

ISSN 2957-1898 Print  
ISSN 2957-2096 Online

# ACADEMIA POLONICA

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SCIENTIFIC JOURNAL OF POLONIA UNIVERSITY  
PERIODYK NAUKOWY AKADEMII POLONIJNEJ



**74 (2026) nr 1**

CZESTOCHOWA 2026

Periodyk Naukowy Akademii Polonijnej, Częstochowa, 2026, 74 (2026) nr 1, s. 308.

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ISSN 2957-1898 Print

ISSN 2957-2096 Online

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Wydawnictwo Akademii Polonijnej „Educator”  
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## INTRODUCTION

Dear colleagues, authors and readers of the *Academia Polonica*  
(Scientific Journal of Polonia University, PNAP – *Periodyk Naukowy Akademii Polonijnej*)!  
Congratulation on the release of a new *Academia Polonica* 74 (1) (2026)!

This issue brings together a diverse and intellectually vibrant collection of scholarly contributions that reflect the complexity of contemporary research within the humanities, social sciences, education, and applied sciences. Structured around four thematic clusters, such as *Language, Culture, Communication, Innovation, Work, Society, Health, Environment, Development, and Technology, Creativity, Implementation*, the volume highlights the dynamic intersections among language, identity, knowledge production, and societal transformation.

The first section foregrounds the role of language and discourse in shaping cultural meaning, social interaction, and epistemological frameworks. The collected papers and their objectives highlight research in linguistics, translation, intercultural communication, and education. Contributions such as “Metamodern Oscillation of Time and Space and Its Symbolic Tools: David Mitchell’s Postironic Writing in the Novel ‘Cloud Atlas’”, “Phatic Communication in Shaping Social Cohesion in Professional and Interpersonal Interaction”, and “The Paradox of Perfection: How AI’s Grammatical Precision Masks Sociopragmatic Failures in Language Education” demonstrate the breadth of approaches across literary studies, discourse analysis, and contemporary language pedagogy. Studies such as “Developing Foreign Language Communicative Competence through Video Materials” and “Cultural and Linguistic Roles of Regional Languages in Multilingual Communities” further highlight the applied dimensions of linguistic research.

The second section examines evolving socio-political and legal landscapes, addressing leadership, governance, and global value systems. Articles such as “From State Image to Normative Influence: The Evolution of Soft Power Strategies across Regions”, “Natural Law Paradigm of Legitimacy in General Legal Theory”, and “The Balance of Public and Private Interests as a Principle of Effective State Regulation of the Financial Market under Wartime Conditions” offer critical insights into institutional adaptation during periods of uncertainty and transformation.

In the third section, the focus shifts to health and human development, with contributions that integrate scientific research and practical application. For example, “Innovative Methods of Infectious Disease Diagnostics: From Metagenomic Sequencing to Point-of-Care Testing” and “Biochemical and Hormonal Factors in the Development of Alopecia in Women” reflect advances in medical science, while “Factor Analysis of Quality of Life Indicators among Older Internally Displaced Persons” underscores the social dimension of health and well-being.

This *Academia Polonica* issue also highlights current problems in modern society. The final section highlights technological innovation and its practical implementation across various sectors. Articles such as “Digitalisation of Technologies and Technological Equipment in Ukrainian Agriculture: Opportunities and Prospects for Development”, “Comparative LCA Study of Thermal Insulation Materials for Industrial and Construction Applications”, and “Analysis of the Assessment of Logistics Sustainability in the Context of Implementing Sustainable Development Principles” demonstrate the relevance of technological and environmental research in addressing global challenges.

Taken together, these issues exemplify the richness of interdisciplinary dialogue and the importance of integrating diverse methodological and theoretical perspectives. It offers not only a snapshot of current academic inquiry but also a platform for future research, fostering collaboration across disciplines and geographical boundaries.

We thank our authors who have already submitted their scientific articles to Academia Polonica, as well as those planning to submit their research findings to our journal. We also want to sincerely thank all members of the editorial board, reviewers, and everyone who graciously accepted our invitation to collaborate in developing Academia Polonica.

With respect and regards  
**Maciej Rudnicki**, Prof. PhD, Editor in Chief

## LANGUAGE, CULTURE, COMMUNICATION

### TURANISM IN THE POETRY OF AHMED JAVAD

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#### **Summary**

The article examines the poetic manifestations of the ideas of Turkism and Turanism in the work of Ahmad Cavad (1892–1937), one of the prominent representatives of Azerbaijani romantics. It is noted that in Ahmad Cavad's work, a certain light was shed on the path towards Turanism. The thematic scope of the poet's work, its embrace of the entire Turkic world, its research into history and culture that is not limited to Azerbaijan but addresses the whole Turkic world, and its poems on the Turk's self-awareness and future life, are among the earliest manifestations of Turanism. The fact that Ə. Cavad was stigmatised and subjected to repression during the Soviet era also shows that there are deeper reasons at the root of this attitude towards his work. The idea of Turkism, of Turanism, runs like a red thread through the poet's work. He did not merely celebrate these factors in his work. The poet also remained in life a lover of the Turkic people, a traveller on the path of Turan, and a mujahid defending Turkism. Research shows that in both his life and his various literary endeavours, the themes of Turkism, Turanism and Islamism held a central place, and the republic and its attributes were reflected in his work in the finest manner. The themes of the motherland, nation, Turkic identity, Turanism, the flag, the army, the Turkish soldier, and so on, run like a red thread through the poems written during this period, making Ə. Cavad's work of considerable importance.

**Key words:** Ahmad Cavad, Turanism, Turkic identity, poetic sources, republic.

*DOI <https://doi.org/10.23856/7401>*

#### **1. Introduction**

The search for national identity and the formation of political thought, which had been on the rise at the beginning of the 20th century, gradually began to take shape in the second decade of the century. Following the First World War and the emergence of revolutions in Russia, nations also acquired the right to self-determination. A society that had struggled to define its national identity just a few years earlier, in a short space of time travelled a political and social path, establishing its own democratic republic—the first in the East. Literature also played a significant role in the society's political maturation within such a short period. Poetry in its flexible forms played a great role in this direction. Alongside the satirical poems of M.E. Sabir and

A. Nazim, the Azerbaijani romantics A. Hüseynzadə, M. Hadi, A. Cenneti, A. Şaiq, H. Cavid, A. Səhhət and others became a beacon on the path to national self-awareness. The rapid development of events in the Caucasus also encouraged literature to respond appropriately. In this sense, during the Republican era, poets chose the path of celebration rather than criticism. This was because the people had, for the first time in their history, gained their independence and established their republic. National consciousness had entered a new phase. Mirzəbala Məmmədzadə, in his work entitled 'The National Azerbaijani Movement', highly valued this process, writing: 'Thus, the Turkish national movement began to take shape towards the beginning of the 20th century, both in its broad sense and in the context of Azerbaijan. The early 20th century was a period when Turkic peoples transitioned from the era of tribalism to the era of nationhood...' A society that has its first newspaper in its own language is one that has begun to become a nation, having previously existed as an ethnic group. A people with a tradition of the press, however, is already an established nation..." (*Mehmetzade, 1991, p. 17*). The literary scholar A. Bayramoğlu also holds this view, stating that during this period, poetry played an important role in the formation of the people's national identity consciousness, celebrating their historical and ethnic bonds: "... The political and socio-psychological upheavals in the country's life, like those experienced by many nations, significantly spurred the formation of the Azerbaijani people's national self-awareness and psychology. The purposeful and consistent activity and struggle of our progressive figures also played a significant role in this process. The nation's process of self-awareness was further strengthened during a period of socio-political and revolutionary change" (*Bayramoğlu, 2003, p. 18*).

## 2. Main part

During the Republican era, poetry became one of the most agile and appropriate artistic forms for responding to events. A. Şaiq, Ə. Cavad, C. Cabbarlı, Ə. Müznib, Umgülsüm, Davud, Əliyusif, Zülfüqar bəy, S. Mümtaz and dozens of other poets celebrated the new era, the independence won by the people, its flag, its army, and Turkism. One of the most frequently celebrated themes in poetry was Turanism. The name Turan and the idea of Turanism entered Azerbaijani artistic thought at the end of the 19th and the beginning of the 20th century. The main factor in this idea becoming a theme in poetry was the political processes taking place in the world and the resulting migration of Turks from many countries. The Ottoman Empire's conquest of a large part of the world over several centuries increased the pressure against it, and imperialist powers united to begin to squeeze the Turks out of these territories. The imperialists were also preparing an ideological basis for this; the accusations of Pan-Turkism and Pan-Islamism were nothing more than an ideological attack for precisely this purpose. In fact, by doing so, they were seeking a justification for their own imperialist attacks and establishing a defensive position. The literary scholar Badirkhan Ahmadli writes with this in mind: "At a time when Pan-Slavism was taking shape with all its might, the Slavophiles had also chosen a defensive tactic for themselves. While promoting Slavic unity, they spoke of the great danger of Islamic unity, and the fear of Pan-Islamism, and the expression born of this fear, very soon became widespread" (*Ahmadli, 2019, pp. 50-51*). At such a time, Turkism and Turanism were also entering into Azerbaijani public and literary thought. However, these tendencies are most evident in the work of the Azerbaijani romantics. The glorification of the Turanism idea could often be encountered in the works of A. Hüseynzadə, A. Cənnəti, A. Müznib, H. Cavid, A. Cavad, C. Cabbarlı and others. The poets here extol the past of Turkicdom and its most ideal

era, the Turan past, and express faith that this conquest will come again. However, until the First World War, such poems were somewhat rare. That is to say, Turkism and Turanism had not yet fully taken root in public and literary thought. During the Balkan War, this process was somewhat accelerated. World events gave this process a certain direction. The situation the Turks found themselves in prompted our poets to take the path of panegyric to recall their past and to restore it. The elaboration of Z. Göyalyp's triple formula of "Turkification, Islamisation, Modernisation" in a series of articles did not fail to influence public opinion, and Azerbaijani public thought also made use of this formula. In fact, Z. Göyalyp's poem "Turan" had also influenced the work of Azerbaijani romantics. First published in the Turkish magazine "Young Pens", the poem saw the great thinker express the geographical boundaries of Turan in poetic terms:

The feelings that beat in the pulses of history,  
A deep sound each one, I am not in the pages,  
In the scimitar, all the victories of my glorious, noble race, far and near,  
I read them on the body of its heart,  
In its pulses, I feel, I make them a hymn.  
Not in the pages, for Attila, Genghis,  
The brows that crowned my race with victory. (*Gökalp, 1991, p. 54*)

For the Turks, in whose veins the blood of great conquerors flowed, to unite and resist oppression, they first and foremost needed to know themselves. Z. Göyalyp did precisely this, drawing a broader map to show that Turkdome was by no means confined to the Ottomans:

The homeland is neither Turkey for the Turks, nor Turkestan,  
The homeland is a great and eternal country: Turan! (*Gökalp, 1977, p. 54*).

The work of E. Cavad, in which themes such as the homeland, nation, Turkic identity, Turanism, the flag, the army, and the Turkish soldier are woven throughout, is of immense importance. The Republic and its attributes are reflected in his work in the finest possible way. The eminent scholar Yaşar Qarayev, in his article "The Republican Period and Its Memory in Poetry: Ahmad Cavad", aptly expressed that the Republic is best reflected in the poetry of A. Cavad, stating: 'When one mentions 'Renaissance', the first name that comes to mind is Nizami.' When one mentions "Love", Fuzuli's name is the first to be mentioned. When one mentions "Republic", Ahmed Cevat is the first to come to mind.

'There is a tricolour flag emblem in our history. The tricolour poetry was inscribed into the artistic memory by the pen of Ahmed Cavad before anyone else' (*Qarayev, 2004, p. 4*). A. Cavad had taken an active part in the events in Turkey during the First World War, was heartbroken by the displacement of Turks in the Balkans, and later in Kars extended a helping hand to the Turks displaced by the Armenian-Russian forces. Through his community work, he frequently travelled to Turkey, helping to bring refugee children to Azerbaijan. During this time, horrified by what he witnessed, the poet celebrated Turkic identity and the Turkish flag in several of his poems. " In the poem 'Çırpınırdın Qara dəniz', the poet, seeing the Turkish flag at its highest point, expressed his boundless love for it, saying, 'Ah!.. I would rather die than live, //If only I could fall at your feet.' The poet conveyed his greetings to the Turkish flag, which had been 'separated from its motherland':

'Həmidiiyə', that Turkish blood!  
Whose glory never ends!  
Let 'Kazbek' be the first victim!  
To the Turkish flag, we salute!  
Breezes blowing from a friend's hand,  
Bring me a poem, send my greetings!

May all our lands be  
 A sacrifice to the Turkish flag!  
 Make way for the Turkish flag! (*Cavad, 2005, p. 140*).

In his poems, which constantly celebrated his love for his homeland, the Republic, and its symbols, Ə. Cavad was frequently criticised, arrested, and ultimately repressed during the Soviet era for being a poet of the Republic and for his praise of it. In the poems he wrote during these years, alongside those about the homeland, the flag and the army, Turkic identity, Turkism and Turanism also featured prominently.

In the poems he wrote during these years, such as “To the Flag of Azerbaijan”, “Bismillah”, “I Had Seen Her Dream”, “To Our National Flag”, “O Soldier”, “Istanbul”, “Arise”, “Do Not Come”, “O Soldier”, and “To the Turkish Army”, In poems such as “To the Martyrs”, the themes of the tricolour flag, Turkdom, and Turanism are celebrated and depicted. The poem ‘To the Flag of Azerbaijan’ includes the following author's note: ‘It was addressed to the national flag flying over the parliament building on 10 April 1919, the first time I had been to Baku after the arrival of the British’ (*Cavad, p. 127*).

The poet, here eulogising the Azerbaijani flag, the ideals of the Republic and the idea of Turan, takes pride in the glorious history of this flag. The poet's appeal to history, invoking figures such as the Raven Sea, the old Elkhani, the son of Elkhani, Qayi Khan, and others, demonstrates that a nation which has only just gained its independence possesses a great historical past. Delighted by the waving of his Azerbaijani flag, the poet considers this waving a great prize:

The winds of Turkestan have kissed your brow,  
 Telling you its sorrow, my flag!  
 May the raven send from the sea  
 The reflection of your three colours as a gift, my flag!  
 As you went to Turan, you appeared before me,  
 Your state bird, your shadow, alighted upon my head!  
 Grant that the tear welling in my eye  
 May make my sorrow heard, oh, my flag! (*Cavad, 2005, p. 127*).

In this four-stanza poem, A. Cavad promotes both Turkic identity and religion, as well as modernity, poetically expressing the symbols of the tricolour flag, ‘The colour received from the Qayi Khan lineage’ – that is, Turkic identity – he also refers to as ‘the son of Ilkhan, the pillar of the faith’, thereby indicating that Islam is also reflected in it. The poet's lyrical protagonist's heart is full of emotion; the desire to kiss the “blessed ground” upon which it waves, and where its shadow falls, with “storms in his bosom”, and to nestle in its embrace, never leaves him.

In his poem “I Had Dreamed Her Dream”, E. Cevdet describes the dream of the freedom and independence he had long yearned for. From the lyricist's description of the poet experiencing the joy of the Republic, it becomes clear that he had dreamt of these “joyful times”, and in his dream, he had “plaited the hair of his beloved”. The lyrical hero also rebukes those who begrudge this day, the uneasy, and tries to convince the “faithless who do not believe” in this day. The hero, who believes his nation's capital to be inexhaustible, declares that its past is glorious and worthy of pride, and revives the image of Turan. It also becomes clear that although there are few who believe in the nation's Independence Day, the lyrical hero has always believed in it, never losing hope for a single moment:

Once, our Sun was wrapped  
 In a black veil.  
 When everyone had lost hope in it,

My heart grew weary.  
 Forgetting the “blind” love,  
 On the green willow branches  
 My eye first searched  
 For it on the “Turan” roads (*Cavad, 2005, p. 131*).

In his poem “Istanbul”, E. Cevad also describes an Istanbul with a “pale face”, “blue eyes”, “dreamy”, and “silken-haired”, and portrays the difficult situation it has fallen into. The poet expresses his disappointment at the plight of this beautiful city of the Turkic lands:

O Lord, didst Thou not know my heart,  
 That Thou didst break the living string of my harp?!  
 While a new hope was dawning for me,  
 Why didst Thou disappoint the land of Turan?!  
 Ah, O pale-faced, pensive Istanbul!  
 Blue-eyed, silken-lipped Istanbul?! (*Cavad, 2005, p. 134*).

In his poem “To the Turkish Army”, E. Cevdet eulogises the exploits of this glorious army, recalls the day it ascended Mount Allahu-Akbar, and feels immense pride in its arrival. The poet regards the glorious Turkish army's expulsion of the Russian from Turkestan as a momentous historical event:

O glorious army of the glorious land,  
 Forget not the day you entered the Caucasus!  
 When you came to drive the Turk from Turan,  
 Did the Black Sea kiss your foot?!  
 When the first shot was fired, a single step of the old,  
 Did the Kars fortress fire its salute?!  
 When you did so, amid the celebration of victory,  
 Did the defeated enemy frown? (*Cavad, 2005, p. 143*)

In the poem ‘My Sorrow’, the poet once again addresses the theme of Turan, sharing his sorrow. The lyrical protagonist's sorrow is heavy; ‘how strange it is to be a stranger’, ‘I have no homeland that knows my sorrow’. The lyricist's homeland is in ruins, and owls are hooting. This state of the homeland leaves the hero distraught. It seems that when the hero speaks of the homeland, he means the lands of Turan:

The old tales of Turan,  
 In the blind bard's breast.  
 Decline, and listen at least,  
 Behold, what a tumultuous sound!  
 A stallion neighs,  
 May your heart burst!  
 The glorious land of “Turan”,  
 Where are its throne and divan?  
 The torn leaf of “Yaşa”,  
 Shows the way, but where is the one who is to go? (*Cavad, 2005, p. 144*).

### 3. Conclusion

During the Republican era, the direction of poetry was directed towards the depiction of independence, patriotism, Turkism, and Turanism. The search for national identity, which had been taking place in literary and social thought since the beginning of the century, entered a

new phase during this period. In particular, in poetry, the national consciousness directs its full attention to independence, Turkism and Turanism. In the works of M. Hadi, A. Cavad, A. Shaig, A. Muznib, Davud, Zülfüqar bey, C. Jabbarli, Aliyusif, S. Mumtaz and others, the Azerbaijani flag, Turkism and Turanism are celebrated. However, this process did not last long; with the collapse of the Republic, a new historical situation arose, and in this context, national thought, Turkism and Turanism ceased to be a subject for literature. Despite all this, during this period, those who espoused national thought and Turkism became victims of the 1937 repressions. Factors such as Panturkism, Pan-Islamism, and Pan-Uralism were cited as the reason for their arrests, and their advocacy of national thought resulted in their destruction.

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## MEDIEVAL TOMBSTONE MONUMENTS OF THE MASHTAGA SETTLEMENT IN THE CITY OF BAKU

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### Summary

One of Azerbaijan's settlements with a rich history is the village of Mashtaga, located on the outskirts of Baku. Overall, there is a great need for a comprehensive study of the northeastern part of the Absheron Peninsula. Archaeological and ethnographic research conducted on the Absheron Peninsula since the first quarter of the 20th century, especially since the 1960s, allows us to make this assertion.

The village of Mashtaga, with its ancient history, also boasts a rich culture. Its territory is home to numerous valuable architectural monuments, testifying to its distant past. The stone inscriptions on these monuments are rare primary sources, allowing researchers to uncover historical truths. The coffins and tombstones at Mashtaga Cemetery date primarily from the 9th to 19th centuries. The construction of the tombs here dates back to the early 20th century.

**Key words:** Mashtaga settlement, Absheron Peninsula, Medieval tombstones, Epigraphic monuments, Islamic funerary architecture, Stone inscriptions, Azerbaijani cultural heritage.

DOI <https://doi.org/10.23856/7402>

### 1. Introduction

One of the settlements of Azerbaijan with a rich historical background is the Mashtaga settlement located on the outskirts of the city of Baku. The Absheron Peninsula, where Mashtaga is situated, has historically been one of the most important cultural and economic regions of Azerbaijan. Due to its strategic location along historical trade routes and its proximity to the Caspian Sea, the peninsula has been inhabited since ancient times and has played a significant role in the development of urban and rural settlements. Numerous architectural monuments, archaeological sites, and epigraphic inscriptions preserved in this region testify to its long and complex historical development.

In general, there is a great need for a comprehensive study of the northeastern part of the Absheron Peninsula. Although archaeological and ethnographic research has been carried out in this region since the first quarter of the twentieth century, particularly from the 1960s onward, many monuments remain insufficiently studied or documented. Earlier studies mainly focused on large architectural complexes, religious buildings, and urban monuments in Baku and its surroundings, while smaller rural monuments such as tombstones, sarcophagi, and burial structures often remained outside the main focus of scientific research. Therefore, the investigation of funerary monuments in settlements such as Mashtaga is of great importance for reconstructing the historical and cultural landscape of Absheron.

The village of Mashtaga, which has an ancient history, is distinguished by its rich cultural heritage and its large number of historical architectural monuments. The settlement is

known for its medieval mosques, baths, ovdans (water reservoirs), and numerous sacred places that played an important role in the spiritual life of the local population. Among these monuments, grave memorial structures occupy a special place. Tombstones, sarcophagi, and underground burial chambers located in local cemeteries serve not only as burial markers but also as important historical and artistic monuments that reflect the cultural traditions and religious beliefs of different historical periods.

The stone inscriptions carved on these monuments represent rare primary historical sources. Epigraphic materials preserved on tombstones provide valuable information about the names, titles, social status, and sometimes the professions of the individuals buried there. In many cases, these inscriptions also include precise dates recorded according to the Hijri calendar, which allows researchers to determine the chronological framework of the monuments. Such information contributes significantly to the reconstruction of local genealogies and the historical development of settlements in the Absheron region.

The sarcophagi and tombstones placed on the graves in the Mashtaga cemetery mainly date from the 9th to the 19th centuries. These monuments demonstrate the continuity of burial traditions over a long historical period and illustrate the evolution of funerary architecture in Azerbaijan. The underground burial chambers (crypts) found in the "Pirshahid" cemetery were constructed in the early twentieth century and represent a later stage in the development of burial practices in the region. Despite their relatively recent construction, these crypts are closely connected with older traditions and preserve valuable epigraphic and architectural features.

Another important aspect of the tomb monuments found in Mashtaga is their artistic decoration. Many of the tombstones are decorated with geometric patterns, vegetal motifs, and framed inscriptions that reflect the artistic traditions of medieval Azerbaijani stone carving. These decorative elements demonstrate the high level of craftsmanship of the masters who created them and reveal the aesthetic preferences of the period. At the same time, the use of Arabic inscriptions indicates the strong influence of Islamic cultural and epigraphic traditions that spread widely throughout Azerbaijan after the adoption of Islam.

The study of such monuments is important not only for archaeology and architectural history but also for understanding the broader cultural processes that shaped the region. Grave memorial monuments serve as valuable sources for the study of social structure, religious beliefs, and artistic traditions. Through the analysis of their architectural forms, decorative elements, and inscriptions, researchers can gain deeper insight into the historical development of local communities.

Therefore, the investigation and documentation of medieval tomb monuments in the Mashtaga settlement contribute significantly to the preservation of Azerbaijan's cultural heritage and to the broader understanding of the historical landscape of the Absheron Peninsula.

## 2. Main part

The city of Baku, located on the Absheron Peninsula, and the villages surrounding it are among the regions of Azerbaijan with an ancient and rich history.

During research related to the registration and documentation of historical and archaeological monuments, employees of the Institute of Archaeology and Anthropology of the Azerbaijan National Academy of Sciences, Idris Aliyev and Alibaba Babayev, recorded new monuments dating to the medieval period in the territory of the Mashtaga settlement of Sabunchu district of Baku city (*Babayev, 2010, p. 3*). The Mashtaga settlement of Sabunchu district can be

considered one of the most important centers of architectural monuments in Absheron (*Babayev 2023, 4, p. 90*). The Mashtaga settlement of Sabunchu district can be considered one of the most important centers of architectural monuments in Absheron (*Aliyev & Abdullayev, 2011, p. 90*). It is no coincidence that the prominent art historian and researcher of the history of architecture, architect Sh.S. Fatullayev, emphasized that Mashtaga ranks second in Absheron after the city of Baku in terms of the richness of historically constructed public buildings, and that the dense concentration of numerous mosques, baths, and ovdans is an exceptional case for Absheron (*Fatullayev, 1991, p. 18*).

Three crypts were recorded in the “Pirshahid” cemetery (Pir of the Martyr – A.H.), located in the northeastern part of Mashtaga. Each of these crypts contains stone inscriptions providing information about the individuals buried there.

The quadrangular inscription on the first crypt contains the following words: “This is the grave of the late Sheikhalı Badkubi, son of the late Agadadash, 1329.” (Hijri year 1329 = 1911–1912). In order to make the inscription clearly readable, the surface of the stone was painted white, while the letters were painted black. The edges of the inscription were framed in black. A six-petaled floral branch is carved on the lower right side of the stone (Figure 1).



**Fig. 1. General view of the crypts located in the Pirshahid cemetery (20th century)**

On the second crypt, an inscription placed on the front side and designed in an arched form symbolizing a doorway states that the late Gasim, son of the late Haji Karim, died on the 12th day of the sacred month of Muharram in the year 1334 (Hijri Muharram al-Haram, 1334 = 1915–1916) (Figure 2).



**Fig. 2. General view of the crypts located in the Pirshahid cemetery (20th century)**

**The inscription of the third crypt reads:** “This is the grave of the late Abdulla, son of Nabi. On the 9th day of the month of Safar al-Muzaffar, 1334 (Hijri 1334 = 1915–1916)” (Figure 3).



**Fig. 3. General view of the crypts located in the Pirshahid cemetery (20th century)**

1. The front parts of the second and third crypts were designed in the form of a double-row arched doorway. The reddish stones on which the inscriptions were carved are framed on all sides with a raised border. The text of the inscriptions is divided into two parts by a raised horizontal line between the rows. The entrance parts of the crypts are sealed with masonry. Simple geometric elements are used around the inscriptions on the second and third crypts.

2. In the “Pirshahid” cemetery, tomb monuments in the form of sarcophagi and tombstones were also identified near the crypts.

3. **Rectangular tombstone.** Part of it remains under the soil. The inscriptions on its sides are carved in relief within a frame. On both sides of the inscription located in the upper part of the tombstone, an eight-petaled floral motif inside a decorative medallion is depicted. The central inscription is carved in two lines from bottom to top. Since a part of the monument remains under the soil, it was not possible to determine the exact date of the inscription (Figure 4).



**Fig. 4. Rectangular gravestone located in the Pirshahid cemetery (18th century)**

4. **Sarcophagus.** Since it is made in a trapezoidal form, at first glance it appears stepped. Usually, an inscription was written in a framed area at the head of the upper surface of the sarcophagus. On its sides, geometric ornaments, vegetal patterns, and architectural elements were carved. The lower two rows are placed within a border and decorated with vegetal motifs (two- and three-petaled flowers with branches). In the wide middle border, an eight-petaled vegetal ornament and a geometric network pattern are carved. In the upper two rows of the border, vertical lines are drawn. As the last border has undergone internal erosion, it is not possible to determine whether an inscription or ornament was originally carved there (Figures 5, 5a).

5. At the foot side of the sarcophagus, a small place was made for lighting candles. The tradition of lighting candles on graves is connected with ancient beliefs. Some researchers associate it with “an ancient belief carrying symbolic meaning related to the afterlife.” According to elderly residents, the sarcophagus remained inside an ancient shrine (pir) until the 1940s, after which the shrine was destroyed. Women who could not have children and people suffering from fear or illness usually visited the shrine in search of healing.

6. There are two stones placed on the sarcophagus. One of them is elongated and shaped like a tall cap. Such stones were usually placed on the graves of Sufi sheikhs. It can therefore be



**Fig. 5. Chest-type tomb (sanduka) with a stepped appearance due to its trapezoidal form (18th century)**

**Fig. 5a Chest-type tomb (sanduka) with a stepped appearance due to its trapezoidal form (18th century)**

assumed that the person buried in the shrine was a religious figure—possibly a scholar or a saint. Based on a comparative analysis of the composition of the inscription and the ornaments on the sarcophagus with other monuments of this type, it can be dated to the 16th–17th centuries.

7. **The tombstone with a pointed arch-shaped upper part** has an inscription placed within a frame along its edges. In the center, the first line is carved separately. The main text is written within decorative medallions. The date inscribed on the monument is Hijri 1191 (1191 AH), which corresponds to 1777–1778 (Figure 6).



**Fig. 6. Gravestone with a pointed arch-shaped upper part (18th century)**

8. **The tombstone with a sarcophagus** has a border carved along the edges of its upper surface. It is assumed that an ornament was carved in the central part of the sarcophagus. The tombstone is rectangular in shape. Zigzag lines are carved along the narrow borders on its sides. The monument bears the date 1172 in the Hijri calendar (1172 AH = 1758–1759) (Figure 7).



**Fig. 7. Chest-type gravestone with decorative borders on the sides (18th century)**

The sarcophagi and tombstones placed on the graves in the Mashtaga cemetery mainly date from the 9th to the 19th centuries, while the construction of the crypts belongs to the early 20th century.

Azerbaijan's grave memorial monuments, tombstones and sarcophagi dating from the 9th to the 19th centuries, are decorated with very delicate geometric and vegetal ornaments and relief compositions (*Nematova, 1963, p. 154*). In addition to ornamental motifs, inscriptions written in various styles of the Arabic script were also carved on these monuments. Unfortunately, unlike many other architectural monuments, the names of the skilled craftsmen who created these valuable and enduring works of art are only rarely encountered on these monuments, although they constitute a significant group within the heritage of Azerbaijani art.

### 3. Conclusions

In conclusion, the medieval tomb monuments of the Mashtaga settlement represent an important part of the historical and cultural heritage of the Absheron Peninsula. The tombstones, sarcophagi, and underground burial structures found in the "Pirshahid" cemetery demonstrate the richness of local architectural traditions and funerary practices from the IX–XIX centuries. The inscriptions carved on the stones provide valuable historical information about the individuals buried there, as well as the religious and cultural environment of the period.

The decorative elements observed on these monuments, including geometric and vegetal ornaments, reflect the artistic traditions of Azerbaijani medieval stone carving. At the same time, the presence of Arabic inscriptions indicates the strong influence of Islamic culture and

epigraphic traditions in the region. The analysis of these architectural and epigraphic features allows researchers to better understand the historical development, social structure, and spiritual beliefs of the local population.

Therefore, the medieval grave monuments of Mashtaga should be considered not only as archaeological and architectural artifacts but also as important written and artistic sources for studying the history and culture of Azerbaijan. Their preservation, documentation, and further scientific investigation are essential for protecting this valuable cultural heritage and for expanding our knowledge of the historical landscape of the Absheron Peninsula.

Furthermore, the typological variety of the tomb monuments recorded in the Mashtaga cemetery reflects the gradual evolution of funerary architecture on the Absheron Peninsula. The combination of different monument forms, including sarcophagus-type tombs, rectangular gravestones, and underground crypts, illustrates the continuity of burial traditions over several centuries. These monuments also demonstrate the high level of craftsmanship of medieval stone carvers who skillfully combined architectural composition with decorative ornamentation and epigraphic elements. The study of these monuments contributes significantly to the reconstruction of the historical and cultural landscape of the region. In addition, comparative analysis with similar funerary monuments found in other parts of Azerbaijan and the broader Islamic world may help to identify artistic influences, regional stylistic features, and chronological development in medieval funerary architecture.

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## CULTURAL AND LINGUISTIC ROLES OF REGIONAL LANGUAGES IN MULTILINGUAL COMMUNITIES

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### Summary

Regional languages contribute notably to the formation of societal multilingualism and function as carriers of cultural identity. They are considered as active components of local linguistic ecologies. This article examines the cultural and linguistic roles of regional languages in multilingual communities, with a focus on Azerbaijan. Taking into consideration the linguistic landscape frameworks and sociocultural approaches, this study synthesizes Azerbaijani and international scholarship in order to develop an integrated understanding of regional languages as ecological agents. The findings demonstrate that regional languages serve a key function in translanguaging practices, intergenerational transmission and the reinforcement of community identity. There exist some challenges as well, including limited institutional support, the dominance of national and global languages, and underrepresentation of regional languages in digital platforms. Furthermore, the article highlights the practical implications which play an important role in the fields of education, policy and community initiatives targeted at maintaining regional languages within multilingual communities.

**Key words:** sociolinguistics, societal multilingualism, regional languages, Azerbaijan, linguistic landscape, language ecology, cultural transmission.

DOI <https://doi.org/10.23856/7403>

### 1. Introduction

It is well known that there are two main types of multilingualism: individual multilingualism and societal multilingualism. Societal multilingualism refers to the coexistence and functional usage of multiple languages within a community, area or country. In this regard, linguistic diversity is embedded in social interactions, institutions and other spatial environments (*Li Wei, 2018*). Regional languages are essential for the formation of cultural, as well as linguistic dimensions of multilingualism, because they are closely connected with ethnic, geographic and cultural communities.

In multilingual communities, regional languages coexist with national, as well as global languages. Azerbaijan can also be considered as a multilingual society, as global lingua franca, such as English and Russian are mostly spoken in the area. Some regional languages play complementary communicative and cultural roles. Yet the official language of the country is the Azerbaijani language. Despite the fact that regional languages are spoken by relatively small proportion of people, they play an important role in the reinforcement of community identity, local communication networks, and ecological balance within multilingual interaction. It can be said that the roles of regional languages extend beyond the linguistic diversity, therefore, facilitating cultural maintenance and social cohesion. In this regard, this article examines the cultural and linguistic roles of regional languages in the construction of societal multilingualism. It integrates theoretical perspectives with Azerbaijani and international research to understand

how these languages support multilingual practices, foster cultural identity, and interact with dominant languages in various domains.

Language ecology theory provides conceptual framework for understanding the ways languages interact with cultural, social, spatial and institutional settings. Originally this phenomenon was proposed by Haugen (1972). In this theory, it is highlighted that languages are not isolated systems. Their existence and sustainability rely on much broader ecological contexts. The language ecology theory plays an important role in understanding regional languages as active agents in the formation of multilingualism. It should be mentioned that the sustainability of multilingualism is not only determined by individual speaker competence, but also some interconnected factors which enable languages to survive, function and develop in all domains. The ecological approach proposes some approaches to analyze the role of regional languages in the process of strengthening of societal multilingualism and supporting sustainable multilingual communities.

## 2. Cultural Transmission and Identity

Regional languages serve a key function in the cultural continuity, social cohesion and intergenerational transmission. They carry not only words, but also customs and traditions, values, history of the communities. Through traditional festivals, rituals, folktales, some oral narratives, regional languages help to encode collective memory and social norms. The very collective memory and social norms bind communities together. In Azerbaijan, regional languages, such as Lezgian, Tsakhur and Khinalug foster the maintenance of distinct cultural practices which are essential for supporting the local heritage, reflecting centuries of cultural, historical, geographic and social evolution (*Rzayeva et al., 2020; Karimova, 2017*). In this article, Lezgian, Talysh and other territorially bound minority languages of Azerbaijan are referred to as regional languages, emphasizing their geographic concentration and ecological roles, although they are also minority languages in demographic and political terms. Apart from cultural practices, the regional languages are used in daily life, including family interaction, local ceremonies and community governance. For example, the elder members of families frequently use regional languages to transmit social norms and moral teachings to younger generations, fostering a sense of identity, shaping how community members perceive themselves and how they relate to other linguistic groups.

## 3. Functional Linguistic Roles

Within interaction domains, regional languages play an important role in the maintenance of everyday multilingualism. These domains comprise families, neighborhoods, local markets, religious spaces and some other settings. By being a part of these domains, regional languages provide a functional complementarity. In this regard, it allows multilingual communities to navigate social and communicative landscapes effectively. As an illustration, in Lezgian-speaking villages, the regional language may be the primary means of communication in homes and local facilities, while the Azerbaijani language is used for education, administration and communication with the members of other ethnic groups. It can be said that such categorization is not rigid but flexible, reflecting the ecological principle that language adapts to the specific affordances of their environment (*Hult, 2017; Li Wei, 2018*). Furthermore, the regional

languages foster the negotiation of social relationships. By doing so, they maintain solidarity within a community and define social boundaries with outsiders. They have a crucial impact on the development of collective multilingual practices, as speakers utilize multiple languages depending on the setting, communicative goals and interlocutors involved. By fulfilling diverse social functions, regional languages maintain their relevance, acting not merely as markers of heritage but as active tools for complex social and economic interactions within multilingual communities.

