in children aged 0–17 years inclusive in Ukraine from 2010 to 2022**

Indicator	2010	2015	2020	2021	2022
The relative weight of CP among all cases of disability due to nervous system disorders, %	55.9	53.6	50.5	50.6	48.5
The relative weight of CP among first-time disability due to nervous system disorders, %	36.2	35.7	33.8	32.9	27.7

The dynamic analysis revealed a unidirectional trend towards decreasing rates of first-time and overall disability in the child population due to CP from 2010 to 2022. Overall disability during this period decreased by 28.4% (from 21.1 to 15.1 per 10,000 children aged 0–17 years), and first-time disability decreased by 36.4% (from 1.1 to 0.7 per 10,000 children aged 0–17 years).

## 5. Conclusions

Disability in the child population due to NSDs poses a significant medical, social, and economic challenge. NSDs account for every 7<sup>th</sup> case of disability in children in Ukraine, ranking third in the overall disability structure among children (with a relative weight of 14.7% in 2022). In Ukraine, the population of individuals with disabilities due to this cause is nearly 23,000 children (31.2 per 10,000 children aged 0-17 years in 2022), requiring prolonged, often lifelong rehabilitation and socio-medical assistance. Every year, over 1,800 children (2.5 per 10,000 children aged 0–17 years) are newly recognized with disability due to NSDs.

Half (48.5% in 2022) of all cases of disability in children due to NSDs are attributed to cerebral palsy (CP). Among children newly recognized with a disability, CP is the cause of disability for nearly every fourth child (27.7% in 2022). The population of children with disabilities due to CP in Ukraine is over 11,000 individuals (15.1 per 10,000 children aged 0–17 years in 2022).

### Prospects for further research

The obtained data on the rate of first-time and overall disability of the child population due to diseases of the central nervous system will contribute to the creation of an optimized model of rehabilitation assistance for children with this pathology and the implementation of modern rehabilitation technologies. A priority is the organization of the work of socio-medical

centers for the rehabilitation of children involving a multidisciplinary team of rehabilitation specialists, predominantly using non-drug methods aimed at restoring the functional systems of the body.

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## ASSESSMENT OF THE FUNCTIONAL STATE OF THE CARDIOVASCULAR SYSTEM OF STUDENTS

**Antonina Tarnovska**

Ph.D., Assistant Professor, Ivan Franko National University of Lviv, Ukraine  
e-mail: antonina.tarnovska@lnu.edu.ua, orcid.org/0000-0002-1626-3919

**Anastasiia Heneha**

Ph.D., Assistant Professor, Ivan Franko National University of Lviv, Ukraine  
e-mail: anastasiya.heneha@lnu.edu.ua, orcid.org/0000-0003-3516-426X

### Summary

Student youth are constantly in various stressful circumstances associated with social, economic, and psychological changes. These factors, as well as an unbalanced diet, lack of sleep, negatively affect the physical, mental and social health of students, and create prerequisites for reducing the adaptive capacity of the body. Studying the adaptation capabilities of students in conditions of intensive study load will make it possible to analyze their adaptation potential and level of health in order to introduce health-improving, preventive and medical measures if necessary.

As a marker for evaluating the work of the human cardiovascular system, we used such indicators as heart rate, adaptation potential, endurance coefficient, Ruffier index. We evaluated the functioning of the circulatory system in students of the Faculty of Biology by determining the adaptation potential according to Baevsky, the coefficient of endurance according to the Kvass formula and the Ruffier index. Having assessed the level of functioning of the circulatory system in students of the II year according to the indicator of adaptation potential, we found that the majority of students have a satisfactory level of adaptation. In 30% of male students and 35% of female students, a poor and unsatisfactory evaluation of the reaction according to the Ruffier index and weakening of the cardiovascular system was found in 40% of male students and 71% of female students, according to the endurance coefficient. This is probably explained by a decrease in the reserve capabilities of the cardiovascular system due to the low physical fitness of the students.

**Key words:** Ruffier index, adaptation potential, endurance coefficient, heart rate.

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### 1. Introduction

The problem of preserving and strengthening the health of the population, especially young people, remains the most urgent for the state. Throughout his life, a modern person is constantly in various stressful circumstances that are associated with social, economic, and psychological changes (Korovina, Zaporozhets, Kozakevych, 2019). The most vulnerable are student youth, since the rhythm of their life is hypodynamic with simultaneous significant intellectual and emotional loads. All these factors, as well as unbalanced nutrition, lack of sleep, negatively affect the physical, mental and social health of students, create prerequisites for reducing the body's adaptive capacity (Chychkan, Shutka, Pazychuk, 2012).

It is known that the adaptive processes in the human body are associated with various functional systems, most of all with the cardiovascular system, therefore they serve as markers of physical health (*Arabadzhy, 2012*).

Overstrain of regulation systems can lead to failure of adaptation with inadequate functioning of the heart and blood vessels, violation of homeostasis, appearance of various pathological syndromes and diseases.

In order to preserve and strengthen the health of student youth, it is necessary to conduct a comprehensive examination – to assess the level of functioning of body systems (primarily cardiovascular) and the level of functional reserve. This will help to improve the existing and search for new methods of optimizing the functional state, health preservation and future professional longevity of student youth (*Ukrai'nec', Romanjuk, 2014, Tarnovska, Heneha, et al, 2023*).

Studying the adaptation capabilities of students in the conditions of an intensive academic load will make it possible to analyze their adaptation potential and level of health in order to introduce health-improving, preventive and medical measures if necessary (*Goncharenko, Chykalo, 2011, Glazkov, 2013*).

As a marker for assessing the work of the human cardiovascular system, such indicators as heart rate (HR), adaptation potential, endurance coefficient, Ruffier index, etc. are used.

Assessment of the functional state of the cardiovascular system of the body is of primary importance in connection with the huge role of this system in adaptation to physical loads of various nature. It is well known that the normal functioning of the circulatory system determines the operation of a number of other physiological systems, ensures the effective use of the body's energy potential, contributes to its speedy recovery and a kind of exit to a qualitatively new level of functional state (*Harchenko, 2016, Lazorenko, 2023*).

It is well known that adaptive processes in the human body are associated with various functional systems, most of all with the cardiovascular system, therefore they serve as markers of physical health.

Overstrain of regulation systems can lead to failure of adaptation with inadequate functioning of the heart and blood vessels, disruption of homeostasis, appearance of various pathological syndromes and diseases.

In order to preserve and strengthen the health of student youth, it is necessary to carry out a comprehensive examination – to assess the level of functioning of body systems (primarily cardiovascular) and the level of functional reserve. This will help to improve the existing and search for new methods of optimizing the functional state, health preservation and future professional longevity of medical students (*Lys, 2016*).

Studying the adaptation capabilities of students in conditions of intensive study load will make it possible to analyze their adaptation potential and level of health in order to introduce health-improving, preventive and medical measures if necessary (*Mamotenko, Kovalenko, 2017*).

The purpose of the work was to assess the level of functioning of the circulatory system in student youth.

To achieve the goal, we set ourselves the task of evaluating the functioning of the circulatory system in students of the Faculty of Biology by determining the adaptation potential according to Bayevski, the endurance coefficient according to the Kvass formula, and the Ruffier index.

## 2. Research materials and methods

Our research continued during 2022-2023 at the Department of Biophysics and Bioinformatics, Faculty of Biology, Ivan Franko National University of Lviv. Among the respondents were 2nd-year students, a total of 59 female and male students (49 girls and 10 boys) took part. The respondents had no complaints about their own health, all respondents gave their consent to the processing and use of personal data. The average age of the subjects was 18–19 years.

A survey was conducted among the interviewees. The purpose of the survey was to record anthropometric indicators and find out the peculiarities of the students' lifestyle. In particular, during the experiment, such anthropometric characteristics as height and weight were measured, as well as specific characteristics of the lifestyle that affect the cardiovascular system of a person.

The adaptation potential of the cardiovascular system of the body was determined according to the method of R.M. Bayevski, taking into account heart rate, systolic and diastolic blood pressure, anthropometric indicators and coefficients of the multiple regression equation.

$$AP = 0,011 \times HR + 0,014 \times SBP + 0,008 \times DBP + 0,014 \times BM - 0,009 \times H - 0,27$$

where HR – heart rate, bpm, SBP – systolic blood pressure, mm Hg, DBP – diastolic blood pressure, mm Hg, BM – body mass, kg, H – height, cm.

The Kvass formula was used to calculate the endurance coefficient (CE) of the cardiovascular system:  $CE = HR \times 10 / AT_{max} - AT_{min}$ .

where HR – heart rate, bpm,  $SBP_{max}$  – systolic blood pressure,  $DBP_{min}$  – diastolic blood pressure,

Normally, CE is 16. Its increase indicates that the cardiovascular system is in a state of lower activity, and its decrease indicates increased activity. Its increase is a sign of weakening of the cardiovascular system. The Ruffier index considers the peculiarities of the reaction of the cardiovascular system to physical exertion based on changes in the heart rate at the end of the exercise and sometime after it. The Ruffier index is calculated according to the formula:

$$RI = (4(HR1+HR2+HR3) - 200) / 10,$$

where RI – Ruffier Index, HR1 is the average resting heart rate, HR2 is the maximum heart rate recorded during the first 15 seconds of recovery, and HR3 is the 15 second average after the 1st minute of recovery. Lower scores indicate better exercise tolerance.

All experiments were performed at least three times. Statistical processing of research results was carried out using a personal computer with the help of the analysis package program. Calculating the main statistical indicators from direct quantitative data obtained as a result of research (arithmetic mean – M; standard error of the mean – m).

For the analysis of the material obtained after the tests, the method of comparing the percentages that corresponded to the values of the "norm" was applied. In the samples, where an assessment on a five-point scale is offered, conditionally, in each group, a percentage indicator was determined, which consisted of the sum of indicators with ratings of "4" and "5" and assigned them to the "norm" group, which later took part in the comparison with the results of other tests.