#### 4. Translanguaging and Hybrid Practices

It can be said that by smoothly blending elements of regional, national and global languages, speakers in multilingual interaction often engage in translanguaging in their daily lives. This practice extends beyond simple code-switching, as it entails the creative, as well as strategic usage of multiple linguistic resources to transmit meaning, express identity, and navigate through social contexts. For the sake of clarity, we can give Azerbaijani multilingual setting as an example: in a Talysh-speaking village an interaction may combine Talysh for familial intimacy, Azerbaijani for formal or administrative references, and English or Russian for technical or educational terms. The regional languages enrich these multilingual practices with the usage of unique lexical, syntactic resources, mainly introducing culturally embedded concepts in the dominant languages. “By incorporating regional languages, translanguaging expands the collective multilingual repertoire, reinforcing community identity while promoting cognitive flexibility and linguistic creativity” (Li Wei, 2018; Hult, 2017). These hybrid practices establish a conducive environment for fostering language maintenance, and sustaining their functionality and relevance in social life. Additionally, translanguaging further develops intergenerational engagement, in turn, allows younger speakers have an access to cultural knowledge encoded in regional languages. Meanwhile, the regional languages remain competent in national and global languages. Through the medium of this dynamic, societal multilingualism is not only preserved, but actively reshaped by the interplay of linguistic resources within the communities.

#### 5. Spatial and institutional presence

The way languages are represented in public spaces, social media, institutional communication and other settings is important for national and regional languages. In this regard, regional languages act as a major influence. Signage that schools, government offices, community centers, markets and other amenities reflects not only the languages which are being used, but also the concept of the visibility perceived by other members of the community. In multilingual Azerbaijani contexts, regional languages are confined to certain localized spaces, such as community events, cultural centers. In this way, they demonstrate their ecological role in everyday communication. However, strong institutional support appears to be limited, which constrains the broader influence of these languages in different spheres, such as administrative, public and digital spaces (Rzayeva et al., 2020; Hanalieva, 2024). The usage of regional languages will remain limited, if there is no official recognition, curricula integration, or media representation. Regional languages will experience risk being restricted to private or ceremonial domains. Then, it will be difficult for them to contribute to functional multilingualism. If regional languages are visible in public settings, they will be easy for speakers to experience

multilingual practices in these languages. It will foster cultural identity, and motivate younger generation to value and continue using regional languages in their everyday communication. The interaction between space, policy and social practice underlines the ecological principle which clearly states that the survival and vitality of regional languages rely on their close connection and integration into both physical and institutional environments. By reinforcing the existence of regional languages across multiple ecological layers, members of communities can strengthen societal multilingualism. In this way, they will ensure linguistic diversity in the community.

## 6. Challenges to regional languages

Despite the fact that regional languages have attained cultural and linguistic roles, they face some challenges within contemporary multilingual communities. These are as follows:

- Sociopolitical marginalization
- Dominance of national and global languages
- Digital underrepresentation

One of the challenges that regional languages encounter today is sociopolitical marginalization. The reason is that many regional languages lack formal recognition in national language policy. In addition, they have limited representation in educational systems. When regional languages are excluded from schooling, literacy development, administration, younger people are not prone to learn and use them. This will be an obstacle for intergenerational transmission. Meanwhile, as national and global languages grow rapidly, they exert strong pressure on regional languages. There is no doubt that global as well as national languages provide greater access to education, employment, social mobility. These opportunities make global and national languages attractive for everyday communication, making regional languages less attractive. As a result, regional languages are often sidelined in different domains, such economic, public, institutional spaces, thus reducing their prestige. Another challenge, which is considered as a major one, is digital underrepresentation. As it is known, nowadays modern communication tools are widespread, it is almost impossible to imagine life without them. In the contemporary communicative settings, digital platforms are essential for language use, individual identity construction and global communication. Despite the fact that we live in a globalized world, many regional languages lack digital content, technical support and digital visibility. It affects their participation in transnational and youth-oriented communication spaces. This digital gap is a barrier for regional languages being represented in online spaces, thus limiting their ability to adapt to modern communication practices. In this respect, it is difficult for regional languages to contribute to the evolving ecology of societal multilingualism.

In Azerbaijan, linguistic diversity is acknowledged. Regional languages in this area often appear to be limited to informal and domestic domains. However, it should be noted that regional and minority languages are formally recognized within education system. Their existence surely differs by regions as well as level of instruction. According to the Ministry of Education in Azerbaijan, the main language of instruction is Azerbaijani. There is a proportion of schools which offer education in Russian as well. The Azerbaijani language is taught as an official state language. In areas with significant population of national minorities, the instruction of native languages, such as Lezgian, Talysh, Tsakhur, Udi, is offered as a part of school curriculum. The programmes for instruction of minority languages have been developed by the state, and with state support textbooks, some other teaching aids have been prepared. These

languages are usually being taught for a limited number of hours per week (*Baku International Multiculturalism Center, 2024*). In many regions, children have an access to instruction of their native language alongside the official state language. In this way, both linguistic diversity and cultural transmission are preserved. Despite this, the extent of this instruction can be limited: regional languages are usually taught only in primary or lower secondary classes, and are taught as a native language subject. They are not the primary language of instruction for all subjects. However, these conducive conditions still help native learners to maintain the regional languages and contribute to societal multilingualism in the region.

Table 1

**Regional languages taught in Azerbaijani schools and their institutional coverage**

Languages	Number of schools teaching language	
Lezgian	95–101 schools	Taught in I–IX grades in regions with Lezgins.
Talysh	about 251–254 schools	Mostly offered as a native language subject in primary schools.
Avar	about 19 schools	Taught mainly in primary classes.
Tsakhur	3–4 schools	Limited usage but officially included.
Udi	3 schools	Taught in selected regions.
Kurdish	1–2 schools	Rare but present.
Khinalug	1 school	Taught mainly in primary classes.

It should be noted that the numbers represent schools where each language is formally offered as a part of curriculum. They do not demonstrate full language of instruction status in the area.

Regional languages contribute significantly to the cultural and linguistic dimensions of societal multilingualism. They play an important role in the preservation of heritage, the reinforcement of cultural and social identity, the maintenance of functional multilingual repertoires. Despite the fact that there exist some challenges, they remain vital components of multilingual communities. Policy, education and digital platforms can be helpful for supporting these languages and ensuring that societal multilingualism remains dynamic and culturally grounded. Furthermore, regional languages are of great importance for promoting linguistic diversity by creating opportunities for expressing local knowledge, values and worldviews. Their usage in public institutions and digital spaces is a way for enhancing social inclusion and intergenerational transmission. In multilingual societies, regional languages act a major influence on the prevention of the dominant languages, thus, paving the way to the improvement of cultural continuity and social cohesion.

## 7. Conclusions

**The results of the study.** The analysis reflects that one of the functions of the regional languages is to act as ecological agents within multilingual communities. By doing so, they aid to sustain local linguistic diversity and maintain sustainable patterns of language use. They have a crucial impact on the construction of cultural identity and the transmission of values, knowledge, customs and traditions through generations. There is no doubt that regional languages are actively participating in multilingual practices as well as translanguaging practices. By combining regional, national and global languages, speakers foster the development of societal multilingualism. At the same time, it should be mentioned that their potential is sometimes restricted by the existence of limited institutional support and increasing dominance and demand for national and global languages. Insufficient digital presence should be included here as well. It limits the visibility and functional usage of regional languages in modern communication settings.

**The relevance of the study.** This study is highly relevant in the context of linguistic and cultural diversity, which are growing day by day. Meanwhile, regional languages face some challenges, such as socio-economic pressures, limited institutional support, and the preeminence of national and global languages. Thus, understanding the role of regional languages is considered essential for the maintenance of balanced multilingual ecologies and the prevention of language shift and attrition. Additionally, regional languages serve as transmitters of local knowledge and, cultural heritage, making their study crucial for strengthening cultural resilience and community cohesion. Finally, by demonstrating the ecological importance of how regional languages contribute to societal multilingualism, this study provides evidence-based insights for educational planning, language policy, and digital inclusion. In this way, they provide conducive conditions for more inclusive multilingual communities.

**The novelty of the study.** While previous researches have largely addressed individual multilingualism or national language use, this article introduces a novel perspective by integrating language ecology theory with regional language study in the Azerbaijani context. The study highlights the dual linguistic and cultural functions of regional languages and put them within the system of ecological agents. Furthermore, by drawing on international theoretical frameworks, this article develops a conceptual, multi-layered framework for understanding how regional languages function within communities. In this way, a more nuanced understanding of the roles of regional languages is further explained.

**The research methods.** This study adopts a theoretical and conceptual research design based on qualitative literature synthesis. In order to examine the linguistic and cultural roles of regional languages within societal multilingualism, this article draws on key works in sociolinguistics, language ecology, and multilingual policy studies. The comparative analysis is applied to situate the Azerbaijani context within broader ecological perspectives on multilingualism. It should be mentioned that the article develops a conceptual ecological model which give further explanation how regional languages act as major influences within different domains, such as institutional, cultural, spatial and digital spaces.

The practical implications of the study. Having greater insight into the roles of linguistic and cultural roles of regional languages yield useful information which can be taken into consideration in language policy, education, community engagement, and digital development. In order to provide conducive conditions for the institutional visibility and functional use of regional languages, inclusive language policies should recognize regional languages within public services, media platforms, more importantly education systems. The integration of

regional languages into educational programs and community-based learning initiatives can be helpful for the promotion of sustainable multilingual ecologies and the reinforcement of support to the intergenerational transmission. Additionally, digital initiatives are of great importance. The presence and availability of regional languages in modern communication spaces can further foster the development of multilingualism. Online dictionaries, learning platforms and social media content may contribute notably to this process. Active community attendance in maintaining and valuing regional languages plays a significant role in the sustenance of both cultural heritage and linguistic diversity. As a result, it ensures that societal multilingualism stays as a living and dynamic social resource.

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## INNOCENCE UNDER THREAT: COGNITIVE STRUCTURES IN BLAKE'S "NIGHT"

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### Summary

The aim of this paper is to examine William Blake's poem "Night", and to demonstrate that the poem constructs Innocence not as a state of absolute security, but as a condition of conditional safety based on vigilance, compassion, and moral balance. The relevance of the study lies in addressing the gap between classical interpretations of the poem and the lack of systematic explanation of the mechanisms through which danger and protection coexist within a single poetic space. The study integrates traditional Blakean criticism with a cognitive-poetic perspective in order to clarify how meaning is organized at the level of perception and conceptualization. Special attention is given to frames, conceptual metaphors, and image schemas that structure the nocturnal world of the poem. Methods used in the study include general scientific methods (analysis and synthesis), elements of cognitive linguistics (frame semantics, conceptual metaphor theory, image schema theory), and close textual analysis. The results of the research contribute to a deeper understanding of Blake's poetic model of Innocence and may be applied in literary translation for preserving underlying conceptual structures across languages.

**Key words:** William Blake, cognitive poetics, frame analysis, conceptual metaphor, image schemas, poetic meaning.

DOI <https://doi.org/10.23856/7404>

### 1. Introduction

William Blake's poem "Night" (Erdman, 1988: 13-14), the fourteenth poem in "Songs of Innocence" (1789), has traditionally been interpreted as a lyrical representation of divine protection and nocturnal harmony. Classical scholarship has convincingly demonstrated that the poem simultaneously preserves the mode of Innocence and acknowledges fear, suffering, and death, emphasizing the limited and non-coercive nature of angelic guardianship and the displacement of ultimate harmony into Eternity. However, despite the richness of these interpretations, the mechanisms through which the poem organizes the coexistence of danger, vulnerability, and moral order remain insufficiently explicated.

**The relevance of the study** lies in its attempt to address this gap by shifting the focus from interpretive outcomes to the cognitive structures that generate meaning in the poem. While previous research has described what "Night" signifies within Blake's ethical and theological vision, less attention has been paid to how the text itself constructs this vision at the level of perception, embodiment, and conceptual organization. This problem is particularly important for contemporary literary analysis, as well as for translation studies, where an understanding of underlying conceptual structures is essential for preserving poetic meaning across languages.

**The novelty of the study** consists in the application of an integrative cognitive-poetic approach to "Night", which combines insights from classical Blakean criticism with the analytical tools of cognitive linguistics. The article proposes a systematic analysis of frames,

conceptual metaphors, and image schemas as interacting mechanisms that structure the poem's nocturnal world. Unlike earlier readings, which treat danger and guardianship primarily as thematic elements, the present study demonstrates how these notions function as stable cognitive scenarios that govern the reader's interpretation.

**The aim of the article** is to reveal how Blake's "Night" constructs Innocence as a condition of conditional safety through the interaction of cognitive structures. To achieve this aim, the study pursues the following research objectives: (1) to identify the nuclear and peripheral frames activated in the poem; (2) to analyze the dominant conceptual metaphors that shape the understanding of night, guardianship, and vulnerability; and (3) to examine the role of embodied image schemas in grounding abstract ethical and theological meanings.

**Methodologically**, the study draws on general scientific methods (analysis and synthesis), elements of cognitive linguistics (frame semantics, conceptual metaphor theory, image schema theory), and close textual analysis. The research is based on close reading combined with cognitive modeling, which enables a systematic correlation between linguistic form and underlying conceptual structures.

**The article is structured** in a logical sequence that reflects the methodological progression of the study. Following a brief outline of the poem's critical reception, the main sections analyze the system of frames, conceptual metaphors, and image schemas. The concluding section summarizes the findings and outlines their implications for Blake studies and for the translation of poetic texts into other languages.

## 2. Classical Interpretations



William Blake. *Night*, objects 26 and 27. Copy L, 1789

Edmund Hirsch emphasizes the dual character of the poem: it is “*neither spoken by a child nor contrived to bring a child joy, but it is emphatically a poem of Innocence*”, which “*unlike Experience is much concerned with the fact of death*”, since it “*fronts fearlessly ‘the cloud of mortal destiny’*” (Hirsch, 1964: 197). For this reason, Innocence is able to acknowledge the real limits of angelic guardianship: they can only “*pitying stand and weep*” when tigers hunt their prey (Hirsch, 1964: 197). Despite this frankness about death, the poem retains the mode of imagistic organization characteristic of “*Songs of Innocence*”. The author notes that “*the setting, as in all the poems of Innocence, does not abandon the literal for the symbolic*” (Hirsch, 1964: 197). Nevertheless, the poem effectively demonstrates the duality of night, both sorrowful and “*dreadful*”, and, at the same time, peaceful and fulfilling (Hirsch, 1964: 197).

Hirsch gives special attention to a series of linguistic difficulties. The phrase from the second stanza, “*Flocks have took*”, is recognized as normative, a claim supported by comparison with Milton’s “*Nativity Ode*”: “*Now while the heaven, by the Sun’s team untrod, / Hath took no print of the approaching light*” (Milton, 1645). The phrase “*Silent moves*” enters into tension with the image of the “*feet of angels*”, since silence appears to contradict movement. The expression “*the thoughtless nest*”, in which the birds “*are covered warm*”, signifies not only an incapacity for thought but also the creatures’ trustfulness (Hirsch, 1964: 197-198).

The final stanzas of the poem unfold a vision of Eternity rooted in biblical texts. The commentator refers to Isaiah 11:6: “*The wolf shall dwell with the lamb, and the leopard shall lie down with the kid; and the calf and the young lion and the fatling together; and a little child shall lead them!*”, and Isaiah 65:25: “*The wolf and the lamb shall feed together, and the lion shall eat straw...*”, emphasizing that Blake’s lion “*is more Christian than Isaiah’s*”, because it is transformed not merely into a peaceful beast but into a «weeping guardian» (Hirsch, 1964: 198). The image of «*life’s river*» forms part of the paradisaic landscape of Revelation 22:1: “*And he shewed me a pure river of water of life, clear as crystal...*”. From this same chapter Blake derives the opposition between earthly “*night*” and the “*immortal day*” of Eternity: “*And there shall be no night there; and they need no candle, neither light of the sun; for the Lord God giveth them light...*” (Hirsch, 1964: 198; Rev. 22:5).

In the final part of his commentary, Hirsch focuses on the two illustrative plates accompanying the poem. The first depicts a decorative tree whose branches envelop the text on the right-hand side, beneath which a lion sleeps. Since it is “*neither guarding the fold nor washing in life’s river*”, it must be a genuine predatory lion, able to “*rush dreadful*”. The second illustration shows five figures strolling through a garden; some of them have haloes, which together allude to an iconographic image of Eternity (Hirsch, 1964: 198).

David Gillham connects the religious mythology of “*Night*” with the broader context of “*Songs of Innocence*”, particularly with “*The Echoing Green*” and “*The Shepherd*”, as “*an outcome of the same sense of belonging, of participating and of caring*”. (Gillham, 1966: 238). Regarding the first three stanzas, the commentator emphasizes that the poem not only names the angels but also assigns them a specific role: they appear not as symbols of generalized benevolence, but as beings with clearly defined spheres of action – those who “*pour blessing*” and “*look in every thoughtless nest*”. In the earlier poems of the cycle, these angels appeared only in the illuminations – as small figures among the letters, engaged in various states of joy or despair (Gillham, 1966: 238). The second part moves toward the frustration of angelic guardianship: the speaker knows that the lamb may be eaten by the tiger, and such knowledge does not destroy his faith. The reason for this lies in the fact that “*the faith is not vested in force but*

<sup>1</sup> Biblical quotations are given according to the King James Version

in love" (Gillham, 1966: 238-239). Angels do not control the elements by imposing their will, but "only through the exercise of love". For this reason, they «seek to drive» wolves and tigers away, but do not restrain them when they «rush dreadful» (Gillham, 1966: 238).

According to the commentator, the final two stanzas affirm the notion of a "new world" in which the dominant God's virtues are "pity" and "meekness". The speaker knows that the values of joy operate productively; therefore, in such a world, the lion and the lamb may live in harmony. Quoting the words of the fifth octet ("... wrath by his meekness / And by his health, sickness, / Is driven away, / From our immortal day"), Gillham explains that "wrath" is a pathology, a "sickness", that is, a deviation from the natural norm. Consequently, the actions of predators in the poem are not a moral anomaly but a manifestation of a "disturbance" which, regardless of the outcome of the encounter, ultimately culminates in the restoration of peace "in some world, this or the next" (Gillham, 1966: 240). The scholar stresses that Blake's "new world" is not "a place to be aspired to. It is not the residence of God" (Gillham, 1966: 240). Such a world appears not as a supernatural dimension, but as a moral order in which the virtues of Innocence – "pity" and "meekness" – acquire real force.

Heather Glen emphasizes that the theme of darkness receives its fullest and most explicit presentation. Whereas in "Nurse's Song" this experience is deferred, and in "The Ecchoing Green" it is only briefly mentioned in the final darkening, in "Night" Blake "enters the world of darkness" (Glen, 1983: 141).

Within a broader intellectual background, the author turns to Swedenborgian doctrine, in which the concepts of "night" and "faith" are closely connected: "Faith is called "night", because it receives its light from charity, as the moon does from the sun..." (Glen, 1983: 141). In this sense, faith is also likened to the moon. Although Blake's poem may contain a certain echo of this correlation, the author insists that the text is not a Swedenborgian allegory (Glen, 1983: 141). The poem operates on a different level of poetic abstraction – through generalization, condensation, and the reorientation of motifs drawn from other songs of Innocence.

A significant structural gesture is the rejection of pastoral attributes characteristic of the idyllic horizon of the cycle. The author describes this rejection as explicit and transparent, referring to the second stanza: "Farewell green fields and happy groves, / Where flocks have took delight; / Where lambs have nibbled, silent moves / The feet of angels bright" (Glen, 1983: 141). This marks the end of the familiar vision of "green fields" and "happy groves", within which Innocence could exist as a form of recurring joy. In "Night" Blake moves beyond this frame, opening a space where darkness and threat become organic components of experience.

In this new scene, angelic guardianship appears not as a calm pastoral presence, but as a dynamic, though internally limited, compassion. The scholar provides a characteristic list of verbs denoting active agency: angels "pour blessing",

"look in every thoughtless nest", "visit caves of every beast", "pour sleep", and "sit down by their bed". These activities, however, contrast with their powerlessness in the face of genuine "harm": "The protecting angels seem powerless ... theirs is a curiously passive role..." (Glen, 1983: 142).

The final stanza ("And now beside thee bleating lamb, / I can lie down and sleep; / Or think on him who bore thy name, / Graze after thee and weep. / For, wash'd in lifes river; / My bright mane for ever, / Shall shine like the gold, / As I guard o'er the fold") moves from a reality confronted with chaos toward a projective vision of order that "shall flow", forming an image of transcendence over chaos. The author describes this as a "vision of the Eternal Now", which "echoes and condenses elements of other Songs of Innocence", where the lamb is called "by his name" ("The Lamb"), and the chimney sweepers "wash in a river and shine in the Sun"

(“*The Chimney Sweeper*”). At the center stands the purified and restrained lion, whose energy acquires both timeless permanence (“*shine like the gold*”) and contingency (“*guard o’er the fold*”) (Glen, 1983: 143).

Stanley Gardner notes that the opening lines of “*Night*” continue the intonations with which “*The Echoing Green*” and “*Nurse’s Song*” conclude, extending the theme of care into the sphere of the “*night hours*” and the “*after-life*”, and revealing “*revelation concealed from daylight activity*” (Gardner, 1986: 56). Central to his reading is the angelic formula “*New worlds to inherit*”, interpreted as «*an extension into eternity of the state of Innocence on earth*» (Gardner, 1986: 56). In the subsequent analysis, the image of nocturnal light becomes central: the moon appears as a “*flower*” that emits “*silent delight*”, and its radiance “*smiles*” (Gardner, 1986: 57). Central to a philological reading is Gardner’s interpretation of the word “*thoughtless*”. He clarifies that it does not mean “*mindless*”, but rather a state “*free from anxiety*” (Gardner, 1986: 57), which supports the overall tonality of serene nocturnal protection.

In conclusion, Gardner characterizes “*Night*” as “*a superbly controlled symbolic statement of the nature of Innocence*” (Gardner, 1986: 57), in which night does not contradict the daylight world, but transforms and deepens it.

Alan Tomlinson devotes particular attention to the phrase “*thoughtless nest*” in the third stanza, explaining it by reference to the unpublished “*Motto to the Songs of Innocence & of Experience*” (1793), where it is stated that “*The Good... Think not for themselves*”. For this reason, “*the nests of innocence are ‘thoughtless’*” (Tomlinson, 1987: 43). This characteristic is presented not as a deficiency, but as a structural feature of the state of innocence. The reason for this “*thoughtlessness*” is formulated directly: “*They have no need to do so because the angels, the protective ministers of love, ‘keep them all from harm’*” (Tomlinson, 1987: 43).

At the same time, the critic warns against an idealized perception of this world. He stresses that angelic guardianship “*does not mean that suffering and death are excluded*” (Tomlinson, 1987: 43). To support his argument, he turns to the poem’s final stanzas, where the imagery of predators who “*howl for prey*” emerges. In defining the function of the angels, it is stated that “*The angels, most heedful*” “*try to turn them aside*”. This intervention, however, is not coercive. If diversion fails, the angels perform another action: they “*Receive each mild spirit, / New worlds to inherit*”. According to Tomlinson, in heaven the spirits of both predators and victims are taken up “*on equal terms*” (Tomlinson, 1987: 43).

Samuel Damon interprets the motif of the Lion within the context of biblical symbolism, where the Lion appears as a “*noble beast*” representing Judah (Gen. 49:9) and Jesus (Rev. 5:5). The scholar notes that the poem is often associated with a widespread, though inaccurate, formula about “*the lion shall down with the lamb*”, derived from a mistaken citation of Isa. 11:6. In Blake’s text, the Lion functions as the protector of the sheep from wolves and tigers; however, it is emphasized that “*the innocents are eventually killed*”. The harmonious union of the Lion and the Lamb is possible, according to Damon, only in Eternity, where the earthly drama of predation is abolished (Damon, 1988: 242).

### 3. Cognitive Approach and Frames

Classical interpretations of “*Night*” usually emphasize the idyllic calm of the nocturnal scene, divine protection, and the harmony of the created world, treating night as a temporal pause in which evil is neutralized by the presence of angels. At the same time, such approaches scarcely explain how the text itself organizes the reader’s perception or why motifs of danger

and guardianship coexist without open conflict. A cognitive approach makes it possible to move from interpretive outcomes to an analysis of frames – stable mental scenarios through which the poem constructs the imagined space of Innocence. Central to this process are nuclear frames, which establish the basic cognitive scenario and remain present throughout the text, while peripheral frames specify, modify, and deepen this scenario.

Among the nuclear frames is that of **“nocturnal danger”**, which establishes the initial condition of the entire scene. Night appears not as a neutral background but as a state of potential threat, concretized through images of predators and the lexis of hunting: *“wolves and tygers howl for prey”*, *“rush dreadful”*. The threat is not realized in the form of direct violence; however, it is constantly present as a possibility that structures the overall emotional background.

In parallel, the frame of **“vulnerable beings”** unfolds, formed by the nominations, such as *“lambs”*, *“sheep”*, and *“children”*, as well as by repeated references to sleep, in particular the paradigmatic forms of the lexeme *“sleep”*. Here sleep functions as a cognitive marker of the loss of agency: the beings are physically present but deprived of the capacity to act or defend themselves. This frame directs the reader toward an empathetic mode of perception and highlights the asymmetry between threat and defenselessness.

A response to this asymmetry is provided by the frame of **“angelic guardianship”**, constructed around the image of *“angels”* and the lexis of care and surveillance – *“pour blessing”*. Syntactically, this frame is reinforced by the active role of the angels as agents of action: they move, observe, and bless. Against the backdrop of passive, sleeping creatures, angelic presence creates a sense of compensatory protection.

The interaction of these structures gives rise to the frame of **“conditional safety”**, which has no single lexical trigger but emerges from the overlap of danger, vulnerability, and guardianship. Safety in the poem is not presented as a guaranteed state: it exists only as long as the protective action continues. Accordingly, Innocence appears as a fragile equilibrium rather than as an ontologically secured space.

Alongside the nuclear frames, the poem activates peripheral frames that do not create an autonomous scene but refine the mode in which it is experienced. Thus, the frame of **“surveillance”** deepens angelic guardianship by shifting the emphasis from outcome to process. It is formed by verbs of duration and repetition, as well as by the image of circular movement *“round”*, which underscores the continuity of nocturnal watchfulness.

The frame of **“boundary”** structures the nocturnal space through the nominations *“fold”*, *“den”*, and *“Heaven’s gate”*. The world of the poem is organized as a system of demarcations between the protected and the dangerous, the internal and the external, the earthly and the heavenly. In this sense, night is conceived not as a homogeneous space but as a network of zones with differing degrees of vulnerability.

Finally, the frame of **“cyclicity”** inscribes night into a broader diurnal and cosmic order. The repetition of the motifs of sleep, watchfulness, and blessing mitigates the absoluteness of threat: night appears as a phase with a beginning and an end and therefore becomes subject to order and control.

#### 4. Conceptual Metaphors

In *“Night”*, conceptual metaphors shape the way night is understood as a space of tense coexistence between threat, guardianship, and sacred order. By mapping properties of natural, spatial, and bodily domains onto ethical and theological meanings, Blake constructs a model of Innocence that does not deny danger but balances it through the presence of vigilance and mercy.

1. **“Night is a time of active threat”**. The phrase *“When wolves and tygers howl for prey”* projects the conceptual domain of hunting onto the temporal dimension of night. In this metaphorical mapping, night appears as a period in which danger is not concealed but acoustically and verbally marked (*“howl”*). This is not abstract evil, but a concrete activity that determines the background tension of the entire scene.

2. **“The nocturnal world is a pastoral space of Innocence”**. The simile *“the moon like a flower”* and the personification *“sits and smiles on the night”* transfer the domain of natural beauty and gentle vitality onto the nocturnal cosmos. The moon is conceptualized not as a cold luminary, but as an aesthetically and emotionally engaged element of the world. The metaphor creates a pastoral background in which night appears as a space capable of harmony.

3. **“Vulnerable beings are lambs”**. The word *“lambs”* structures the perception of nocturnal inhabitants through the pastoral-biblical domain of innocence, dependence, and the need for care. Here the lamb functions not merely as an animal image, but as a cognitive model of defenseless existence that requires external protection.

4. **“Guardianship is a quiet, unobtrusive presence”**. The lines *“Unseen they pour blessing”* and *“Where lambs have nibbled silent moves / The feet of angels bright”* map the domain of noiseless movement and proximity onto sacred action. Protection is conceptualized not as force or surveillance, but as an unnoticed being-near.

5. **“Safety is being in proximity to the body”**. The phrases *“They pour sleep on their head, / And sit down by their bed”* depict protection as bodily closeness. Guardianship is neither distant nor spatially abstract; it is localized beside the sleeping body. The metaphor brings sacred protection closer to gestures of human care.

6. **“Mercy is compassion without violence”**. The formula *“They pitying stand and weep”* (in the context of *“wolves and tygers”*) maps the domain of emotional empathy onto the response to threat. Angels do not destroy predators or drive them away, but respond with compassion. The metaphor models an ethical mode of balancing danger rather than eliminating it.

7. **“Peace is the coexistence of incompatible”**. The phrase *“And now beside thee bleating lamb, / I can lie down and sleep”* enacts a mapping in which harmony is conceived as the spatial coexistence of opposing entities. Predator and victim are not removed but brought together within a single space. The metaphor thus defines the innocent world as balanced rather than purified of tension.

## 5. Image Schemas

Frames and conceptual metaphors in the poem establish overarching semantic scenarios for understanding night as a space of harmony, protection, and moral order. At the same time, these abstract structures rely on more basic, pre-rational mechanisms of conceptualization rooted in embodied and spatial experience – namely, image schemas.

1. **PATH**. In the line *“The sun descending in the west”*, night is conceptualized as a stage of directed movement rather than as an abrupt rupture from daytime. The setting of the sun models a temporal trajectory with a beginning, development, and completion, within which night appears as a regular phase of the cycle of being.

2. **VERTICALITY**. The downward movement of the sun is combined with the motif of angels descending into the earthly realm: *“The feet of angels bright; / Unseen they pour blessing”*. The vertical orientation from above to below cognitively encodes the approach of the divine toward the earthly and shapes the perception of night as a time of spiritual proximity rather than separation from the sacred.

3. **CONTAINER.** The nocturnal world is conceptualized as a space of shelter and protected localization, verbalized through images of the nest and the place of rest: “*The birds are silent in their nest, / And I must seek for mine*”. This schema conceptualizes safety, belonging, and order within the night space, in which each being has its own place.

4. **PROTECTION.** Angels perform an active guarding function: “They visit caves of every beast, / To keep them all from harm”. Through this schema, night appears not as a sphere of danger but as a space of universal guardianship that extends both to vulnerable creatures and to predators.

5. **LIGHT / DARK.** The transition from day to night is not accompanied by a value-based opposition between good and evil. Darkness in “*Night*” does not negate moral order, since angelic presence preserves light in the spiritual dimension. In this way, light and darkness are reinterpreted within the coordinates of Innocence, where night becomes a condition of rest rather than threat.

6. **REST.** Recurrent motifs of silence, cessation of movement, and sleep form an embodied experiential schema of rest, culminating in the state in which creatures “*lie down and sleep*”. This complements the image of the path, emphasizing that movement does not disappear but is temporarily suspended for renewal.

7. **WHOLENESS.** In the poem, all living beings – humans, birds, lambs, and beasts – are included within a single nocturnal space without the opposition of “one’s own” versus “the other”. This schema constructs a model of the world as an integral moral system in which the nocturnal order encompasses all of creation.

## 6. Conclusions

This article has examined William Blake’s poem “*Night*” from *Songs of Innocence* through an integrative perspective that combines classical Blakean criticism with a cognitive-poetic framework. Engaging with established interpretations that emphasize the poem’s status as a work of Innocence confronted by fear and mortality, the limits of angelic guardianship and the primacy of love over force, the rejection of pastoral security and the entry into darkness as experience, and the extension of Innocence into an eschatological horizon of Eternity, the study has shown that these readings, while mutually consistent, leave open the question of how such tensions are structurally sustained within the text.

The cognitive analysis developed in this study does not replace these readings but clarifies the textual mechanisms through which they operate. By identifying nuclear frames such as **nocturnal danger**, **vulnerability**, and **angelic guardianship**, alongside peripheral frames including **surveillance**, **boundary**, and **cyclicity**, the analysis demonstrates how the poem constructs a coherent cognitive scenario in which Innocence appears as a state of **conditional safety** rather than absolute protection. This framework explains why motifs of threat and care coexist without contradiction or narrative resolution, a tension repeatedly noted by commentators but not previously systematized.

The examination of conceptual metaphors further reveals how Blake balances darkness and moral order at a pre-reflective level of experience. Metaphors of unobtrusive guardianship (“*Unseen they pour blessing*”), compassionate restraint (“*They pitying stand and weep*”), and coexistence without violence (“*beside thee bleating lamb, / I can lie down and sleep*”) articulate the ethical vision described by Gillham and Gardner through embodied and spatial mappings. At a more fundamental level, image schemas such as **PATH**, **VERTICALITY**,

**CONTAINER, PROTECTION, and REST** integrate night into a cyclical and ordered world, supporting Glen's observation that darkness in "Night" is not deferred or denied but fully entered and conceptually mastered.

Beyond literary interpretation, the results of this study have direct implications for the translation of Blake's poetry into other languages. By making explicit the cognitive structures that organize meaning in "Night", the analysis helps translators move beyond surface lexical equivalence toward the preservation of underlying frames, metaphors, and image schemas.

Further research may extend this integrative and translation-oriented approach to other poems in "*Songs of Innocence and of Experience*", tracing how cognitive structures interact with established interpretive traditions across the two states. In addition, combining cognitive analysis with the study of Blake's illuminated plates may further illuminate the multimodal foundations of his poetic and visual art.

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**MADAD CHOBANOV AND ONOMATOLOGICAL ISSUES****Mushfig Borchali (Chobanov)**PhD in Philology, Azerbaijan Technical University, Azerbaijan  
orcid.org/0009-0008-86842722**Summary**

The article examines the scientific work of academician Madad Chobanov, who is known as a well-known Turkologist and public figure, an outstanding linguist-scientist, onomastician, especially an anthroponymist and toponymist, especially his research work in the field of onomology, and the reviews written about these works. It is noted that Madad Chobanov successfully defended his candidate dissertation on the topic "Lexicon of Azerbaijani Dialects of the Bolnisi Region of the Georgian SSR" at the Institute of Language and Literature of the Academy of Sciences of Uzbekistan in Tashkent in 1973, and in the same year he was elected a teacher at the Azerbaijani department of the Tbilisi State Pedagogical Institute named after A. S. Pushkin. He worked at this institution of higher education, later renamed the Tbilisi State Pedagogical University named after S. S. Orbeliani, and now Ilia University, for exactly 21 years, until 1994, as a lecturer, associate professor, professor, deputy head of department, and head of department.

Madad Chobanov successfully defended his doctoral dissertation on the topic "Fundamentals of Azerbaijani anthroponymy" at Baku State University in February 1992, was awarded the degree of Doctor of Philological Sciences, and was elected a professor in 1993. He has been continuing his scientific and pedagogical activities in Baku since 1994. He worked as vice-president of the "Futurologist" Continuous Education Complex, vice-rector of the Azerbaijan Futurology University, rector of the Azerbaijan Elite University, dean of the "Higher School Teachers" faculty at the Azerbaijan State Institute for Advanced Training and Retraining of Senior Pedagogical Personnel, and in 1996 was elected head of the "Languages" department at the Azerbaijan Higher Military School named after Heydar Aliyev - Azerbaijan Higher Naval School, and worked in that position with honor and dignity for many years.

The article focuses on the works of only one of these scientists - the former head of the "Methodology of Teaching the Azerbaijani Language" department of the Azerbaijan State Pedagogical University, Doctor of Philological Sciences, the late Professor Azizkhan Tanriverdi, which are well known to the scientific community, refers to his writings about academician Madad Chobanov, and briefly presents to the readers the services rendered by M. Chobanov in the field of onomology.

**Key words:** Azerbaijani language, linguistics, Turkology, onomastics, anthroponymy, toponymy, Madad Chobanov, Azizkhan Tanriverdi.