### 3. Results and discussion

Evaluation of the functional state of the organism of biology students according to the adaptation potential.

Adaptation potential reflects the functional state of the organism, characterizes functional reserves and allows predicting changes in health. We measured heart rate, systolic and diastolic blood pressure, as well as anthropometric parameters in 59 students (49 girls and 10 boys). Adaptation potential was calculated according to Bayevski formula.

According to the results of adaptation potential, male students ( $n = 10$ ) were divided into two categories: students with satisfactory adaptation ( $2.05 \pm 0.06$ ;  $n = 4$ ) and students with a strained adaptation mechanism ( $2.46 \pm 0.13$ ;  $n = 6$ ). Female students ( $n = 49$ ) were divided into three categories based on the result of adaptation potential: students with satisfactory adaptation ( $1.79 \pm 0.06$ ;  $n = 31$ ), students with a strained adaptation mechanism ( $2.43 \pm 0.05$ ;  $n = 16$ ) and students with unsatisfactory adaptation ( $3.68 \pm 0.02$ ;  $n = 2$ ) (Table 1, Fig. 1).

This study showed us the degree of human adaptation to living conditions that are constantly changing under the influence of environmental, social and economic factors.

Table 1

**General assessment of adaptation capabilities and health level of male and female students**

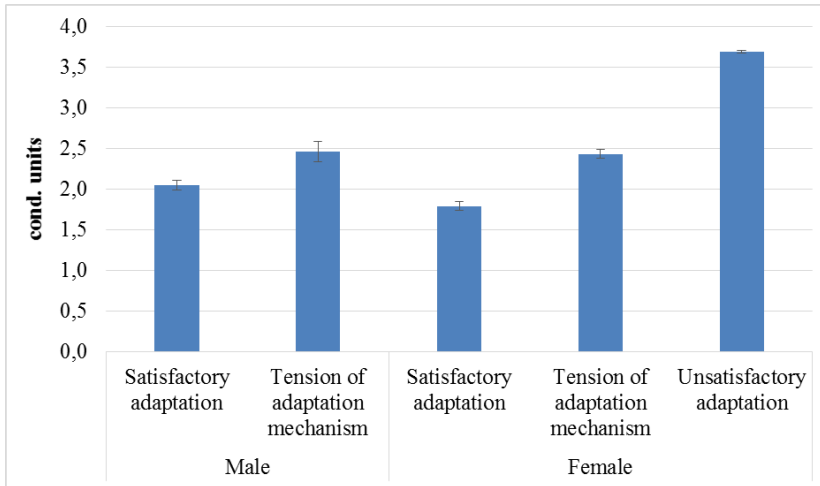
Gender (n = 59)	Satisfactory adaptation	Tension of adaptation mechanisms	Unsatisfactory adaptation	Failure of adaptation
Male (n=10)	2.05 ± 0,06 40% n = 4	2.46 ± 0,13 60% n = 6	0	0
Female (n=49)	1.79 ± 0,06 63% n = 31	2.43 ± 0,05 33% n = 16	3.68 ± 0,02 4% n = 2	0

The analysis of the results showed that the percentage ratio among male students is dominated by the group with satisfactory adaptation, which is 60% (I health group) of the total number of male respondents against 40% (II health group) of students with a strained adaptation mechanism. Analyzing the results of adaptation potential among female students, it should be noted that the group with satisfactory adaptation prevails here, which is 63% (I health group) of the total number of female respondents against 33% (II health group) of students with strained adaptation mechanism and 4% (III health group) of students with unsatisfactory adaptation (Table 1, Fig. 1).

The reason for the lower level of adaptation in male students compared to female students may be related with greater sensitivity of women to social factors and stress, as well as a greater tendency to bad habits of male students, hormonal differences (estrogen and prostacyclin concentrations).

Evaluation of the physical state of the heart in biology students by endurance coefficient

The next stage of our research was to assess the physical condition of the heart in students of the Faculty of Biology. To calculate the endurance coefficient of the cardiovascular system, we used the K<sub>vass</sub> formula. The coefficient characterizes the functional state of the cardiovascular system and is an integral value that combines heart rate with pulse pressure. Normally, the ratio is 16%. Its increase indicates that the cardiovascular system is in a state of



**Fig. 1. General assessment of adaptive capabilities and health level of students of the Faculty of Biology**

weakness activity, and its decrease, on the contrary, is increased. Its increase is a sign of weakness of the cardiovascular system.

Table 2

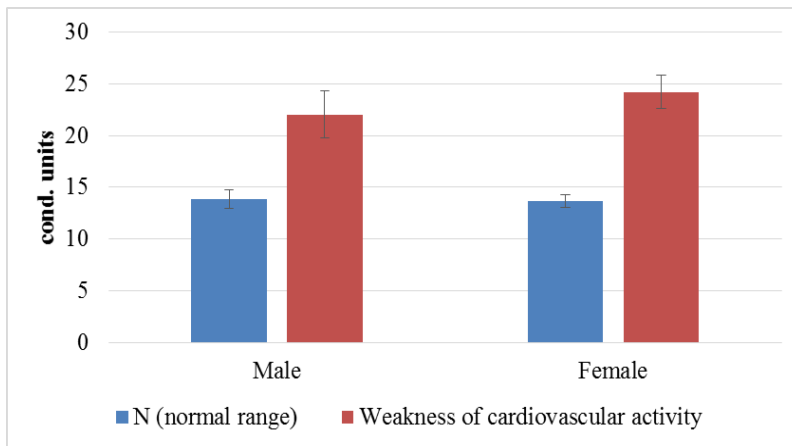
**General assessment of the coefficient of endurance in male and female students**

Gender	Normal cardiovascular activity	Weakness of cardiovascular activity
<b>Male (n = 10)</b>	13.83 ± 0.87 60% <b>n = 6</b>	22.00 ± 2.27 40% <b>n = 4</b>
<b>Female (n = 49)</b>	13.67 ± 0.63 29% <b>n = 14</b>	24.19 ± 1.59 71% <b>n = 35</b>

Analyzing the results of physical endurance studies, it was possible to observe that out of 59 students, 14 girls (13.67 ± 0.63) and 6 boys (13.83 ± 0.87) had an endurance coefficient within the normal range, and 35 girls (24.19 ± 1.59) and 4 boys (22.00 ± 2.27) showed weakening of the activity of the cardiovascular system (Table 2, Fig. 2). Thus, it should be noted that weakening of the cardiovascular system was found in 40% of male students and 71% of female students (Table 2).

Evaluation of the reaction of the cardiovascular system of biology students to physical activity according to the Ruffier index.

The next stage of our research was to analyze the reaction of the students' cardiovascular system to physical exertion. For this analysis, we used the Ruffier index, which takes into account the features of the cardiovascular system's response to physical exertion based on changes in heart rate at the end of the exercise and some time after it. According to the results of the sample of male and female students, they were divided into four groups (Table 3, Fig. 3): 1) good evaluation of the reaction (men 0.90 points, n = 1; women 2.97 ± 0.39 points, n = 7), 2) average evaluation of the reaction (men 8.00 ± 0.33 points, n = 6; women 7.43 ± 0.28 points,



**Fig. 2. General assessment of the endurance coefficient of students of the Faculty of Biology**

n = 25), 3) poor evaluation of the reaction (men  $11.55 \pm 0.95$  points, n = 2; women  $12.55 \pm 0.32$  points, n = 14), 4) very poor evaluation of the reaction (men 15.30 points, n = 1; women  $16.93 \pm 1.11$  points, n = 3). This study makes it possible to evaluate the reserve capabilities of the cardiovascular system.

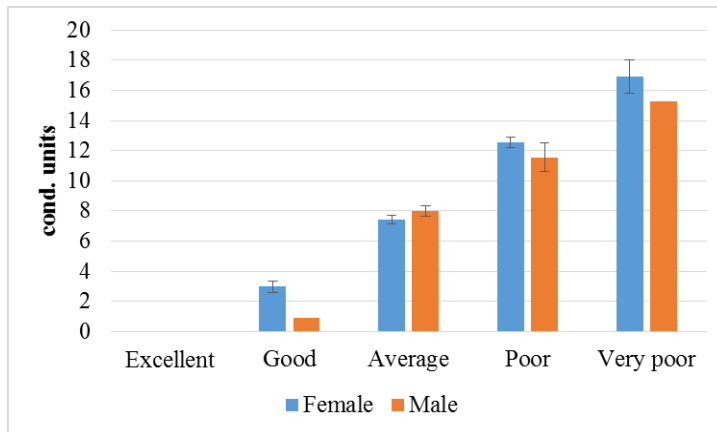
Table 3

**General assessment of the Ruffier index in male and female students**

Gender	Excellent	Good	Average	Poor	Very poor
<b>Boys (n = 10)</b>	0	0.90 10% <b>n = 1</b>	$8.00 \pm 0.33$ 60% <b>n = 6</b>	$11.55 \pm 0.95$ 20% <b>n = 2</b>	15.30 10% <b>n = 1</b>
<b>Girls (n = 49)</b>	0	$2.97 \pm 0.39$ 14% <b>n = 7</b>	$7.43 \pm 0.28$ 51% <b>n = 25</b>	$12.55 \pm 0.32$ 29% <b>n = 14</b>	$16.93 \pm 1.11$ 6% <b>n = 3</b>

The results showed (Table 3, Fig. 3) that among the students who took part in the study, there are 10% and 7% of male and female students, respectively, with a good reaction rating, 60% and 51% of male and female students, respectively, with an average evaluation of the reaction, 20% and 29% of male and female students, respectively, with a poor evaluation of the reaction and 10% and 6% of male and female students, respectively, with a very poor evaluation of the reaction according to the Ruffier index. Therefore, it should be noted that 30% and 35% of male and female students had a poor and very poor response rating according to the Ruffier index. This is probably explained by a decrease in the reserve capabilities of the cardiovascular system due to the low physical fitness of the students. The body needs more blood to support its vital activities. The cardiovascular system is the main system that ensures adaptation and limits mental and physical performance. Such results indicate low reserves of the cardiovascular system, which is characteristic of insufficiently trained individuals.