DOI <https://doi.org/10.23856/7405>

**1. Introduction**

The well-known Turkologist and public figure, distinguished linguist-scholar, and renowned specialist in onomastics – particularly as an anthroponymist and toponymist – Mədəd Çobanov (1937–2023) lived an exceptionally meaningful and honorable life. Regardless of where he lived or worked, he always conducted himself with dignity and integrity. Beginning

his professional career as an ordinary secondary school teacher, he rose through the academic ranks to become a university lecturer, associate professor, professor, department chair, dean, and rector. Through his tireless efforts, dedicated labor, extensive and comprehensive scholarly, pedagogical, and social activities, as well as his rich and valuable body of work, he was awarded the highest academic degree – Doctor of Philological Sciences – and honored with the highest academic titles of Professor and Academician.

Academician Mədəd Çobanov delivered presentations at international congresses, scientific-theoretical and scientific-practical conferences, symposia, and seminars held in Azerbaijan, Georgia, Turkey, Russia, and the republics of Central Asia. Dozens of his scholarly articles and books were published in these countries.

The works of Academician Mədəd Çobanov were highly appreciated by distinguished scholars, prominent specialists, and public figures. Among them were the world-famous writer and well-known Turkologist Chingiz Aitmatov; Academician Edhem Rahimovich Tenishev (Moscow); Academician Shanazar Shaabdurakhmanovich Shaabdurakhmanov (Tashkent); Uzbek scholars Professors Nasir Shukurov, Etibarkhanim Nasirova, Fattoh Abdullayev, Kayum Kayumov; Kazakh scholar Ali Abbas Chinar; Kyrgyz scholar Gulzura Cumakanova; Turkish scholars Hamza Zülfikar, Cengiz Alyılmaz, Doğan Kaya, Fazıl Erqaş, Metin Kara, Şurəddin Məmmədli, Gülnara Qoca-Məmmədova; as well as Azerbaijani scholars Abdüləzəl Dəmirçizadə, Afad Qurbanov, Əlövsət Abdullayev, Ramiz Mehdiyev, Həsən Mirzəyev, Nizami Cəfərov, Musa Adilov, Səyyarə Mollazadə, Həsərət Həsənov, Kamil Vəliyev, Şamil Qurbanov, Yusif Seyidov, Əflatun Saraclı (Məmmədov), Tofiq Əhmədov, Qəzənfər Kazimov, Nizami Xudiyev, Nəbi Əsgərov, İbrahim Bayramov, Əzizxan Tanrıverdi, Buludxan Xəlilov, Aslan Aslanov, Fidan Qurbanova, Sevindik Vəliyev, Çingiz Hüseynzadə, Razim Məmmədli, Əli Rza Xələfli, Sadiq Zaman, and others.

In this article, we focus on only one of these scholars – the late Professor Əzizxan Tanrıverdi, Doctor of Philological Sciences and former head of the Department of Methodology of Teaching the Azerbaijani Language at Azerbaijan State Pedagogical University. Referring to his well-known works and his writings about Academician Mədəd Çobanov, we briefly present once again to the reader M. Çobanov's significant contributions to the field of onomastics.

## 2. Main part

In his article entitled “Mədəd Çobanov and Issues of Onomastics,” published in the newspapers “Şərqi səsi” (February 2007) and “Hakimiyyət və gələcək” (April 4, 2007), Professor Ə. Tanrıverdi begins with the following introduction:

“In the history of Azerbaijani science and culture, there have been many distinguished personalities who worked in several fields and achieved success in each of them. Even in the modern period, there are not few individuals with encyclopedic knowledge who stand out for the richness and breadth of their activities. One such figure is Academician Mədəd Çobanov, who is known at least throughout the Turkic world and the CIS as a scholar, teacher, publicist, and translator, and whose works have been published in Azerbaijani, Turkish, Uzbek, Kazakh, Kyrgyz, Russian, Georgian, Armenian, and other languages. Regardless of the field in which he worked or wrote, he always kept in focus the greatness and strength of the Turkic world, as well as its rich language, history, and ethnography” (*Tanrıverdi, 2007*).

This characteristic is vividly reflected in more than 80 books published by the author over different years, including 15 monographs, textbooks, and teaching manuals, as well as

in more than 200 scholarly articles and over 250 scientific-publicistic writings. Among his major works are *Fundamentals of Azerbaijani Studies*, *Azerbaijani Onomastics*, *Fundamentals of Azerbaijani Anthroponymy*, *Toponyms of Borchaly*, *The Lexicon of Borchaly Dialects*, *Linguistic Analysis of the Text*, *Pedagogical Issues*, *Towards the Literary Unity of the Turkic Languages*, *The Book of Dede Qorqud – Heroic Epic*, *Literary Reflections*, *Issues of Linguistics*, and others. In all these works, his scholarly depth, national consciousness, and dedication to Turkic heritage are clearly manifested.

The article also reviews the meaningful life path of Professor Mədəd Çobanov. It notes that Mədəd Namaz oğlu Çobanov was born on April 11, 1937, in the ancient Borchaly region – in the village of Darbaz in the Bolnisi district of present-day Georgia. He graduated from the A. S. Pushkin Tbilisi State Pedagogical Institute and began his pedagogical career at the secondary school in his native village of Darbaz. After working as a teacher for one year, he was called to military service. He graduated from the Officers' School and, after being discharged from the army with the rank of senior lieutenant, worked for one year at the Bolnisi district Komsomol committee. He was later promoted and continued his activities in the district party committee.

At the same time, he pursued part-time postgraduate studies at the Institute of Linguistics named after I. Nasimi of the Azerbaijan Academy of Sciences. In 1973, in Tashkent, at the Institute of Language and Literature of the Academy of Sciences of Uzbekistan, he successfully defended his Candidate of Sciences (PhD) dissertation on “The Lexicon of Azerbaijani Dialects of the Bolnisi District of the Georgian SSR.” In the same year, he was elected as a lecturer in the Azerbaijani Department of the A. S. Pushkin Tbilisi State Pedagogical Institute. Later, at this higher education institution – renamed S. S. Orbeliani Tbilisi State Pedagogical University and currently known as Ilia University – he worked continuously for 21 years, until 1994, serving as lecturer, associate professor, professor, deputy head of department, and head of department.

Mədəd Çobanov successfully defended his doctoral dissertation entitled “Fundamentals of Azerbaijani Anthroponymy” at Baku State University in February 1992 and was awarded the academic degree of Doctor of Philological Sciences. In 1993, he was elected Professor.

From 1994 onward, he continued his scholarly and pedagogical activity in Baku. He served as Vice-President of the “Futurologist” Continuing Education Complex, Vice-Rector of the Azerbaijan University of Futurology, Rector of the Azerbaijan Elite University, and Dean of the “Higher Education Teachers” Faculty at the Azerbaijan State Institute for Advanced Training and Retraining of Pedagogical Staff.

In 1996, he was elected Head of the Department of Languages at the Heydar Aliyev Azerbaijan Higher Military School – Azerbaijan Higher Naval School – where he worked with honor and dignity for many years, more precisely until his retirement.

At different times, he also lectured at Azerbaijan State Pedagogical University and Azerbaijan Technical University.

He devoted great effort to the training of hundreds of teachers and dozens of scholars, serving as scientific supervisor, advisor, opponent, or reviewer for many of them.

For many years, Mədəd Çobanov was a member of the Expert Council of the Higher Attestation Commission under the President of the Republic of Azerbaijan.

He was elected a member of the Turkish Language Association (Türk Dil Kurumu) and a full member (academician) of the International Turan Academy and the New York Academy of Sciences.

During his tenure as Head of the Department of Azerbaijani Language and Literature at S. S. Orbeliani Tbilisi State Pedagogical University, he founded the literary association

“Qaynaq” within the department. Later, while serving as Head of the Department of Languages at the Azerbaijan Higher Naval School, he established another literary association, “Dalğalar qoynunda” (“In the Embrace of the Waves”), which he led for many years. He also served as editor of the newspaper bearing the same title. With his two-volume work *Literary Reflections*, he gained considerable authority as a literary critic.

He was the first to compile an Azerbaijani–Georgian Phrasebook (*Tbilisi, 1977, 1991; Baku, 2000*). Through works such as *I Love Georgia (Baku, 1977)*, *Songs of Friendship (in Georgian, Tbilisi, 1978)*, and the two-volume *Azerbaijani–Georgian Literary Relations (Baku, 2017, 2019)*, he contributed significantly to strengthening friendly ties between the two neighboring peoples.

In his youth, Mədəd Çobanov was also engaged in literary creativity. He authored one drama, two plays, two novellas, one epic poem, and dozens of short stories. His works were translated into Turkish, Russian, Georgian, Uzbek, English, French, and other languages. He himself translated several works from Russian and Georgian into Azerbaijani.

Əzizxan Tanrıverdi writes:

“Mədəd Çobanov is among those scholars who are able to synthesize teaching and research, theory and practice. It is worth noting that his work as a professor and head of department at a military school encouraged him to write on ancient Turkic military art. This is confirmed by sections such as ‘The Land of the Oghuz and Military Art,’ ‘The Heroes of the Oghuz and Their Battle Tactics,’ and ‘The Oghuz and Military Marches’ in Part II of the monograph *Fragments from a Journey into the World of Dede Qorqud (Baku, 1998)*, published jointly with Müşfiq Çobanlı.”

Tanrıverdi further emphasizes:

“Among the scholars conducting research in several directions within Turkology, including Azerbaijani linguistics, Mədəd Çobanov occupies a special place” (*Tanrıverdi, 2007*).

Academician Abdüləzəl Dəmirçizadə (Baku) quite rightly wrote:

“Mədəd Çobanov is one of the first scholars to investigate the contemporary problems of the Azerbaijani language from the standpoint of national consciousness and initiative.”

His numerous articles, monographs, and dictionaries published in the fields of anthroponymy, toponymy, dialectology, lexicography, and other areas are highly valued by specialists for their scholarly weight and scientific merit. They are widely cited as authoritative sources today, and there is no doubt that this will continue to be the case in future centuries.

As Tanrıverdi (2007) notes, “Problems of anthroponymy are among the topics most frequently addressed by Mədəd Çobanov.” For the first time, he compiled the dictionary *Azerbaijani Personal Names*, wrote an extensive preface to it, and published it as a separate booklet for readers (*Çobanov, 1981*). In 1993, the book was also published in Turkey under the title *Azerbaijani Male Names*.

Doctor of Philological Sciences, Professor Əzizxan Tanrıverdi, in works such as *Turkic-Origin Azerbaijani Anthroponyms (1996)*, *Personal Names in the Book of Dede Qorqud (1999)*, *Grammar of the 16th-Century Kipchak (Polovets) Language (2000)*, *The Book of Dede Qorqud and the Western Dialect (2002)*, *The Figurative Language of the Book of Dede Qorqud (2006)*, *The Lexical World of the Book of Dede Qorqud (2007)*, *The Linguistic Miracle of the Book of Dede Qorqud (2008)*, *Our Language, Our Spirituality (2008)*, *Personal Names Preserved in Ancient Turkic Sources (2009)*, *Historical Grammar of the Azerbaijani Language (2010)*, and particularly in his book *Historical-Linguistic Study of Turkic-Origin Azerbaijani Personal Names (Tanrıverdi, 2012)*, devoted substantial attention to the scholarly research of Academician Mədəd Çobanov.

He notes that:

“Mədəd Çobanov has published a number of theses, articles, and monographs related to various aspects of Azerbaijani anthroponymy. In his book *Fundamentals of Azerbaijani Anthroponymy*, published as early as 1983, he discusses the lexical-semantic groups of anthroponyms, their structure, naming traditions, and the lexical-semantic characteristics of auxiliary name categories such as pseudonyms and nicknames, supporting these issues with rich linguistic data. Among the noteworthy aspects of this work is the extensive study of shared names, polynyms, palindromic names, and the abbreviation of names” (*Tanrıverdi, 2012, p. 28*).

For the first time, based on the curriculum of the course “Special Course in Linguistics” предусмотренный in the study plans of philology faculties at pedagogical universities, Mədəd Çobanov prepared in 1981 a program entitled *Fundamentals of Azerbaijani Anthroponymy* (*Çobanov, 1981*), and in 1983 he developed a corresponding textbook under the same title. After being approved by the Ministry of Education of Georgia, both the program and the teaching manual were published by the “Qanatleba” publishing house in Tbilisi.

Mədəd Çobanov continued his research on Azerbaijani anthroponymy in later years, eventually writing his doctoral dissertation on this topic. In February 1992, he successfully defended his dissertation entitled “Fundamentals of Azerbaijani Anthroponymy” (*Çobanov, 1992*) / “Osnovy azerbaydzhanskoj antroponimiki” (*Çobanov, 1992*) at Baku State University (*Tanrıverdi, 2012, p. 29*). He was awarded the academic degree of Doctor of Philological Sciences by the former USSR Higher Attestation Commission and, in October 1993, was elected Professor. (The diploma and certificate were nostrified and revalidated in 1995 by the Higher Attestation Commission under the President of the Republic of Azerbaijan. – M.B.)

As Tanrıverdi (2007) emphasizes:

“This proves his special interest in the study of Azerbaijani anthroponyms. It is precisely due to these works that Mədəd Çobanov’s name is mentioned in Turkology alongside scholars such as N.A. Baskakov, E. Begmatov, N. Garbova, and T. Jamzakov, and in Azerbaijani linguistics alongside A. Qurbanov, M. Adilov, and H. Əliyev.”

According to Cəfərov (2012, p. 65), Mədəd Çobanov set as his goal the study of an urgent and highly relevant problem that required thorough investigation – namely, the formation of personal names in the Azerbaijani language, their regional distribution, frequency of usage, historical development, and other aspects. He critically analyzed previous scholarly research produced up to that time, offering scientific evaluations of each idea and argument. While examining works from different periods, he consistently adhered to the chronological principle and maintained an objective scholarly stance.

The author also addressed issues raised at onomastic conferences held both within Azerbaijan and abroad, analyzing related problems and considering the general scientific conclusions reached therein to be valuable. The dissertation carefully took into account the socio-political conditions and cultural levels of different historical periods, which enabled a more accurate interpretation of linguistic facts and enhanced the scientific quality of the research.

Throughout all chapters of the dissertation, Çobanov employed a range of specialized scientific methods consistent with the theoretical foundations of linguistics. His extensive use of comparative, historical, and quantitative methods of modern linguistics significantly increased the scholarly value of the work and enabled him to achieve his research objectives. As Cəfərov notes:

“Mədəd Çobanov’s work is, in the true sense of the word, the product of profound research and intense labor. It can be regarded as an original study in Turkological linguistics on issues of anthroponymy, based on rich linguistic material. The work possesses numerous positive qualities” (*Cəfərov, 2012, p. 65*).

Furthermore, Cəfərov (2012, p. 66) observes that:

“In Azerbaijani linguistics, anthroponyms – which constitute a broad segment of the lexical system – had not previously been studied in monographic form as an independent research topic. In selecting this subject, the doctoral candidate took into account the developmental conditions of personal names, linguistic diversity, and a number of other important characteristic features. The dissertation demonstrates M. Çobanov’s strong theoretical insight, independent research skills, and solid Turkological preparation. Overall, the dissertation is the result of labor demanding great effort. One of its notable strengths is the interconnection, logical consistency, and organic unity among all chapters of the research.” (Cəfərov, 2012, p. 66).

Based on his doctoral dissertation, Mədəd Çobanov prepared the book *Fundamentals of Azerbaijani Anthroponymy*, which was published in Russian in 1995 by the “Azerbaijan” publishing house under the title “Osnovy azerbaydzhanskoy antroponomiki” (Çobanov, 1995) and made available to a wide readership. In 1998, it was approved by the Ministry of Education of the Republic of Azerbaijan as a textbook for higher education institutions and published by the “Maarif” publishing house (Çobanov, 1998). A revised and expanded third edition was published in 2017 by the “Borçalı” publishing house (Çobanov, 2017).

The book provides a comprehensive analysis of general information about onomastics; anthroponymy and its object of study; the history of anthroponymic research in Azerbaijani linguistics; issues of anthroponym development; the concept of name and naming systems; surnames, pseudonyms, and nicknames; the structural and semantic foundations of names; anthroponymic phenomena such as shared names; naming traditions; the structure and origin of names; poetic anthroponymy; and other related topics.

Mədəd Çobanov also paid close attention to anthroponymy as a branch of onomology, discussing its research object, subdivisions, and types. He emphasized that the primary concerns of onomology include the origin of proper names, their degree of distribution, their correspondence to referents, stylistic possibilities, and related issues. He examined major branches of onomology such as anthroponymy, toponymy, and cosmonymy, and explained the division of onomology into general and special categories from the perspective of general linguistics.

This approach demonstrates that the author laid a theoretical foundation for the diachronic and synchronic analysis of Azerbaijani anthroponyms and considered research within that framework to be methodologically sound. Moreover, in systematically examining the history of research on Azerbaijani anthroponymic units, Academician Mədəd Çobanov critically evaluated the works of scholars such as V.A. Gordlevsky, A.N. Samoylovich, A. Qurbanov, M. Adilov, Z. Sadiqov, and others. He identified unresolved or insufficiently studied problems related to anthroponyms, and by employing such a methodological approach, he was able to clarify even the most subtle details concerning anthroponymic phenomena.

Taking into account that Azerbaijani anthroponyms have been approached from various perspectives and that several views have been proposed regarding their stages of development, the author systematized previous research and presented the following classification:

#### **The historical development of anthroponyms:**

1. Ancient anthroponyms
2. Anthroponyms of the medieval period (13th–19th centuries)
3. Modern anthroponyms (20th century)

Research shows that the division proposed by the author is both scientifically and logically sound. Moreover, Mədəd Çobanov identified the anthroponymic units characteristic of each historical period. For example, he determined that anthroponyms such as Alp, Qazan, Tanqristan, Ağvuqi, and Arslan were typical of Azerbaijani anthroponyms prior to the 12th century. Likewise, he substantiated that names such as Allah-verdi, Ağası, Mədəd, Bəsdı, and Güllü were characteristic of the 17th–19th centuries.

Mədəd Çobanov extensively studied anthroponyms connected with the history, culture, ethnography, and worldview of the Azerbaijani people – names that perform a function of national etiquette. For instance, when discussing the tradition of identifying a person by their father's name, he referred to *The Book of Dede Qorqud* to support his argument (e.g., Bayandur, son of Qatğan; Buğac, son of Dərsə Khan). This demonstrates that the author approached anthroponymic units and their structural models from a historical-linguistic perspective.

The topic of the **“System of Azerbaijani Anthroponyms”** occupies a special place in Çobanov's research. While analyzing patronymics and surnames within the system of primary name categories, he addressed the issue from both diachronic and particularly synchronic perspectives. Surnames derived from male and female personal names, as well as those formed from lexical bases not traceable directly to personal names, were for the first time subjected to broad and systematic linguistic analysis in Çobanov's work.

The author also systematically examined pseudonyms – classified within the system of auxiliary name categories – studying their historical origins, frequency of occurrence, etymology, and geographical distribution. He concluded that pseudonyms derived from toponyms, ethnonyms, zoonyms, hydronyms, cosmonyms, as well as from common lexical items, due to their diversity and distinctive characteristics, may be considered among the rare cultural treasures of Azerbaijani heritage.

In addition, Çobanov clarified the place of nicknames within the auxiliary name category system and analyzed their types, distinguishing between individual-personal, familial-generic, and local-collective nicknames.

Paying particular attention to the semantic groups of anthroponyms, Çobanov carefully classified the meaning-based categories of Azerbaijani anthroponyms without overlooking even minor details. He extensively analyzed anthroponyms derived from toponyms, ethnonyms, hydronyms, zoonyms, cosmonyms, as well as from the names of weapons. In confirming his views on anthroponymic semantics, he frequently referred to examples from classical literary texts. For instance, anthroponyms such as Qılınc (Sword), Kaman (Bow), and Sadaq (Quiver) were linked to the line from *The Book of Dede Qorqud*: “In Oghuz times, when a young man married, he would shoot an arrow...,” as well as to a bayatı beginning with the line “fresh quiver, fresh arrow.”

One of the least studied issues in Turkology is that of anthroponymic phenomena. This topic was thoroughly examined in Çobanov's works on anthroponymy, where he identified and clarified their most characteristic features. He substantiated, with concrete evidence, semantic groups of anthroponymic phenomena such as shared (common) names, polynyms, palindromic names, and abbreviated names. For example:

- Shared anthroponyms: Həsərət, Şirin, İntizar
- Polynym anthroponyms: Balaxanım–Xanbaba, Aygün–Günay
- Abbreviated anthroponyms: Q-əli (Qurbanəli), İ-Xəlil (İbrahimxəlil)

Evaluating highly Çobanov's article “Anthroponymic Phenomena in the Azerbaijani Language” (Çobanov, 1988) and his book *Fundamentals of Azerbaijani Anthroponymy*, Əzizxan Tanrıverdi, referring to Çobanov's statement that “312 genuine personal names have been formed in the Azerbaijani language based on the word ‘gül’ (rose/flower)” (Tanrıverdi, 2012, p. 22), concludes that more than half of the anthroponyms within the Azerbaijani anthroponymic system are of national origin (Tanrıverdi, 2012, pp. 110–111).

Issues such as the orthography of anthroponyms and poetic onomastics likewise did not escape M. Çobanov's attention. He systematically examined each of these topics in separate chapters and sections. It is sufficient to note one fact: in addressing the orthography of

anthroponyms, Çobanov identified 39 principal rules and 12 sub-rules. This clearly demonstrates that he approached linguistic phenomena not as a casual observer, but with the precision of a jeweler.

M. Çobanov was also among the scholars who studied Azerbaijani anthroponyms within the broader context of Turkic anthroponymy. For example, when discussing shared names, he writes that in Kazakh anthroponymy, due to certain traditions, one encounters names formed according to specific naming customs. In families with many daughters, male children were sometimes given female names. For instance, girls were given names such as Altay, Bolat (Polad), Yanıl (Yonıl), Yanılxan, and were raised as boys. Similarly, Çobanov's research shows that the name Bəxtiyar is characteristic not only of Azerbaijani anthroponymy but also of Uzbek, Kyrgyz, and Kazakh naming traditions.

In short, Academician Mədəd Çobanov's textbook *Fundamentals of Azerbaijani Anthroponymy* is a valuable contribution not only for students of philology faculties in higher education institutions, but also for teachers of Azerbaijani language and literature in secondary and vocational schools, as well as for master's students, doctoral candidates, and researchers.

Following the first edition of *Fundamentals of Azerbaijani Anthroponymy* (1983), Çobanov published a series of important works, including *Linguistic Analysis of the Text* (1984, 1987), *On the Methodology of Teaching the Azerbaijani Language* (1986), *Surname. Pseudonym* (1987), *Semantics and Orthography of Azerbaijani Personal Names* (1990), *Azerbaijani Male Names* (1993), and others.

Among these works, *Surname. Pseudonym and Semantics and Orthography of Azerbaijani Personal Names* are particularly significant. The latter was approved by the Ministry of Public Education of the Republic of Georgia as a teaching aid for secondary school teachers of Azerbaijani language and literature and was published in 1990 by the "Qanatleba" publishing house. The editor of the book was Prof. Q. Kazımov, and the reviewers were T.M. Əhmədov and Prof. T. Əfəndiyeva (*Çobanov, 1990*).

As Ə. Tanrıverdi writes:

"In his book *Surname. Pseudonym*, published in 1987, M. Çobanov for the first time subjected surnames and pseudonyms to comprehensive study. After interpreting the issues of name and naming systems, as well as patronymics, from a Turkological perspective, the author discusses the motivational principles underlying surnames and identifies three main principles in the formation of Azerbaijani surnames: surnames derived from male names, surnames derived from female names, and surnames derived from lexical bases not functioning as personal names. The book also explains the origin, historical formation, usage contexts, meanings, areal distribution of pseudonyms, and the structural relationship between pseudonym and autonym. Additionally, an Azerbaijani dictionary of pseudonyms containing nearly 600 entries was compiled" (*Tanrıverdi, 2012, pp. 28–29*).

Emphasizing the richness, linguistic diversity, and functional significance of pseudonyms within the Azerbaijani anthroponymic system, Tanrıverdi notes that pseudonyms occupy a special place within the system of auxiliary name categories. While acknowledging the presence of pseudonyms formed on the basis of Arabic and Persian appellatives, he states that his own research mainly focuses on pseudonyms formed from Turkic-origin appellatives and onomastic units. He further remarks:

"The Turkic-origin pseudonyms analyzed in our study were taken from the 'Dictionary of Pseudonyms' (pp. 67–91) in M. Çobanov's book *Surname. Pseudonym*, as well as from literary works and various monographs" (*Tanrıverdi, 2012, p. 143*).

Professor Tanrıverdi also observes:

“M. Çobanov addressed not only the structure and lexical-semantic characteristics of nicknames, but also the issues of individual-personal, familial-generic, and local-collective nicknames” (*Tanrıverdi, 2012, pp. 28–29*).

He quite rightly concludes that Professor M. Çobanov’s research in onomastics is not limited solely to anthroponymy. A significant place in his scholarly work is also devoted to the linguistic analysis of toponymic units. Dozens of his articles on toponyms, as well as the book *Toponyms of Borchaly* (*Çobanov, 1996*), co-authored with Müşfiq Çobanlı, have long been familiar to intellectuals and the wider reading public.

The world-renowned writer and Turkologist Chingiz Aytmatov wrote:

“I am greatly pleased by the well-known Turkologist Mədəd Çobanov’s recent scientific research in the field of onomastics. His studies in the field of toponymy, in particular, are highly valuable and commendable. His presentations at the international scientific conferences held in Ufa and Bishkek especially attracted my attention. I wish him success on this path!” (*Scientific Activity of Academician Mədəd Namaz oğlu Çobanov, 2024a*).

The internationally recognized academician Edhem Rahimovich Tenishev (Moscow) wrote:

“Professor M.N. Çobanov, who is well acquainted with the history of philological science, skillfully selects and investigates topics that correspond to the contemporary level of scholarship and remain insufficiently studied. This enables him to achieve new accomplishments in the field of science” (*Scientific Activity of Academician Mədəd Namaz oğlu Çobanov, 2024b*).

Academician Shanazar Shaabdurakhmanovich Shaabdurakhmanov (Uzbekistan), who considers Çobanov to belong to the generation of scholars devoted to both preserving the rich traditions of Azerbaijani linguistics and Turkology and addressing the modern general problems of Turkology, concluded his reflections as follows:

“A close examination of Professor M.N. Çobanov’s scientific work reveals that he is among those scholars who pay special attention to organically linking the past of science with its present, and its present with its future. In other words, in his works, the historicity of modernity and the modernity of historicity are consistently analyzed in parallel” (*Scientific Activity of Academician Mədəd Namaz oğlu Çobanov, 2024c*).

In his book *Toponyms of Borchaly*, Academician Mədəd Çobanov, for the first time, clarified the history of the settlement of Turkic (Azerbaijani) tribes in Georgia by referring to historical sources such as *Moksevai Kartlisa* and *Istoriia Alvan*. He substantiated, with undeniable evidence, that the Borchaly region is an ancient Turkic homeland. Within this framework, he also explained the toponym “Borchaly” as meaning “hill of wolves.”

In the section entitled “Borchaly Toponyms Resonating with the World of Dede Qorqud,” the author discusses toponymic units such as Baydar, Bəytəkər, Sarvan, Ulaşlı, and Qızlar bulağı, highlighting their parallels with place names mentioned in *The Book of Dede Qorqud*. He emphasizes their importance for a deeper study of ancient Turkic history, language, and ethnography.

For the first time, the book analyzes Turkic-origin oikonyms in Georgia from the perspective of historical onomastics and identifies five main groups:

1. Ancient oikonyms
2. Ancient and modern oikonyms
3. Modern oikonyms
4. Hybrid oikonyms

### 5. Recurrent or multi-variant oikonyms

Each of these groups is substantiated with concrete linguistic evidence.

For example, oikonyms such as Aziki (Azlar), Qanlı, Qazan, Qıpçaq, Hunlar, and Qaramanlı – derived from the names of Turkic tribes that played an active role in the ethnogenesis of the Azerbaijani people – are examined within the system of ancient oikonyms.

Mədəd Çobanov was also the first to systematically analyze the semantics of Borchaly toponyms, particularly their semantic groupings. In this section, the following categories are examined from a synchronic perspective:

- Anthroponym-based toponyms: Bəylər, Qasımlı, Səfərli
- Ethnotoponyms: Quşçu, Ulaşlı, Türklər
- Hydrotoponyms: Qarabulaq, Qırxbulaq, Südbulaq
- Zootoponyms: Ayıtılası, Danaqıran, Leyləkuçan, Canavarlı
- Phytotoponyms: Armudlu, Qamışlı, Zoğallı, Vələsli, Palıdlı
- Memorial toponyms: Sabirkənd, Səməd Vurğun Street, Nərimanov Avenue, Vazeh

Lane

- Cosmotoponyms: Ayorta, Güney, Gündoğan

Through such a comprehensive and methodologically grounded analysis, Çobanov significantly enriched both Azerbaijani onomastics and Turkological scholarship.

The section entitled “Brief Essays on Borchaly Toponyms” may be regarded as the central and most significant part of the book under discussion. First, this is because it provides extensive information on the historical origins of toponyms such as Azgəyliyən, Kaspi, Sadaqlı, Kəpənəkçi, and others, which resonate with the Orkhon–Yenisei inscriptions and The Book of Dede Qorqud. Second, since each toponymic unit is analyzed from a historical-linguistic perspective, the characteristic features of archaic appellative-based toponyms become clearly understandable. For example: Qarayazı (“large plain”), Qaracala (“large hollow”), Sadaqlı (derived from sadaq – “quiver”), Tüllər (from tülü – the name of a tribe), and others.

Such examples confirm that in Toponyms of Borchaly, dozens of toponymic units are provided with detailed etymological explanations. Concluding his article “Mədəd Çobanov and Issues of Onomology,” published in the newspapers Şərqi səsi and Hakimiyyət və gələcək, Professor Əzizxan Tanrıverdi, Head of the Department of Methodology of Teaching the Azerbaijani Language at Azerbaijan State Pedagogical University and Doctor of Philological Sciences, wrote:

“In this brief article, I have attempted to cover only a small portion – though the most important aspects – of Prof. Mədəd Çobanov’s research related to onomology... Finally, I sincerely congratulate the distinguished linguist-scholar, renowned Turkologist, Doctor of Philological Sciences, Professor Mədəd Çobanov on the occasion of his 70th anniversary and wish him new creative successes” (*Mədəd Çobanov və onomologiya məsələləri*, 2018).

Even after this article was published, and despite his retirement, Academician Mədəd Çobanov continued his scientific and pedagogical activities until the end of his life. He authored a number of new scholarly works, served as General Director of the “Education” Center of the Republic of Azerbaijan, and was elected a member of various award commissions and editorial boards of newspapers and journals. He was repeatedly honored with certificates of merit, orders, medals, and numerous other awards.

In 2021, Academician Mədəd Çobanov was awarded the Presidential Scholarship.

His 60th, 70th, 75th, 80th, and 85th anniversaries (1997, 2007, 2012, 2017, and 2022) were solemnly celebrated in Azerbaijan and Georgia. Books were written about him, scholarly articles were published, radio and television programs were produced, and documentary films

were made. Among them was the book by Academician Nizami Cəfərov entitled “A Diligent Scholar, a Renowned Linguist-Turkologist” (Cəfərov, 2012).

Academician Mədəd Çobanov passed away on June 2, 2023, at the age of 86 and was buried on June 3 at the Dede Qorqud Cemetery in Baku.

He was also a devoted family man. Together with his wife, medical professional Rima Nadir qızı Əhmədova-Çobanova, he raised five children – four daughters and one son. All of them received higher education and have families of their own. His son and two of his daughters are scholars. He had nine grandchildren and eighteen great-grandchildren; nine of his grandchildren have also received higher education.

Even after his passing, Academician Mədəd Çobanov has not been forgotten. Memorial events have been held in Baku and Tbilisi, as well as in Bolnisi, Dmanisi, Marneuli, Gardabani, and other regions. Numerous poems, epics, and essays have been dedicated to his memory; various events, competitions, olympiads, and contests have been organized in his honor. Books on his life and scholarly legacy have been published; series of articles have appeared in the Azerbaijani and Georgian press; elegantly printed volumes have been presented in both Azerbaijan and Georgia; and these events have been widely covered in newspapers, radio and television programs, and on various internet platforms. All of this has further contributed to the development of Azerbaijani science and strengthened the friendship between the Azerbaijani and Georgian peoples.

### 3. Conclusions

In summary, in the scholarly legacy of Academician Mədəd Çobanov, such fields as the Azerbaijani language, Azerbaijani studies, Turkology, the unity of Turkic literary languages, linguistics, dialectology, onomastics – particularly anthroponymy and toponymy – as well as literary criticism, literary studies, and literary relations, including the reflection of Azerbaijani–Georgian friendship and brotherhood traditions in artistic and academic literature, were elevated to a new level of analysis.

These areas found broad expression within scientific thought through his works, ensured the enduring relevance of his scholarship, and significantly enriched Azerbaijani linguistics and literary studies, Turkology and philology in general, as well as Azerbaijani–Georgian literary and cultural relations.

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## METAMODERN OSCILLATION OF TIME AND SPACE AND ITS SYMBOLIC TOOLS: DAVID MITCHELL'S POSTIRONIC WRITING IN THE NOVEL "CLOUD ATLAS"

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### Summary

This paper explores the metaphorical construction of time and space in David Mitchell's "Cloud Atlas". Time and space in the novel function as interdependent, symbolically charged categories that materialize through the symbolism of clocks, focus on specific dates, conveyed through the motif of travel and diverse means of travel (as symbols of movement). Analyzing all six interconnected narratives, the article shows how characters try to master their individual spatiotemporal frameworks, embodying a postironic desire to control the abstract categories of time and space. However, these efforts are consistently undermined by the cyclicity of time and the instability of symbols, which function as carriers of bipolar emotional tension. The narrative trajectory of "Cloud Atlas" reveals a model of civilization progressing not linearly but cyclically from emergence to decline, despite persistent attempts of all the characters. Meta-modern oscillation in "Cloud Atlas" manifests through time and space as fluctuating forces of hope and collapse, progress and disappointment, which are in constant dynamic balance. Thus, "Cloud Atlas" conceptualizes time and space as a dynamic, oscillatory system that reflects emotional, ethical, and civilizational patterns across generations. The postirony of time and space cyclicity lies in the fact that all six narrators, both individually and collectively, are moving towards apocalypse while maintaining their faith in renewal.

**Key words:** metamodernism, postirony, symbolism, oscillation of time and space, David Mitchell's "Cloud Atlas".

DOI <https://doi.org/10.23856/7406>

### 1. Introduction

The oscillation between postirony and sincerity creates the dynamic tension necessary for the metamodern novel, which makes it both profound and reflexive, in which sincerity does not negate irony, nor does irony devalue sincerity. Within such oscillatory movements postirony reveals its potential as a universal, transcultural, and productive model of thinking. Consequently, such "fluctuations" ensure the continuous movement and flexibility of metamodern concepts in the context of global cultural and technological progress in all its value and ethical manifestations.

David Mitchell's "Cloud Atlas" presents a richly layered narrative that challenges conventional perceptions of time and space. The novel portrays civilization's progress as non-linear, oscillating between emergence and decline. Synthesizing philosophical conceptions of "*time*" and "*space*" as fundamental categories through which human existence is conceptualized, G. Zoran extends this equivalence into the literary sphere: "*Independent or interdependent, space and time are perceived as complementary aspects of equal status, belonging to*

a common field of debate” (Zoran, 1984: 309). The harmonious interaction between temporal and spatial dimensions influences both the formation of imagery and the narration: “...to understand the specifics of modeling artistic time and space, it is advisable to use an interdisciplinary approach, which allows for a multi-faceted analysis of the text through the prism of philosophy, cultural studies ...” (Ishchenko, et al., 2025: 124), since even the author’s fictional world is governed by the integrative laws of the universe. Accepting the notion of an inseparable epistemological relationship between time and space, this study proceeds to examine the nature of time and space as realized within literary narrative.

## 2. Time and space in metamodern narrative

J. Hillis Miller argues that every literary narrative functions as an allegory of temporality, since the act of reading, by virtue of its spatial inscription, is inherently sequential. Meaning emerges precisely from the ordered succession of words: “*The words must be read one after the other if sense is to be made of the narration, just as, for human or literary temporality, moments in time follow one another until they add up to make a story*” (Hillis Miller, 2003: 91). Thus, for J. Hillis Miller, the linguistic articulation of time and space constitutes the primary object of literary analysis: “*Literature, after all, is made of words*” (Hillis Miller, 2003: 87). Grounded in M. Heidegger’s “*Being and Time*” (1927), J. Hillis Miller argues that linguistic and imagistic representations of temporality in Western languages are largely spatial, whereby time resists direct representation and instead assumes an abstract form.

M. Kane emphasizes the abstract nature of such categories as “time” and “space”, whose meaningfulness emerges through their apprehension within the reality of everyday life: “*Those wider notions themselves are not usually colourless, empty abstractions either, but are deeply influenced by experiences and perceptions of history, culture, geography*” (Kane, 2020: 3). M. Currie highlights the ontological distinction between the future as it exists within the text and the future in its general, abstract sense, arguing that the reader’s capacity to undertake a spatiotemporal journey into the future (“*an excursion into the future*”) and subsequently return to the present constitutes a singular reading experience, with no analogue in the real world. (Currie, 2006: 22). Building on the notion that time and space are imbued with meaningful events, contextual nuances, values, and emotional resonances, the spatiotemporal dimension of a literary work can be understood as a medium through which the author’s intended meanings are realized.

P. Smethurst argues that within the framework of time and space, consciousness is capable both of shaping and organizing reality and of reinterpreting it. (Smethurst, 2000: 5). Novelistic time and space convey both real and unreal worlds; in realist novels, time and space are closely aligned with empirical reality, “*close to actual historical and geographical realities to present models or microcosms of the real world*” (Smethurst, 2000: 5). At the same time, C. Bourne and E. C. Bourne argue that the fictional world only simulates the form of the actual world, without replicating its underlying ontological structures. The temporal and spatial dimensions of a literary work are subordinated to artistic intentionality rather than to the philosophical or ontological structures of empirical reality: “*...the structure of what is represented by fictions is not mirrored in the structure of the ontology provided by these realist accounts. The structure represented in fiction is world-like: things participate in events and have their properties at times and places*” (Bourne et al., 2016: 15). Thus, the framework of time and space of the novel is circumscribed by authorial meanings, narrative structure, and motifs, and is capable of materializing within the poetic dimension, most notably through symbols.

### 3. Constructing postirony through spatiotemporal cyclicity and emotional oscillation in “*Cloud Atlas*”

The metamodernist idea of the cyclicity and nonlinearity of progress resonates with the author’s narrative conception of “*Cloud Atlas*”, where it is realized through a nonlinear, fragmentary compositional structure that demonstrates the impossibility of sustained civilizational advancement. Taking this universal principle of metamodernist worldmaking as its foundation, D. Mitchell constructs a postironic time and space paradox across all six narratives of the novel: while each character advances *linearly* along their own spatiotemporal narrative progression, their convergence ultimately forms a *cycle* – a coherent, sequential model of the development of human civilization.

Despite their sincere efforts, the characters’ inability to alter the predetermined civilizational progression of D. Mitchell’s fictional world serves as a mechanism for generating *postirony* – an effect that becomes perceptible only from the reader’s perspective across all six narratives. Each character strives to “hear” across time and space, yet their inherent incapacity to truly listen to one another seems to oscillate them within both temporal and spatial dimensions, mirroring the very essence of metamodernist postirony. In their desire to measure their own spatiotemporal existence, at least *physically*, the characters cover distances and count the passing days.

P. M. Bray notes that a text generates a sense of movement through its narrative dynamics, metaphorical thinking, mechanisms of involuntary memory, and also through direct representations of motion, particularly in descriptions of automobiles: “*metaphors bridge the distance between places; they translate impressions and shuttle meaning*” (Bray, 2013: 216). The metaphorization of abstract notions of time and space is widespread in human culture, often mediated through recurrent symbolic forms. The sensory accessibility of these time and space symbols allows a reader to explore both their typological patterns, as well as their polysemy and context-dependent interpretive potential. The metamodernist pendulum, as a metaphor for instability, cyclicity, reinterpretation, and the continuous oscillation between opposites, corresponds to the concept of unfixed symbols – bearers of bipolar emotional tension.

### 4. Metaphorizing time and space: symbols in David Mitchell’s “*Cloud Atlas*”

The characters in D. Mitchell’s novel are connected not only across space and time but also, within their own narratives, they strive to assert control over their individual time and space, enacting the postironic notion of mastery over the abstract categories of time and space. Thus, time in the novel is metaphorically represented through *the symbolism of clocks* and *focus on specific dates*, while space is conveyed through *the motif of travel* and *diverse means of travel* as symbols of movement. Crucially, despite analyzing the symbols of time and space separately, the spatiotemporal dynamics operate holistically, without separating time from space. Time and space oscillations demonstrate unity and simultaneously reflect the emotional fluctuations within the novel, as well as the cyclicity of civilizational progress.

*The clocks* appearing in the characters’ narratives carry informational significance and possess a symbolic nature:

The clocks seem to pursue Robert Frobisher, insistently reminding him to hurry, as his time rapidly slips away: “*To the west, cows graze in the meadow, and the church tower rises above the wood beyond. Its bells are my own clock. (In truth, Zedelghem boasts a good*

many antique clocks, whose chimes go off some early, some late, like a Bruges in miniature)” (Mitchell, 2004: 137).

– In Luisa Rey’s story, the author specifies the exact time of Joe Napier’s death: “*Second to last, an inset digital clock blinks from 21:57 to 21:58*” (Mitchell, 2004: 792), which coincides with Margo’s awakening from a coma in the hospital, symbolizing an inevitable, time-regulated reckoning.

– In Timothy Cavendish’s story, a clock, stolen on the street, symbolizes the loss of romantic feelings between the character and his wife. “*My sixtysomething wrist was winched back through ninety degrees of agony, and my Ingersoll Solar was unclasped.... «Had my purloined Ingersoll not been a love present from a sunnier era of our now-Arctic marriage, I would have kept mum about the entire incident*” (Mitchell, 2004: 279).

– “Time”, as a complex philosophical category, is rendered concretely within the characters’ mental landscapes. **The focus on specific dates** functions as a metaphorical movement of both the characters and human civilization through time, structured and regulated by letters, diaries, video recordings (an orison), and memoirs:

1. Adam Ewing meticulously records the passage of time in the diary of his journey. The reader can closely trace the dynamics of the character’s emotional and physical exhaustion over time.

2. Each letter to Rufus Sixsmith is dated, as Robert Frobisher’s own reckoning of time is measured through the letters to his beloved.

3. Timothy Cavendish temporarily loses his sense of time: upon entering Aurora’s house and undergoing treatment, he becomes disoriented with regard to temporal orientation: “*No, I was stuck in Aurora House all right. A clock with no hands*” (Mitchell, 2004: 436).

4. Sonmi, the fabricant, narrates her story to the Archivist in a precise chronological order. This temporal structuring is significant not merely for recording events, but for observing the trajectory of Sonmi’s evolution – from a clone-waitress to a self-conscious individual.

5. The only exception is Zachry’s narrative, which is both chronologically extreme and continuous, occupying a central position in the novel. For Zachry, conventional temporal categories – past, present, and future – do not yet exist. His tribe does not measure time according to the clock-based systems of the “advanced” civilizations of the Prescients; instead, the tribe experiences time cyclically, mirroring the ceaseless alternation of the Sun and the Moon in the sky. The concept of rebirth within the tribe, occurring immediately after death, reintegrates each individual into the communal framework, strengthening tribal cohesion, moral integrity, and belief in the perpetuity of righteous existence. Significantly, Zachry lacks familiarity with clocks and he experiences fear toward them: “*When I was a schooler I was ‘fraid of that tick-tockin’ spider watchin’ n’ judgin’ us*». Водночас старійшини племені знають, що час важливий для цивілізації: “*I mem’ry Abbess sayin’, Civ’lize needs time, an’ if we let this clock die, time’ll die too, an’ then how can we bring back the Civ’lize Days as it was b’fore the Fall?*” (Mitchell, 2004: 460). The impulse to “reinvent” time and live in accordance with its laws represents a fundamental human necessity. Zachry’s primitive tribal society gradually progresses toward an awareness of itself at the chronological inception of the civilizational clock; in reclaiming time, humanity initiates a new cycle in the unfolding of history.

**The motif of travel** embodies both spatial and temporal transformation and is realized uniquely within each six stories. Through their journeys, the characters encounter new worlds, expand the boundaries of their thought, and undergo mental and existential changes. Each journey entails not only the negotiation of physical distance and engagement with unfamiliar people, but also a rigorous testing of inner capacities and the steadfastness of personal convictions in wholly novel and unpredictably challenging contexts:

1. Adam Ewing's maritime journey offers insight into the profound consequences of colonial and missionary endeavors, while simultaneously exposing the spectrum of human behavior – from loyalty and friendship to moral corruption and betrayal.

2. Robert Frobisher's journey to his distinguished mentor's residence, and his subsequent escape to Bruges, illuminates his latent musical potential, demonstrating how personal challenges both impede and catalyze artistic growth.

3. The pursuit of Luisa Rey's compels her to flee, yet she continues her quest for Sixsmith's report, gaining like-minded collaborators and essential assistance throughout her journey.

4. Timothy Cavendish's escape to Aurora's house, followed by his rescue, exemplifies the triumph of friendship and collaborative agency over the constraints of age and entrenched social biases.

5. Sonmi's escape from the restaurant and ensuing journey constitute a trajectory of spiritual enlightenment and the acquisition of experiential and cognitive insight.

6. Zachry's journey beyond the settlement with Meronym allows the protagonist to gradually shed fears, prejudices, and illusions, while acquiring new principles and convictions.

The journeys in "Cloud Atlas" are not solely pedestrian (as with Zakri and Meronym) but also traverse *diverse means of travel* – ship, airplane, car, and even a futuristic vessel of the future – guiding the characters along the narrative arc of a personal development. However, the notion of mastering space loses its significance once the symbolism of individual vehicles revealed as explicitly postironic:

- "Prophetess" – the name of the ship whose repair Ewing anticipates from the opening pages foreshadows the ambivalent nature of the colonial "civilizing" and Christianizing mission. Yet the vessel's prophetic significance is realized solely for Luisa Rey, for it is aboard this ship that Sixsmith's report comes to light.

- The vessel "Papa Song's Golden Ark", which Sonmi boards, functions simultaneously as a lethal mechanism for certain fabricants, processed into soap, and as nourishment for other clones who consume it – an explicitly postironic, futuristic meditation on the cyclical nature of life.

- Zachry and his tribe refer to the vessel of the Prescients as the "The Great Ship o' the Prescients", trusting in the Prescients' limitless wisdom and seemingly transcendent technologies. Zachry and his tribe are unaware that all the Prescients' efforts are directed toward finding ways to preserve the remnants of human civilization and ensure survival.

- The car journey for the fabricant Sonmi is not just a path toward knowledge or personal growth, nor a conscious choice; it is a constrained opportunity to encounter a world beyond the limits of her designated function. For Sonmi, the automobile symbolizes the replacement of one set of constraints with another – an illusion of a journey toward freedom.

- Unlike Sonmi, the genetically related journalist Luisa Rey personally drives the car, which becomes for her a symbol of control over her own fate and of the active pursuit of truth amid morally complex decisions, "an image of an independent wise woman" (*Babelyuk, et al., 2019: 63*), "her own success is a priority for her" (*Babelyuk, et al., 2019: 69*). However, resistance to the system – which will, in the future, evolve into a destructive authoritarian machine – yields only short-term results in Luisa's story, creating the illusion of journalistic victory and public agency.

- The car and train by which Timothy Cavendish flees symbolize a movement toward freedom, yet this freedom is conditional and temporary. His escape – first by train, then by car – is a chaotic navigation of obstacles and difficulties, many of which he has brought upon himself. Even after covering such a long distance, Timothy fails to overcome his own faintheartedness and irresponsibility.

– After delivering a copy of the crucial report to Luisa Rey, the physicist Isaac Sachs becomes a victim of an explosion. The airplane he had intended to escape in becomes a symbol of the sacrificial nature of science in the service of ethics, emphasizing that moral principles must be defended rather than evaded.

## 5. Conclusions

It is crucial to note that D. Mitchell's characters in "Cloud Atlas", bound by the constraints of their individual temporal and spatial horizons, subconsciously endeavor to align their actions across multiple genetic generations. Their pursuit of liberation from personal prejudices, internal development, and creative fulfillment requires journeys that are simultaneously psychological and existential. Yet the postironic structuring of time and space – characterized by cyclical recurrence and perpetual oscillation – subverts linear progression and sustained advancement, standing in tension with the principles of metamodernist temporality.

In "Cloud Atlas", symbolic instruments of temporal measurement, the motif of travel, and diverse means of travel as tools for negotiating space and as emblems of transformation and progress are rendered into conventional human technologies, documenting both the cumulative civilizational time of humanity and the cultural limits of nations. Clocks, letters, diaries, video recordings, and memoirs provide only a partial accounting of a civilization's existence, while advanced means of transport offer no assurance of evading the decline of the humankind.

The postirony inherent in time and space cyclicity consists in the simultaneous trajectory of six narrative points – and the totality of these points – toward both apocalypse and the decline of civilization, while paradoxically sustaining belief in the inception of a subsequent cycle: "a cyclical apocalyptic narrative" (Hicks, 2010: 55). In progressing forward, each character traverses the developmental trajectory requisite to their growth, yet when considered across the entirety of all six narratives, the story advances cyclically along a predetermined course – from genesis to civilizational decay.

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# THE ROLE OF PHATIC COMMUNICATION IN SHAPING SOCIAL COHESION IN PROFESSIONAL AND INTERPERSONAL INTERACTION

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## Summary

The aim of the study is to identify the functional and interactional characteristics of phatic communication that contribute to the formation and maintenance of social cohesion in professional and interpersonal interaction. The article examines the linguistic and pragmatic realization of phatic utterances in various communicative contexts, focusing on their role in establishing, sustaining, and regulating social contact. Within an interactional framework, such structural phases as openings, transitions, and closings are identified and analyzed as key domains of phatic communication. The scientific novelty of the study lies in its integrative approach, which for the first time systematically connects phatic communication with interaction design and social cohesion. The results of the study demonstrate that phatic communication is not a marginal or auxiliary phenomenon but a core interactional mechanism that supports communicative alignment and cooperative relations. At the same time, the use and interpretation of phatic forms are influenced by sociocultural norms, leading to variation in their pragmatic value across professional and interpersonal contexts.

**Key words:** phatic communication; social cohesion; professional interaction; interpersonal discourse; communicative alignment.

DOI <https://doi.org/10.23856/7407>

## 1. Introduction

The relevance of this study lies in the growing importance of social cohesion in professional and interpersonal communication. Phatic communication plays a key role in maintaining interaction, yet it remains insufficiently studied in relation to interaction design.

The research material includes examples of phatic communication discussed in linguistic literature, professional discourse studies, and English-language literary texts. These examples illustrate how phatic utterances function in openings, transitions, and closings of interaction. The theoretical basis of the study draws on works in pragmatics, discourse analysis, and interactional linguistics. Key concepts include the phatic function of language, politeness theory, and interaction design in communication. The practical significance of the study lies in its application to professional, educational, and intercultural communication contexts. The findings can be used to improve communicative competence and interaction design in workplaces and learning environments. Phatic communication is considered a special form of interpersonal communication, not determined by the quality of information transfer, aimed at regulating interpersonal relationships. Using a set of specialized speech tools, phatic communication realizes specific communication motives, in particular, the management of communication structure. Phatic cues ensure the successful implementation of the informational function of communication in the future. The normativity of communicative culture is associated with the systematization of

forms and rules of communication in their relation to the various communicative functions of language, in particular the phatic function, and the national and cultural specifics of their embodiment in speech activity. The phatic (contact-establishing, etiquette, ritual) function is an important aspect of communication and is studied in various fields – sociology, psychology, anthropology, pedagogy, and others. It is of great importance in interpersonal communication and helps establish and maintain contact between people in various situations and cultural contexts.

There is a trend toward an increase in the number of phatic genres – casual dialogues about nothing, speech etiquette, comic genres (jokes, anecdotes, puns, etc.), and conflict genres (quarrels, insults, etc.).

The phatic function has become more widely used in nonverbal communication – non-verbal signals, gestures, etc. Despite its importance for communication, phatic speech behavior undergoes changes not only of a positive but also destructive nature.

In any process of verbal communication, the degree of verbal informativeness of the communicants varies throughout the communicative interaction. Accordingly, it is common to distinguish between informative and non-informative speech acts. The concept of non-informative speech acts is closely linked to the concept of phatic communication, which began to attract the attention of scholars in the early days of communicative research.

Representatives of a single communicative culture share common rules that regulate their verbal behavior and dictate the necessity or lack thereof of engaging in communication. Interpersonal communication is built on the norms of a communicative culture, which can be defined as loose rules for constructing communication, correlated with speech forms and guiding people's behavior. It occurs in an ethnocultural environment familiar to communicants and presupposes knowledge of phatic communication norms. Phatic communication requires separate consideration, since the success and effectiveness of interpersonal interaction is determined not only by language proficiency but also by knowledge of sociocultural norms and the national-cultural characteristics of communication.

Current trends of discourse-oriented and interactional research indicate the following: social cohesion in a professional environment seems no longer a purely macrosocial phenomenon and occurs rather through the constant construction and formatting of a microsocial level of daily communication. Based on the above perspective and following the outline of the topic description above, phatic communication appears as a major interactive resource for the construction of a cooperative communicative environment. However, even though there are numerous papers focusing either on the topic of small talk or politeness strategies and relational work respectively, there seems to be a gap regarding the systematic connection of phatic communication and the topic of interactive design.

Interaction design, defined as the deliberate structuring of communicative acts in an interaction, has never been investigated from the perspective of phatic communication before. Phatic communication is typically considered in relation to turn-taking, speech acts, or task-driven trajectories of communication, which do not address the integration of phatic communication in the designing of professional interactions. Even though interaction design is a very significant aspect of society, which structures interactions on a massive scale in major organizations, there is definitely a gap in the literature that demands an in-depth analysis of phatic communication in relation to interaction design, which is at present considered a marginal phenomenon of linguistics, adding to the building of cohesion in society.

## 2. Background of the study

The term “phatic communication” was first introduced by B.Malinowski, who introduced the term phatic communion to describe forms of speech that serve to create bonds of fellowship and social connection rather than to exchange information (*Malinowski, 1972, p. 146*). Since then, phatic communication received considerable attention from pragmatics, sociolinguistics, and discourse analysis studies in understanding how it functions in terms of achieving a sense of communication and connection between communication participants.

R.Jacobson also described the phatic function. According to R.Jacobson's classification of the language functions, the phatic function achieves a focus on contact. R.Jacobson also mentions: it is effected via messages, “the main purpose of which is to establish, continue, or interrupt communication, to check whether the communication channel is functioning, to call the attention of the interlocutor, or to insure that he is listening attentively” (*Jacobson, 1975, pp. 197-198*). The researcher illustrates by example: “Hello, can you hear me?” or the confirming response “Yes, yes,” produced by the interlocutor at the other end of the line. To illustrate this point, he refers to a literary dialogue in which two characters repeatedly exchange seemingly meaningless phrases such as “all right” or “so it seems,” varying them slightly without introducing new information. In such cases, the communicative value lies not in meaning transmission but in sustaining interactional continuity. R.Jacobson's structural–functional analysis of speech was developed as an extension of Karl Bühler's well-known model of language, which distinguishes emotive, conative, and referential functions. R.Jacobson adopts this triadic framework but reinterprets it within a broader communicative system. He agrees that the emotive (or expressive) function reflects the speaker's intention and subjective orientation (the domain of the first person), that the conative (or appellative) function is directed toward a specific addressee (the domain of the second person), and that the referential (or communicative) function concerns the content of the message, referring to objects, events, or states of affairs (the domain of the third person) (*Bühler, 1933, p. 19*).

Approximately during the same period as that of B.Malinowski, E.Sapir was engaged with the subject matter of phatic communication. In the definition set out by Sapir's classification, “one can talk about language as a tool of socialization. It is this function of language to serve as an instrument of socialization that can be described by the “phatic function.” However, this concept is not used in the article by E.Sapir. He writes, “without language, there cannot be social interaction,” so language becomes an instrument of establishing contact among members in a temporarily created group, for instance, at the reception. He emphasizes that “what is important is not what is said, but that the conversation is taking place at all” (*Sapir, 1993, p. 232*).

The phatic function is also a part of the dominant principle of communication, the Principle of Politeness, explained by Geoffrey Leech in his paper “Principles Of Pragmatics.” Together with other communicative maxims, G.Leech points out the phatic maxim (*Leech, 1983, p. 141*). The phatic maxim is additional to the basic maxims of the Principle of Politeness, including tact, generosity, approval, agreement, modesty, and sympathy G.Leech formulates the phatic maxim in negative terms as “avoid silence” and in positive terms as “keep the conversation going.” However, phatic communication should not be interpreted merely as a strategy for filling conversational gaps or preventing silence. G.Leech argues that the principle of “avoiding silence” can be understood as a specific manifestation of the maxims of agreement and sympathy. From this perspective, the central focus of a phatic utterance is not the informational content it conveys, but rather the speaker's attitudinal stance toward the interlocutor and the interaction itself (*Leech, 1983, pp. 131-132, pp. 141-142*).

From the point of view of interaction design, the study of phatic communication gains added relevance in organizational, digital, and educational contexts. Interaction design increasingly considers communication as a structured and sequential process in which meaning and social relations are co-constructed over time. In organizational meetings, online professional platforms, and educational interactions, phatic elements play a decisive role in opening interactions, transitioning between activities, and closing encounters in a socially acceptable manner. However, most interaction design frameworks are biased toward task-oriented moves and user efficiency, leaving the relational and phatic components analytically underrepresented (*Dourish, 2001, p. 56*). Addressing phatic communication within interaction design enables a more human-centered understanding of communicative processes in face-to-face and mediated environments.

The originality in this study can be found in two aspects: one lies in applying an integrative model analyzing phatic communication with an emphasis on its link with social cohesion, particularly in relating phatic communication to professional social contexts, as most previous studies on phatic communication concentrate on marking politeness in conversation peripherally. The proposed model blends different theories and angles from pragmatics and discourse analysis in respect to interactions in a manner illustrating that phatic forms, functions, and factors are interlocking planes in professional communication (*Locher, Watts, 2005, p. 11*). Second, the theme of the research develops an emphasis on interaction sequences in a way that is an additional innovative feature of the research. As opposed to previous research on phatic communication that concentrated on examining the individual phatic messages in isolation, the research focuses on exploring how phatic communication is sequentially organized in interaction sequences such as openings, transitions, and closings that remained largely unexplored in previous research on phatic communication.

### 3. Research focus and objectives

The article aims to analyze the phenomenon of phatic communication in its function as a deep mechanism of communication that is instrumental in creating and sustaining the social solidarity in professional and social communication. Instead of regarding phatic utterances as an auxiliary phenomenon, as fillers in communication, the article aims to approach them as deeply embedded communication processes, instrumental in achieving communication alignment and continuity. The article will specifically consider professional communication, wherein a successful communication process is based not only on the realization of the communication function but also on sustaining cooperative relations.

The article relies on an interactional perspective on communication, seeing communication as a sequentially organized procedure, in which phatic communication is especially important in points such as the opening, transition, and closing phases. Special emphasis is placed on the importance of phatic communication in relation to interaction design, defined as a patterned organization of communicative actions, based on the specific way in which individuals make sense of it. In doing so, a new approach is pursued in relation to the meeting point of pragmatics, discourse analysis, and interaction design, which to date has attracted limited systematic study.

Research objectives:

For this focus, the paper aims at the following:

- to identify the dominant types of phatic communication employed in professional and interpersonal interaction, while focusing on pragmatic and discourse-related features.
- to analyze the social-cohesive functions of phatic communication, such as establishing rapport, managing interpersonal relations, and sustaining interactional alignment.

- to explore the ways in which phatic communication is located within the interaction design of both professional and interpersonal sequencing and organization.

This focus and set of objectives put the article in its place within the literature, as a contribution to contemporary debates in pragmatics and discourse analysis, with a refined understanding of social cohesion achieved by means of phatic communication. The concept of phatic communication was introduced into linguistic theory by B.Malinowski, who described “phatic communion” as speech that has a purpose of creating bonds of association rather than any connection to conveying meaningful information. The author argued that these utterances have the purpose of creating an ambiance of togetherness rather than focusing on the communicative function of language. Phatic communication is important because it emphasizes that even seemingly irrelevant conversations contain an element of functionality (*Malinowski, 1923, p. 296*). An important further step in integrating phatic communication into a wide model for linguistics was made by the linguist R.Jakobson, who established the phatic function as one of the function categories in his analysis of the universality and diversity of language (*Jakobson, 1981, pp. 18–51*).

In R.Jakobson’s view, phatic communication is tied to the function of establishing, checking, and maintaining contact with the other participants in communication. Although this has theoretically incorporated phaticity into the function profile, the analysis has tended to restrict itself in English linguistics studies to examples and examples only. As a result, phatic communication has long remained at the periphery of linguistic analysis, frequently treated as auxiliary to “meaningful” or informational discourse. This marginalization has had lasting implications for how phatic communication is conceptualized, especially in professional and institutional contexts where efficiency and task-oriented communication dominate analytical attention.

Within pragmatic studies, phatic communication has been commonly mentioned within the context of politeness and interpersonal harmony. For example, G.Leech’s common way to explain phatic communication within a politeness context would be to see it through a social maxim like agreement or sympathy. Even though this shows that it’s important to place emphasis on the relationship aspect inherent in phatic communication, it equally incorporates phatic communication within a general meaning of politeness. The implication herein would be that it leads to the understudy of the roles of phatic communication within an interactional context (*Leech, 1983, p. 131*). More contemporary research, however, has begun to focus on the phatic functions of communication in a professional/Institutional context. Research on communication in the business environment has indicated that phatic talk is an interactional phenomenon that is peripheral in terms of communication principles, though integral to interaction experiences. Janet Holmes, in conversations analysis research, for example, has indicated that phatic talk in a business setting is a means of promoting cooperation between interactants in a highly task-centered environment that experiences tension in their relationships. However, very few of these studies actually highlight the impact of phatic communication in relation to an interactional framework. Studies of meetings and institutional talk show that small talk and ritualized expressions support rapport, cooperation, and interactional stability (*Holmes, 2005, pp. 344–371*).

Despite these insights, phatic communication in professional contexts is often described as supplementary rather than structural. Many studies focus on specific genres or communicative events, without examining how phatic elements are systematically embedded in interactional sequences such as openings, transitions, and closings. As a result, phatic communication is acknowledged as useful but remains analytically peripheral to models of professional interaction.

Moreover, intercultural research highlights that phatic norms vary significantly across professional cultures, affecting perceptions of appropriateness and competence. Yet these studies tend to emphasize pragmatic failure rather than exploring how phatic communication contributes positively to social cohesion when successfully integrated into interactional design.

Such an opposition has been extended to critiques of academic and media discourse, where phaticity is sometimes equated with imitation, banality, or lack of originality. This critical attitude, however, has been countered by those scholars who, while admitting that phatic communication may not be informative in the classical sense-propositional content-it is informative in its own right, in that it conveys relational meaning. In other words, from this perspective, the establishment of mutual orientation, goodwill, or interpersonal contact is a meaningful communicative outcome. The persistence of these diverging interpretations is a sign of a deeper theoretical problem-a focus merely on the informational content of a message, which simultaneously overlooks the social and interactional dimensions of communication. Despite the popularity of phatic communication as an area of research, phatic communication still occurs on the margins, either as a phenomenon of politeness or as a weak semantic discourse. Studies on communication do not connect phatic communication with social cohesion or its use in the design of interactions. This article will, therefore, highlight phatic communication as an interaction mechanism influencing social cohesion in both professional and social interactions.

#### 4. Methodology

The study adopts a qualitative, theory-driven research design with an interpretative orientation. It is primarily theoretical and analytical, supported by qualitative discourse-based observation. The article does not aim at statistical generalization; instead, it seeks to develop a conceptual and interactional understanding of how phatic communication contributes to social cohesion in professional and interpersonal interaction. This design is appropriate for examining interactional phenomena whose significance lies in function, sequence, and context rather than frequency.

It uses secondary and illustrative material available mainly in English-language sources, such as:

- examples discussed in previous studies on professional discourse and interaction,
- extracts from communication occurring in the work environment, such as meetings or service encounters, that have been discussed in the literature,
- publicly available examples of professional or institutional interaction (e.g., media interview, professional talk).

The material presented in these tables and figures is not intended to be used as quantitative corpus material, nor as a means to test hypotheses, although it may be used to support certain theoretical claims.

The analytical framework draws together insights from pragmatics, discourse analysis, and interactional studies. With regards to pragmatics, the study engages functional interpretations for phatic communication, particularly the concept of the phatic function and contact maintenance and relational signaling. Discourse-analytic approaches are also used for the study. This approach is used for the analysis and understanding of the phatic elements and their connection to professional and interpersonal discourse and coherence constructs. Moreover, interaction analysis is used for the analysis and understanding of the phatic components in interaction and sequencing, particularly the phatic elements in openings, transitions, and closure. This

dual platform enables a consideration not just of phatic expressions, but rather the structural elements in the design of interaction to facilitate social cohesion.

Considering that it is based on theoretical analysis and literature previously published or obtainable in public domain, no direct involvement of human subjects was needed. All instances and references are appropriately stated, and no secret information that could directly identify individuals or groups are used. The ethical consideration in any study demands commitment to honesty, transparency, and intellectual integrity.

## 5. Discussion: Phatic Communication as a Mechanism of Social Cohesion

Detailed samples of English-language interaction have shown that, far from being used for the transmission of new information, phatic communication plays an essential role as a social cohesive force within both professional and social relationships. Research into discourse patterns in the workplace has demonstrated phatics are utilized to structure discourse at relationship boundary points such as openings or transitions. For example, in professional-type meetings, short discourses on trivial topics, such as weather, travel, or workload, are deployed to establish relationships prior to task-related discourse (Holmes, 2005, pp. 344-371).

For example, Holmes documents instances where meeting participants open interaction with remarks such as *“Did you have trouble finding the place?”* or *“It’s been a busy week, hasn’t it?”*, which serve to align participants socially and reduce potential tension prior to decision-making. These utterances do not advance the agenda directly but create the interpersonal conditions necessary for effective collaboration. Similarly, workplace interaction studies show that phatic talk contributes to maintaining professional relationships over time, particularly in hierarchical contexts where direct personal engagement may otherwise be constrained (Holmes, 2015, p. 21).

### Phatic Communication in Interpersonal and Everyday Interaction

English-language literary dialogue provides valuable evidence of how phatic communication operates in everyday interpersonal interaction. In *“Rebecca”*, social encounters are frequently structured around neutral, phatic topics such as weather or travel discomfort. These exchanges function to maintain polite interaction among characters who are socially connected but emotionally distant (du Maurier, 2006, p. 318).

For instance, repeated references to heat, climate, and physical discomfort allow characters to remain engaged in conversation without addressing potentially sensitive personal issues. The phatic nature of these exchanges supports social cohesion by preserving a conflict-free communicative environment.

Illustrative examples from English-language fiction confirm the centrality of phatic communication in shaping social cohesion. In *“Rebecca”*, casual exchanges about weather and everyday discomfort function as interactional fillers that sustain polite conversation among participants of formal meetings, without advancing propositional content (du Maurier, 2006, p. 318). Similarly, in *“Almost a Crime”* book, restaurant conversations centered on menus and wine serve as phatic devices that create a relaxed and socially aligned atmosphere rather than informational exchange (Vincenzi, 1999, pp. 570-571).

Typical phatic themes include references to current events, weather conditions, everyday routines, cultural activities, and other topics associated with lightness, emotional neutrality, and positive interpersonal orientation. Such topics are selected not for their informational value, but for their ability to sustain interaction and maintain a cooperative communicative atmosphere.

An illustrative example of this can be found in a fictional depiction of a formal social gathering, where the participants engage in weather-related small talk:

*“It’s unusually warm for this time of year,” one of the guests remarked.*

*“Yes, it’s been quite stifling lately,” another replied.*

*“Much worse than last summer, I’d say,” added a third voice.*

*“Indeed, especially for those who have no chance to leave the city.”*

In this exchange, the speakers do not seek to exchange new or practically relevant information. Instead, the references to temperature and seasonal discomfort function as phatic devices that allow participants to remain socially engaged while avoiding personal, evaluative, or potentially conflictual topics. The repetition of similar observations and the absence of argumentative development underscore the contact-maintaining function of the interaction. Such exchanges exemplify the phatic use of language as a means of sustaining social contact rather than conveying propositional content. The communicative value of these utterances lies in their ability to reinforce social cohesion, signal mutual attentiveness, and preserve a polite interactional frame in situations characterized by formal or semi-formal interpersonal relations.

**Phatic Communication and Cultural Orientation.** Phatic communication becomes most visible when analysed at the level of actual utterances, where communicative value is determined not by informational content but by interactional function. In English-language interaction, such utterances typically rely on neutral, socially “safe” themes and formulaic expressions that enable interlocutors to sustain interpersonal alignment and social cohesion.

**1. Phatic Talk in Formal Social Interaction: Weather as a Safe Topic.** A classic illustration of phatic communication occurs in *Rebecca*, where participants in an organised social gathering engage in weather-related conversation: *“I see in The Times they had it well over eighty in London yesterday.”* (du Maurier, 2006, p. 318).

This utterance does not convey new or interactionally necessary information. Its primary function is to initiate and maintain social contact. The topic of weather serves as a neutral conversational bridge, allowing participants to remain engaged while avoiding personal or potentially contentious issues. The minimal follow-up responses (*“Really?”*, *“Yes, frightful!”*) demonstrate how low-informational utterances are sufficient to sustain polite interaction and social equilibrium. Such exchanges exemplify the phatic function of language as contact maintenance rather than message transmission, reinforcing cohesion in a formal interpersonal setting.

**2. Phatic Communication in Everyday Interaction: Shared Situational Context**

Phaticity is equally evident in everyday interpersonal encounters. In *Almost a Crime*, restaurant conversation centres on menus and wine: *“Now this menu is wonderful, a perfect blend of Caribbean and smart London.”* (Vincenzi, 1999, p. 570). The evaluative nature of the utterance does not serve an informational goal; instead, it orients speakers toward a shared immediate context, facilitating relaxed interaction. The interlocutor’s response — *“I’m not actually very familiar with smart London menus.”* (Vincenzi, 1999, p. 571) — maintains the conversational flow without developing the topic or challenging the speaker.

**3. Ritualized Openings in Small Talk: Etiquette-Driven Phatic Scripts**

Etiquette plays a decisive role in shaping phatic interaction. In *Pygmalion*, the ritual of entering social interaction is realised through a sequence of formulaic utterances:

*Mrs. Higgins: “Colonel Pickering, you’re just in time for tea.”*

*Pickering: “Thank you, Mrs. Higgins. May I introduce Miss Eliza Doolittle?”*

*Mrs. Higgins: “My dear Miss Doolittle.”*

*Eliza: “How kind of you to let me come.”*

*Mrs. Higgins: "Delighted, my dear." (Shaw, 2003, p. 41).*

These utterances introduce no new information. Their function is purely phatic: they establish contact, confirm social roles, and align participants within a shared communicative frame. Such formulae are characteristic of the small talk genre and form part of its conventionalized interactional script.

#### 4. Topic Regulation and Phatic Repair

Phatic communication also serves as a mechanism for interactional repair. When conversational norms risk being violated, phatic utterances redirect discourse toward neutral territory. In *Pygmalion*, this function is realised through a question about the weather: *Mrs. Higgins: "Will it rain, do you think?" (Shaw, 2003, p. 42).*

Here, the weather functions as a phatic reset, steering interaction away from potential impropriety and restoring ritual balance. This illustrates how phatic talk regulates interaction without explicit metacommunicative instruction.

#### 5. Phatic Expansion from Situational to Personal Topics

Phatic interaction may gradually extend beyond situational topics through associative links. In *Rebecca*, a conversation initially focused on place and arrival shifts toward mild personal evaluation:

*"You're looking better, old man ... " (du Maurier, 2006, p. 102).*

Although evaluative in form, the utterance remains phatic in function. It does not invite serious discussion of health or personal circumstances but instead reinforces social bonding through informal reassurance. The absence of elaboration preserves interactional harmony.

#### 6. Extended Phatic Closings and Genre Variability

Phatic genres exhibit internal variability, particularly in closing sequences. As Kate Fox observes, English farewells after pleasant social visits often take the form of prolonged ritual exchanges:

*"Well, see you soon, then ... " / "Oh yes, we must ... "*

*"Lovely time ... " / "Goodbye ... " (Fox, 2005, pp. 58–59).*

These repetitive formulas are not redundant. Instead, they signal reluctance to terminate interaction and reaffirm social bonds. Variation in wording and tone is permitted within the genre, while its phatic core remains intact.