The influence of an active factor of significant strength and duration (for example, nervous tension, chronic lack of sleep, physical exertion, etc.) is accompanied by a pronounced stress on the regulatory systems, which ensures the mobilization of functional reserves



**Fig. 3. Evaluation of the reserve capabilities of the cardiovascular system of students of the Faculty of Biology using the Ruffier Index**

of the cardiovascular system and the activation of protective devices. This leads to the necessary adaptive effect. Overstrain of the regulatory systems causes a disruption of adaptation, during which there are inadequate changes in the functioning of the heart and blood vessels, a violation of homeostasis with the appearance of various symptoms of diseases. An organism with a high functional reserve of the cardiovascular system ensures high adaptation to the environment. This reserve is a biological indicator of the adaptation reserves of the entire organism.

#### 4. Conclusions

Thus, the assessment of physiological reserves makes it possible to reveal the etiology and process of changes in the functional state and physical capacity, to predict negative changes in health and performance. The decrease in the functional reserves of a person and the team indicate the need to carry out various medical and preventive measures, including the optimization of the environment.

1. We assessed the level of functioning of the circulatory system in students of the II year according to the indicator of adaptation potential according to the formula of P.M. Bayevski. The majority of students have a satisfactory level of adaptation

2. The ratio of levels of satisfactory adaptation and tension of adaptation mechanisms among boys and girls is different. Among girls, there was a greater number of persons with satisfactory adaptation than among boys. Perhaps it could be explained by hormonal differences, fewer people with bad habits and greater resistance to stress among girls.

3. General health measures can be recommended to students who belong to the 1st health group: increasing physical activity, carrying out hardening procedures, normalizing the regime of nutrition, work and rest, walking and cycling, swimming, as well as giving up bad habits. Individuals belonging to the II group need not only health care, but also preventive measures aimed at preventing the development of various diseases individually in each individual case. Taking into account that the students belong to the category of people with intense mental work,



it was explained to them that, in addition to medical and biological methods, psychological recovery methods should be used, for example, autogenic training. Persons belonging to the III group need preventive and medicinal measures.

4. In 30% of male students and 35% of female students, a poor and unsatisfactory evaluation of the reaction according to the Ruffier index and weakening of the cardiovascular system was found in 40% of male students and 71% of female students, according to the endurance coefficient. This is probably explained by a decrease in the reserve capabilities of the cardiovascular system due to the low physical fitness of the students.

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## THE ROLE OF KINESIOTHERAPY IN COMBATING OBESITY AND SEDENTARY LIFESTYLES IN AMERICAN SOCIETY

Viktoryia Vasiltsova

Physical Therapist, Ergotherapist, 3532 Annette st LA CA 90065, USA  
e-mail: viktoryia\_vasiltsova@ukr.net, orcid.org/0009-0000-7954-7057

### Summary

This research confirms the pivotal role of kinesiotherapy in combating obesity and sedentary lifestyles and provides a foundational framework for future interventions and studies in this field. It underscores the importance of an integrated approach that combines physical therapy with lifestyle changes, paving the way for healthier and more active communities. The aim of this research is to gather and group the main methods of kinesiotherapy that are used to combat obesity and the problems associated with a sedentary lifestyle. This research underlines the efficacy of kinesiotherapy in combating obesity and sedentary lifestyles, highlighting various forms like Morning Hygiene Gymnastics (MHG) and Therapeutic Gymnastics (TG). MHG, ideal for starting the day with increased energy, focuses on general wellness, while TG is tailored to reduce body fat and improve cardiovascular health. Individualized exercises are emphasized for their role in addressing specific obesity and sedentarism needs. Additionally, therapeutic walking and aquatic exercises stand out for their low-impact, high-calorie-burn benefits, essential in obesity management. The study also stresses the importance of systematic, regular, and progressive exercise routines that are accessible and tailored to individual needs. By adhering to these principles, kinesiotherapy serves as a versatile and effective tool in promoting physical activity and countering the challenges of obesity and a sedentary lifestyle.

**Key words:** kinesiotherapy, obesity management, sedentary lifestyle, therapeutic exercises, individualized exercise programs.

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### 1. Introduction

In contemporary American society, the twin challenges of obesity and sedentary lifestyles loom large, casting a shadow over public health. These pervasive issues are major contributors to an array of health complications, including a spectrum of chronic physical diseases and profound mental health disorders. The rising tide of these conditions underscores an urgent need for effective, accessible, and sustainable health interventions.

While policy measures at various governmental levels are pivotal, the onus of maintaining personal health ultimately rests with the individual. In cases where obesity and inactivity cross the threshold into medical concerns, the role of rehabilitation specialists, particularly in the field of kinesiotherapy, becomes paramount. Kinesiotherapy, which lies at the intersection of movement science and therapeutic exercise, is increasingly recognized as a vital weapon in this ongoing battle.

This research delves deep into the capabilities of kinesiotherapy as an instrumental tool to counteract obesity and sedentarism across the diverse landscape of the United States. It is an exploration into how custom-fit exercise programs, grounded in the tenets of kinesiology, can do more than just facilitate weight loss; they can be the catalyst for a seismic shift towards more active, healthier living.

By scrutinizing the role of kinesiotherapy, this research contributes to a growing body of knowledge on non-pharmacological strategies in public health. It draws on a rich tapestry of scientific literature, presenting an array of rehabilitation approaches for individuals grappling with obesity, utilizing diverse kinesiotherapeutic exercises. This research not only aims to enrich the academic discourse but also seeks to provide practical, evidence-based insights for healthcare professionals, decision-makers, and individuals alike, charting a course towards more holistic, inclusive, and efficacious health strategies in American society.

## 2. Main part

The aim of this research is to gather and group the main methods of kinesiotherapy that are used to combat obesity and the problems associated with a sedentary lifestyle. To achieve this goal, the following tasks will be undertaken:

- consider the problem of obesity and a sedentary lifestyle in the USA, analyzing the extent and impact of these issues in American society.
- study the scientific literature on this topic to identify the main methods of combating this problem, reviewing various research findings and expert opinions in the field of kinesiotherapy.
- investigate the primary approaches to combat obesity, examining different therapeutic exercises, lifestyle adjustments, and preventive strategies.
- systematize a set of exercises that are suitable for fighting obesity and sedentary living, creating a comprehensive compilation of effective kinesiotherapy practices.

## 3. Research results

Obesity and a sedentary lifestyle are significant health concerns in the United States, with roots tracing back several decades. The problem began to escalate in the late 20th century, largely due to changes in lifestyle and food consumption patterns. Increased reliance on fast food, high-calorie diets, and a shift towards more sedentary jobs and recreational activities have all contributed to this growing issue (*Chaput & Tremblay, 2009*).

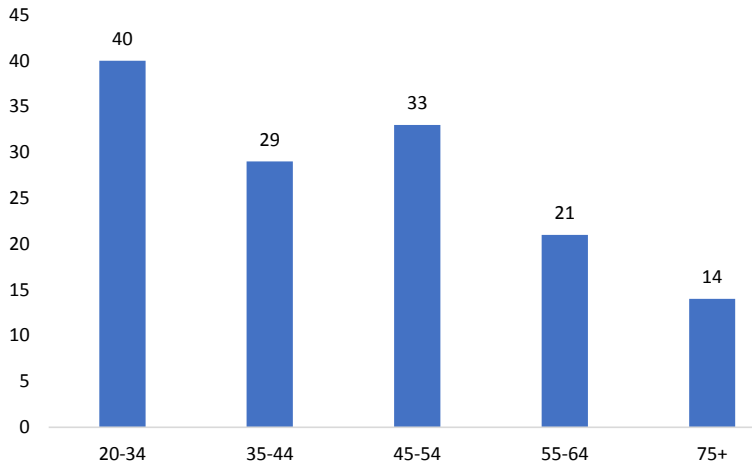
Obesity and sedentary lifestyles affect a broad spectrum of the population, but certain groups are more susceptible. In the United States, obesity rates vary significantly by age. For children, 13.9% of those aged 2-4 are considered obese, and nearly 1 in 8 preschoolers are obese. Among high school students, 14.8% are obese. This problem is not limited to youth; obesity affects adults as well, with 42.4% of the adult population being obese. This rate has increased from 30.5% in 1999, and predictions suggest that over 50% of adults might be obese in the next 10 years.

Statistically, lower-income communities and certain ethnic groups, such as African Americans and Hispanics, show higher rates of obesity.

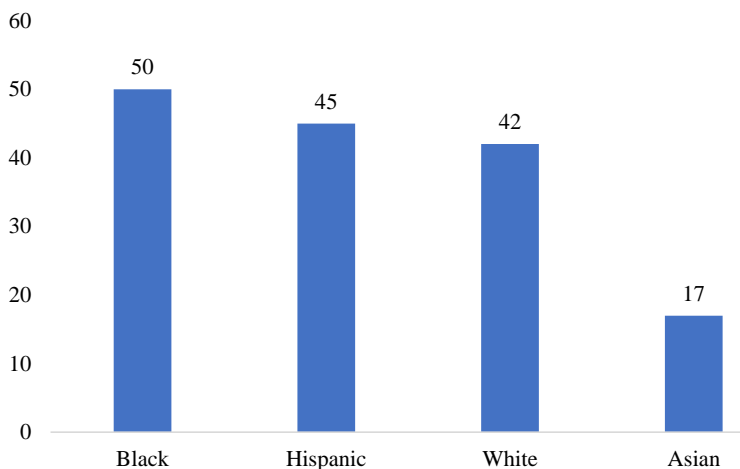
This disparity is often attributed to socioeconomic factors that limit access to healthy food options and safe environments for physical activity. Additionally, children and adolescents are increasingly affected, leading to long-term health implications.