#### 7. Phatic Utterances in Professional Interaction

Phatic communication is also well documented in professional discourse. In English-speaking workplaces, meetings frequently open with utterances such as:

*"Did you manage to find the place all right?" (Holmes, 2005, p. 352).*

This question does not seek detailed logistical information. Its function is to ease participants into interaction, reduce interpersonal tension, and establish rapport prior to task-oriented communication. Such phatic openings contribute directly to cooperative professional interaction.

Phatic communication plays a structuring and regulatory role in pedagogical discourse, where interaction is framed not only by instructional goals but also by communicative and etiquette norms. Classroom interaction represents a hybrid form of professional and interpersonal communication, in which social cohesion is constructed and maintained through ritualized contact-establishing and contact-closing moves.

At the initiating stage of a lesson, the primary communicative task of the teacher is the establishment of contact with students and the creation of a cooperative working atmosphere. This task is achieved predominantly through phatic communication, which functions as a communicative "bridge" between teacher and learners. Sentence-level phatic utterances at this stage typically take the form of greetings and formulaic expressions, such as:

*“Good morning!” / Good afternoon! Sit down, please.” /*

*“Nice to see you, everyone.”*

These utterances do not transmit subject-related information. Their function is relational: they exchange emotional states, express goodwill, and signal readiness for joint activity. Through such ritualized openings, participants are aligned within a shared interactional frame, which is essential for establishing social cohesion in the classroom. Phatic openings are frequently combined with brief orienting statements that introduce the lesson topic or outline planned activities:

*“Today we’ll speak about ...” / “First, we’ll ..., then ..., and finally...”*

Although informational in form, these utterances retain a phatic function at the initiating stage, as they address the group collectively and reinforce the sense of shared participation. Similarly, directive utterances such as *“Open your books on page...”* serve a dual role: while managing activity, they also confirm the established communicative order.

The absence or distortion of phatic communication at the initiating stage often leads to communicative tension and weakened social cohesion. For example, beginning a lesson with purely task-oriented commands: *“Let’s start.”*

The use of directive utterances such as *“Open your books, please”* in the absence of an initial greeting is widely regarded as a breach of phatic etiquette norms. Such openings signal an instruction-centered and potentially authoritarian communicative style, limiting opportunities for interpersonal alignment. Even more disruptive are cases in which the teacher first addresses an individual student with corrective remarks: *“Ann, why are you sitting on the desk?”* – before addressing the group as a whole. These moves introduce asymmetry and anxiety into interaction and undermine the collective communicative frame.

Negative or disciplinary utterances at the initiating stage, such as *“Silence, please!”* or *“Keep silent!”*, further disrupt social cohesion. Such remarks violate politeness principles and may transform greeting formulas into purely formal signals, generating communicative tension rather than cooperation. The combination of greetings with prohibitions or negative imperatives creates an unfavorable emotional atmosphere and distances interlocutors.

Phatic communication is also crucial at the closing stage of a lesson, although it is less ritualized than the opening. The closing stage performs the function of exiting contact and shaping expectations for future interaction. Typical sentence-level phatic utterances include:

*“Bye.” / “Goodbye.”*

More interactionally significant are farewell formulas that project future contact:

*“We’ll meet on Monday.” / “I’ll be waiting for you tomorrow.”*

Such utterances extend social cohesion beyond the immediate interaction and establish continuity in the teacher–student relationship. Especially effective are farewells combined with expressions of appreciation:

*“Thank you for your work.” / “You did great today.”*

These utterances simultaneously perform a phatic and evaluative function, reinforcing both interpersonal alignment and the positive outcome of collective activity. When the closing stage is omitted or replaced solely by informational content (e.g., homework instructions without farewell), the communicative frame of the lesson remains incomplete. This often results in phatic failure, as interaction is terminated without symbolic closure. The widespread assumption that lesson closure consists only of assessment and instruction overlooks the role of phatic communication in maintaining long-term social cohesion.

Overall, interaction demonstrates that phatic communication is not a peripheral or decorative feature of discourse but a core interactional mechanism. Through greetings, ritualized directives, repair strategies, and farewells, phatic utterances regulate emotional distance,

support stable status – role relations, and sustain social cohesion. These findings reinforce the broader argument of the present article: across professional and interpersonal domains, phatic communication functions as a foundational resource for the construction and maintenance of social cohesion.

## 6. Conclusions

This article has examined phatic communication as a central interactional mechanism in the construction and maintenance of social cohesion across professional and interpersonal contexts. Moving beyond the traditional view of phatic utterances as marginal, auxiliary, or merely polite fillers, the study has demonstrated that phatic communication performs structurally significant functions within interactional sequences and communicative design.

Communication with others – whether friends, relatives, colleagues, neighbors, or acquaintances – is necessary not only for establishing or maintaining social relations within a micro-community, but also for the individual’s self-affirmation and realization as a social actor. In this sense, communication performs a dual function: it sustains social structures while simultaneously supporting personal identity construction. The space of communicative culture encompasses a wide range of recurring interactional situations in which the communicative function of language is realized. Within these situations, individuals do not merely perform a fixed social role by applying specific communicative skills associated with their professional or social status (e.g., teacher, researcher, student, employee), but also continuously adopt and negotiate different social “masks” Each social role or interactional identity is associated with a particular set of linguistic resources that operate within the shared norms of interpersonal communication.

By synthesizing insights from pragmatics, discourse analysis, and interactional studies, the article has shown that phatic communication operates at critical junctures of interaction – openings, transitions, and closings – where social relations are negotiated, aligned, and stabilized. In professional environments, such as workplace meetings and pedagogical discourse, phatic utterances create the interpersonal conditions necessary for cooperation, mitigate hierarchical tension, and facilitate the smooth progression of task-oriented communication. In interpersonal interaction, phatic communication enables participants to sustain contact, manage emotional distance, and avoid potential conflict through the use of socially “safe” topics and ritualized expressions.

The analysis of English-language interaction, supported by literary dialogue and documented professional discourse, has highlighted that the communicative value of phatic utterances lies not in their propositional content but in their relational and regulatory function. Weather talk, situational remarks, formulaic greetings, and extended farewells all contribute to communicative alignment by reinforcing shared norms and expectations. These patterns are particularly salient in low-context communicative cultures, where explicit verbal form, politeness, and interactional predictability are central to maintaining social harmon. An important contribution of this article lies in its emphasis on interaction design. Rather than examining isolated phatic expressions, the study has argued for understanding phatic communication as sequentially organized and embedded within patterned interactional frameworks. This perspective reveals how phatic communication shapes interaction over time and underscores its role in sustaining social cohesion at the microsocial level of everyday professional and interpersonal encounters.

In conclusion, phatic communication should be recognized as a foundational component of communicative practice rather than a peripheral phenomenon. Its systematic integration into interactional design highlights its capacity to regulate relationships, ensure interactional continuity, and support social cohesion. Future research may extend this approach by examining phatic communication in digitally mediated environments or by exploring cross-cultural differences in phatic interaction design, thereby further enriching our understanding of communication as a socially embedded and relational process.

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## THE PARADOX OF PERFECTION: HOW AI'S GRAMMATICAL PRECISION MASKS SOCIOPRAGMATIC FAILURES IN LANGUAGE EDUCATION

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### Summary

This article examines how the structural impeccability of generative Artificial Intelligence (AI) serves as a cognitive trap within the paradigm of second language acquisition. The authors argue that the syntactic-lexical precision of large language models masks profound sociopragmatic deficiencies, fostering a “fluency illusion” that precipitates the atrophy of metapragmatic judgment. Central to this study is the “paradox of perfection,” a phenomenon in which AI’s flawless syntax creates a profound halo effect, neutralizing a learner’s ability to recognize sociocultural inappropriateness.

The research analyzes the risks of erosion of pragmatic sensitivity among students using AI for English as a Foreign Language (EFL) acquisition. It contends that over-reliance on algorithmically perfected outputs facilitates a state of “hidden pragmatic incompetence”. This condition is characterized by a high level of formal literacy paired with an inability to make independent sociopragmatic choices in real-world interactions. To mitigate these risks, the study proposes a fundamental shift in pedagogical focus: from utilizing AI as an authoritative source to employing it as an object of pragmatic deconstruction. The authors outline specific methodological strategies, such as contextual prompting and metapragmatic reflection, to restore human communicative authenticity in the digital age.

**Key words:** linguistic perfection, sociopragmatic deficiencies, sociocultural inappropriateness, pragmatic sensitivity, EFL, generative AI.

DOI <https://doi.org/10.23856/7408>

### 1. Introduction

The accelerated adoption of generative Artificial Intelligence (AI) into linguodidactics has introduced the challenge known as the “paradox of perfection”. This phenomenon stems from the ability of large language models to generate texts with impeccable grammatical, syntactic, and lexical accuracy, which, however, serves as a kind of linguistic screen concealing the algorithms’ inability to master subtle sociopragmatic nuances.

Within the framework of English as a foreign language (EFL) acquisition, this paradox becomes particularly critical, evolving into a serious cognitive barrier. The flawless linguistic form demonstrated by AI becomes a false benchmark for students, creating the risk of fostering

an illusion of language proficiency. Relying on the high linguistic quality of AI-generated responses, students mistakenly perceive them as absolute models to be imitated in real-life situations. However, the algorithmic model is incapable of comprehending extra-linguistic context, such as the social status of interlocutors, cultural nuances, or the hidden meaning of an utterance. Consequently, the pragmatic parameters of speech, without which successful intercultural interaction is impossible, remain overlooked.

In the context of Ukrainian higher education, where students face cognitive exhaustion due to prolonged wartime trauma, there is a growing tendency to use AI as a compensatory tool. Although this dependency reduces foreign language classroom anxiety, it unintentionally masks deep pragmatic failure, leading to superficial language proficiency that proves inadequate in high-stakes social and professional interactions.

Therefore, contemporary foreign language pedagogy requires a paradigm shift: from the mere instruction of grammatical structures to cultivating critical sociopragmatic awareness. This shift will empower students to identify the boundary between machine perfection and human communicative authenticity.

**The aim of this study** is to theoretically substantiate the phenomenon of the “paradox of perfection”; to analyze the disparity between linguistic form and sociopragmatic content in AI-generated texts; to identify their shortcomings and outline the risks of hidden pragmatic incompetence among EFL students; and to formulate strategies for adapting foreign language pedagogy with an emphasis on the development of critical sociopragmatic awareness.

## 2. A review of theoretical and practical risks

The “paradox of perfection” is rooted in the contradiction between the flawless linguistic competence of AI and its limited capacity for sociopragmatic adaptation. The theoretical justification of this disparity can be traced through the works of several research groups.

The foundation for understanding how form masks the absence of meaning was laid by Bender et al. in their concept of “stochastic parrots” (Bender, Gebru, McMillan-Major & Shmitchell 2021). The authors argue that AI skillfully manipulates linguistic form without possessing actual access to meaning or sociocultural experience. This view is echoed by Bohré, who notes that the excessive syntactic gloss of machine-generated text creates a false impression of intellectual and pragmatic depth for the user (Bohré, 2024).

A critical view of this phenomenon is offered by Chomsky et al., who highlight the grammatical excessiveness of AI. They argue that the flawless syntactic structure of algorithms is devoid of human understanding of morality and context which is a key component of sociopragmatics (Chomsky, Roberts & Watumull, 2023).

The classic distinction between levels of pragmatic failures proposed by Thomas allows us to clearly localize the problem of AI, while pragmalinguistic failure (errors in the selection of linguistic forms) is virtually non-existent in modern models, sociopragmatic failure (misunderstanding of social context) remains their primary vulnerability (Thomas, 1983). Kasper further reinforces this analysis with interlanguage studies, explaining why even with perfect grammar, speech can sound pragmatically inappropriate (Kasper, 1992).

Within the Ukrainian scientific tradition, these issues are examined through the lens of communicative deviations and pragmatic failures. The fundamental works of Batsevych explain why “correct” linguistic forms fail in live communication: AI ignores the background knowledge of the audience, inevitably leading to communicative discomfort (Batsevych, 2004).

Shvachko emphasizes that such a “paradox” often arises in automated translation where the text remains grammatically perfect but culturally decontextualized (*Shvachko, 2022*).

The impact of AI on learners’ pragmatic sensitivity is analyzed by Belnap and Jarvis, who warn against a decline in students’ ability to distinguish subtle contextual nuances (Belnap & Jarvis 2023). Taguchi (2023) focuses on the threat to a student’s “pragmatic identity” using impersonal AI templates (*Taguchi, 2023*).

Sharples explores the methodological aspects of this problem, pointing to a loss of critical thinking among students using AI for writing (*Sharples, 2023*). From the perspective of Ukrainian pedagogy, Tarnopolsky emphasizes the importance of immersion in real-world contexts which AI can only superficially imitate (*Tarnopolsky, 2023*). To mitigate these challenges, the development of pragmatic competence in future teachers is thoroughly elaborated by Shapran who advocates for professional training that prioritizes sociopragmatic awareness as a safeguard against AI-driven linguistic superficiality (*Shapran, 2023*).

### **3. A typology of sociopragmatic failures in AI-generated discourse and their impact on EFL learners**

An examination of the impact of artificial intelligence on contemporary language education requires, first and foremost, a terminological clarification of the key challenge, which we define as the “paradox of perfection”.

By the AI perfection paradox, we mean a specific cognitive-communicative contradiction characterized by a pronounced gap between the flawless linguistic form of the generated text (its grammatical, syntactic, and lexical precision) and its low sociopragmatic validity (inconsistency with situational context, the speaker’s illocutionary intentions, and ethnocultural norms of communication).

This phenomenon is based on the ability of large language models to create an illusion of high communicative competence through the mechanical proficiency of the linguistic code. However, as E. Bender and T. Gebru point out in their concept of “stochastic parrots”, such “perfection” is merely a manifestation of statistical symbol prediction rather than a reflection of social relationships (Bender, Gebru, McMillan-Major & Shmitchell 2021).

Within the scope of our study, we contend that this formal flawlessness becomes a trap for students learning English as a foreign language. By perceiving the grammatical correctness of AI as automatic confirmation of sociopragmatic appropriateness, students risk developing hidden pragmatic incompetence – a state in which the speaker possesses the linguistic tools but is unable to use them effectively to achieve communicative goals in a natural social environment.

From a psycholinguistic perspective, grammatical impeccability creates a profound “halo effect”: a positive impression of the external linguistic form is automatically transferred to the pragmatic content thereby neutralizing the student’s ability to recognize the sociocultural inappropriateness of an utterance.

For a deeper understanding of the “paradox of perfection”, it is necessary to classify the specific forms of sociopragmatic failure that are most frequently generated by generative AI algorithms. Despite their grammatical precision, the following deficiencies are clearly observable in machine-generated texts.

- Register mismatch is one of the most prevalent deficiencies, arising from the stylistic averaging inherent in large language models. AI frequently generates texts in an overly formal or academic register in situations where the social context requires an informal or neutral style.

As a result, the use of complex syntactic structures and bookish vocabulary in everyday communication creates a “robotic” effect and disrupts interpersonal distance.

- Pragmatic hypercorrection and violation of politeness strategies. AI algorithms are programmed with a pervasive over-politeness or formulaic sycophancy that feels unnatural in neutral social contexts. Based on Brown and Levinson’s (1987) theory of politeness, it can be argued that AI often ignores the “positive face” of the interlocutor, choosing a strategy of excessive formal distance, which in real communication can be perceived as irony or passive aggression (*Brown & Levinson, 1987*).

- Contextual and presuppositional “deafness.” According to F. Batsevych’s concept, successful communication relies on shared background knowledge and presuppositions. Existing outside the boundaries of real physical and social reality, AI is unable to consider the shared experience of the participants in the dialogue. As a result, the algorithm may provide exhaustive explanations for obvious concepts (the phenomenon of “AI-mansplaining”) or ignore implicit meanings, making the text inappropriate for a specific situation.

- Ethnocultural insensitivity and loss of pragmatic force. AI often neutralizes cultural connotations, offering grammatically correct but culturally sterile text. This leads to a weakening of the utterance’s pragmatic force: for instance, a request generated by AI may be so obscured due to polite clichés that the recipient fails to recognize it as a call to action.

The shift from analyzing AI shortcomings to examining their impact on learners allows us to identify the most critical consequence of the “paradox of perfection”: the atrophy of the student’s own judgment. The use of generative models in EFL learning transforms the development of pragmatic competence, creating conditions for the emergence of hidden pragmatic incompetence. We characterize this condition a specific form of linguistic deviation in which the student demonstrates a high level of formal literacy but at the same time loses the ability to make independent sociopragmatic choices.

The genesis of this deviation is driven by a series of cognitive and methodological factors that arise from the human-algorithm interaction. Specifically, we identify the following key mechanisms of the negative impact of AI on student competence:

1. Atrophy of metapragmatic consciousness. Relying on AI as an ideal proofreader, the student delegates the function of pragmatic decision-making (choice of tone, politeness strategy, degree of directness) to the algorithm.

2. Risk of pragmatic fossilization. The grammatical impeccability of AI-generated text creates an illusion of complete adequacy. Students cease to notice the contextual insensitivity of the algorithm, accepting template responses as a sociocultural standard.

3. Loss of pragmatic identity. According to Naoko Taguchi’s concepts, the development of pragmatic competence involves forming an individual “voice” in a target language. AI offers an averaged, depersonalized discourse. By using it, students unwittingly adopt the role of a “digital avatar”, losing the ability to express personal intention, irony, or subjective attitude which are at the core of authentic human interaction.

4. The nature of hidden incompetence. A traditional pragmatic mistake made by a student (e.g., an overly direct request) is obvious to the teacher and can be corrected. In contrast, AI-generated text looks “too good” to arouse suspicion. Hidden incompetence is masked by a high level of language proficiency, yet it is abruptly exposed in real-life, face-to-face dialogue where the student, deprived of algorithmic support, lacks the necessary skills of sociopragmatic adaptation.

Therefore, awareness of the risks of the “paradox of perfection” requires not the prohibition of AI tools, but a fundamental shift in pedagogical focus: from teaching grammatical correctness to cultivating critical sociopragmatic awareness. This involves repositioning AI from

an authoritative source into an object of critical analysis. Thus, such a transformation of the role of technology within the educational process requires a comprehensive revision of the traditional system of exercises and the introduction of tasks that stimulate metapragmatic reflection.

#### 4. Practical approaches to developing sociopragmatic awareness

Accordingly, we identify the following methodological strategies and task typologies:

- Pragmatic deconstruction and reverse editing. Instead of using AI solely to correct their own mistakes, students are given the task to analyse AI-generated texts.

Task: Analyse an email request created by a chatbot and identify where its “perfect politeness” becomes inappropriate (e.g., too formal for a colleague). Students must recontextualize the text by adding contextual authenticity.

- Contextual prompting. Developing the ability to manipulate social parameters in dialogue with AI.

Task: Generate three versions of the same message (e.g., declining a meeting) by altering only one parameter in the prompt: the status of the interlocutor or the degree of urgency. Students must compare the results and justify why AI versions often appear identical despite divergent social conditions.

- Sociopragmatic failure analysis. Use cases where AI ignores cultural context or idiomatity.

Task: Students are provided with a dialogue where AI has failed to grasp irony or an underlying hint. The task is to identify the violation of Grice’s maxims and rewrite the response so that it aligns with the illocutionary intent of a real person.

- Metapragmatic reflection. Implementing mandatory commentaries for assignments written with the help of AI.

Task: Students must not simply submit a text but also provide a written explanation of why they chose a specific AI-generated option/response, what sociopragmatic risks they perceive in that text, and what changes they made to adapt it for a specific audience.

#### 5. Conclusions

To sum up, the accelerated integration of generative AI into linguodidactics necessitates a paradigmatic shift toward mitigating the “paradox of perfection”, ensuring that technological flawlessness does not undermine the organic process of language acquisition. The development of critical sociopragmatic awareness empowers learners to escape the trap of “hidden incompetence”. Implementing strategies grounded in constructivist pedagogy and the theory of pragmatic consciousness transforms AI into a powerful tool for developing metacognitive skills. Consequently, foreign language learning shifts from the narrow dimension of formal grammatical accuracy to the complex realm of sociopragmatic appropriateness, where the human speaker remains the sole agent capable of authentic sociocultural mediation within the ever-changing extralinguistic reality.

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# THE ENGLISH LANGUAGE IN THE LANGUAGE POLICY OF HIGHER EDUCATION IN LAW ENFORCEMENT INSTITUTIONS: A COMPARATIVE ANALYSIS OF NATIONAL AND INTERNATIONAL PRACTICES

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## Summary

The article examines the role of the English language in the language policy of higher education for law enforcement institutions, emphasizing its strategic importance for developing professional foreign-language communicative competence. The study provides a theoretical and empirical analysis of national (particularly Ukrainian) and international practices, highlighting the integration of English in professional curricula, the use of English for Specific Purposes (ESP) materials, and compliance with international standards, including the Common European Framework of Reference for Languages (CEFR). The analysis of domestic practices demonstrates that Ukrainian law enforcement institutions have established regulatory and methodological foundations for English language training; however, challenges persist, such as insufficient alignment with CEFR levels, limited practical and communicative methods, and weak integration of intercultural components. Comparative analysis of international experience, including CEPOL programs in the European Union, the UK Policing Education Qualifications Framework, and FLETC training in the United States, reveals effective implementation of competence-based, practice-oriented, and intercultural approaches, which can serve as a model for modernizing Ukrainian law enforcement language education. The study concludes that enhancing standardized English proficiency requirements, strengthening practical orientation, and expanding opportunities for international and intercultural professional communication will improve the quality and competitiveness of future law enforcement officers in a globalized security environment.

**Key words:** foreign language training, law enforcement education, competence-based approach, English for Specific Purposes, intercultural communication, CEFR alignment, professional communication, curriculum development.

DOI <https://doi.org/10.23856/7409>

## 1. Introduction

In the context of globalization, the intensification of international cooperation in the field of security, and the increasing role of the European Union and NATO in ensuring collective security, effective foreign language training of future law enforcement professionals has become a matter of strategic importance. English, functioning as the lingua franca of international professional communication, serves as a key instrument for police officers and other representatives of law enforcement institutions involved in transnational operations, information exchange, and joint training activities.

At the same time, within the national language policies of various countries – from Ukraine to European and North American systems – the status and scope of English differ with regard to legal, regulatory, and educational support, which necessitates a comparative analysis of contemporary approaches and models. In the context of ongoing reforms in Ukraine’s higher education system and the adoption of new policy documents aimed at strengthening the role of English in academic curricula, questions arise concerning the appropriate place of English within the language policy of professional law enforcement education, as well as its compliance with international standards, including the Common European Framework of Reference for Languages (CEFR), and the practices of specialized agencies such as the European Union Agency for Law Enforcement Training (CEPOL). This issue is particularly relevant in view of Ukraine’s integration into the European Higher Education Area and the need to further develop national policies for the training of law enforcement personnel.

**Aim and Objectives.** The aim of this article is to provide a theoretical and empirical justification of the role of the English language in the language policy of higher education within law enforcement institutions, as well as to conduct a comparative analysis of national (particularly Ukrainian) and international practices aimed at developing the professional English-language competence of future law enforcement officers. The objectives of the study include:

1. Analyzing contemporary national and international practices of law enforcement language education.
2. Examining the integration of English in professional curricula.
3. Identifying challenges and prospects for improving language policy in Ukraine.

**Methodology.** The study is based on comparative, analytical, and descriptive approaches. The research methodology includes review and synthesis of domestic and international scholarly publications, analysis of legal and policy documents, examination of educational programs, and case-study evaluation of professional language training models in Ukraine, the European Union, the United Kingdom, and the United States.

## 2. Literature review

In domestic scholarly publications, issues of language policy in higher education are examined within the broader context of nationwide educational reforms, protection of citizens’ language rights, and the legal and regulatory framework governing the functioning of the Ukrainian language as the state language (*Law of Ukraine “On Education”, 2017*). Lanvers U. notes inconsistencies between formally declared principles of multilingualism and the actual practices of foreign language teaching, especially in the context of professional training (*Lanvers, Lunyova, 2023*).

Pedagogical research emphasizes the competence-based approach as the dominant paradigm of contemporary education. Bekh I.D. advocate reorienting education from mere knowledge accumulation toward developing the ability to act effectively in professionally relevant situations (*Bekh, 2019*). Savchenko O. further highlights the integration of content, methods, and learning outcomes according to societal and labor market needs, emphasizing the shift from formal language study to the development of communicative competence (*Savchenko, 2020*). Kostyk E. examines theoretical and practical foundations of language education in Ukrainian higher education institutions, noting insufficient alignment between educational standards and professional requirements. The authors emphasize the role of English for Specific Purposes (ESP) as a key instrument for professional communication and advocate the implementation of ESP courses across various fields (*Kostyk, Siliutina, 2022*).

The sociolinguistic perspective considers the “Anglicization” of higher education in Ukraine. Farion I. stresses the strategic role of English in international science, education, and professional mobility while warning of potential risks, including marginalization of the national language and unequal access to quality education (Farion, 2023: 196). These observations align with Ukrainian language legislation, which designates Ukrainian as the language of instruction while acknowledging the importance of foreign language learning (*Law of Ukraine “On Ensuring the Functioning of the Ukrainian Language as the State Language”*, 2019).

The specificity of foreign language instruction in Ukrainian law enforcement education has been addressed by Levashov O, who highlights the necessity of integrating real communicative situations into training. However, they note that traditional reproductive methods dominate in practice (Levashov, 2020: 103-105). Pyrozhkova Yu. and Larkin M. identify insufficient CEFR alignment, limited ESP courses, and low integration of blended learning and certification (Pyrozhkova & Larkin, 2025: 364).

International research emphasizes competence-based and intercultural paradigms. Byram M. developed the concept of intercultural communicative competence, which has served as a methodological basis for numerous European programs (Byram, 1997). The Common European Framework of Reference for Languages provides clear descriptors for language competencies, widely applied in professional training (CEFR, 2020). European Union Agency for Law Enforcement Training (CEPOL) offers specialized courses, English for Law Enforcement Officials, targeting CEFR levels A2–B1 (CEPOL, 2019). The UK Policing Education Qualifications Framework integrates language, professional, and intercultural training (*College of Policing*, 2019), while FLETC programs in the US focus on practice-oriented communication, simulations, and role-playing (*Federal Law Enforcement Training Centers*, 2018). The theoretical foundations of English as a global language and ESP methodology are discussed by Crystal D., Graddol D., Hutchinson T. and Waters (Crystal, 2018; Graddol, 2006; Hutchinson & Waters, 2017).

The literature review demonstrates a substantial theoretical and practical foundation for language policy and English-language training, yet a gap remains regarding comprehensive comparative studies focusing on the role of English in law enforcement higher education in Ukraine and abroad.

### 3. Language policy in Law Enforcement education

Language policy is understood as an integrated system of legal, organizational, and didactic measures determining the status of languages, the language of instruction, and the mechanisms for foreign language use in specialist training (Bekh, 2019). In law enforcement education, it serves strategic objectives: ensuring the functioning of the state language as a foundation of professional identity, developing foreign-language competence for international cooperation, and adhering to international standards (Kostyk, 2022: 40-43).

In Ukraine, the Law of Ukraine «On Education» establishes Ukrainian as the state language while permitting the teaching of disciplines in foreign languages, particularly English (*the Law of Ukraine «On Education»*, 2017). The Law «On Ensuring the Functioning of the Ukrainian Language as the State Language» (2019) reinforces the priority of Ukrainian without limiting foreign language learning.

English occupies a special role as a global language of professional communication (Crystal, 2018; Graddol, 2006). Its integration into law enforcement curricula should follow a

clear methodological approach combining national legislation and CEFR standards (*Council of Europe, 2020*).

In the Ministry of Internal Affairs (MIA) institutions, English is incorporated through professionally oriented courses, including English for Professional Purposes, English for Law Enforcement Officers, and Legal English, aiming to develop skills in professional communication, document handling, and participation in international events (*Levashov, 2020*). Educational materials include professional texts, terminology exercises, translation tasks, and communicative competence development (*Haldetska, 2023*).

Challenges in foreign language education include insufficient alignment with the CEFR, limited use of communicative methods, and weak intercultural integration (*Pyrozhkova, 2025*), while English is often treated as an auxiliary subject and competence-based approaches are only partially implemented.

#### 4. International practices

In the EU, CEPOL integrates English as a mandatory component of professional training (*CEPOL, 2019*), using authentic materials, real-life scenarios, and intercultural competence development (*Byram, 1997*). In the UK, English is part of professional qualifications via the Policing Education Qualifications Framework (*College of Policing, 2019*), fostering professional discourse, ethical awareness, and pragmatic competence.

In the US, FLETC programs employ practice-oriented methods, including simulations, role-playing, and intercultural training. Despite the absence of standardized proficiency frameworks, these programs achieve high effectiveness due to their close alignment with real professional situations.

Internationally, the predominance of competence-based and communicative paradigms provides a model for the modernization of Ukraine's law enforcement education system.

#### 5. Comparative Analysis

Comparative analysis shows that in EU and North American countries, English is fully integrated into professional law enforcement training, aligned with CEFR levels, and supported by practice-oriented and intercultural methods. Ukrainian practices demonstrate progress but reveal gaps in standardization, practical application, and intercultural integration.

#### 6. Conclusions

English has become a strategically important tool in law enforcement higher education, enabling professional foreign-language competence, international cooperation, joint operations, and communication with foreign partners. Ukrainian institutions have developed regulatory and methodological foundations, including specialized courses and ESP materials. However, the absence of standardized CEFR-aligned proficiency requirements hinders objective assessment and international comparability.

Comparative analysis confirms that in EU and North American contexts, English is fully integrated into professional training, using competence-based approaches, CEFR alignment, practice-oriented methods, and intercultural components.

The findings suggest the advisability of further improving national language policy in law enforcement education by introducing standardized English proficiency requirements, strengthening practical orientation, and expanding opportunities for intercultural and international professional communication. Implementation of these measures will contribute to enhancing the quality of training and global competitiveness of future law enforcement officers.

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## EXPRESSIVE PROPERTIES OF THE CATEGORY OF TENSE IN THE LYRICS BY MYKOLA KHOLODNY

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### Summary

The article deals with the analysis of tense verb forms functioning in the lyric works by Mykola Kholodny. It is viewed to be significant for the interpretation of the artist's lyrical works and the determination of the morphological features of his idiostyle. It is revealed that the poetic task accomplishment in the considered works occurs through the actualization of the grammatical background tense dominant, which is carried out in two ways. The main one is the poetic technique of concentration of morphologically similar units: the usage of the single tense grammemes or combination of different tense verb forms with dominant present tense forms. The technique of morphemic repetition is singled out as another method to actualize the background tense dominant in the poet's idiostyle. The author's choice of methods to actualize grammatical forms and meanings combined with other master's expressive techniques (morpheme repetition, the principle of compositionality, the use of the stylistic figure of oxymoron) is seen to be a characteristic feature of his idiostyle and serves to be the author's unique way to create a text.

**Key words:** idiostyle, tense verb forms, background dominant, poetic technique, morphological feature.

DOI <https://doi.org/10.23856/7410>

### 1. Introduction

As differential characteristic of idiostyle the tense verb forms have been the focus of linguists' attention for many years. The researchers of this topic suggest that the stylistic potential of verb forms is impressive. Linguists consider the category of tense to be the stylistically richest category, explaining it by voluminosity of lexical semantics of the verb, the diversity of morphological categories, meanings, forms (*Oleksenko 2020: 207*). It appears to be one of the most important categories of the spatial and temporal continuum, which is reflected in the language of fiction, the language of poetic works in particular. The issue of space and time in the language of poetry is of growing interest among scholars, since a complex interaction of temporal layers is observed, regularities of various tense meanings formation are realized, and compositional possibilities inherent in tense and aspect relations of the verbs in a poetic text are used (*Ibid.*).

The grammatical category of tense is one of the important grammatical categories involved in the formation of the poetic space and time in lyrical works by Mykola Kholodny. In this article we aim to consider the functioning of tense verb forms in the poetry of the mentioned author, which is significant for the interpretation of his lyrical works and determination of the morphological features of his idiostyle.

The assigned goal caused the accomplishment of the following objectives: to reveal the poetic potential of tense verb forms in artistic functioning using a functional method and to characterize grammatical means and poetic techniques to create poetic meaning using a method of contextual and interpretative analysis.

## 2. The poetic technique of concentration

Philologists' observations testify that the concentration of the single tense verb forms in a poetic text or its fragment as part of the integral structure of the text is the result of the formation of the tense verb form dominant, which creates the basis of the temporal plan and is an integral part of the compositional structure of the work. According to the degree of markedness in the poetic text, two types of grammatical dominant are distinguished: background (unmarked) and actualized dominant (*Skorobohatova, 2015*), (*Samsonenko, 2018*). The grammatical tense dominant is background due to the fact that the verb forms of the past tense, present and future, conveying the temporal sequence of events that happened, are happening and will happen in objective or artistic reality at the moment of speech, are perceived as "ordinary", "normal" and acceptable (*Batsevich, Kochan, 2016*). Poetic text as a space for maximum realization of the possibilities of linguistic units, grammatical ones in particular, is able to actualize this dominant.

One of the main ways to actualize grammatical forms and meanings in the works by Mykola Kholodny is the poetic technique of concentration of morphologically similar units (*Skorobohatova, 2015*). The use of the same morphological form or several repeated morphological forms in a completed work or its fragment creates the effect of its "recognizability" and "markedness" (*Samsonenko, 2018*), highlights its meaning. This produces an actualized dominant. The poetic technique of the concentration of similar morphological units, the verb forms of the present, past or future tense within a certain textual space significantly enhances the expressiveness of the text and becomes a characteristic feature of the artist's idiosyncrasy.

## 3. Present tense forms organization of the poetic works

When studying the poetic text, linguists came to the conclusion that lyrical works, which are known to reproduce feelings, moods, and thoughts, are characterized by repeated actions, processes, and states occurring in different periods of time preceding and following the moment of speech. The depiction of such repeated habitual actions, processes, and states that may precede and follow the moment of speech is realized through the present extended tense, which is a subtype of the present non-actual tense (*Vykhovanets, 2004*). As scholars fairly point out, the actual present tense is not peculiar to lyrics in general, because the action in lyrical genres is usually not correlated with the moment of speech (*Oleksenko, 2020*).

Analyzing the poetic works by Mykola Kholodny, we found out that this pattern – the realization of the meaning of the present extended tense – is typical for the master's language, but there are poems where the present verb forms have the meaning of the present actual. Compare: *Він іде степом і відчуває, / як хтось йому цілить у спину. / Він повертається – нікого нема. // Він далі іде і відчуває, / як хтось йому цілить у спину. / Знов озирвається – нікого нема. // Він далі іде й відчуває, / як хтось йому цілить у спину. / Він повертає в зворотний бік. / І все ж відчуває, як хтось йому цілить у спину* (М. Холодний «Він іде степом...»). We note that the given example is not a poetic fragment, but a completed work with dominant present verb forms, which reproduce the meaning of the present actual tense. The background dominant of the present tense becomes actualized in the given sample due to the repetition of the verb form of the third person singular (*іде, відчуває, цілить*) at the beginning of each stanza and in the last verse line, which is considered to be another poetic technique – the principle of compositionality.

The actions coincide with the moment of the lyrical hero's contemplation and almost do not go beyond its limits. In our opinion, they are depicted as a comment on a specific situation

that the reader observes. The poetic work that we are analyzing turns out to be a narrative about the things the lyrical hero sees or experiences at the moment of speech, which is not very characteristic of the lyrics of the 20th century. In addition, we believe that the present tense acquires a dynamic meaning through the sequential change and repetition of verb forms, which creates a sense of movement in the given piece of poetry. The famous researchers of the last century, specifically V. Vinogradov, paid attention to the dynamic semantics of the present tense, determined by the syntagmatics of the speech process and by the change of verb forms. The researchers of the present day support these views, emphasizing that the compositional load of the present tense is to be regarded considering the syntactic tense of a separate poem (Oleksenko, 2020). We share the standpoint that the present tense itself is devoid of movement, but the consistent change of present verb forms enables the dynamic development of the narrative.