In turn, a sedentary lifestyle, characterized by prolonged periods of sitting and minimal physical activity, poses several health risks. It can lead to:

- *weight gain and obesity*. Sedentary behavior often leads to weight gain due to a lower rate of calorie burning. Over time, this can contribute to obesity, which is a risk factor for numerous health conditions;



**Fig. 1. Obesity in the US population by age (The Barbecue Lab; 2023)**



**Fig. 2. Obesity in the United States by race (The Barbecue Lab; 2023)**

- *increased risk of cardiovascular diseases.* Lack of physical activity is associated with an increased risk of heart diseases like coronary artery disease, heart attack, and stroke;
- *musculoskeletal problems.* Prolonged sitting can cause back pain and deteriorate posture. It also weakens the muscles, particularly in the lower body, and can lead to musculoskeletal disorders;
- *metabolic issues.* A sedentary lifestyle can lead to metabolic syndrome, characterized by a cluster of conditions like increased blood pressure, high blood sugar, excess body fat around the waist, and abnormal cholesterol levels;

- *mental health concerns.* Physical inactivity can negatively impact mental health, leading to an increased risk of depression, anxiety, and decreased emotional well-being;
- *increased risk of type 2 diabetes.* Sedentarism is linked with a higher risk of developing type 2 diabetes due to its association with obesity, insulin resistance, and glucose intolerance;
- *poor circulation/ sitting for long periods can lead to poor circulation, especially in the legs, increasing the risk of thrombosis;*
- *decreased life expectancy.* Studies suggest that a sedentary lifestyle can shorten life expectancy due to the increased risk of various chronic diseases.

The issues of obesity and a sedentary lifestyle are interrelated, and to a large extent, addressing these problems requires similar solutions – primarily, physical activity.

Recognizing the escalating crisis of obesity and sedentary lifestyles, the government has embarked on implementing various countermeasures. These initiatives aim to tackle and mitigate the growing health concerns associated with these issues (Tinning, 2014). Let's explore these strategies in more detail.

- *Public awareness campaigns.* The U.S. government has launched various campaigns to raise awareness about the risks of obesity and the importance of physical activity. These campaigns aim to educate the public on healthy eating habits and the benefits of regular exercise.
- *Nutritional guidelines.* Federal agencies have developed and regularly update nutritional guidelines to help Americans make healthier food choices. These guidelines are used to shape school lunch programs and inform public health policies.
- *School-based programs.* The government has implemented programs in schools to promote physical activity and healthy eating among children. This includes revising school lunch menus and incorporating more physical education into the curriculum.
- *Support for physical activity.* Efforts are made to create and maintain public spaces like parks and recreational facilities that encourage physical activity. There are also initiatives to improve urban planning to make cities more walkable and bike-friendly.
- *Healthcare interventions.* The healthcare system plays a crucial role in managing obesity. This includes screening, counseling, and providing resources for weight management and lifestyle changes (Kletskova & Rudenko, 2023).

Despite these efforts, tackling obesity and sedentary lifestyles remains a complex challenge due to factors like food industry lobbying, cultural preferences, and socioeconomic barriers. Future strategies will need to address these multifaceted issues through a combination of policy, community engagement, and individualized healthcare approaches. There's a growing recognition of the need for more comprehensive and inclusive strategies that consider the diverse needs and circumstances of the American population.

While the government continues to search for effective ways to prevent obesity, the field of medicine has already gathered substantial evidence supporting the effectiveness of therapeutic physical activity, also known as kinesiotherapy. *Kinesiotherapy*, a scientifically-based exercise program, is designed to improve physical strength, endurance, flexibility, and motor skills. It's particularly beneficial in treating and managing obesity and related health issues (Dunn, 2009). This approach focuses on customized exercise routines that not only aid in weight reduction but also enhance overall physical health, offering a proactive solution in the battle against obesity-related conditions.

In the United States, there are numerous centers and professionals specializing in kinesiotherapy. These centers are spread across various states, with the highest concentrations found in California (61 centers), Texas (56), Virginia (50), Florida (47), and Illinois (42). Other states

like Ohio, New York, Alabama, Pennsylvania, and Mississippi also have notable numbers of kinesiotherapy centers and practitioners (*SingleCare Team, 2023*).

Kinesiotherapy, a pivotal approach in addressing obesity and sedentary lifestyles, is comprehensively explored in various scientific studies. These studies delve into different aspects of obesity, ranging from psychological factors to physical activity patterns and broader socio-cultural influences. For instance, the work by Chaput and Tremblay (2009) reevaluates the concept of sedentariness in obesity, suggesting a need for a more nuanced understanding. Dunn (2009) looks at the evolving role of kinesiology in the face of changing health landscapes. Kim and Welk (2015) analyze the lifestyles leading to sedentary behavior. Kletskova and Rudenko (2023) focus on motivational factors in the rehabilitation of obese women. Matthews et al. (2021) discuss sedentary behaviors in U.S. adults. Shephard's 2018 book offers a kinesiology perspective on obesity. Tinning (2014) examines the obesity crisis from a kinesiological and cultural perspective. Vasileva and Marchenkova (2022) explore kinesiotherapy's impact on metabolic aspects in sarcopenic obesity. These diverse sources collectively underscore the multifaceted nature of obesity and the significant role kinesiotherapy can play in its management and prevention.

Within kinesiotherapy, various forms have been identified as effective in combating obesity and sedentary lifestyles:

- Morning hygiene gymnastics (MHG). Primarily focused on general wellness, MHG is effective for starting the day with increased energy and improved metabolism.
- Therapeutic gymnastics (TG). Particularly beneficial for obesity, TG involves exercises tailored to reduce body fat and improve cardiovascular health.
- Individual tasks. These are customized exercises, crucial for addressing specific needs in obesity and sedentary lifestyles.
- Other forms. These include therapeutic walking, correction methods, terrain therapy, walking tours, near tourism, aquatic exercises (hydrokinesiotherapy), health running, autogenic training, various sports-related exercises, and active or sports games. Aquatic exercises and therapeutic walking are particularly effective for obesity due to their low-impact, high-calorie-burn nature. For sedentary lifestyles, activities like active games and sports-related exercises are beneficial as they encourage more movement and can be easily integrated into daily life.

Morning hygienic gymnastics, a self-administered routine suitable for home conditions that primes the body for active work. This routine involves simple exercises affecting different muscle groups and internal organs, considering one's health status, physical development, and occupational workload. These exercises are particularly vital in a society grappling with sedentary habits and rising obesity rates (*Kim & Welk, 2015*).

In the context of obesity, static exercises that cause intense strain and breath holding are not recommended, aligning with the need for safe and sustainable physical activity for individuals with varying fitness levels. Each session, lasting between 10-30 minutes, employs a calm tempo with gradually increasing amplitude, incorporating no more than 10-15 exercises. This approach is essential in gradually introducing the body to physical activity, especially for individuals who lead predominantly sedentary lifestyles.

Therapeutic gymnastics, a core aspect of kinesiotherapy, plays a crucial role in the functional recovery of impaired organs and overall physical health. This method requires careful consideration of physiological load, monitored through indicators like pulse rate, blood pressure, and respiratory rate. These exercises can be conducted individually, following an instructor's demonstration, or in a continuous flow, combining action with guidance. This adaptability makes therapeutic gymnastics an inclusive tool for diverse populations, including those battling obesity or leading inactive lives.

Prescribed therapeutic walking is another kinesiotherapy strategy beneficial for post-injury rehabilitation and for those with nervous system, musculoskeletal, or metabolic disorders. This walking is tailored in speed, distance, and terrain, making it an accessible exercise for improving cardiovascular and respiratory health, crucial for combating obesity and sedentary lifestyles.

Terrain therapy (*terrenkur*), involving prescribed walking with gradual ascents and descents on specialized routes, addresses cardiovascular, respiratory, metabolic, and musculoskeletal conditions. The physical load during *terrenkur* varies based on route length, terrain, incline angle, walking pace, and rest stops. The varying degrees of incline – from 4 to over 20 degrees – offer scalable challenges, accommodating individuals at different fitness levels.

Such activities like walking, skiing, boating, or cycling, conducted on specially designed paths, form an integral part of kinesiotherapy. These activities, prescribed in duration and intensity, progressively train the cardiovascular and respiratory systems to handle increasing physical demands, a key component in addressing obesity and sedentary habits (*Matthews et al., 2021*)

Kinesiotherapy, an interdisciplinary approach within rehabilitative medicine, encompasses two primary modalities: general and specific training. General training is primarily concerned with holistic health enhancement, fortification of the body, and fostering overall physical development in patients. This modality integrates a spectrum of physical exercises designed for general strengthening and developmental purposes (*Shephard, 2018*). Contrarily, specific training is tailored to rehabilitate functions impaired due to pathological conditions or trauma. It employs exercises directly influencing the afflicted area or the dysfunctional aspects of a particular system compromised by the ailment (e.g., respiratory exercises for patients with pleural adhesions, joint-focused exercises for cases of polyarthritis, etc.).

When contextualized in the realm of obesity management and counteracting sedentary lifestyles, these kinesiotherapy methodologies offer significant implications:

- **General Training in Obesity and Sedentary Lifestyle Mitigation.** This facet of kinesiotherapy is instrumental in combating obesity and sedentary life patterns. Engaging in a diverse array of physical activities, which encompasses both aerobic and anaerobic exercises, can elicit substantial improvements in overall physical fitness, facilitate adipose tissue reduction, and enhance metabolic functions. Such activities are pivotal in augmenting muscle mass and optimizing cardiovascular health, both of which are vital in obesity management and the prevention of associated comorbidities.

- **Specific Training for Targeted Intervention.** In addressing the direct sequelae of obesity and a sedentary lifestyle, specific training in kinesiotherapy can offer targeted therapeutic interventions. For instance, custom exercises can be designed to enhance mobility and alleviate joint discomfort, common afflictions in individuals with excessive body weight. Additionally, this training can concentrate on improving postural dynamics and reducing the risk of musculoskeletal disorders, frequently exacerbated by prolonged sedentariness and inadequate physical activity. This personalized approach in kinesiotherapy aids in addressing specific health challenges linked to obesity and sedentary behaviors, thereby offering a nuanced therapeutic strategy.