We are of the opinion that the mechanism of expression and functioning of artistic time in the poetry «Монолог Франка» is noteworthy. The grammatical verb forms of the past tense are perceived as those reproducing an action which has just been performed. Such cases, when the grammatical tense of the verbs used in poems does not coincide with the time depicted in the work, is traditionally qualified as transposition which is conceived as the use of one form in the function of another. In a broad sense, this term is interpreted as any figurative use of a language form, in particular the transposition of verb forms (Melnyk, 2015). We assume that the transposition of past verb forms is implemented in this piece of poetry «Монолог Франка» actualizing resultative actions in present. Compare: *В багно звірми притоптана калина. / Російська мова в душу нам плює. / Та ще не вмерла мертва Україна! / Народ в народі знову постає! / Народу шлях показують суди / (Недарма ж звуться ті суди – народні), / І садить він по півночах сади, / і добува метали благородні. / І вчать його майори філософії, / і підривають йому береги. / А навкруги усе вже пересохло. / Але не все ще всохло навкруги! / Нас і виховують, нас і приховують. / Не вислуховують – так підслуховують. / серед зими, народе, й серед літа / Стоїть в снігах надій твоїх Говерла. / Але ти вже розлився на півсвіта, / І рабська твоя падає орбіта. / І ще не вмерла.* (М. Холодний «Монолог Франка»).

The entire poem is organized with verb forms of the present tense with the meaning of the present extended, which is regular for the works of the mentioned poet: *плює, постає, показують, звуться, садить, добува, вчать, підривають*, but we observe the inclusion of the transposed past forms: *не вмерла, пересохло, всохло, розлився*. These forms are used together with the adverbs *ще* and *вже*, which indicate the duration of the action up to now, up to this time (*ще*) and the final implementation or occurrence of the action, phenomenon or state (*вже*). By the meaning these past verb forms correspond to the semantics of the present perfect tense, which constitutes the paradigm of the grammatical category of tense in the English language. It reproduces the meaning of a completed or uncompleted action in the present with a visible result that is important at the moment. These are the adverbs *ще* and *вже* that are the markers of this grammatical tense. The adverb *вже* strengthens the action that has been completed; it is used in affirmative sentences. The adverb *ще* is mainly used in negative sentences, emphasizing an action that has not been completed yet. According to our point of view, the past verb forms in the poetic lines by Mykola Kholodny / *Та ще не вмерла мертва Україна!* / <...> / *А навкруги усе вже пересохло.* / <...> / *Але не все ще всохло навкруги!* / <...> / *Але ти вже розлився на півсвіта,* / <...> / *І ще не вмерла.* / reproduce the meaning of completed actions, the fact of their performance is important in present. In our opinion, their result can be interpreted as follows: *ще не вмерла*=*ще жива, ще борється; усе вже пересохло*=*немає нічого живого (життя); не все ще всохло*=*ще є життя, надія; ти вже розлився на півсвіта*=*ти далеко, тебе зараз тут нема.*

So, we can say that the author uses dominant verb forms of the present tense with the semantics of the present extended and transposed past forms, which have the meaning of completion, effectiveness in the present. Such semantic filling of the past tense forms gives the reader the opportunity to establish a connection between the past and the present. The author depicts the reality and events that he witnessed himself through the use of these tense verb forms. In this way, the master brings the real life of that period closer to the reader, which becomes his main poetic task.

#### 4. The poetic technique of morphemic repetition

The actualization of the background dominant of the present tense forms in the given sample occurs due to the author's expressive techniques, which enhance the stylistic effect and the fascinating influence of morphological forms on the reader. We observe the technique of morphemic repetition, the use of a common root in the words that acquire different meanings due to the prefixes. Compare: *виховують – приховують, вислуховують – підслуховують, пересохло – всохло*. The sound similarity of forms due to the root repetition creates a play of meanings and an expressive effect. In the verse line *Та ще не вмерла мертва Україна!* We note the use of the stylistic figure oxymoron *не вмерла мертва*. This is a combination of words opposite in meaning, contrasting concepts. We analyzed the past tense forms, which have the meaning of the fact of a completed/uncompleted action in the present *ще не вмерла=ще є живою мертва Україна*. A new semantic quality is built, an unexpected expressive effect, which is enhanced by the principle of compositionality. Beginning and finishing his poem with this line, the author creates the compositional integrity of the poetry, showing the connection of events at the level of the entire text (*Skorobogatova, Kozlova, 2020: 206*). Verb forms play an important role in it.

#### 5. Different tense forms organization of the works

Authors develop the poetic narrative in different ways, choosing one or another temporal plan of poems and linking their choice to a specific poetic task. Each poet has individual features of using general poetic methods of actualizing units of the morphological level, which reflect the master's creativity modus. Our conception of the term “modus” is based on its definition in the dictionary by A. Zagnitko (“modus – combinatorics of two elements at the level of parts of speech, model – at the logical and grammatical level; modification – detailing of its various grammatical variants; reflection of the position of the subject regarding the objective content”) (translated by Zh. H.) (*Zagnitko, 2012*). We also ground on the general scientific definition (“modus – type, manifestation, variety of an object; an insignificant, accidental, temporary property of an object, inherent in its certain states; a way of being, action, experience and thinking”), given in the Great Ukrainian Encyclopedia. Therefore, we consider the concept of the author's creativity modus to be the master's type of thinking, his method of action, which enables to produce new ideas that are reflected in the individual creative use of traditional artistic techniques and the author's selection of linguistic and stylistic material. Mykola Kholodny develops the plot of the poetic narrative by actualizing the grammatical category of tense, often combining different time plans, which gives the reader the opportunity for a broad and detailed perception of what is depicted in the work.

For example, in the poem «На смерть В. Сосюри» we record the following interrelation of different time plans: present - future with the inclusion of past verb forms. Compare: *Поети вмирають в душі, / а потім в лікарні вмирають. / Спочатку ховають вірші, / а потім поетів ховають. // Поету копають яму; / коли, – знає тільки він сам; / в поезії білі плями, / ще більше на серці плям. // Неначе потрапив не в свій город – / нервово повітря ковта. / Поете, не той тепер Миргород, / Хорол річка не та. // Поетів вивчають діти / І слідчі десь ціду ніч; / поетам купують квіти / (померлим, відома річ!). / На цвинтар за місто як сніг / вивозять на третій швидкості. / Глузують із друзів їх, / немов зі сторичної рідкості. // <...> Білі ведмеді. Ватра. / Земляцьких кісток опилки. / Зникнуть поети завтра, / залишаться члени Спілки. // І хто нас з-під криг тоді визволить? / І хто нас запалить? Хто? / Он знову на третій швидкості / помчало когось авто.* (М. Холодний «На смерть В. Сосюри»). The basis of the grammatical structure of the poem is made up with the present verb forms realizing the meaning of the present extended. They are alternated with future tense grammemes of the perfect aspect. Analyzing ten stanzas, we note that only three include future verb forms, two of which are located in the final lines. Such disproportionate use of verb forms, with dominant grammemes of the present tense, creates the structural and grammatical asymmetry (Omelchenko, 2025). In our view, it clarifies the author's intentions to depict actions that are relevant for any moment of perception, whether preceding the moment of speech, during or following it. The future verb forms convey the meaning of a forecast, of vain hopes. The grammeme of the past tense, which in the context of the poem acquires the meaning of the activity or life completion, is final in the work. In this way, the author depicts the details of his creative development and life, which was not easy for the artists who lived and worked during the period of the sixties in XX century. The time plan of the work organization gives a feeling of impossibility to change the life situation, stagnation and disbelief in the future.

In the poem «Шестидесятникам» Mykola Kholodny combines verb forms of various grammatical tenses in a different way. He builds a logical sequence of the past, present and future events, giving preference to past verbs forms. Compare: *Коли ще живі були ми / І мали, як всі, хребет, – / народ був поету дверима, / дверми був народу поет. / Поети народом дихали, / Йому слугували очима, / «Не столь отдаленно їхали – / Вкраїну везли за плечима. / Роками, віками мучились. / Поети були поетами! / А ви за три дні спадючились / в погоні за еполетами. / <...> / Батькам ви далися на чари – / а матір в ярмо запрягли. / тесали дубові мари / Й на них самі же лягли. / <...> / Поети! Обридло нам «за»! / Де ваше «проти»? / Сусіду вартуєм Курили. / Спитати б, дідизну чию? / В відітнутих крилах Кирила / відгадуєш долю свою... / Вливається кров козацька / в азійську під знаком злиття. / Каліки! Як висохнуть ріки – / хто морю продовжить життя? / За вами у пресі стежать, / За іншими...Краще, зоставим. / Але чи й столиці належите. / Але чи належить вона вам?.. / Й коли вже, поете, згодишся / відчути волячим серцем, / що в ній українцем народишся, / а вік проживеш іноземцем?* (М. Холодний «Шестидесятникам»). The poet begins his lyrical work using the past tense verbs of the imperfect and perfect aspect (*мали, був, дихали, слугували, їхали, везли, мучились, спадючились, запрягли, лягли, обридло*), describing the lives of Ukrainian poets of the sixties. Then the author mixes the temporal plans of the present and future tenses, using the following scheme P+F (*вартуєм, відгадуєш, вливається + висохнуть, продовжить*) – P+F (*стежать, належите, належить + згодишся, народишся, проживеш*). The master combines different tense verb forms and creates a voluminous picture, proclaiming the rejection of totalitarian reality, human self-respect and the need to preserve national values.

## 6. Single tense forms organization of the works

In the works by Mykola Kholodny we can often observe the poems where the grammatical structure is based on the single tense verb forms. We emphasize that the present verb form is used to a greater extent in the artist's works. We also observe the poems which are frequently structured with the past or future tense verb forms. A well-known linguist Olena Oleksenko points out that lyric poetry is not characterized by narrative, which is produced by the narrative semantics of the past tense (Oleksenko, 2020: 209). However, in Mykola Kholodny's idiostyle occasionally we record such poems in which the accumulation of the past tense verb grammemes creates compositional significance and contributes to the "formation of poetic narrative" (Omelchenko 2025) (translated by Zh. H.). Compare: *Війна **вечеряла** серцями, що жито **сіяли**. / Вона **прийшла** й по тебе, не спитавши, хто ти. / І ти **покинув** дім, узявши **неньки фото** / та море сліз її, старої і безсилої. / **Не мріяв** ти / про хату під гранітною плитою, / де **хтось кричав**: «За Сталіна» – / а потім **лаявся** брудно; / Й **чиясь** відірвана нога **благала**: «люди! / за що мене, за що / **зробили** сиротою?» / Земля **палала**. Ти її **сховати** / хотів би в пазуху. Та **раптом впав**. / І **впало** фото на долівку трав. / На нього **глянули** Карпати. / Повз тебе **бігали** мерці байдуже колонами / Під музику **какофонічну** жерд; / Над твоїм тілом, що **пливло** човном червоним / досвідчено **схилився** мародер. / Ти **помирає** / і **думає**: «Правнуки-аматори / над нами будуть яблуні садить...» / Ти **помирає**. А з під чужих **чобіт** / **ще довго усміхалося** старе обличчя матері (М. Холодний «Материнське фото»).*

The author turns to the presentation of the story, which illustrates specific extended moments of the lyrical hero's life. They are explicated by the grammemes of the past tense of imperfect aspect (*вечеряла, сіяли, кричав, благала, палала, бігали, помирає і думає*). The morphological characteristics of these forms make it possible to depict prolonged actions that communicate the sadness and sorrow of that period. Past tense grammemes of perfect aspect, which denote actions that reached an internal limit (Bezpozasko, & Gorodenska, 1993), acquire additional elements of meaning in the mentioned poem: a resultative action (*прийшла, покинув, зробили*); a single action (*впав, впало, глянули*). Researchers of the grammatical level of poetic works mention the "aorist and perfect interaction" (Oleksenko, 2024: 327) when combining past verb forms of the perfect and imperfect aspect, which becomes an important indicator of the plot development. Against the background of this picture, the lyrical hero's depressed state that is reproduced due to the past verb forms of the imperfect and perfect aspect, the master conveys the idea of a single glimmer of hope, using only one future tense grammeme of the imperfect aspect (*будуть садить*) in the final line of this work. We consider such inclusion of the future tense verb forms into the plan of the past to be essential for the realization of the poetic meaning not only in the analyzed one, but also in other poems by this master («Василеві Симоненкові», «У руках тримала, та не мала...», «Україна», «Поговор»).

We will illustrate mentioned author's sample of the poetry, the grammatical structure of which also has a background dominant (Skorobogatova, 2015), because it is reproduced only on the basis of future tense verbs. The poet alternates the future forms of the perfect and imperfect aspect disproportionately. The verb forms that denote completed actions in the future are used to a greater extent. Compare: *Постанови партійні **читатиму**, / через рік все прочитане **виблюю**. / а тим часом **хтось реготатиме**, / твого тіла вивчаючи біблію. // Я **відріжу** одну собі ногу, / **зкономити** на чоботі **щоб**, / і **подамся** у тир, їйбогу, / **щоб** ціляли мені в лоб. // І не ти **поцілуєш** мене, / а **гарячая куля** в уста. / **Не заплачуть** стрілецькі знамена, / **хтось** на дрова **спилляє** хреста (М. Холодний «Постанови партійні...»).* In this

way, the author highlights his vision of what will happen in the future, what will be the result of these actions. Using the future tense forms of the perfect aspect, the master emphasizes confidence in their accomplishment. In contrast, the imperfect aspect creates the meaning of a long, unlimited future action, which embodies the possible development of events.

## 7. Conclusions

Thus the analyzed factual material of Mykola Kholodny's poetic works indicates the regular organization of poems by grammemes of the present tense with the meaning of the present extended («Собаки», «Пахне небо...», «Нічний гість», «Монолог Франка», «Він іде степом...», «І знову ніч», «Як вам живеться, вуйче...», «Рука», «Дитинство», «На хуторі кохання», «Білий світ до серця...», «На смерть В. Сосюри»). Such author's choice of tense verb forms contributes to the reproduction of real events of that stagnation period, to the creation of a true picture of the Soviet world reality. However, we recorded samples of poems where the author interchanges different time plans. Mostly the combination of time plans is realized according to the following schemes: Pr(present) + F(future); P(past) + Pr(present) + F(future). Combining different temporal plans, the master uses the corresponding tense forms disproportionately, giving preference to grammemes of a single grammatical tense, which is connected with the author's intention to recreate the necessary artistic meaning. Switching from present verb forms to the grammemes of the future tense the author illustrates a picture of the lyrical hero's changing mood, who predicts a possible development of events in that stagnating period. Poems, which are built in a logical sequence of three temporal plans (past-present-future), enable the recipient to perceive them extensively and in details.

Sometimes the basis of the grammatical structure of poetic works by Mykola Kholodny is made up of grammemes of a single grammatical tense, only past verb forms, present or future verb forms are used. The author regularly uses present tense forms with the meaning of the present extended or present actual at the level of the entire poetic text. The master organizes poetic works with grammemes of the past or future tense to a lesser extent. We have recorded a few samples. By means of the past verb forms of the imperfect aspect, which denote continuous actions, the life situation is recreated as a background against which resultative or single actions take place, denoted by the past tense grammemes of the perfect aspect. The author transmits his vision of the future through the future verb forms of the perfect and imperfect aspect, which actualize the meaning of confidence in specific actions fulfilment (perfect aspect) and possible life processes (imperfect aspect).

Cases of transposition of tense verb grammemes have been registered. In the context of some poetic works the past tense forms acquire the meaning of completion (resultativeness) in the present. In this way, due to the alternation of the present tense forms and transposed past tense grammemes, a single time dimension is formed – the plan of the extended present, which denotes actions that occur at the moment of speech and in different time periods preceding and following this moment.

In any poetic work there is an author's intention to reproduce a certain poetic meaning. The realization of the poetic task in the works analyzed in this article and many other ones by Mykola Kholodny occurs through the actualization of the grammatical background dominant of tense. The master resorts to the use of various methods of actualization. The main one is the poetic technique of concentration of morphologically similar units. One and the same morphological form or several repeated morphological forms in a completed work or its fragment

creates the effect of its "recognizability", which emphasizes its meaning. Applying this general poetic method of actualization, the poet uses grammemes of a single tense or combines the forms of two or three grammatical tenses, giving preference to the present tense forms. Another method of actualization of the background dominant of tense in the poet's idiosyle is the technique of morphemic repetition. The use of a common root in the tense verb forms creates a sound similarity of these words, which gives an expressive effect. This choice of methods of actualizing grammatical forms and meanings combined with the author's expressive techniques (morpheme repetition, the principle of compositionality, the use of the stylistic figure of oxymoron) is considered to be a characteristic feature of idiosyle and serves to be a way of existence for the artist's creativity, his unique way of creating a text.

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## DEVELOPING FOREIGN LANGUAGE COMMUNICATIVE COMPETENCE THROUGH VIDEO MATERIALS: THEORETICAL FOUNDATIONS AND IMPLEMENTATION STAGES

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### Summary

The article examines the role of video materials in developing students' foreign language communicative competence within the context of increasing intercultural professional interaction. It emphasizes that modern specialists must be capable of participating effectively in international communication, which requires not only linguistic knowledge but also socio-linguistic and sociocultural awareness. Communicative competence is defined as an integral personal quality that encompasses linguistic (phonetic, lexical, grammatical), speech (listening, speaking, reading, writing), sociolinguistic, and sociocultural components.

Particular attention is paid to listening comprehension as a complex and multi-layered process based on phonetic, lexical, and grammatical skills functioning simultaneously and largely subconsciously. The article argues that audiovisual materials, especially video, play a leading role in developing these skills by combining auditory and visual channels of perception. Video reduces the artificiality of classroom learning, creates the effect of presence, and simulates authentic communicative situations relevant to students' future professional activities. Visual support facilitates comprehension, strengthens contextual inference, enhances emotional engagement, and promotes long-term retention of language material.

The study reviews recent research confirming that authentic video content increases motivation, supports cognitive involvement, and enhances linguistic intuition. It outlines three stages of working with video materials: pre-viewing, while-viewing, and post-viewing activities, each aimed at ensuring effective comprehension and the transition from receptive to productive skills.

Although video offers significant pedagogical advantages, including immersion in sociocultural context and reduced anxiety, it may also create cognitive overload if not methodically structured. Therefore, the effectiveness of video integration depends on careful selection, clear task formulation, and systematic application, ultimately contributing to the preparation of competitive specialists.

**Key words:** audiovisual materials, listening comprehension, authentic language environment, skills, abilities, foreign language communicative competence.

DOI <https://doi.org/10.23856/7411>

### 1. Introduction

In the contemporary globalized world, professional activities increasingly transcend national borders, and international cooperation is becoming common practice. Modernity requires students to become active participants in intercultural professional dialogue. Consequently, the primary aim of foreign language teaching in higher education institutions is the systematic development of communicative competence, which involves cultivating students'

ability to navigate freely the global information space and respond appropriately to the challenges posed by diverse situations directly related to their future professional activities. Adopting such an approach contributes to the preparation of highly competitive specialists for a dynamic labor market.

Foreign language communicative competence is widely recognized as an integral personal quality that includes linguistic competence (orthographic, phonetic, lexical, grammatical), speech competence (reading, listening, speaking, and writing), sociolinguistic competence (understanding how language functions in specific social contexts beyond the conventional rules) and sociocultural competence (the ability to navigate correctly the cultural context of the target language, taking into account behavior norms, traditions, and social stereotypes to avoid misunderstandings in communication). Thus, the formation of students' communicative competence goes beyond the scope of basic linguistics, covering sociolinguistic and sociocultural aspects of life to enable effective interaction. To adapt the foreign language to real-life formal and informal communication contexts, is it essential to simulate social situations through methods such as role-playing, dialogues, cooperative and project-based learning as well as by using authentic materials (audio/video recordings with native speakers, podcasts, social networks) to train listening and speaking skills in realistic communicative environments.

Particular attention should be paid to the use of video materials in the process of forming foreign language communicative competence, as they address a major limitation of traditional classroom learning – its artificiality. It is worth noting that the visualization of the context ensures the transition from abstract study of language units to mastering socio-professional behavioral patterns. Video can help transform the classroom into an interactive space for practicing real-life scenarios relevant to a specialist's future career, serving as a model of the professional environment. The visual sequence is perceived by the eyes holistically and provides a cognitive framework that supports subsequent reproductive and productive language activities.

In contrast to audio recordings, video creates the illusion of immediate presence, which reduces the psychological barrier when transitioning to role-playing. Students are not limited to mechanically repeating lines. They also adopt the intonational features of speech, dynamics of interaction, facial expressions, gestures, behavioral patterns of characters and communication strategies. The sense of presence evokes an emotional response that facilitates better retention of the material. When students observe the characters' live reactions, the educational content ceases to be an abstract set of rules and becomes part of their personal experience (*Kaliberda et al., 2023*).

Moreover, the visual sequence provides the opportunity to interpret the context of a communicative situation. It is important to highlight that when learning occurs in a context closely approximating real-life conditions, students gradually begin to use the language as a tool for solving specific practical tasks, feeling more confident due to the presence of visual cues.

## 2. Review of recent research and publications

Recent studies show that the implementation of audiovisual tools enhances students' communicative competence by immersing them in authentic language environments and natural communication contexts. The use of video materials promotes the integration of lexical, grammatical, and pragmatic aspects of speech, activates students' cognitive engagement, and increases motivation for language learning. Additionally, audiovisual content provides authentic language input, facilitating the development of listening comprehension skills at a natural pace within a sociocultural context of communication.

Ukrainian researchers M. Ryzhenko, O. Anisenko, and O. Hnatysheva consider video materials as a didactic tool that not only conveys educational content but also ensures interactive engagement during its processing. This positively impacts the effective formation of students' foreign language competencies. A key parameter in selecting content for foreign language classes is its compliance with the principle of authenticity, as original materials ensure high-quality language training (Ryzhenko et al., 2022).

According to O. Romanova and O. Mudryk, the use of video content in the educational process serves as a significant cognitive catalyst. The combination of theoretical material with visual aesthetics and emotional subtext forms an effective basis for intensifying the acquisition of foreign language structures. A considerable number of scholars share this perspective. The brain retains information that evokes feelings much more effectively. In light of this, a student memorizes not merely an isolated lexical unit, but the communicative moment in which it is articulated, together with the character's facial expressions and intonation patterns. The emotional experience of a scene creates a strong association, allowing the word to move from passive vocabulary to active use (Romanova et al., 2020).

T. Riabokuchma and A. Horbachenko emphasize that video materials represent an exceptionally effective instrument for the development of listening comprehension skills among university students as visual support substantially facilitates the perception and processing of a foreign language. The synergy of audio and visual input enables students to better understand the content of what they hear, even when certain words or expressions remain unclear. Such a multimodal approach enhances contextual inference and compensatory strategies in the process of language acquisition. Consequently, video content becomes an indispensable instructional tool in working with students of both language-related and non-language specialties across various levels of language proficiency (Riabokuchma et al., 2021).

As Ya. O. Pavlishcheva observes, the systematic and sustained practice of viewing films in a foreign language contributes to the development of linguistic intuition understood as the capacity to subconsciously discern the appropriateness of grammatical structures and lexical collocations without explicit analytical reflection. Thus, students learn to comprehend linguistic units directly within the context of their functioning, gradually reducing their reliance on dictionaries and developing greater autonomy in language processing and interpretation (Pavlishcheva., 2020).

O. Mudryk argues that incorporating video materials into teaching significantly enhances educational quality by fostering a more dynamic and content-rich environment. Such resources impart a clear communicative purpose to lessons, allowing students not only to analyze linguistic material but also to observe its functioning in a natural language setting. Video can be conceptualized as a window into lived reality: it transmits both linguistic norms and cultural codes embedded within communicative practice (Mudryk, 2020).

Margaret Ellan, an English author of the methodological manual *Teaching English with Video*, emphasizes that video viewing in foreign language classes activates two levels of stimulation. The first is external, driven by the captivating plot of the video itself. The second is internal, emerging as students recognize their own ability to comprehend the foreign language. This experience provides satisfaction, enhances their confidence, and encourages them to move forward (Ellan, 1991).

It is noteworthy that the rapid development of information technologies has naturally sparked a scientific debate concerning the role of video in the educational process. Two decades ago, access to authentic content was limited. In contrast, contemporary educators have the opportunity to utilize an extensive repository of video resources, allowing students to immerse

themselves in an authentic environment without the necessity of traveling abroad. Currently, some scholars emphasize the unique advantages of visualization for developing communicative skills, while others warn against oversaturation and stress the need for a methodically balanced approach to integrating the potential of video for the effective formation of speech competencies.

### 3. Presenting the main material

Within the framework of foreign language learning, video is conceptualized as a multimedia means of presenting information that combines visual and auditory elements, thereby creating an effect of presence and demonstrating a holistic system of social interaction. This format converts passive acquisition of vocabulary and grammatical structures into a real experience of observing communicative situations involving native speakers (*Karpenko, 2023:129*). It is important to note that many scholars consider the lack of direct immersion in an authentic environment as one of the key obstacles to mastering a foreign language. For this reason, the integration of video content into the educational process acquires particular significance, as video materials can partially simulate such an environment and provide exposure to authentic speech patterns.

For successful communication, it is vital that each participant is able not only to express their own thoughts but also to perceive accurately the information conveyed by their interlocutors. That is why listening comprehension is a key component in the development of foreign language communicative competence. Listening is regarded as a complex type of speech activity that relies on a series of interrelated skills ensuring rapid and accurate perception of spoken language (*Huzynina, 2021:250*). These skills work primarily on a subconscious level, enabling the listener to correctly interpret the content of what is heard without focusing on the analysis of its individual elements.

Scholars (*Harmer, Mudryk, Podoliak, Stadnii, Zozulia*) distinguish three fundamental groups of skills that are implemented simultaneously:

- *phonetic skills*

They involve the capacity to automatically differentiate the components of the sound system of speech, which forms the basis for understanding the meaning of any utterance. At the same time, a person's cognitive resources are freed up, for example, for constructing their own response. Well-developed phonetic skills also contribute to adherence to orthoepic norms.

- *lexical skills*

As is known, the larger the vocabulary, the better the lexical skills are formed and, accordingly, the faster the connections between sound and meaning are activated. It is highly beneficial when a person instantly correlates heard words with their meanings without resorting to prolonged deliberations or translation, since translation into the native language makes it impossible to keep up with the pace of speech.

- *grammatical skills*

When perceiving information by ear, a person must process grammatical constructions reflexively, understanding how individual parts of the sentence are interconnected. A complete awareness of grammatical patterns allows focusing on the overall context and hidden implications of the utterance.

Given the above, it can be argued that listening represents a multi-layered process that combines grammatical, lexical, and phonetic skills. Their systematic development ensures full participation in communication by acquiring the ability to perceive and process spoken information effectively.

A leading role in the formation of phonetic, lexical, and grammatical skills is played by audiovisual aids, which ensure the synergy of speech perception. When watching video materials, visual and auditory channels of information input are used together, allowing students to simultaneously practice listening and correlate what they hear with the visual sequence (*Leshchuk et al., 2025:46*). Particularly significant is the fact that visual support greatly facilitates the comprehension of foreign language speech. In everyday communication, a substantial portion of information is conveyed through nonverbal means, so visual perception (setting, actions, emotions) is often difficult to substitute with words alone. By using video, the teacher activates the mechanism of perceptual learning, when the student's brain constantly matches the audio track with the picture. The essence is that the eye helps the ear: the student sees the situation on the screen; the brain organizes the heard information more easily and retains it faster. Information reinforced by vivid visual imagery remains in long-term memory far longer than material presented exclusively in a traditional textbook format.

The use of video materials in foreign language classes opens up broad didactic opportunities for the teacher. First and foremost, video makes it possible to create an artificial foreign language environment which, in several respects, surpasses the natural one, as it features a clearly structured and methodologically well-designed framework adapted to specific educational objectives (*Rybalka, 2021:237*). Video content contributes to the intensification of the learning process, with information arriving simultaneously through two perception channels, which aligns with the human ability to remember material in the context of emotions and visual images. It is worth emphasizing that video materials make foreign language learning more engaging, emotionally rich and convincing, thereby increasing students' motivation and encouraging active communication in the target language. A live image provokes a spontaneous desire to speak, to express their opinion, to argue. Additionally, the use of appropriately selected video clips enables flexible assessment of how well students have assimilated the learning material. Sometimes, simply by observing how students react while watching a video and completing related tasks, the teacher can accurately identify gaps in knowledge and promptly adjust the educational process (*Rybalka, 2021:238*).

Among the variety of video materials, educational films stand out. These are specially designed audiovisual teaching tools that combine different types of visual aids and are characterized by a strong emotional impact. Such videos are intended to model natural communicative situations and facilitate the effective acquisition of foreign language material. However, despite their methodological value and emotional richness, specially created educational films are somewhat limited compared to authentic video materials in terms of the range of language patterns they offer. Authentic videos present the speech of native speakers in its stylistic, dialectal, and social diversity, along with nonverbal communication and cultural realities within a natural context. This helps develop more flexible communicative skills by creating an immersive experience in the target language culture (*Zozulia et al., 2022*). Sources for this content may include feature and documentary films, animated movies, television programs, series, interviews, video blogs, podcasts, social advertisements, and news reports, all of which represent authentic speech in diverse communicative situations.

Analysis of scientific studies indicates that immersion in a virtual, yet realistic environment reduces anxiety levels. Students gradually become accustomed to the sound of authentic language in various acoustic conditions, which is important for their future professional activities (*Anisenko, Hnatysheva, Huzynina, Konoplianyk, Kovalenko*). A kind of habituation effect begins to take place, making real conversations with foreigners no longer trigger a stressful state.

The stages of working with video materials can be considered in the following sequence: pre-viewing activities, while-viewing activities, and post-viewing activities.

The goal of the first stage is to create the necessary foundation for effective video comprehension. It is designed to immerse students in the emotional and semantic atmosphere of the film, motivate them to watch, and remove potential difficulties to ensure the successful completion of subsequent tasks. Therefore, during the pre-viewing stage, it is essential to briefly discuss the title of the video, explain key vocabulary items, and comment on unfamiliar grammatical structures that appear in the video. Equally important is to focus students' attention on proper nouns, cultural features and the setting of the action, as this helps avoid cognitive dissonance and facilitates a better understanding of the context

In scientific and methodological literature, the second stage of working with video material is considered the core one. as it is during this stage that direct perception and comprehension of information take place. The aim of the while-viewing stage is, firstly, for students to grasp the content of the video and, secondly, to further develop linguistic, communicative, and sociocultural competencies. The video clip demonstration is always accompanied by active learning activities through the completion of specially designed exercises. Depending on the complexity of the material, at least two cycles of work with the video are determined:

- *initial viewing* – to gain a general understanding of the plot and to answer basic questions;

- *detailed viewing* – for thorough content analysis with logical pauses, during which students perform tasks that allow them to discuss events, clarify details, and understand the implicit messages.

The goal of the third stage is to use the information obtained while watching the video to further develop productive skills and improve both oral and written language abilities. During the post-viewing stage, there is a transition from receptive (listening and comprehension) to productive (speaking, writing) types of speech activities. The final stage focuses on developing skills such as interpreting and summarizing what has been seen, observing the norms of speech behavior, and using linguistic means correctly in accordance with communicative conditions. To achieve maximum effect, various types of exercises are employed to stimulate language activity: discussions, role-playing games, writing reviews or character sketches, and other creative tasks (*Konoplianyk et al., 2006*). In addition, returning to the vocabulary or plot of the video in subsequent lessons is beneficial, as it helps reinforce the material more reliably in long-term memory (*Allan, 1991:38*).

Based on practical experience, it should be noted that the use of video materials in foreign language classes has both undeniable advantages and certain drawbacks that must be taken into account when arranging the educational process. Logically, the advantages should be examined first. Unlike conventional audio text, video provides students with both auditory and visual information. Students can simultaneously perceive speech by ear and observe the speakers' facial expressions, gestures, and emotional states, which constitute an essential component of natural communication. Furthermore, video offers a broader context for perceiving information: students gain insights into the setting of events, the age and appearance of communication participants, and other sociocultural details, which contribute to deeper comprehension and the development of intercultural competence. At the same time, this informational richness may hinder effective learning by creating additional cognitive loads. An abundance of visual details can distract students from focusing on listening comprehension. There is a risk that students may become absorbed in watching the images, which may negatively affect the quality of listening (*Ryzhenko et al., 2022*). For this reason, it is crucial that before working with a video,

students are provided with a clearly formulated task on which they are expected to concentrate. A predefined objective helps prevent the dispersion of attention and ensures more focused engagement with the material.

#### 4. Conclusions

Thus, there are sufficient grounds to assert that the professional training of specialists requires the development of foreign language communicative competence as an integral personal quality that combines linguistic, speech, sociolinguistic, and sociocultural components. Analysis of scientific and methodological sources along with generalization of practical experience confirms that the integration of video materials into foreign language learning effectively implements the competency-based approach. Video content enables the simulation of an authentic language environment, facilitates integration of phonetic, lexical, and grammatical skills into a holistic listening mechanism, evokes emotional response, activates students' verbal-cognitive activity, reduces psychological barriers, and boosts motivation for language learning. At the same time, video effectiveness depends on a methodologically sound approach to organizing the work. The contemporary development of information technologies opens up virtually unlimited access to authentic video content. As a result, the purposeful and systematic use of video materials makes it possible to transform the classroom into an interactive space for practicing real-life professional scenarios, which, in turn, is a key factor in preparing competitive specialists.

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# THE DISINTEGRATION OF METANARRATIVES AND THE EMERGENCE OF MULTIPLE RATIONALITIES IN TWENTIETH-CENTURY PHILOSOPHY

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## Summary

This article offers a systematic historical-philosophical analysis of the transformation of rationality in twentieth-century philosophy through the disintegration of metanarratives and the emergence of multiple forms of rationality. Classical modern philosophy was grounded in the idea of a unified, universal reason capable of legitimizing knowledge, morality, and political order. The dramatic historical experiences of the twentieth century—world wars, totalitarian regimes, technological acceleration, and radical changes in scientific knowledge—undermined the credibility of such universal foundations. Drawing on original texts by Friedrich Nietzsche, Martin Heidegger, Ludwig Wittgenstein, Michel Foucault, and Jean-François Lyotard, the article reconstructs the internal philosophical logic of this transformation. It is argued that plural rationality should not be interpreted as epistemological relativism or the rejection of reason as such. Instead, plural rationality is conceptualized as a historically conditioned reconfiguration of reason that allows critical thinking to persist after the collapse of universal legitimating narratives. The scientific novelty of the article lies in interpreting plural rationality as a structural response to the crisis of modernity rather than as a symptom of philosophical decline. This interpretation makes it possible to understand twentieth-century philosophy as a coherent, though non-totalizing, intellectual project oriented toward contextual justification, reflexivity, and ethical responsibility.

**Key words:** metanarratives, rationality, twentieth-century philosophy, postmodernity, plural rationalities.

DOI <https://doi.org/10.23856/7412>

## 1. Introduction

The scientific novelty of this article consists in a reinterpretation of the plurality of rationalities in twentieth-century philosophy as a constructive reconfiguration of reason rather than its dissolution. The article demonstrates that the emergence of multiple rationalities represents a methodological strategy aimed at preserving critical thought under conditions of historical contingency, cultural fragmentation, and the loss of universal foundations. This approach allows plural rationality to be understood as an internally coherent response to the crisis of modern rationality.

### *Research Aim:*

The aim of this study is a systematic historical-philosophical analysis of the transformation of rationality in the twentieth century through the disintegration of metanarratives and the emergence of multiple forms of rationality. The study seeks to demonstrate that plural rationality should not be interpreted as philosophical decline or epistemological relativism, but as a

historically conditioned reconfiguration of reason that allows critical thinking to persist after the collapse of universal legitimating narratives.

*Research Objectives:*

1. To analyze the historical context of the twentieth century influencing the transformation of notions of rationality, including world wars, totalitarian regimes, and scientific-technological changes.
2. To reveal the philosophical foundations of classical modern rationality and demonstrate its limitations through the critique of Nietzsche and Heidegger.
3. To examine the role of linguistic practices, scientific paradigms, and social structures in the emergence of plural rationality (drawing on Wittgenstein, Kuhn, Foucault, and Lyotard).
4. To systematize the concept of plural rationality as a methodological strategy for preserving critical thought in twentieth-century philosophy.
5. To construct a logical presentation of the material from the analysis of classical rationality to the postmodern plural approach, demonstrating the internal coherence of the transformations of rationality.

**Research Methodology.** The study employs a combined historical-philosophical and logical-analytical approach, allowing for the integration of historical reconstruction of philosophical concepts and conceptual analysis of key ideas.

Historical-philosophical method is used to reconstruct the context of the critique of universal rationality and the process of metanarrative disintegration in the twentieth century.

Logical-analytical method enables the systematization and comparison of philosophers' views (Nietzsche, Heidegger, Wittgenstein, Foucault, Lyotard) to identify common principles in the formation of plural rationality.

Comparative analysis method is applied to juxtapose different approaches to rationality in science, morality, and social practices (Kuhn, Lyotard).

Systemic approach ensures the logical presentation of the material: from the historical context of modern rationality → critique of classical rationality → linguistic, social, and scientific transformations → the concept of plural rationality.

This methodology demonstrates that plural rationality is not the dissolution of reason but its reorganization, adapted to historically changing conditions and cultural diversity.

## 2. Main part

Twentieth-century philosophy developed in a historical context characterized by unprecedented ruptures. Two world wars, the experience of genocide and totalitarian violence, the collapse of colonial empires, and the rapid expansion of scientific and technological power fundamentally transformed the intellectual landscape of Europe and the world. Philosophical systems that had once claimed universal explanatory and normative authority increasingly appeared incapable of accounting for these experiences.

At the center of this crisis stood the concept of rationality. Since the Enlightenment, reason had been understood as a universal faculty capable of grounding knowledge, morality, and political legitimacy. This conception presupposed that rationality was unified, ahistorical, and normatively binding for all subjects. By the beginning of the twentieth century, however, this assumption had become deeply problematic.

The concept of the metanarrative provides a key to understanding this transformation. Metanarratives are overarching narratives that legitimize social practices, scientific knowledge,

and moral norms by appealing to universal principles such as progress, emancipation, or absolute truth. The gradual erosion of confidence in such narratives marks a decisive shift in philosophical self-understanding. This article argues that the disintegration of metanarratives did not lead to the abandonment of rationality but rather to its pluralization and contextualization.

*Modern Rationality and Its Discontents.* Modern philosophy, especially in its Kantian formulation, conceived rationality as a unified normative structure. Kant's critical project sought to delimit the scope of reason while simultaneously securing its universal validity as the condition of possibility of experience, knowledge, and moral obligation (*Kant, 1998*). Despite its critical intentions, this framework preserved the idea that rationality could provide universally binding criteria of truth and normativity. Rationality was thus conceived as both a cognitive instrument and a moral compass, capable of guiding human action toward objective, universal ends.

During the nineteenth century, this conception came under increasing pressure. The rise of historical consciousness, the development of the human sciences, and the growing awareness of cultural plurality challenged the assumption that reason could transcend historical and social conditions. Thinkers began to recognize that knowledge and value judgments were profoundly influenced by contingent factors such as language, culture, social institutions, and historical circumstances. The philosophical ideal of a context-independent rationality became increasingly tenuous, provoking debates on the nature, scope, and limits of reason.

These tensions culminated in the radical critiques of the late nineteenth century. Friedrich Nietzsche's philosophy represents a decisive break with the modern ideal of universal rationality. Nietzsche's genealogical method exposes moral values, concepts of truth, and rational norms as products of historical struggles and psychological drives rather than expressions of timeless reason (*Nietzsche, 1974*). Rationality is inseparable from interpretation, perspective, and power relations, making it inherently plural and contingent. Nietzsche emphasizes that the pursuit of universal truth often masks underlying power dynamics, ideological commitments, and unexamined assumptions.

Nietzsche's critique is not merely negative. By uncovering the historical and psychological roots of values, he opens the possibility for a reflective, self-conscious rationality. Rational evaluation becomes a matter of examining origins, functions, and consequences rather than adhering to pre-given universals. This perspective lays the groundwork for understanding reason as a historically situated and interpretive practice, paving the way for twentieth-century thinkers who would expand the concept of plural rationality.

*Ontological Critique and the Historicity of Reason.* In the twentieth century, Martin Heidegger deepened the critique of modern rationality by questioning its ontological foundations. Heidegger argues that Western philosophy, since Plato, has understood Being in terms of presence and objectivity, reducing thought to calculative rationality (*Heidegger, 1962*). Such rationality emphasizes control, prediction, and technological mastery, often neglecting more fundamental ways of understanding existence.

Heidegger's ontological analysis reveals that rationality is historically constituted rather than universally given. Each epoch manifests a particular understanding of Being that shapes what counts as rational, meaningful, or true. Rationality is therefore plural and context-dependent, though this plurality is often concealed by metaphysical claims to universality. By exposing the historical grounding of reason, Heidegger challenges the assumption that rationality can operate independently of temporal, cultural, and existential conditions.

This ontological critique also reorients philosophical methodology. Instead of seeking timeless principles, philosophers are encouraged to investigate the structures of understanding

that inform human experience in specific historical contexts. Rationality becomes a mode of engagement with the world, grounded in lived experience and attentive to the limits imposed by finitude, contingency, and historical circumstance. Heidegger's insights underscore the necessity of situating rational critique within the broader horizon of human existence.

Furthermore, Heidegger's approach opens avenues for alternative forms of rationality that escape the strictures of calculative logic. By recognizing the diversity of ontological frameworks across time and culture, it becomes possible to appreciate multiple ways of reasoning, evaluating, and interpreting phenomena. Rationality is thus pluralized, not dissolved, and its critical function persists even in the absence of universal foundations. This reconceptualization directly informs later developments in philosophy of language, science, and postmodern thought, creating a continuum from historical critique to contemporary pluralistic epistemology.

*The Linguistic Turn and the Pluralization of Meaning.* The pluralization of rationality becomes particularly evident in the linguistic turn of twentieth-century philosophy. Ludwig Wittgenstein, in his later work, abandons the search for a universal logical structure underlying language and meaning. He introduces the notion of language games, emphasizing that meaning and justification are inseparable from the specific forms of life and practical contexts in which they occur (*Wittgenstein 1953, §§23-43*).

According to this framework, rationality cannot be understood as the application of abstract, context-independent rules. Each language game is governed by norms internal to the form of life it presupposes, shaping what counts as meaningful, true, or rational. These norms emerge from regularities and conventions within social practices, and they are maintained through participation, shared understanding, and the ongoing negotiation of meanings. Rational evaluation, therefore, is not externally imposed but immanent to the practices themselves.

This shift has significant implications for epistemology and the philosophy of language. Philosophers must attend to the diversity of rational practices, analyzing how justification operates differently across contexts. The demand for a single, overarching criterion of rationality is rendered obsolete, replaced by sensitivity to the internal coherence, functional adequacy, and discursive rules of each practice. Rationality is thus plural, but still structured, intelligible, and normatively significant within its context.

Wittgenstein's perspective also highlights the role of interpretation, negotiation, and communal understanding. Grasping a statement or argument requires engagement with the relevant language game. Disagreement between different language games does not signify irrationality but underscores the contextuality of reasoning and the necessity for interpretive competence. Misalignment between language games reveals the boundaries of rational evaluation and emphasizes the need for situationally grounded critique.

The methodological consequences are profound. Philosophy and social theory must investigate the practices, conventions, and forms of life that give meaning to reasoning rather than appeal to abstract universals. Critique is redirected toward the internal consistency and practical functionality of specific forms of discourse, allowing evaluation without recourse to context-independent standards. Rational assessment becomes a matter of examining coherence, adequacy, and justificatory mechanisms embedded in particular practices.

Moreover, the linguistic turn introduces an ethical dimension. Recognizing the plurality of rational standards requires attentiveness, reflexivity, and responsiveness to context. The rational agent is no longer guided by universal principles but by situated norms and the responsibilities that these entail. Rationality is thus enriched, demanding, and responsive to the complexity of social and historical realities.

Extending these insights, the linguistic turn provides a conceptual foundation for understanding twentieth-century rationality as both plural and normatively rigorous. Rational practices are not arbitrary but are structured by the internal logic of language games, shared community standards, and historically situated norms. This theoretical reorientation sets the stage for understanding scientific paradigms, power-knowledge dynamics, and postmodern fragmentation. It demonstrates how rationality persists and transforms in contexts where metanarratives have collapsed, preserving critical and evaluative capacities.

In sum, the linguistic turn does not erode reason; it pluralizes, situates, and enriches it. Rationality becomes context-sensitive but critically robust, historically informed yet normatively coherent, and locally grounded yet communicatively effective within each form of life. By articulating multiple standards of rationality, this perspective bridges localized reasoning and broader philosophical critique, offering a coherent strategy for navigating epistemic diversity and maintaining the integrity of rational discourse across fragmented, pluralistic landscapes of twentieth-century thought.

*Scientific Rationality and Paradigm Shifts.* Parallel developments in the philosophy of science further undermine the modern ideal of unified rationality. Thomas Kuhn's analysis of scientific revolutions challenges the view of science as a cumulative, linear progression toward truth (*Kuhn, 1962*). Kuhn argues that scientific research operates within paradigms—shared frameworks of concepts, methods, and standards—that define what counts as rational scientific practice.

Scientific paradigms encompass a wide array of tacit assumptions, methodological norms, and conceptual structures that guide researchers in problem selection, hypothesis formation, experimental design, and data interpretation. These frameworks are learned, socially transmitted, and largely invisible to practitioners until a crisis occurs. Within a paradigm, scientific judgments are highly rational, coherent, and structured, but they are intelligible only relative to the internal logic of that paradigm. What counts as an anomaly or a falsifying event, for example, depends on the interpretive standards of the prevailing scientific community.

The process of scientific revolution, in which one paradigm replaces another, reveals the historically contingent and plural character of rationality. Kuhn demonstrates that competing paradigms are often incommensurable: they employ different conceptual vocabularies, research questions, and evaluative criteria, making direct comparison extremely difficult or impossible. Consequently, the rationality operative within one paradigm cannot simply be transferred to another; what is rational in one context may be unintelligible or invalid in another. This insight destabilizes the Enlightenment conception of reason as context-independent and universally binding.

Moreover, the paradigm-based understanding of science illuminates the social and institutional dimensions of rationality. Scientific communities enforce standards of evidence, methodological rigor, and theoretical coherence, but these standards are embedded within professional practices, academic hierarchies, and historical contingencies. Rationality is thus both epistemic and social, operating through networks of scientists, publications, and research institutions.

Kuhn's framework also emphasizes the temporal dynamics of rationality. Scientific knowledge is not static; it evolves through cycles of normal science, crisis, and revolution. During periods of normal science, rationality appears highly structured and predictable. However, crises reveal the limitations of existing frameworks and necessitate theoretical creativity, epistemic flexibility, and the recognition of alternative rational possibilities. The paradigm shift is therefore not a loss of rationality, but a transformation in its operational conditions.

In addition, Kuhn's insights challenge simplistic understandings of scientific objectivity. Objectivity is not abolished but reinterpreted: it is realized within the constraints of specific paradigms and the methodological norms they establish. This situates rationality within historical

and social contexts, highlighting its plural character without undermining its normative and epistemic authority.

The implication is not that science is irrational, but that rationality itself takes different forms depending on historical, disciplinary, and institutional contexts. Plural rationalities emerge as a necessary response to the diversity and complexity of scientific practice, reflecting the contingent, dynamic, and socially embedded nature of reason in the twentieth century.

*Power, Knowledge, Paradigms, and Plural Rationality Beyond Relativism.* The transformation of rationality in twentieth-century philosophy cannot be adequately understood without examining the complex interplay between knowledge, power, language, and scientific practice (Foucault, 1980; Kuhn, 1962; Lyotard, 1984). The collapse of metanarratives does not occur in an abstract theoretical vacuum; it unfolds within concrete historical configurations in which forms of rationality function as instruments of organization, normalization, and critique (Foucault, 1977; Bourdieu, 1990).

Michel Foucault's genealogical analyses demonstrate that rationality is always embedded within regimes of power. Rather than treating reason as a neutral cognitive faculty, Foucault reveals it as a historically situated practice that structures fields of knowledge, produces subjects, and regulates social behavior (Foucault, 1980; Foucault, 1972). What counts as rational, true, or normal is inseparable from institutional frameworks such as medicine, law, education, and the human sciences (Foucault, 1977). Rationality thus operates as a productive force, generating forms of knowledge while simultaneously excluding alternative modes of understanding. This insight radically destabilizes the modern belief in a single, universally valid rational order (Habermas, 1987).

At the same time, developments in the philosophy of science reinforce this critique of unified rationality. Thomas Kuhn's concept of paradigms shows that scientific rationality itself is plural and historically contingent (Kuhn, 1962; Kuhn, 1970). Scientific communities operate within shared conceptual and methodological frameworks that determine what counts as a legitimate problem, acceptable evidence, and valid explanation. Paradigm shifts are not merely theoretical corrections but involve profound changes in standards of rationality (Hacking, 1983). The incommensurability between paradigms reveals that rational evaluation cannot always appeal to neutral, paradigm-independent criteria (Kuhn, 1962; Feyerabend, 1975).

Jean-François Lyotard integrates these insights into a broader diagnosis of postmodern knowledge. The collapse of metanarratives, according to Lyotard, signifies the loss of overarching legitimating stories such as progress, emancipation, or the unity of science (Lyotard, 1984). Knowledge fragments into heterogeneous language games, each governed by its own rules of justification. This condition does not entail the disappearance of rationality, but its localization. Rationality becomes performative and context-bound, oriented toward specific goals and practices rather than universal foundations (Lyotard, 1984; Rorty, 1989).

The emergence of plural rationalities is often criticized as a slide into epistemological relativism. Such criticism, however, rests on a misunderstanding. Relativism implies that all claims are equally valid and that no rational grounds for critique remain (Putnam, 1981). Plural rationality, by contrast, presupposes the existence of internal norms, standards, and criteria within specific contexts (Foucault, 1980; Kuhn, 1962). Rational judgment does not vanish; it is transformed. Evaluation becomes immanent rather than transcendent, relying on coherence, consistency, practical adequacy, and ethical responsibility (Lyotard, 1984; Habermas, 1987).

Plural rationality thus preserves the critical potential of philosophy under conditions of historical contingency. It enables critique without appealing to absolute foundations, allowing philosophy to address the limits, exclusions, and power effects of particular rational regimes

(Foucault, 1980; Kuhn, 1970). In this sense, plural rationality represents not the end of reason, but its reflexive maturation. Reason becomes aware of its own conditions, limits, and responsibilities, operating as a historically conscious practice rather than a totalizing authority.

This integrated perspective shows that twentieth-century philosophy does not dissolve into fragmentation or irrationalism. Instead, it articulates a complex landscape of rational practices capable of mutual critique and transformation. Plural rationality emerges as a structural response to the crisis of modernity, maintaining the possibility of rational discourse while rejecting the illusion of universal, context-free foundations (Foucault, 1980; Kuhn, 1962; Lyotard, 1984).

### 3. Conclusions

The disintegration of metanarratives constitutes one of the most profound and far-reaching transformations in the history of twentieth-century philosophy. What collapses in this process is not merely a set of theoretical constructs, but an entire model of philosophical legitimacy grounded in universal reason, linear progress, and comprehensive explanatory systems. The erosion of these legitimating narratives reveals a deep structural crisis of modern rationality, exposing its historical contingency and its entanglement with specific social, political, and epistemic conditions.

Twentieth-century philosophy responds to this crisis not through a simple rejection of rationality, but through its systematic reconfiguration. The emergence of multiple rationalities reflects an effort to preserve the critical function of philosophy under conditions in which universal foundations can no longer be credibly sustained. Rather than abandoning reason, philosophers re-articulate it as situated, reflexive, and internally regulated by contextual norms. In this sense, plural rationality represents a transformation of reason that allows philosophical inquiry to remain meaningful after the collapse of totalizing frameworks.

The analyses of Nietzsche, Heidegger, Wittgenstein, Foucault, and Lyotard demonstrate that rationality in the twentieth century becomes inseparable from historical experience, linguistic practice, and power relations. Each of these thinkers exposes different dimensions of the limits of modern rationality while simultaneously developing alternative modes of critique. Nietzsche's genealogical method reveals the perspectival character of values and truths; Heidegger uncovers the ontological presuppositions that shape calculative thinking; Wittgenstein situates rational justification within forms of life; Foucault links rational regimes to practices of power; and Lyotard conceptualizes the fragmentation of knowledge after the collapse of metanarratives. Taken together, these approaches articulate a shared philosophical horizon in which rationality is no longer unified but irreducibly plural.

Interpreting plural rationality as a form of epistemological relativism fails to capture the critical ambitions of twentieth-century philosophy. Plural rationalities do not imply the equivalence of all claims or the suspension of judgment. On the contrary, they require more demanding forms of justification that operate immanently within specific contexts. Rational critique persists through coherence, internal consistency, pragmatic effectiveness, and ethical accountability. The loss of universal foundations thus gives rise not to arbitrariness, but to heightened responsibility in the exercise of reason.

From this perspective, twentieth-century philosophy can be understood as a coherent, though non-totalizing, intellectual project aimed at rethinking the conditions of rationality in a fragmented world. The shift from universal to plural rationality reflects an attempt to reconcile

critical thinking with historical finitude and cultural diversity. This reconfiguration does not signal the end of philosophy, but rather its transformation into a practice attuned to contingency, difference, and reflexivity. In this sense, plural rationality emerges as one of the most significant philosophical achievements of the twentieth century, redefining reason not as an instrument of domination or totalization, but as a fragile yet indispensable medium of critique and responsibility.

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## LINGUISTIC MEANS OF REALIZING PROPAGANDA STRATEGIES IN CONTEMPORARY ENGLISH MEDIA DISCOURSE

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### Summary

The article examines the linguistic means of realizing propaganda strategies in contemporary English-language media discourse, focusing on news coverage by Fox News and The New York Times between 2020 and 2024. Drawing on the theoretical frameworks of critical discourse analysis and linguistic stylistics, the study explores how lexical, syntactic, and pragmatic features serve to encode ideological bias and persuasive intent. The research identifies several dominant mechanisms of propaganda realization, including evaluative lexis, metaphorical and symbolic framing, manipulation of agency, and the strategic use of modality. Comparative analysis reveals that Fox News employs emotionally charged and moralizing language to construct narratives of national defense and cultural threat, whereas The New York Times relies on analytical and reform-oriented discourse emphasizing rational inquiry and democratic values. These findings support the view that propaganda in modern journalism operates less through overt manipulation than through the subtle normalization of ideological perspectives. The study underscores the importance of linguistic awareness and critical media literacy in identifying the hidden persuasive strategies that shape public understanding of political and social reality.

**Key words:** ideological framing, evaluative language, critical discourse analysis, persuasion techniques, media bias, rhetorical strategies, linguistic manipulation.

DOI <https://doi.org/10.23856/7413>

### 1. Introduction

In the era of global information flows and mediated communication, media discourse functions as a dominant platform for shaping public opinion and constructing ideological realities. According to Fairclough (1995), media discourse is not a neutral reflection of social events but a “site of ideological production,” where linguistic choices encode specific power relations and values. Similarly, van Dijk (1998) emphasizes that media texts represent “discursive practices” through which social cognition is influenced and collective beliefs are formed. Thus, media discourse encompasses a complex interaction of textual, contextual, and sociocognitive dimensions, reflecting both communicative practices and underlying ideological intentions.

Within this framework, propaganda is understood as a strategic and systematic attempt to influence attitudes and behaviors through selective communication. Jowett and O'Donnell (2019: 7) define propaganda as “the deliberate, systematic attempt to shape perceptions, manipulate cognitions, and direct behavior to achieve a response that furthers the desired intent of the propagandist.” Lasswell's (1927: 627) classical definition – “the management of collective attitudes by the manipulation of significant symbols” – remains relevant, highlighting the linguistic and semiotic mechanisms that sustain persuasive influence. Contemporary scholarship (Ellul, 1973; Bernays, 1928; Chilton, 2004) extends this view, stressing that propaganda functions not only in overtly political contexts but also in subtle, routine representations of reality across media platforms.

The aim of this article is to analyze the linguistic means through which propaganda strategies are realized in contemporary media discourse, with particular attention to the contrastive representation of political and social events in Fox News and The New York Times. By examining lexical, syntactic, and pragmatic devices, the study seeks to uncover how evaluative language, framing, and argumentation patterns contribute to the construction of ideological bias and persuasion.

**The specific objectives are:**

- 1) To classify and analyze lexical, syntactic, and rhetorical devices used to convey ideological bias.
- 2) To compare the linguistic representation of key political and social issues in two ideologically opposed media outlets.
- 3) To interpret the persuasive and manipulative functions of these linguistic strategies within the framework of propaganda theory.

The analysis employs the tools of critical discourse analysis (CDA) and linguistic stylistics. A comparative textual analysis is conducted on selected news articles and editorials published between 2020 and 2024, focusing on topics such as elections, immigration, and public health policy. Linguistic data are examined in terms of lexical evaluation, syntactic agency, modality, and metaphorical framing, with attention to their pragmatic and ideological implications.

By uncovering the subtle linguistic mechanisms that underpin propaganda in ostensibly neutral reporting, the study aims to contribute to the broader understanding of media discourse as a powerful instrument of ideological influence in contemporary society.

## **2. Media Discourse as an Object of Linguistic Analysis**

Media discourse represents a multifaceted communicative domain situated at the intersection of language, ideology, and power. It encompasses both spoken and written modes of communication disseminated through mass media, including news reports, editorials, interviews, and opinion pieces. Fairclough (1995) defines media discourse as a “socially situated form of language use,” which not only transmits information but also constructs social identities and relations. Similarly, Fowler (1991) argues that media texts are inherently selective, reflecting institutional and ideological frameworks rather than objective reality.

From a discourse-analytic perspective, media communication can be viewed as a site of ideological struggle, where competing interpretations of social events are negotiated and legitimated through linguistic means (van Dijk, 1998). In this sense, language operates as a tool of representation, framing particular actors and events in ways that support or challenge

dominant ideologies. The process of framing – that is, selecting and emphasizing certain aspects of perceived reality (Entman, 1993) – is central to the construction of meaning in media texts. Thus, the analysis of media discourse necessarily entails an exploration of linguistic patterns that contribute to evaluative stance, emotional appeal, and the manipulation of reader perception.

### 3. Propaganda as a Communicative Strategy

The concept of propaganda has evolved from its early political and wartime associations to encompass a wide range of persuasive and manipulative communicative practices. Lasswell (1927: 627) provided one of the earliest systematic definitions, describing propaganda as “the management of collective attitudes by the manipulation of significant symbols.” Later, Ellul (1973) extended this view, distinguishing between political propaganda, which is overt and institutionally organized, and sociological propaganda, which subtly embeds ideology into everyday communication and cultural expression.

Modern interpretations view propaganda as a discursive strategy that exploits linguistic and cognitive mechanisms to shape perception and belief. Jowett and O’Donnell (2019) emphasize intentionality, systematicity, and the use of persuasive symbols as key features of propaganda. Chilton (2004) further situates propaganda within the broader framework of political discourse, highlighting its reliance on rhetorical and cognitive strategies such as metaphor, deixis, presupposition, and modality.

In the context of media communication, propaganda manifests not only through overt persuasive techniques but also through lexical choice, thematic emphasis, and syntactic framing that subtly direct interpretation. For instance, the use of evaluative adjectives (*radical, progressive, patriotic*), nominalizations that obscure agency (*mistakes were made*), or metaphorical framing (*war on truth, battle for democracy*) exemplifies how linguistic structures contribute to ideological manipulation.

A substantial body of research has examined the relationship between media language and ideological control. Thus, van Dijk’s (1991, 1998) socio-cognitive model emphasizes how media discourse influences public knowledge structures by reinforcing group polarization and ideological schemata. Fairclough’s (1992, 1995) critical discourse analysis (CDA) provides a methodological framework for exploring how linguistic forms express social power and dominance. Wodak’s (2001) discourse-historical approach (DHA) integrates linguistic, historical, and sociopolitical contexts, demonstrating how discursive strategies construct national, ethnic, or political identities.

Scholars have also focused on the linguistic markers of bias in specific media outlets. For example, Bednarek and Caple (2017) identify evaluative and affective patterns that create “news values,” while Richardson (2007) shows how grammatical and lexical features serve ideological purposes in newspaper discourse. Within the U.S. media landscape, comparative analyses (Bhatia, 2006; Cotter, 2010) reveal that outlets such as Fox News and The New York Times employ distinct linguistic strategies reflecting conservative and liberal ideological orientations, respectively.

## 4. Linguistic Tools of Persuasive Media Communication

### 4.1. Lexical Evaluation and Ideological Polarization

Lexical choice constitutes the most immediate indicator of ideological stance in media texts. It carries evaluative and emotional potential that guides the reader toward a preferred interpretation. As van Dijk (1998) observes, ideological discourse performs positive self-presentation and negative other-presentation by means of evaluative lexis, metaphoric intensification, and categorical labeling.

Consider the headline:

“The radical left’s war on American values: What’s really at stake” (Fox News, 2022, November 8).

The evaluative epithet radical and the militarized metaphor war create an antagonistic frame that positions liberal actors as existential threats. The noun phrase American values evokes shared cultural identity, appealing to the reader’s sense of patriotism. The ideological implication, following Fowler (1991), is a moral polarization between the in-group (defenders of national integrity) and the out-group (destructive radicals).

By contrast, The New York Times frames political conflict in analytic and civic terms:

“Democracy tested: Voters confront misinformation and division” (The New York Times, 2022, November 9).

The lexical field (democracy, voters, misinformation, division) constructs an institutional rather than moral frame. The noun misinformation presupposes epistemic rationality and the citizen’s capacity for judgment. The lexical tone is cautionary rather than accusatory, characteristic of what Bednarek & Caple (2017) identify as the rational-evaluative register of liberal media.

Both examples reveal the evaluative asymmetry through which ideological discourse encodes propaganda: Fox News relies on emotionally saturated, polarizing vocabulary, whereas The New York Times employs cognitively oriented, legitimacy-seeking lexis.

### 4.2. Metaphorical and Symbolic Framing

Metaphor operates as a cognitive and ideological device that shapes public understanding by mapping abstract social concepts onto concrete experiential domains (Lakoff & Johnson, 1980; Charteris-Black, 2011).

In Fox News coverage of immigration “Biden’s border crisis worsens as administration ignores calls for reform” (Fox News, 2023, March 14), the dominant metaphor is CRISIS AS DISASTER. The lexical cluster (crisis, worsens, ignores) constructs an unfolding emergency, thereby legitimizing a call for decisive action. The metaphorical construction evokes fear and urgency, activating a protectionist frame congruent with conservative ideology.

Conversely, The New York Times employs POLITICS AS JOURNEY metaphors, as in “How immigration policy divides Washington again” (The New York Times, 2023, March 15). The headline conceptualizes policy debate as cyclical movement (divides ... again), implying persistence of systemic obstacles rather than immediate danger. Such metaphorical framing positions the reader as an informed observer invited to reflect, not to mobilize emotionally.

Following Chilton (2004), metaphorical framing here functions as an ideological gatekeeper: Fox News constructs threat and moral urgency; The New York Times foregrounds process and deliberation.

### 4.3. Syntactic Structuring and Agency Manipulation

Syntactic structures determine how responsibility and causality are distributed in discourse. The manipulation of agency – through active or passive voice, nominalization, and topicalization – constitutes a core linguistic strategy of propaganda (*van Leeuwen, 1996*).

In Fox News reporting on policy outcomes, the passive construction “mistakes were made in policy communication” (Fox News, 2023, *March 14*) removes the human agent and dilutes accountability. This syntactic erasure aligns with ideological mitigation of the in-group’s responsibility. In contrast, when addressing liberal actors, Fox News frequently resorts to agentive syntax: “Democrats pushed divisive measures through Congress” (Fox News, 2023, *March 14*). The active verb pushed implies coercion and ideological aggressiveness, thereby framing Democratic policymakers as the source of social tension.

The New York Times reverses the pattern. In the article “Trump intensified the political divide” (The New York Times, 2023, *March 15*), agency is overtly attributed, emphasizing personal accountability moral responsibility. Yet, in discussions of systemic inequality – “Inequalities were reinforced by decades of policy inertia” (The New York Times, 2023, *March 16*) – the passive voice abstracts the actor, diffusing blame and depersonalizing causation. Such syntactic alternation reflects Fairclough’s (1995) observation that linguistic choice is ideologically motivated by institutional alignment and audience expectations: conservative media often conceal in-group agency, while liberal outlets obscure structural responsibility.

### 4.4. Modality, Evidentiality, and Persuasive Force

Modality indexes degrees of certainty and authority, thus contributing to the persuasive or manipulative dimension of discourse (*Halliday, 1994*). Fox News often employs deontic modality to evoke moral imperative and mobilize emotional response. For example, in an opinion piece titled “Leaders must protect our borders before it’s too late” (Fox News, 2023, *April 4*), the modal *must* asserts necessity, while the apocalyptic clause before it’s too late heightens emotional intensity. The lexical combination frames immigration as an urgent national crisis and constructs a moral binary between action and failure. The function, as Jowett and O’Donnell (2019) note, is to transform subjective opinion into perceived moral truth.

In contrast, The New York Times typically relies on epistemic modality, emphasizing analytical caution and institutional rationality. In an article titled “Experts suggest the data may indicate a gradual shift in voter priorities” (The New York Times, 2023, *April 5*), the modals *may* and the reporting verb suggest signal interpretive distance and scholarly ethos. Such expressions build an image of professional credibility and intellectual restraint. Yet, as Fowler (1991) observes, even hedged modality can perform a persuasive function by legitimizing authority and marginalizing emotionally grounded alternatives.

Thus, while Fox News uses modality to command and mobilize, The New York Times employs it to legitimize and rationalize. Both forms of certainty – moral and epistemic – sustain ideological persuasion through linguistic framing and stance-taking.

### 4.5 Pragmatic and Rhetorical Strategies

Beyond the grammatical level, propaganda is reinforced through pragmatic operations such as presupposition, repetition, and rhetorical contrast. These mechanisms activate ideological assumptions before conscious interpretation occurs.

Presupposition structures ideological inference in news framing. For instance, Fox News asserts, “Even liberal elites now admit the border crisis is real” (Fox News, 2023, *May 7*) – presupposing that liberal groups previously denied an evident truth. Conversely, The New York

Times employs a similar mechanism in “Once again, conservatives claim without evidence that fraud shaped the election outcome” (The New York Times, 2023, *May 8*) – presupposing habitual unreliability and recurring rhetorical patterns within conservative discourse.

Repetition of formulaic expressions – such as “border crisis,” “war on democracy,” “threat to freedom” – creates lexical cohesion and mnemonic salience, functioning as what Ellul (1973) defined as propagandistic conditioning. In Fox News, repeated invocation of “border crisis” amplifies a sense of emergency and moral duty, while The New York Times’ recurrent use of “war on democracy” dramatizes civic defense narratives.

Rhetorical contrast simplifies ideological positioning through moral binaries such as “freedom vs. control” (Fox News, 2023, *May 10*) or “truth vs. misinformation” (The New York Times, 2023, *May 9*). These juxtapositions reduce cognitive complexity while maximizing persuasive clarity, appealing to shared group values.

Taken together, these pragmatic strategies, combined with evaluative and syntactic devices, realize what van Dijk (1998) terms the discursive reproduction of ideology – a process through which linguistic form naturalizes sociopolitical hierarchies and consolidates group identity.

## 5. Conclusions

The present study has demonstrated that propaganda in contemporary media discourse is realized through a complex interplay of linguistic, rhetorical, and pragmatic mechanisms that construct and sustain ideological perspectives. Drawing on the frameworks of critical discourse analysis and linguistic stylistics, the research has shown that both Fox News and The New York Times employ language not merely as a vehicle of information, but as a strategic tool for influencing perception, guiding interpretation, and reinforcing specific worldviews.

The analysis identified several dominant linguistic means of propaganda realization: evaluative lexis, which emotionally polarizes discourse; metaphorical framing, which naturalizes ideological narratives; syntactic structuring and agency manipulation, which allocate responsibility and legitimacy; and modality, which establishes authority and epistemic stance. These elements function collectively to create coherent ideological frames – combative and moralizing in Fox News, analytical and reform-oriented in The New York Times.

Importantly, the findings highlight that propaganda in democratic media environments often operates through discursive subtlety rather than explicit indoctrination. Ideological influence is embedded in habitual linguistic patterns that appear objective but are, in fact, socially and politically motivated. Understanding these mechanisms is essential for fostering critical media literacy, enabling audiences to recognize linguistic bias and the symbolic construction of “truth” in the media.

Future research may expand the scope of analysis to multimodal dimensions – such as visual framing, prosody, and layout – or to cross-cultural comparisons, which would further illuminate how linguistic and semiotic means of persuasion operate across different media systems.

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## INNOVATIVE STRATEGIES FOR MULTI-LEVEL NATURAL SCIENCE EDUCATION OF TEACHERS IN THE CONTEXT OF A CONTINUOUS EDUCATIONAL PROCESS

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### Summary

Current socio-cultural challenges and rapid digitalization necessitate a paradigm shift in pedagogical education. Modern teacher training adopts a dual approach: cultivating a visionary intellectual and a highly qualified specialist. Within this framework, multi-level natural science training serves as a foundational vector, evolving from academic fundamentals to integrated environmental, research, and digital competencies.

The purpose of this article is to analyze innovative strategies for the multi-level natural science education of future teachers within a continuous professional development system. The study highlights how these strategies synthesize professional competence with advanced pedagogical mastery. The analysis confirms that Ukraine's educational paradigm is transforming from a static «knowledge-based» model into a dynamic competence ecosystem.

Special emphasis is placed on the natural science teacher as a key respondent to global technological and environmental crises. Integrating a fundamental scientific base with flexible STEM methodologies, AI-driven practices (such as the «AI-Micro-Educator» concept), and digital tools forms a new type of educator – a facilitator of scientific inquiry. This transformation is reinforced by the unique experience of Ukrainian education under martial law, which fosters critical thinking and psychological resilience.

Prospects for further exploration include developing individualized training trajectories, transdisciplinary approaches, and ecological competence vital for post-war restoration. This developmental vector ensures an adaptive environment capable of nurturing resilient, intellectually mature personalities – the architects of Ukraine's innovative future.

**Key words:** innovative strategies, multi-level education, natural science teachers, continuous educational process, STEM methodologies, professional competence, digital transformation, pedagogical innovation.

DOI <https://doi.org/10.23856/7414>

### 1. Introduction

The current stage of civilization development, which scientists describe as the era of the «Fourth Industrial Revolution» in the context of global environmental challenges, puts forward fundamentally new requirements for natural science education, which is undergoing tectonic shifts under the influence of both global and local crisis phenomena. The COVID-19 pandemic, which became the first shock test for educational systems, and the full-scale Russian invasion of Ukraine have transformed the issue of teacher adaptability from a theoretical plane into an existential one, as blended and distance learning forms have transformed from a temporary measure into a new pedagogical reality. This reality requires a natural science teacher to have

fundamentally new competencies – from organizing a virtual experiment in the absence of access to laboratories to providing initial psychological support to students in the face of security threats. In this complex context, the pedagogical education system has found itself faced with the need for a radical rethinking of approaches to professional training, where the multi-stage training of a natural science teacher is viewed not as a linear process of accumulating a body of knowledge, but as a continuous, flexible trajectory of professional development, covering levels from undergraduate to postgraduate education and self-improvement throughout life (Life Long Learning).

Analysis of recent research and publications. In modern socio-cultural conditions, professional and pedagogical training is designed to solve two complexes of interrelated tasks: first, to promote the social development of the future teacher's personality, his general educational, cultural, and ideological training; second, to ensure professional development in the chosen field of pedagogical activity (Kovalenko, 2020: 154-156). The development of the teacher's personality, the acquisition of relevant knowledge and abilities that allow him to make well-founded conclusions about the state and course of the pedagogical process and to act effectively, is the goal, basis, and condition of effective professional activity.

Of particular importance is the multi-level natural science training of future teachers, which involves the gradual formation of competencies: from basic knowledge in the field of natural sciences to the integration of environmental, interdisciplinary, and research skills (Baibak, 2025: 232-233). Modern approaches emphasize competency-based, practice-oriented, and integrative learning, which combines a fundamental theoretical basis with innovative methods, digital technologies, and environmental values. Such a system provides not only professional readiness but also the ability of the teacher to act as an agent of change in the community, to form the environmental consciousness of students, and to promote sustainable development.

Leading scientists who study the issue of improving the content of professional education (V. Bondar, S. Goncharenko, N. Hrytsay, N. Guz, I. Zyazyun, V. Kremen, V. Kuz, V. Lugovyi, O. Moroz, N. Nychkalo, V. Radul, O. Savchenko, S. Sysoeva, L. Khomych, etc.) quite rightly believe that in modern conditions the traditional image of professional and pedagogical culture no longer ensures a teacher's career success, his competitiveness, a high level of professionalism, and pedagogical skills. That is why multi-level natural science training using modern educational approaches becomes a key factor in updating the system of continuous education (Hramatyk, 2023: 23-36).