Let's explore the fundamental principles of kinesiotherapeutic exercises aimed at combating obesity:

- *Systematic.* Regular and consistent use of kinesiotherapy methods throughout the treatment course is essential for effective results.

- *Progression.* Gradual progression in exercise intensity is crucial, with increased demands introduced as the patient adapts to previous levels of activity.



- *Accessibility.* All therapeutic exercises should be accessible to patients in terms of structure and execution to ensure participation.
- *Duration.* The duration of physical activity directly correlates with its effectiveness. Post-treatment exercises should be continued in outpatient and home settings.
- *Individualization.* Tailoring exercise programs to account for individual physiological and psychological characteristics is vital for personalized care.
- *Visibility.* Instructors should provide clear guidance and corrections during exercises to ensure proper form and technique.
- *Effectiveness Assessment.* Regularly assessing the impact of exercises on improving the patient's functional indicators allows for necessary adjustments to the treatment plan.

These exercises serve as effective components of kinesiotherapy for individuals with a sedentary lifestyle aiming for weight loss. They offer a range of benefits, including calorie burning, muscle strengthening, and improved overall health. Incorporating these exercises into a daily routine can contribute to a healthier and more active lifestyle, even in the context of limited physical activity.

Table 1

### Kinesiological exercises for combating obesity and a sedentary lifestyle

Exercise Type	Description	Benefits
Walking	Brisk walking in a steady pace	Cardiovascular health, leg muscle strengthening
Cycling	Stationary or outdoor bike riding	Lower body strength, endurance
Swimming	Full-body workout in water	Cardio, low-impact, full-body toning
Pilates	Low-impact exercises focusing on core strength	Core strength, flexibility
Yoga	Various poses and stretches	Flexibility, balance, stress reduction
Resistance Training	Use of weights or resistance bands	Muscle building, metabolism boost
High-Intensity Interval Training (HIIT)	Short bursts of intense activity followed by rest	Fat burning, stamina improvement
Stretching	Stretching exercises to improve flexibility	Flexibility, posture improvement

Note: systematized by the author (Vasileva, & Marchenkova, 2022)

The effectiveness and suitability of the kinesiological exercises listed in Table 1 for combating obesity and a sedentary lifestyle are highly dependent on the individual's condition who is suffering from obesity. It is crucial that the duration and intensity of these exercises are tailored to the person's health status, fitness level, and specific needs. The exercises need to be performed in accordance with the fundamental principles outlined above.

Incorporating these exercises into a regular routine can significantly aid in weight reduction and mitigate the effects of a sedentary lifestyle. It's important to remember that consistency and a balanced approach are key to achieving and maintaining results. Additionally, combining these exercises with a healthy diet and proper hydration enhances their effectiveness.

#### 4. Conclusions

In concluding this research, it becomes evident that kinesiotherapy holds significant potential in addressing the intertwined issues of obesity and sedentary lifestyles, particularly within the context of American society. The investigation into the prevalence and impacts of these health challenges in the USA has highlighted the necessity for proactive and effective strategies, where kinesiotherapy emerges as a key player.

The comprehensive review of scientific literature on the subject has been instrumental in identifying and validating various kinesiotherapeutic methods as effective tools in the battle against obesity and sedentary habits. These methods, rooted in exercise science and therapeutic movement, are not only beneficial in mitigating the physical ramifications of obesity but also in fostering a more active and healthier lifestyle.

Furthermore, the exploration of primary approaches to combat obesity, which includes an array of therapeutic exercises and lifestyle modifications, has reinforced the versatility and adaptability of kinesiotherapy.

Systematizing exercises suitable for addressing these health concerns has led to the creation of a comprehensive set of kinesiotherapy practices. This collection stands as a testament to the practical applicability of kinesiotherapy in everyday life, offering a valuable resource for individuals, healthcare professionals, and policymakers alike.

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**TECHNOLOGY, CREATIVITY, IMPLEMENTATION****SCORING METHOD OF EVALUATING ROAD SAFETY AS PART OF MANAGEMENT SYSTEM****Oleksandr Melnichenko**

Ph.D., Professor, National Transport University, Ukraine  
e-mail: melnichenko@ntu.edu.ua, orcid.org/0000-0001-9694-9824

**Valentin Osipov**

Ph.D., Associate Professor, National Transport University, Ukraine  
e-mail: osipov.valentin100@gmail.com, orcid.org/0000-0001-9284-7919

**Summary**

Known methods of assessing the level of traffic safety on highway sections are considered. Factors that can significantly affect forecasting accuracy have been identified. It is proposed to improve the existing method by introducing additional parameters, which were obtained as a result of the formalization of accident statistics at the places of traffic accidents concentration. The purpose of the work is to provide traffic safety specialists with an effective express method of evaluating the level of traffic safety with points directly on the road. The proposed scoring method of evaluating road safety also arouses interest due to the recent implementation in Ukraine of a road safety audit at the stage of operational maintenance, which is specifically designed to conduct an independent inspection of dangerous sections of highways and prescribe low-cost and effective measures to reduce accidents. This will help to make decisions in the road safety management system that will relate to effective measures.

**Key words:** accident rate, place of concentration of traffic accidents, traffic intensity, statistics, traffic safety assessment.

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**1. Introduction**

The assessment of the degree of traffic safety on the road is of primary importance for the services of road operation and traffic organization when identifying dangerous areas and developing measures to improve traffic conditions. On recently built roads, designed according to modern construction norms and rules, dangerous areas can arise only if designers or builders violate the regulatory requirements for road elements. Also, they become dangerous as a result of drivers exceeding the calculated speeds or speeds corresponding to the coefficients of adhesion of tires to the surface in deteriorating weather. Thus, the road safety management system lacks an effective evaluation method that would take into account the listed factors.

## 2. Analysis of research and publications

The study of the existing standards in Ukraine (*Methodology, 2008; Procedure, 2003; Standard, 2002*) and the world (*European Transport Safety Council, 2001; Elvik, 2009*), which provide the possibility of identifying dangerous areas on highways, shows that these standards have not been properly reviewed for a long time. However, modern works (*Syyed Adnan Raheel Shah, 2018; Handbook, 2023; Osipov V. & Melnichenko O., 2019*) can only serve as a basis for improving the method of traffic safety assessment, as they do not take into account many factors. The purpose of the work is to provide traffic safety specialists with an effective express method of evaluating the level of traffic safety with points directly on the road.

## 3. The main results of the study

When developing or improving road safety assessment methods, it is necessary to establish, among other things, the influence of variable road factors on traffic safety and to give a quantitative assessment of their change degree. These factors determine the choice of a further mathematical model, which must meet the following requirements:

- the use of random values characterizing the level of accidents on highways and allowing to identify a dangerous area;
- operation with the minimum necessary sample of data on road accidents;
- the use of the type of mathematical distribution curves that will provide a description of the distribution of "accidental" road accidents on the highway network with the necessary approximation;
- identification of sections of roads on which there is an excess of a stable number of road accidents.

All the methods of identifying dangerous areas that are offered today are based on traffic accident statistics. At different times, the following methods were proposed: analysis of statistical data by the methods of probability theory; use of multivariate correlation analysis data; analysis of traffic speed charts (methods of safety factors and "acceleration noise"); analysis using coefficients of relative impact of individual road elements (method of accident coefficients); method of conflict situations.

Today, in Ukraine, it is proposed to evaluate the levels of emergency according to the following micro-indicators (*Methodology, 2008*):

- determination of the adventure factor;
- determination of the main statistics of the kilometer-by-kilometer distribution of accidents on sections of public roads and the share of road accidents that occurred under conditions of unsatisfactory road maintenance;
- determination of the accident rate.

The accident rate, which is used to evaluate highway sections according to the degree of traffic danger, is determined for highway sections with homogeneous traffic intensity, respectively, for the number of road accidents with victims or their total number according to the formula:

$$K_{ac} = \frac{10^6 \times z}{t \times 365 \times N \times L}, \quad (1)$$

where  $K_{ac}$  – the number of road accidents per 1 million car-kilometers;

$z$  – the number of traffic accidents on the section of the road, pcs.;

$N$  – average annual daily traffic intensity for the last year of the monitoring period for the distribution of traffic accidents on the road section, cars/day;

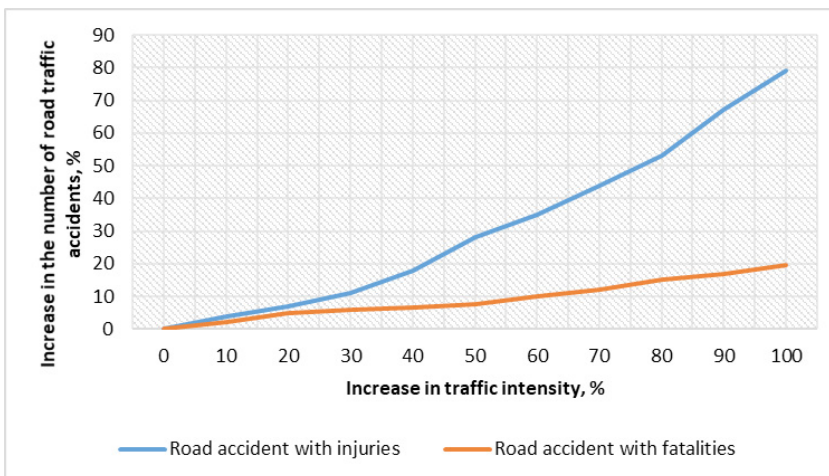
$t$  – the number of years of monitoring the distribution of traffic accidents (three years is recommended);

$L$  – length of the section, km (not taken into account for short sections less than one kilometer long).

The method requires the collection of statistical material before each trip to the road section to be evaluated.

As can be seen from (1), to determine the risks of the impact of various factors on accidents in all proposed methods of evaluating the road safety level, such a component as traffic intensity is required. This parameter is also necessary for the below-proposed evaluation of road safety with points in the form of an impact factor. A characteristic feature of the traffic intensity influence on accidents is a natural increase in traffic accidents with increasing traffic intensity. This fact has been established by numerous studies (*Osipov V. & Melnichenko O., 2019*).

The effect of traffic intensity on the number of accidents is described by the study using the elasticity of accidents relative to traffic intensity. This elasticity shows the percentage change in adventures when traffic changes by 1% (Figure 1).



**Fig. 1. The relationship between the intensity of traffic and the number of accidents according to (*Osipov V. & Melnichenko O., 2019*)**

In 2012, Ukraine developed the Methodology for auditing traffic safety at the stage of operation of public highways (*Methodology, 2012*). Among other things, the methodology proposed an express method of determining the intensity of traffic. This method has been tested by the authors and has already been proposed as an effective means of determining one of the parameters when assessing the risk of a road accident.

The intensity of movement per day is calculated according to the formula:

$$N_D = N_t \times K_1 \times K_2 \times K_3, \quad (2)$$

where  $N_t$  – intensity per hour, auto/hour;  
 $K_1$  – the coefficient of change in the intensity of movement per hour per day (Table 1);  
 $K_2$  – coefficient of change in traffic intensity by day of the week (Table 2);  
 $K_3$  – coefficient of change in traffic intensity by month of the year (Table 3).  
 The intensity of movement per hour is calculated according to the formula:

$$N_t = \frac{a_t \times 60}{t}, \tag{3}$$

where  $a_t$  – the number of cars during the accounting period (recommended 15–60 minutes);  
 $t$  – recording duration, minutes;  
 60 – the number of minutes in an hour.

Table 1

**Correction coefficient,  $K_1$**

hours	8–9	9–10	10–11	11–12	12–13	13–14	14–15	15–16	16–17	17–18	18–19
$K_1$	2,67	6,31	14,95	16,89	16,0	14,49	16,70	14,0	11,63	15,11	19,72

Table 2

**Coefficient of change in traffic intensity by day of the week,  $K_2$**

days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
$K_2$	1,036	1,029	1,074	1,116	1,122	0,996	0,657

Table 3

**Coefficient of change in traffic intensity by month of the year,  $K_3$**

months	1	2	3	4	5	6	7	8	9	10	11	12
$K_3$	1,00	0,92	0,79	1,00	1,26	1,01	0,99	1,02	1,01	0,98	1,03	1,00

By their nature, the tasks of risk assessment and prediction of the consequences of road accidents exclude full-scale field experiments due to their danger, and the use of mathematical modeling. This approach is the only method of obtaining a picture of the development of both hypothetical emergency situations and the analysis of accidents that have taken place in the past. According to the model approach, the forecast is made regarding the specific conditions in the "driver-road" subsystem (*Procedure, 2003*).

According to (*Procedure, 2003*), a linear analysis of accidents and an assessment of traffic safety conditions should be carried out by the road owner or a road company within the scope of its maintenance in order to quickly identify the places of concentration of traffic accidents, in which deficiencies in the operational maintenance of the road section could be associated factors. The analysis should be performed monthly with a cumulative total during the year.

It is proposed to evaluate traffic safety conditions by the final sum of points (on a 100-point scale), which takes into account a number of characteristics of road construction. In our opinion, in conditions where the assessment of road traffic safety conditions according to (*Procedure, 2003*) is entrusted to the representatives of the road owner, this method looks more effective, since the road owner does not always or does not fully possess reliable statistical information about road accidents on the area being evaluated.

For example, according to the data of the Patrol Police Department, in 12 months of 2020, 459 road accidents occurred on the highways of the Kyiv region, during the inspection of which deficiencies in the operational maintenance of the roads were revealed. However, according to the Highway Service Agency in the Kyiv region, there were 386 road accidents. The discrepancy was 73 road accidents, or 16.2%. Of course, with such facts, the road owner should proceed with caution. That is why, we can talk about systematic measurement errors due to incomplete registration of incidents in road safety management system.

In addition, in connection with the intention to introduce "Europrotocols" on the territory of Ukraine, it is not possible to investigate the causes of some categories of road accidents due to the lack of information about them. Since the action of the Europrotocols provides for the registration of road accidents without representatives of the National Police and, accordingly, the owners of the roads in the absence of dead and injured and a small amount of damage. During the development of the scoring method for evaluating road safety, maps of places of concentration of traffic accidents in the period from 2007 to 2013 were analyzed. Maps of places of traffic accidents concentration appear to be the most reliable source of information, as they are compiled simultaneously by representatives of the highway owner, the State Traffic Inspection and the road design organization, and are the object of government statistical reporting.

A total of 28 places of concentration of traffic accidents on state and local highways were covered by the analysis. Based on the analysis, it was found that 95% of the measures involved the installation of new or replacement of existing means of preventing road accidents.

Thus, 30.43% of the proposals regarding the use of road signs in the maps of the places of traffic accidents concentration; the use of horizontal road markings was 30.43%; the use of guide posts was 8.69%; the use of traffic lights was 8.69%; the use of fencing was 8.69%; the use of means of forced speed reduction was 4.34%; the use of anti-glare screens was 4.34%; the use of noise bands was 4.34% (Fig. 2).

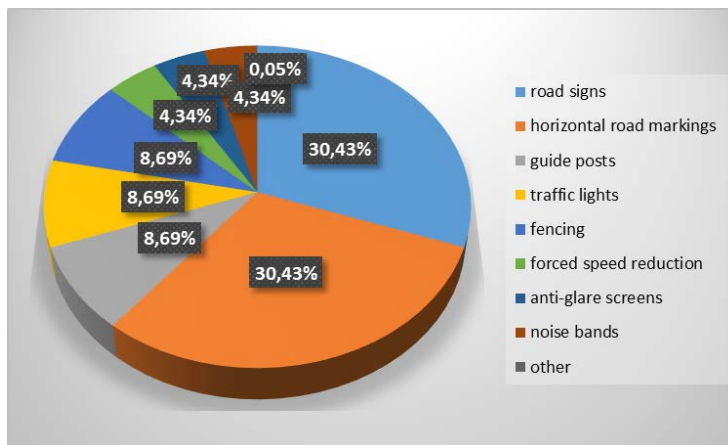


Fig. 2. Distribution of the use of means of road accident prevention

The algorithm for building a scoring method for evaluating the level of road safety has the following form. To obtain the values for the implementation of the 100-point emergency rating system, we convert percentages into points by rounding them to the nearest tenth. Accordingly, we get an assessment of the implementation of individual technical means in points (Table 4).

Table 4

Scale of conditional points for technical means

N	technical means	Conditional score assigned
1.	road signs	30
2.	horizontal road markings	30
3.	guide posts	7
4.	traffic lights	7
5.	fencing	7
6.	forced speed reduction	4
7.	anti-glare screens	4
8.	noise bands	4
9.	other	2

However, these points can be considered correct when all technical means have one hundred percent visibility in various weather and time conditions according to existing regulations. The more time the arranged technical means is on the road, the higher the probability that the driver will not receive information from it due to a decrease in its operational properties.

Indicators of technical means that ensure road traffic safety (in the dark or in adverse weather conditions) include:

- reflective effect of the surface of road signs according to National Standard;
- visibility distance of vertical and horizontal markings according to National Standard;
- reflective effect of road marking inserts according to National Standard;
- signal strength of traffic lights according to National Standard;
- visibility distance of guiding devices according to National Standard;
- visibility of means of forced reduction of speed according to National Standard;
- noise level when a vehicle hits noise lanes in accordance with Local Standard;
- reduction of blinding of drivers when using anti-dazzle screens.

Therefore, there is a need to introduce a reducing coefficient of visibility during the survey, provided that a new technical device manufactured according to the standards of 1 is accepted. When applying the reduction factor, it is recommended not to measure the visibility of technical means with special devices, but to use only a tester with an average degree of vision. So, it can simulate the conditions of visibility of the object by an average driver. This is a very important factor, because according to the time analysis of traffic accident cards, accidents accounted for 61.4% during the day, 21.4% at night, and 17.1% at dark.

It is also necessary to introduce a lowering factor separately, which would take into account the degree of danger for the transport of the technical means itself in the event of a probable collision with it (degree of deformability). According to 1, in this case, it is possible to accept road accident prevention tools made from materials that are recognized as the most dangerous according to modern comparisons and studies.

The lowering coefficient is proposed to be determined by the formula:

$$K_f = 1 - (K_D + (1 - K_i)), \quad (4)$$

where 1 – a new (reference), the most dangerous in terms of deformability, a newly installed technical device, manufactured according to the standard;

$K_D, K_i$  – components of the decrease in the operational state of the technical means (visibility) and its deformability (reduction coefficients).



It should be noted that according to the cards, the effect of the implementation of measures at the places of traffic accidents concentration was 76.03%. That is why, we can talk about a stable correlation between the implementation of these measures and a decrease in accidents, and vice versa, an increase in accidents when these measures are not carried out.

The effectiveness of the implementation of measures was calculated according to the formula:

$$E = \frac{Z_b - Z_a}{Z_b} \times 100\%, \quad (5)$$

where  $E$  – social efficiency from the implementation of road safety measures, %;

$Z_b$  – the number of traffic accidents in the area "before" the implementation of measures to improve traffic safety;

$Z_a$  – the number of traffic accidents in the area "after" implementation of measures to improve traffic safety.

Road safety assessment as road safety management system part must be carried out with the road traffic organization project, which will serve as a benchmark. If the project does not provide for the installation of means of road accident prevention on the inspected section, then the section is considered safe by definition from the point of view of the impact of the road factor on accidents; other component systems should be studied.

It is recommended to carry out an assessment: on a flat area – up to 1 km long (a potentially accident-dangerous area with zones of influence is studied); intersections, railroad crossings, junctions and other accident-prone areas are recommended to be investigated as separate objects (*Standard, 2002*). Indicators of the degree of danger of road sections by points are suggested to be used according to the table 5.

Table 5

#### Indicators of the degree of danger of road sections according to the determined points\*

Number of points	Evaluation criterion*	Traffic safety level
0–25	means of road accident prevention installed according to the dislocation, meet regulatory requirements, materials with a safe level of deformability	Safe
25–50	means of road accident prevention available, some need updating	Low risk
50–75	means of road accident prevention are partially missing, the existing ones need to be updated or installed	Dangerous
75–100	Practically complete (or complete) absence of means of road accident prevention. The existing ones are not visible enough or are blocked by something. means of road accident prevention with a dangerous level of deformability	Very dangerous

\* the main (typical) criteria are formulated in the table, but they can change and be composed

To determine the risks of the impact of other factors on accidents in all proposed methods of assessing the level of road safety, such a component as traffic intensity is required; this parameter is also necessary for evaluating road safety with points in the form of an impact factor.

#### 4. Conclusions

The proposed method of evaluating the level of traffic safety is an undoubted step forward on the path of simplification and clarification of existing methods. In the future, work on the construction of a simulation model of the interaction of the driver and the road as a subsystem of the general system "driver-car-road-environment" looks promising, by relying on criteria that were previously neglected – technical means of traffic management. This will make it possible to calibrate the proposed method and transfer its action to the software environment. In this way, the research will receive a significant platform for the involvement of additional variables – taking into account the road category, time of day, informativeness of technical means, their deformability, etc.

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## DEVELOPMENT AND TESTING OF ALGORITHM FOR AUTOMATING TEAM FORMATION IN IT PROJECTS

**Roman Zolotukha**

Postgraduate Student, National University of Life and Environmental Sciences of Ukraine, Ukraine  
e-mail: remko740@gmail.com, orcid.org/0000-0003-3099-722X

**Olena Glazunova**

Doctor of Pedagogical Sciences, Professor,  
Dean of the Faculty of Information Technologies,  
National University of Life and Environmental Sciences of Ukraine, Ukraine  
e-mail: o-glazunova@nubip.edu.ua, orcid.org/0000-0002-0136-4936

### Summary

The research aims to investigate the automation of recruiting and the formation of adaptive teams for IT projects using a proposed mathematical model. Additionally, the proposed algorithm needs to be tested in practice. The algorithm is based on weighting coefficients formed on the basis of expert assessments of key characteristics of candidates which are obtained by testing candidates for soft and hard skills. The research compares the results of two approaches: arbitrary team formation and a method based on a proposed mathematical algorithm. The authors conducted a practical study of both approaches during a hackathon whose task was to develop a web page for a future HR platform. The research methodology involved dividing the participants into two groups. The participants are divided into two groups. The first group forms teams independently during the hackathon, while the second group undergoes soft and hard skills tests during registration to determine team formation using a mathematical algorithm. The study's authors present the effectiveness results of both groups and describe the advantages and possibilities for improving the algorithm. The conclusions drawn identify the achievements of the study and prospects for further development of the algorithm for automating team selection in the IT industry. This work contributes significantly to the understanding of effective strategies for forming IT teams, which is crucial in the face of constant technological changes.

**Key words:** team development, IT, mathematical models, recruiting, multifactor coefficients, management.

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### 1. Introduction

In the contemporary realm of information technology, where competition in the IT market and the challenge of innovations are increasingly prominent, the judicious selection and formation of IT teams become paramount for the flourishing of IT enterprises. The intricacies of employment in the information technology sphere are characterized not solely by the technical qualifications of the candidate but also by the employee's ability to collaborate effectively in a team-based environment. This work is devoted to examining a novel approach to the constitution of IT teams.

It is also important to note the dynamics of the labor market in the IT market (*opendatabot.ua*, 2022), which has changed significantly after the full-scale invasion. (Fig. 1)



Fig. 1. Vacancies and resumes of IT specialists

Reducing the number of vacancies and increasing the number of candidates increases the competitive situation in the IT labor market, which directly affects the process of finding candidates in companies. Automating the process of recruiting candidates for IT teams can significantly improve its efficiency. It can reduce the time and costs of selection, as well as improve the quality of future personnel.

Solving the problem of selecting a balanced team is an urgent and important task for increasing the efficiency of IT projects. The task of creating effective working teams is necessary not only for project implementation, but also for introducing innovations and ensuring stable competitiveness of companies in a dynamic IT environment. However, common methods of candidate selection and team building often do not take into account the complexity of the requirements for candidates, and also significantly affect the time it takes to hire a candidate and close a position in the team.

The problem of forming teams for project implementation, as well as personnel management, is the subject of many domestic and foreign works. In particular, in research (*O. M. Krivoruchko and T. O. Vodolazhska, 2023*), the authors consider the methods of developing personnel management strategies existing in the scientific literature, and also propose methodological provisions for developing a general personnel management strategy.

In the article (*I. Ivchenko, L. Lingur and T. Filatova, 2021*), the authors investigated and proposed a prototype of a mathematical model of human resources management, taking into account the specifics of IT companies, with the objective function of the model aimed at optimizing the time spent by HR managers on recruiting personnel for IT teams. The authors of the article [4] studied the problem of planning, management and optimal use of available human resources in the production process using mathematical modeling. It is important to note that this article takes into account the factor of the COVID 19 pandemic and the problem of reducing the number of employees, which is now also relevant for the IT market of Ukraine in the context of the full-scale aggression of the Russian Federation and the stagnation of the IT market in Ukraine. The application of the model proposed by the authors has been studied in practice and the effectiveness of mathematical modeling and human resource management has been proven.

In the modern scientific literature (*A. Kostić, B. Maric, M. Kostura, and V. Timotić, 2021, D. Kabachenko and A. Lutsenko, 2015, L. Balabanov and O. Sardak, 2021, V. Nikiforenko, 2014*), a combination of mathematical models and intuition is often used to find the optimal balance in team management.

Main goal of this research is to implement and test the results of applying a mathematical algorithm for forming IT teams and comparing it with the traditional arbitrary method of forming a working team.

## 2. Mathematical model apparatus for automating the formation of IT teams

The specifics of recruiting candidates for an IT project are the diversity of skills required for its successful implementation. Thus, the main condition for the successful acceptance of a candidate's application for a vacant position is the maximum compliance of his or her proposal with the project requirements. In our study, to develop a mathematical algorithm for selecting candidates for an IT project, we will take into account the following factors: the candidate's field of activity, the candidate's level of mastery of the main (hard) skills, the candidate's personality type, the candidate's remuneration, the candidate's level of English proficiency, and the candidate's personality type.

The set of candidate characteristics can be represented as follows:

$$SCC = \Sigma (X_1, \dots, X_5) \quad (1)$$

where  $SCC$  – is the total set of candidate characteristics;

$X_1, \dots, X_5$  – is candidate characteristics;

Also, let's represent the project requirements as  $Y_n$ :

$$SPC = \Sigma (Y_1, \dots, Y_5) \quad (2)$$

where  $SPC$  – is the total set of project requirements

$Y_1, \dots, Y_5$  – is project requirements;

The requirements for the project that the HR manager operates with are the baseline that the candidate's set of characteristics must meet. Based on this, we will have three options for comparison results.

$$SCC/SPC < 1 \quad (3)$$

where the candidate's characteristics are lower than those specified in the project requirements.

$$SCC/SPC = 1 \quad (4)$$

where the candidate's characteristics match the defined project characteristics.

$$SCC/SPC > 1 \quad (5)$$

where the candidate's characteristics are higher than the specified project characteristics.

Under such conditions, the optimal scenarios for us are 2 and 3, since the candidate meets the requirements provided by the project manager. In scenario 1, the candidate is eliminated by one of the  $X_n$  factors, so he or she will not have the option to proceed to the second stage of team formation.

In order to select the right candidates, we need to categorize them by their specialty. Let the specialty be denoted as  $j$ .

Now we need to select candidates who fit the project conditions for each factor:

$$CCR_j = \frac{X_n}{Y_n} \quad (6)$$

where  $X_n$  – is the candidate's factor score in points;

$Y_n$  – is the score of the minimum threshold provided by the project manager or hr.

It is also important to introduce weighting coefficients based on expert opinion to determine the most effective candidates, we denote these coefficients as  $k$ .

Taking into account the addition of the basic coefficients, we can calculate the requirements for candidates provided by the project manager (hr manager) using the following formula:

$$IPR = \Sigma (Y_1 \times k, \dots, Y_5 \times k) \quad (7)$$

where  $Y_n$  – estimation of the basic factor from the project requirements;

$k$  – factor weighting.

Now we can move on to the second iteration of the algorithm – team composition, and here we will use the principle of maximizing team efficiency using the points obtained after adding weighting factors for each candidate. The objective function here will be to maximize the total points received by the candidates in each area:

$$R_j = \frac{ICR}{IPR} \rightarrow max \quad (8)$$

where  $R_j$  – s the maximum score in the context of the professional area of activity;

$ICR$  – he sum of the candidate's points;

$IPR$  – the sum of the points of the minimum requirements of the project documentation.

### 3. Development of a prototype algorithm for further testing

After analyzing the requirements for this algorithm, we chose the PyQt5 library in the Python programming language. PyQt5 is a set of Python bindings for the popular Qt framework used to create GUI applications. (*M. Summerfield, 2015*) This solution is suitable for an HR manager to be able to interact with the application interface on a personal computer. Also, this solution will enable the ability to manually add and remove user characteristics and weighting factors.

The following functions were implemented to implement the calculation logic (Fig 2, 3):

- `set_candidate_data` – which sets the candidate's data for calculating the total score with the ability to dynamically add or remove characteristics. We also added a check that the score value should be in the range from 0 to 100.

- `set_weights` – configures weighting factors for various parameters of candidate evaluation. Added an additional check that the coefficients are set in the range from 0 to 1.

- `calculate_score` – a function that is responsible for the overall calculation of the candidate's rating. There is an additional check to ensure that the sum of the weighting coefficient is in the range from 0 to 1.

The application must be able to receive data from external resources. To do this, it must accept values in JSON (*JSON.org, 1999*) format and save the result of the calculation in this format.

- `calculated_best_score` – a function to create a team combination that will have the highest possible total score.

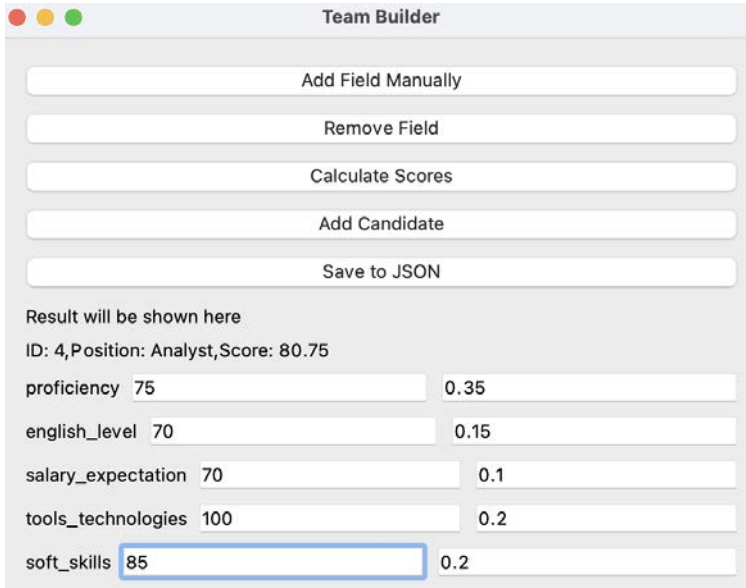


Fig. 2. The stage of adding candidate characteristics

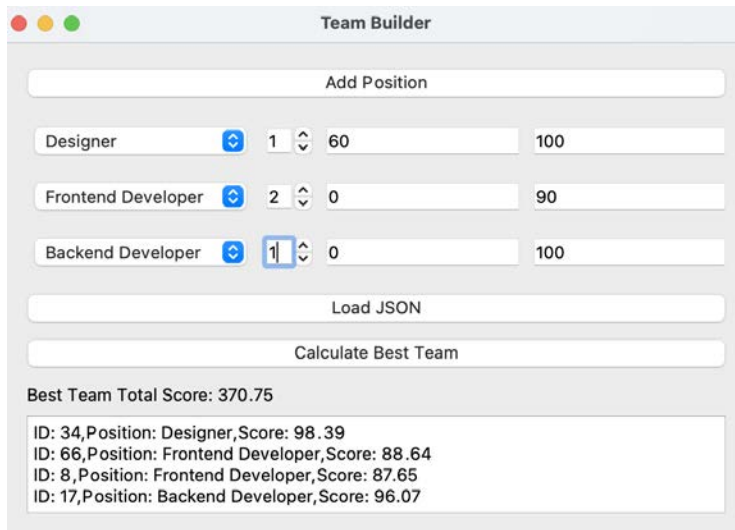


Fig. 3. The result of the automated command generation module

The implementation of the module includes two key iterations: selecting candidates from a common database according to project requirements and forming optimal teams. During the development of the module, functions were implemented to calculate the rating of candidates and set weighting factors, which allows for effective evaluation of candidates and takes into account various aspects of their profile.

#### 4. Organization of the experiment and description of the research sample

An empirical research on the use of the developed modules to automate the process of forming IT teams was conducted on the basis of the annual IT hackathon "IT Marathon Online". The sample of subjects was composed of hackathon participants, as most of the registered participants are IT professionals who either already work in the industry or are starting their careers.

The goal of the hackathon was to create a web application for an HR platform in one day. When preparing for the hackathon to develop a web page for the HR platform, all participants were asked to fill out an additional questionnaire during registration in which candidates indicated their levels of proficiency in the following characteristics:

- X1 – level of professional competencies;
- X2 – English language proficiency;
- X3 – salary expectations;
- X4 – knowledge of Git, Jira, Figma tools and technologies.

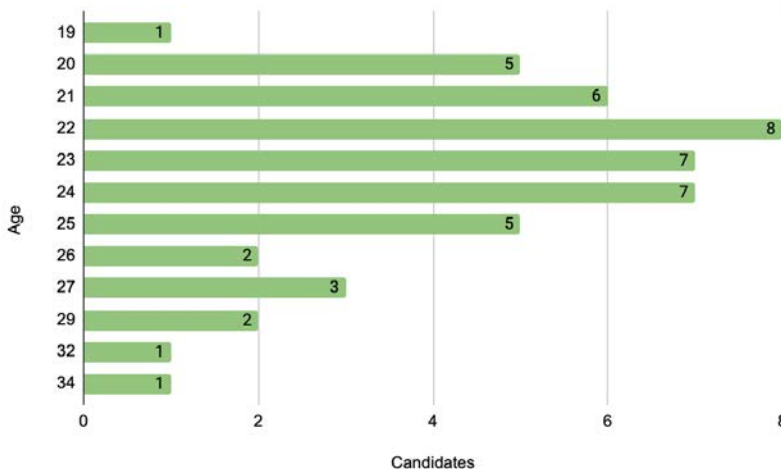
They were also offered to take tests for factor X5 – the level of soft skills formation.

All candidate characteristics were converted to a scale from 1 to 100 points depending on the level of candidate mastery of each factor. Also, a weighting factor ( $k$ ) was added to each factor:

- X:  $k = 0.35$
- X2:  $k = 0.15$
- X3:  $k = 0.1$
- X4:  $k = 0.2$
- X5:  $k = 0.2$

To implement the project, a team consisting of Front-End, Back-End developers, a designer, and a project manager/leader had to create a web page according to the specified requirements in 1 day.

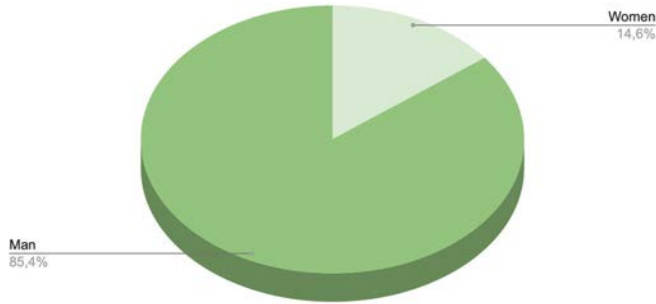
The experiment involved 48 candidates, most of whom were aged 20–25 (Fig. 4).



**Fig. 4. Breakdown of participants by age**

By gender, 85% are men and 15% are women. Or 41 men and 7 women (Fig. 5).





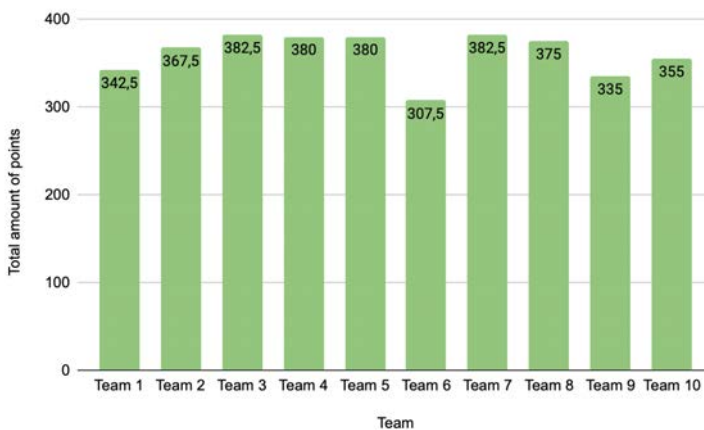
**Fig. 5. Breakdown of participants by gender**

After receiving the results of the survey using a randomizer, we selected 50% of the hackathon participants to be formed into teams to complete the task using the algorithm we implemented to automate the formation of teams based on our proposed mathematical model. The other 50% of the participants were allowed to form a team on their own, and the remaining participants were assigned to teams blindly using a randomizer, taking into account the condition that each team should have 1 Back-End and 1 Front-End developer, designer, and project manager.

At the end of the hackathon, the team’s work was evaluated according to the following parameters:

- timely submission of the project – 100 points, each hour of delay reduces the maximum value by 10 points.
- technical compliance with the requirements – 100 points, the absence of one of the requirements reduces the number by 10 points.
- web page design – 100 points, inaccuracies in the design, lack of necessary elements reduces the value by 10 points.
- assessment of candidates in team interaction – the average score of each team member in terms of interaction with each other from 10 to 100 points.

Below are the total team scores. Of these, teams 2, 3, 4, 5, 7 were formed using the proposed algorithm. ( Fig. 6)



**Fig. 6. Overall score of teams based on their performance**

## 5. Conclusions

This study demonstrated the importance of automating the process of team formation for IT projects and showed the effectiveness of the developed mathematical algorithm for the formation of IT teams. Teams 3, 4, 5, 7 formed use of the mathematical algorithm, showed the highest results in all the parameters evaluated. The research showed, however, that some teams that were formed using the traditional method of getting to know each other at the beginning of the event also scored quite high. Therefore, further development of the potential of the algorithm for automating the selection of candidates is in order:

- Further improvement of the algorithm based on the results obtained to ensure more accurate selection and formation of teams.
- Expanding the algorithm's capabilities to take into account additional parameters and characteristics of candidates.
- Adding verified soft skills tests.
- Adding the ability to take tests to determine the level of all characteristics.
- Testing the algorithm in real conditions of hiring candidates for an IT company.

This research opens great prospects for further research in the field of selecting IT candidates and building effective teams. The results allow for a deeper understanding of the importance of objective and comprehensive criteria when building teams in the field of information technology.

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