**The purpose** of the article is to identify and analyze modern approaches to multi-level natural science education of future teachers in the system of continuous educational process, as well as to reveal its role in the formation of professional competence and pedagogical skills.

## 2. Presentation of the main material of the study

Modern education requires from the training of future natural science teachers not only deep professional knowledge, but also the ability to flexibly respond to the challenges of the time, integrating innovative approaches, ecological thinking, and interdisciplinarity into their own pedagogical practice. In the modern educational space, which is rapidly transforming, the principle of fundamentalization – as interpreted by Academician S. Honcharenko – is considered not as a mechanical accumulation of theoretical material, but as the formation of a deep methodological culture, which provides the future natural science teacher with the ability to holistic scientific thinking, interdisciplinary integration and innovative pedagogical action

(*Honcharenko, 2008: 13-21*). This allows the future teacher to see a single scientific picture of the world based on individual facts and to integrate disparate knowledge of physics, chemistry, and biology into a holistic system. The fundamentalization of the content of natural science education at the present stage acquires a distinct axiological and activity dimension, where scientific knowledge is considered not as an end in itself, but as a tool for preserving life, the environment, and ensuring the sustainable development of society. This idea is consistently developed in her works by A. Stepaniuk, who substantiated the methodological principles of forming the integrity of knowledge about living nature as the basis for the integration of natural sciences, proving that the future teacher must have the ability for interdisciplinary synthesis, and not only narrowly professional erudition (*Stepaniuk, 1999: 135-136*).

The specifics of professional training of teachers of the natural science cycle in Ukraine are differentiated depending on the dominant subject specialization, each of which has its own unique vectors of development, analyzed in detail in the fundamental dissertation studies of leading Ukrainian scientists of the last decade. In particular, in the field of biology teaching methods, a significant contribution was made by N. Hrytsai, who, in her dissertation research, developed the concept of a methodological system for teaching biology based on an activity approach (*Hrytsai, 2014: 154-158*). The scientist emphasizes that the methodological training of future teachers should be inextricably linked with the formation of their research competence, which allows realizing the tasks of the New Ukrainian School by involving students in real scientific research, and not just reproductive assimilation of the material (*Sharko, 2021: 223-225*).

In parallel with this, S. Rudyshyn, in his works, substantiates the ecological-evolutionary approach to the training of biology teachers. The scientist emphasizes that understanding evolutionary processes is the key to the formation of a scientific worldview, and the ecological component should permeate all disciplines of the natural cycle, forming in the future, teacher responsibility for the state of the biosphere (*Rudyshyn, 2009: 227-254*). This is especially relevant in the context of modern environmental crises, when the teacher becomes the main conductor of environmental consciousness for the younger generation. In the same context, I. Koreneva investigated the problem of forming methodological competence of future biology teachers in the process of pedagogical practice, proving that it is a practical activity at school that is the integrative environment where theoretical knowledge is transformed into stable professional skills, and methodological competence becomes a tool for adapting to the changing conditions of the educational process (*Koreneva, 2020: 645*).

No less significant changes are taking place in the training of physics and chemistry teachers. The priority here is methodological mastery and digitalization of the educational process, which is thoroughly analyzed in the works of V. Sharko (*Sharko, 2021: 312*). The researcher proves the necessity of the transition of the physics teacher from the role of translator of physical laws to the role of organizer of research, search, and STEM projects. This idea is developed in her study by I. Salnyk, revealing the potential of computer-oriented tools and emphasizing that modern training of physics teachers is impossible without mastering the skills of working with digital measuring complexes and virtual environments (*Salnyk, 2015: 480*). At the same time, the study by N. Chaichenko focuses on the formation of chemical competence through practical experiments, which brings learning closer to the real life of students (*Chaichenko, 2018: 65-72*).

Analysis of educational and professional programs of leading pedagogical universities of Ukraine indicates the efforts of higher education institutions to adapt the content of training to the requirements of transdisciplinarity and the challenges of the time. An important step on this path was the introduction of the specialty 014.15 «Secondary Education (Natural Sciences)»/

A4 Secondary Education as a subject specialty A4.15 Secondary Education (Natural Sciences) of the field of knowledge A Education, which aims to train a new type of teacher.

The globalization of the educational space requires the harmonization of Ukrainian standards for teacher training with European ones, which actualizes the need for a deep comparative analysis of domestic and foreign models (*Hrynova, 2015: 284*). The experience of Finland, where entry into the teaching profession is possible only with a master's degree, demonstrates the effectiveness of the research-oriented model (Research-Based Teacher Education). Finnish researchers J. Lavonen and K. Juuti emphasize that a teacher must have developed skills of «pedagogical thinking», which allow them to independently diagnose students' problems, analyze data, and choose optimal methods (*Lavonen & Juuti, 2022: 345-358*). This model forms in the teacher the ability to reflect scientifically and to construct new didactic approaches independently, which has become the key to the phenomenal stability of the Finnish education system during the COVID-19 crisis.

In contrast, the Polish training model is particularly relevant to Ukraine in the context of implementing integrated courses in basic school (the subject «Nature» – Przyroda). As researchers V. Kuzmenko and M. Martyniuk note, the Polish system is characterized by flexibility and clear profiling at higher levels of education (*Kuzmenko, 2019; Martyniuk, 2017*). Polish universities offer master's programs that allow bachelors in biology to quickly master the methodology of teaching chemistry, physics, or geography through an extensive system of postgraduate education and micro-qualifications. Comparative analysis allows us to state that the Ukrainian system is gradually evolving from the rigid subject specialization characteristic of the German model (where a teacher is trained in a fixed combination of two subjects, for example, biology and sports), to greater flexibility and integration characteristic of the Anglo-Saxon and Scandinavian systems (*Kocherha, 2021: 21*).

The content of multi-stage training of a teacher of natural sciences should be updated systematically along several strategic vectors, among which the key one is the methodological transformation towards learning through research (Inquiry-Based Learning). This implies that the future teacher should not only master scientific facts, but also master the methodology of organizing students' research activities (15). A striking example of such work is the introduction of «citizen science» projects into teacher training, where students learn to organize monitoring of the state of the environment, water, or air quality using available tools, turning learning into a socially significant activity. An integral part of modern training is becoming digitally competent, which goes beyond basic literacy and involves mastering immersive technologies, such as virtual laboratories Labster or PhET (*Rothland, 2020: 315-330*). In war conditions, when access to real school laboratories is often limited or impossible, a teacher must be able to organize a full-fledged virtual workshop that allows students to develop research skills in a digital environment.

The further logic of modernization of teacher education requires going beyond formal academic training and focusing on the context of lifelong learning, since a bachelor's or master's degree is no longer sufficient for a teacher's professional longevity in a turbulent world. The system of lifelong learning for science teachers is transforming from the traditional model of periodic professional development (once every five years) into a dynamic ecosystem of professional development based on the principles of andragogy and heutagogy (self-determined learning). In the context of rapid obsolescence of scientific knowledge and technological innovation, a teacher is forced to constantly update their professional tools, moving from the status of a «consumer» of new knowledge to the status of a «co-creator» of educational content.

The implementation of the principle of lifelong learning in science teacher training involves a transition from discrete education to a holistic multi-level architectonics, where each stage has its own unique mission and tools:

First level (Bachelor's degree): Fundamentalization and worldview base. This stage is the foundation of professional development, where yesterday's schoolchild is transformed into a future specialist. The key task of the bachelor's degree is the formation of a scientific worldview and subject competence.

- Content: Students study classical fundamental disciplines (general physics, inorganic and organic chemistry, botany, zoology, anatomy), which form «hard skills».
- Innovative aspect: The response to the challenges of modernity was the introduction of integrated courses, such as «Biophysics», «Physical and Colloidal Chemistry», «Biogeography», and «Chemical Ecology». This allows us to destroy artificial inter-subject barriers even at the stage of knowledge acquisition, forming in the student an understanding of the unity of natural processes.

- Psychological and pedagogical component: In parallel, there is an immersion in the world of childhood through courses in age psychology and pedagogy, which lay the foundations of the humanistic worldview of the future teacher.

Second level (Master's degree): methodologization, research, and professional identity. A master's degree is the stage where the «subject expert» turns into a «master teacher». The focus shifts from «what to teach» to «how to teach» and «how to research».

- Methodological mastery: Students master complex technologies: STEM/STEAM education, distance and blended learning methods, and critical thinking technologies. It is here that the readiness to work in inclusion and create a barrier-free educational environment is formed.

- Differentiation: There is a clear profile: preparation for teaching individual subjects at an advanced level in a specialized high school (lyceum) or teaching an integrated course «Natural Sciences» in a basic school and colleges.

- Research component: The master's student acts as a researcher, performing scientific work, which often has the character of «Action Research» – analysis of real pedagogical situations during practice and finding ways to solve them.

Third level (PhD – Doctor of Philosophy): innovations and strategic leadership. Training of Doctors of Philosophy in specialties 011 «Educational, Pedagogical Sciences» or 014 «Secondary Education» goes beyond the school classroom. This is the level of training of the elite of the educational industry – leaders of change.

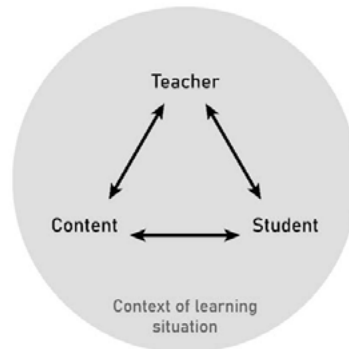
- Mission: Training developers of new methodologies, authors of textbooks and digital content, and teachers of higher education institutions.

- Activity content: postgraduate students explore global trends (digitalization, neuropedagogy, educational management), develop and experimentally test innovative learning models. They become a bridge between academic science and school practice, transferring new knowledge into the education system.

Fourth level (Postgraduate education): adaptation, development, and informal education. This is the most dynamic and flexible link that accompanies a teacher throughout his or her professional life.

- Reactivity: In conditions of war, reforms, or pandemics, it is this link that allows a teacher to survive professionally. Through the system of micro-credentials, a teacher can master critically needed skills in a few weeks: «Digital assessment tools», «Psychological support in stress conditions», «Mine safety», «Artificial intelligence in education».

- Formats: Moving away from formal courses every 5 years to continuous development through:
  - Informal education: online courses (Prometheus, EdEra, Coursera), webinars.
  - Horizontal connections: participation in (non) conferences, EdCamp, professional communities in social networks, where peer-to-peer experience is exchanged.
  - Certification: independent assessment of professional competencies, which stimulates self-development.



**Fig. 1. Model of didactic interaction in the system of continuing education.**  
**Translation of elements (signatures)\***

- \* The Teacher-Content Relationship
- The Student-Content Relationship
- The Teacher-Student Relationship
- The Context of Learning Situation

Such architectonics ensures the continuity of the teacher's professional growth, allowing him to remain relevant, competent, and motivated at every stage of his career (Tirri, 2024: 450-456).

For example, a biology teacher can, in a short time, master the basics of tactical medicine, mine safety methodology, or artificial intelligence tools for generating educational tasks, which cannot be quickly integrated into bulky university programs. Such flexibility is critically necessary to ensure the resilience of the education system in the conditions of martial law and post-war reconstruction (Rothland, 2020: 315-330).

In addition, continuing education acquires the features of horizontal interaction, where experienced teacher practitioners act as mentors for young colleagues, creating professional network communities. This allows overcoming professional isolation, exchanging best practices in implementing integrated courses, and jointly developing methodological cases for working with students who have educational losses or psychological trauma. A science teacher in the continuing education system becomes a researcher of his own practice, constantly reflecting on the effectiveness of his methods and adapting them to the needs of a particular class, which is the highest manifestation of pedagogical skill and the key to the formation of an environmentally conscious nation.

### 3. Conclusions and prospects for further exploration of the direction

Summarizing the analysis of multi-level training, it can be argued that the modern paradigm of pedagogical education in Ukraine is experiencing a phase of deep systemic transformation, gradually moving away from the traditional knowledge model in favor of a dynamic competency ecosystem. Of particular importance in this process is the specificity of training a natural science teacher, who becomes a key figure in responding to global technological and environmental challenges. It is the integration of the fundamental scientific base with flexible STEM methodologies, experimental practices, and digital tools that forms a new type of natural science teacher: this is no longer just a translator of facts, but a facilitator of scientific research, a researcher and innovator, capable of transforming the educational process into an exciting knowledge of the world. The harmonization of national standards with leading European models, reinforced by the unique experience of the functioning of Ukrainian education under martial law, contributes to the crystallization of an original school of training teachers of physics, chemistry, biology, and geography. This school is based on the development of critical thinking, psychological resilience, and the ability to quickly adapt. Prospects for further scientific exploration are seen in the development of individualized training models, the implementation of transdisciplinary approaches, and the deepening of environmental competence, which is critically important for post-war environmental restoration. Such a development vector will ensure the creation of an adaptive educational environment capable of educating an intellectually mature, environmentally conscious, and resilient personality – the creator of the innovative future of Ukraine.

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## TRAINING DEEP NEURAL NETWORKS FOR AUTOMATED ANALYSIS OF PHYSICAL EXPERIMENT DATA

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### Summary

In modern physics, experimental setups produce vast volumes of complex data, the processing of which is becoming increasingly labor-intensive for traditional analytical methods. This is particularly relevant for tasks involving the analysis of multidimensional signals, images, and time series, where the speed and accuracy of interpretation play a critical role.

The purpose of this work is to investigate the capabilities of deep neural networks for the automated analysis of experimental physical data. Within the scope of this study, the application of various deep learning architectures is considered, including convolutional and recurrent networks, as well as transformer-based models. Significant attention is paid to the preparation of input data – specifically its normalization, annotation, and the generation of simulated samples (Baldi, P., Sadowski, P., & Whiteson, D., 2014).

The conducted modeling has demonstrated that the proposed approaches allow for high-accuracy identification of experimental event types, detection of hidden patterns, and prediction of physical system behavior (Goodfellow, I., Bengio, Y., & Courville, A. 2016). The results obtained showcase the promise of using deep learning to increase the efficiency of processing physical research results, reduce manual labor, and improve the quality of interpretation. Future research directions include integration with explainable AI models and application in real-time environments (Agostinelli, S., Allison, J., Amako, K., et al. 2003).

**Key words:** Artificial intelligence, Physics, Adaptive learning, Chatbots, Virtual labs, Pedagogy, Critical thinking.

DOI <https://doi.org/10.23856/7415>

### 1. Introduction

In recent years, physics has advanced significantly due to the development of sophisticated experimental setups that generate massive volumes of data. This data can be highly diverse – ranging from images and spectra to time series and high-frequency signals. However, traditional analytical methods, which primarily rely on classical statistical approaches or manual interpretation, are increasingly unable to handle such scale and complexity. This is particularly evident in real-time applications, where it is necessary to rapidly evaluate and classify events occurring during the experiment.

In this context, machine learning and Deep Neural Networks (DNNs) hold immense potential. They are capable of automatically detecting complex, non-linear dependencies within data, adapting to various information formats, and improving the quality of analysis without direct human intervention. Already, deep neural networks are successfully being applied to classify experimental events, reconstruct particle trajectories, detect anomalies, and predict the behavior of physical systems (Baldi, P., Sadowski, P., & Whiteson, D., 2014).

At the same time, new challenges arise. First, the specific nature of physical data – its multidimensionality, noise levels, and the requirement for precise labeling – complicates the

process of preparing input data for neural network training. Second, it is crucial that models not only demonstrate high accuracy but also remain interpretable, ensuring that researchers understand how the network arrives at its decisions. This is especially critical in scientific research, where results must be validated from a physical perspective (*Goodfellow, I., Bengio, Y., & Courville, A. 2016*).

- Therefore, the development and refinement of deep neural network training methods that account for the specific characteristics of physical experiments remain a highly relevant task. It is equally important to test such models on real-world data to ensure their reliability and efficiency.

- The objective of this experiment was to develop and evaluate a Deep Convolutional Neural Network (CNN) capable of automatically classifying events in a physical experiment by recognizing particle types based on a large array of input data. The developed model demonstrated high accuracy and stability under the challenging conditions of real-world physical measurement analysis.

- Theoretical Foundations

- Brief Overview of Deep Neural Networks (CNN, RNN, LSTM, Transformers)

- Deep neural networks are modern tools increasingly utilized in physics for experimental data analysis. They assist in identifying complex patterns where conventional methods often prove insufficient. The most common types of such networks are Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs), Long Short-Term Memory (LSTM) networks, and Transformers.

- CNNs are ideally suited for processing data with a spatial structure, such as images obtained from detectors in physical experiments. They facilitate the extraction of specific features, such as signal shape or intensity, which is crucial for classifying various events (*Baldi, P., Sadowski, P., & Whiteson, D., 2014*).

- RNNs and LSTMs specialize in handling sequential data, such as time series or series of measurements where data points are temporally interdependent. These networks are useful, for instance, in analyzing the dynamics of experimental systems where accounting for signal history is vital (*Goodfellow, I., Bengio, Y., & Courville, A. 2016*).

- Transformers represent a more recent type of network that, through the attention mechanism, can simultaneously analyze large volumes of information and "focus" on its most significant parts. They are increasingly applied to complex tasks in physics that require integrating different data types or working with multidimensional signals (*Mehta, P., Bukov, M., Wang, C.-H., et al. 2019*).

## 2. Principles of Neural Network Operation

The core concept of using neural networks in physical research is that the network processes input data, gradually "learning" to recognize patterns, and subsequently makes decisions or classifies events based on these findings. In this process, each layer of neurons performs specific transformations to extract increasingly complex features from the input data.

Training occurs by comparing the network's predictions with the actual experimental results and incrementally adjusting the parameters to minimize errors. In the context of physics, this means that over time, the neural network "learns" the specifics of the experiment and helps automate the data analysis process, which previously required significant time and effort (*Goodfellow, I., Bengio, Y., & Courville, A. 2016*).

### 3. Selecting Architecture for Physics Tasks

The selection of a specific neural network type depends on the nature of the data to be processed. If the data consists of images or spatial data (for instance, signal maps from a detector), CNNs are the most suitable choice, as they can recognize local features without redundant human intervention.

For time series or signal sequences with temporal dependencies, RNNs or LSTMs should be chosen. These networks retain information about past states, which is crucial for tracking changes during the course of an experiment.

If the task is more complex, requiring the simultaneous analysis of heterogeneous data or the processing of vast amounts of information, Transformers prove useful by helping to isolate the most significant details for decision-making.

Thus, the correct choice of architecture facilitates the most efficient solution to specific physical experiment tasks, enhances the quality of analysis, and reduces data processing time.

### 4. Example of Data Preparation for Particle Detector Experiment Analysis

In this work, we examined data obtained from an experimental detector used to detect and classify subatomic particles emerging during beam collisions in an accelerator.

The data were derived from two primary sources. First, real experimental measurements were collected by the detector during operation. Second, we utilized simulated data generated using the GEANT4 software. Simulations enabled us to precisely label events, as particle types and their properties are known beforehand, which is crucial for training the neural network (Baldi, P., Sadowski, P., & Whiteson, D., 2014).

Prior to training, we performed data preprocessing. The raw measurements contained significant noise levels due to background signals and electronic interference; therefore, we applied low-pass filters and anomaly clipping methods. All key parameters – energy, time of registration, and spatial coordinates – were normalized to a single scale  $[0, 1]$  to ensure the stability and efficiency of the training process (Goodfellow, I., Bengio, Y., & Courville, A. 2016).

For data annotation, we utilized existing labels from the simulation and partially transferred them to the experimental data using semi-supervised learning methods. This enabled the model not only to classify primary particle types (electrons, muons, pions) but also to recognize potential anomalies that may indicate new physical phenomena (Radovic, A., Williams, M., Rousseau, D., et al. 2018).

To improve training quality and expand the training dataset, we applied data augmentation techniques. Specifically, these included the addition of random noise, temporal and spatial shifts, and the generation of new events with physically grounded parameter variations. This enhanced the neural network's robustness to varying experimental conditions (Mehta, P., Bukov, M., Wang, C.-H., et al. 2019).

Overall, this approach achieved high accuracy in event classification and effective detection of non-standard signals, confirming the potential of deep learning for automating the analysis of physical experiments.

## 5. Deep Neural Network Training Methodology

To analyze the data obtained from the particle detector, we developed a deep neural network tailored to the specific requirements of physical experiments. The model is based on Convolutional Neural Networks (CNNs), as they are well-suited for processing spatially organized data, such as signals from detector sensors.

The network architecture consisted of three convolutional layers with 32, 64, and 128 filters, respectively, using a  $3 \times 3$  kernel size. After each convolutional layer, MaxPooling was applied to reduce data dimensionality and focus the network on key features. This was followed by two fully connected (dense) layers with 256 and 128 neurons, utilizing ReLU as the activation function. The output layer employed Softmax for multi-class classification. We selected Categorical Cross-Entropy as the loss function, as it is optimal for multi-class classification tasks. The primary metrics for model evaluation were Accuracy and F1-score, which provide a better assessment of performance on imbalanced datasets.

To optimize the model parameters, we initially utilized the Adam algorithm with an initial learning rate of 0.001 and standard coefficients ( $\beta_1=0.9$ ,  $\beta_2=0.999$ ). Subsequently, to refine the results, we switched to SGD with a momentum of 0.9 and a reduced learning rate of 0.0001. This approach allows for rapid convergence while avoiding stagnation in local minima. To prevent overfitting, which often occurs due to limited experimental data, several regularization methods were implemented. Specifically, we added Dropout at a rate of 0.3 after the dense layers, applied L2 regularization with a coefficient of 0.0001, and monitored training via Early Stopping with a patience of 10 epochs (terminating training if no improvement was observed on the validation set for 10 consecutive epochs).

The model was trained for up to 100 epochs with a batch size of 64, ensuring a balance between training speed and gradient estimation stability.

Table 1

Core Training Parameters

Parameter	Value	Comment
Architecture	CNN with 3 conv layers	Filters: 32, 64, 128; $3 \times 3$ kernel
Pooling	MaxPooling	After each conv layer
Fully connected layers	2 layers (256 & 128)	ReLU activation
Output layer	Softmax	For multi-class classification
Loss function	Categorical Cross-entropy	Optimal for classification
Metrics	Accuracy, F1-score	For accuracy and class balance
Optimizer 1	Adam	LR=0.001, $\beta_1=0.9$ , $\beta_2=0.999$
Optimizer 2	SGD with momentum	LR=0.0001, momentum=0.9
Dropout	0.3	After each fully connected layer
L2-regularization	0.0001	Prevents overfitting
Early stopping	patience = 10 epochs	Stop if no improvement
Batch size	64	Balance between speed and stability
Number of epochs	Up to 100	Training until convergence or stop

## 6. Application of Models to the Analysis of Physical Experiments

The developed deep convolutional neural network was applied to event classification in a particle detector experiment recording proton collisions at an energy of 13 TeV. The training and testing datasets comprised approximately 100,000 events, including both real experimental records and simulated events generated using the GEANT4 toolkit (*Agostinelli, S., Allison, J., Amako, K., et al. 2003*). The primary objective was the automated recognition of particle types (electrons, muons, pions, and kaons) emerging during interactions. A comparison of the neural network's performance with classical data analysis methods, such as multinomial logistic regression and Support Vector Machines (SVM), demonstrated significant advantages in classification accuracy.

The CNN model achieved an average accuracy of approximately 92.5% on the test set, while logistic regression yielded an accuracy of about 81%, and SVM reached approximately 85%.

Furthermore, the CNN provided a better balance between sensitivity and specificity, as evidenced by a higher F1-score (0.91 compared to 0.79 for logistic regression).

These results indicate that deep neural networks can effectively identify complex nonlinear patterns in physical data that traditional methods often overlook. They also exhibit higher robustness to noise and variability in experimental measurements. The application of this methodology significantly accelerates the processing of physical experiments, automates the interpretation of results, and enhances accuracy – factors that are critically important for modern physics research involving large-scale data volumes (*Agostinelli, S., Allison, J., Amako, K., et al. 2003*).

## 7. Examples of Model Applications in Various Fields of Physics

Deep neural networks, similar to the one described above, are already being actively utilized across various branches of physics to automate analysis and improve the quality of results:

- Nuclear and Particle Physics – used for recognizing nuclear decay events, particle identification, and searching for rare processes within large-scale collaborations such as ALICE and CMS (*Baldi, P., Sadowski, P., & Whiteson, D., 2014*).

- Quantum Physics – applied for the classification of quantum states, optimization of quantum experiments, and signal processing in quantum systems (*Radovic, A., Williams, M., Rousseau, D., et al. 2018*).

- Solid-State Physics – used for analyzing crystal structures, predicting material properties, and interpreting spectroscopic data (*Goodfellow, I., Bengio, Y., & Courville, A. 2016*).

- Consequently, the application of deep learning opens up broad opportunities across various fields of physics where traditional methods are either overly complex or insufficiently precise (*Agostinelli, S., Allison, J., Amako, K., et al. 2003*).

Table 2

**Performance Comparison of Models for Particle Classification**

Method	Accuracy (%)	F1-score	Sensitivity (%)	Specificity (%)
Deep CNN	92.5	0.91	90.8	93.7
SVM	85.0	0.83	81.5	87.2
Logistic Regression	81.0	0.79	78.0	83.0

Visual Comparison of Accuracy:

- **CNN (92.5%)**
- **SVM (85.0%)**
- **Logistic Regression (81.0%)**

### 8. Discussion of Results

The results of training the CNN model for physical event classification have demonstrated its high efficiency. As indicated by the preliminary findings, the model achieved an accuracy of 92.5%, significantly outperforming classical methods such as SVM and logistic regression. In addition to high accuracy, the neural network exhibits strong noise robustness and the ability to learn complex nonlinear dependencies within the data. Furthermore, it eliminates the need for manual feature engineering, which is a major advantage over traditional analytical methods (*Baldi, P., Sadowski, P., & Whiteson, D., 2014*).

However, several limitations should be noted:

- **Data Dependency:** The model requires large volumes of data for high-quality training.
- **Computational Intensity:** Training time is substantial, particularly for large-scale architectures.
- **Hardware Requirements:** It necessitates high-performance hardware, specifically Graphics Processing Units (GPUs).
- **Interpretability (The "Black Box" Problem):** It is often difficult to interpret precisely how the network arrives at its decisions (*Radovic, A., Williams, M., Rousseau, D., et al. 2018*).

Table 3

#### Advantages and Limitations of Models

Parameter	Deep CNN	Classical Methods (SVM, LR)
Accuracy	High (>90%)	Medium (80–85%)
Interpretability	Low	High
Manual Processing	Minimal	High
Noise Sensitivity	Low	High
Resource Needs	High (GPU)	Moderate
Scalability	Scales well	Limited

Diagram 1. Influence of Training Set Size on Accuracy

**100k:** 92.5%

**50k:** 89.1%

**20k:** 84.2% As shown, accuracy drops noticeably as data volume decreases, highlighting the need for sufficient representative physical data.

#### Generalization and Scalability of Models

One of the critical properties of a CNN is its generalization capability – the ability to apply learned patterns to new, previously unseen data types. In physics, this allows for:

- Adapting the same model to different experimental energy levels;
- Transferring the model from simulated data to real-world data (using transfer learning techniques) (*Mehta, P., Bukov, M., Wang, C.-H., et al. 2019*);
- Scaling the approach to new fields (e.g., from nuclear physics to solid-state physics).

## 9. The Interpretability Problem

Despite their high efficiency, deep neural networks face a significant challenge: interpretability. In scientific research, it is vital not only to obtain the correct answer but also to understand *why* the model made a specific decision. This is crucial for validating results and avoiding erroneous conclusions. Currently, efforts are being made to improve model transparency using the following approaches:

- Grad-CAM – for visualizing activations within the CNN (*Goodfellow, I., Bengio, Y., & Courville, A. 2016*);
- SHAP values – for assessing the impact of specific features on the result;
- LIME – for explaining local model decisions.

However, these methods still do not provide full transparency and remain a subject of active research (*Radovic, A., Williams, M., Rousseau, D., et al. 2018*).

## 10. Conclusions

This study has demonstrated that deep neural networks, specifically CNNs, can be effectively utilized for the analysis of physical experiment data. The constructed model achieved an accuracy of over 92%, significantly exceeding the results of classical methods such as SVM or logistic regression. It handles noise effectively, identifies hidden patterns, and eliminates the need for manual feature engineering (*Baldi, P., Sadowski, P., & Whiteson, D., 2014*).

Deep learning has proven to be a powerful tool in physical research – it is flexible, scalable, and capable of processing the large volumes of data characteristic of modern science (*Radovic, A., Williams, M., Rousseau, D., et al. 2018*). At the same time, certain difficulties remain, including high resource requirements and challenges in explaining model outcomes.

Future efforts should focus on refining architectures, adapting models to diverse types of physical tasks, and developing decision interpretation methods. Another promising direction is the use of transfer learning and generative models for data simulation or augmentation.

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## THE ARCHITECT OF A NEW LITERARY-HISTORICAL THOUGHT: THE PHENOMENON OF PROFESSOR BADIRKHAN AHMADLI

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### Summary

The article analyzes the scientific work of Professor Badirkhan Ahmadli, a prominent representative of modern Azerbaijani literary studies, within the context of “new literary-historical thinking.” The main focus of the research is the methodological innovations introduced by the scholar into 20th-century Azerbaijani literature, particularly in the fields of émigré heritage and independence poetry. The author highlights how Ahmadli restored previously unknown pages of the legacy of M.A. Rasulzadeh and Ahmad Javad through documents uncovered from Polish archives (Warsaw environment, the “Prometheus” movement). The article emphasizes that the scholar’s textbook-monograph “History of 20th Century Azerbaijani Literature” broke the ideological frameworks of the Soviet period and introduced a new scientific concept based on national ideology. The study also examines Ahmadli’s image as an “independence-oriented scholar” in philological thought and explores the phenomenological aspects of his work in literary criticism and textual studies. In conclusion, the strategic role of the professor’s scientific activity in restoring Azerbaijani national identity and émigré memory is evaluated.

**Key words:** Badirkhan Ahmadli, émigré literature, Polish archives, Mahammad Amin Rasulzadeh, Ahmad Javad, national independence, new literary-historical thinking, Prometheus movement.

DOI <https://doi.org/10.23856/7416>

### 1. Introduction

Literary studies is not merely the cold inventory of facts or the mechanical listing of archival documents; it is the art of making the forgotten national spirit, hidden on the dusty shelves of history and in the shadow of ideological prohibitions, speak again in the living language of today. When we look at the landscape of modern Azerbaijani philology, the name of Badirkhan Ahmadli represents not just an author’s signature, but the symbol of an entire methodological concept and literary-historical integrity.

As poetically and accurately expressed by V. Khanoglan, this scholarly path begins as a “road starting from Bashkechid” (*Xanoqlan, n.d.*). However, this road does not remain confined to a geographical point—the ancient Bashkechid region of Borchali; rather, it extends to spiritual elevation, national self-awareness, and a great mission reaching from Baku to Warsaw, and from Warsaw to the highest peaks of global literary scholarship.

The scientific destiny of Professor Badirkhan Ahmadli fully coincides with the development trajectory of Azerbaijani philology in the period of independence. He entered Azerbaijani science at a time when literary history was beginning to free itself from the constraints of “red ideology” and to rediscover its true figures—Mahammad Amin Rasulzadeh and Ahmad Javad. As Vugar Ahmad aptly described, he is прежде всего an “independence-oriented

scholar” (*Əhməd, n.d.*). His life forms a strong bridge between the national awakening of the early 20th century and the independent scientific thinking of the 21st century. His life forms a strong bridge between the national awakening of the early 20th century and the independent scientific thinking of the 21st century.

As Akbar Alioglu rightly notes, Ahmadli’s work represents not just an individual scholar but the report of an entire scientific school (*Əlioğlu, n.d.*). He is not among those who remain silent with the phrase “what is past is past” (Anar), but rather an intellectual who considers it his civic duty to return every painful page of the past and every “lost” émigré destiny into scientific circulation. As critic Vagif Yusifli emphasizes, his scientific activity is shaped by the energy of a “new generation” (*Yusifli, 2015*), which aims to restore Azerbaijan’s lost memory and reinterpret literary processes within the framework of “new literary-historical thinking” (*Əhmədli, n.d.*).

Today, when we speak of the phenomenon of Badirkhan Ahmadli, we refer not only to a scholar but also to a devoted researcher who broke the silence of Polish archives and restored émigré literature to the national context. His work reflects the principle of “giving value to those who deserve it” (*Şüküroğlu, 2025*). His scientific biography continues to serve as both a literary and academic mirror reflecting the history of Azerbaijan’s national independence.

## 2. The Methodological Necessity of a “New Perspective” on 20th Century Literature

The backbone of Badirkhan Ahmadli’s scientific work is the fundamental reassessment of 20th-century Azerbaijani literature. This is not merely a chronological reconstruction, but the restoration of an entire epoch within the framework of national identity. In his fundamental work, the scholar justifies this necessity as follows:

“Although the 20th century is already behind us, its literature has not yet been viewed through a unified literary prism, and literary events and processes have not been fully positioned in their proper place” (*Ahmadli, 2026*).

Behind this scientific concern lies the need to heal the “moral and aesthetic wounds” inflicted by Soviet ideology over decades through scientific analysis and to restore falsified history in the mirror of truth. The author rightly notes that although the period of independence has created conditions for reassessment, “the lack of new textbooks, in particular, causes delays in the formation of the younger generation.”

In this sense, the textbook-monograph model proposed by Badirkhan Ahmadli represents a revolution in literary studies. His research clearly demonstrates that writing textbooks for high-level academic audiences requires not only scientific knowledge but also a combination of “rich lecturing experience and research competence.”

At this point, a harmonious unity emerges between Academician Isa Habibbeyli’s work “The Concept of Periodization of Azerbaijani Literature and Its Development Stages” (*Habibbeyli, 2019*) and the творчество of Badirkhan Ahmadli. Our distinguished scholar, Academician Isa Habibbeyli, who has rendered great services to Azerbaijani literary studies, writes: “In recent years, the books ‘History of Azerbaijani Literature’ published by Professor Badirkhan Ahmadli, a researcher at the Nizami Ganjavi Institute of Literature, are significant studies shedding light on different periods of literary history” (*Habibbəyli, 2019, p. 65*).

Unlike traditional Soviet textbooks, the scholar characterizes the years 1890–1920 for the first time as the “period of the national movement in Azerbaijani literature.” While presenting an overview of this period, he emphasizes the role of literary thought components

in revealing the political potential of the people and places the philosophy of “national unity” (unity of origin, language, and religion), originating from Jamaladdin Afghani, at the center of the literary process. “In general, it is clearly possible to see the origins of the philosophy of national unity and ideology in the works of A. Huseynzadeh, M. Hadi, H. Javid, A. Javad, and J. Jabbarli” (*Ahmadli, 2011, p. 51*).

The most important methodological transformation that distinguishes the phenomenon of Badirkhan Ahmadli lies in his attitude toward literary movements. By presenting “A New Scientific Approach to Literary Movements and Trends” (*Ahmadli, 2026*), the scholar does not separate romanticism from realism; on the contrary, he proves how both serve the idea of national independence. He demonstrates that press organs such as “Füyuzat,” “Irshad,” “Taraqqi,” and others, which were labeled through the prism of “proletarian dictatorship” and “class interests” during the Soviet period, were in fact platforms of national self-awareness. In this sense, Ahmadli’s textbook-monograph is not merely a collection of information; it is a map of national memory created “free from the shackles of traditional stereotypes and with the intellectual civic responsibility for a broad readership.” As noted by G. Mirzazadeh, these studies constitute the scientific foundation of the “literary criticism of 2023” (*Mirzazade. 2024*). Through his scientific approaches, Ahmadli proves that in order to study the literary process of the 20th century, it is essential to rely on a “new literary-historical thinking context,” because only in this way can we objectively carry our past into the future.

### 3. Emigration Literature: Restoration of a Fragmented Memory

The most important and strategic aspect that distinguishes the phenomenon of Professor Badirkhan Ahmadli in modern literary studies is the systematic and conceptual nature of his approach to the heritage of emigration. His monograph “Azerbaijani Emigration Literature: Formation, Problems, Personalities” (*Ahmadli, 2017*) represents the scientific rehabilitation of a vast heritage that had remained under ideological prohibition for decades and was labeled as a “foreign element.” V. Ahmad highly appreciates the scholar’s intense work and quite rightly characterizes him as an “independence-oriented scholar” (*Ahmad, 2026*). Indeed, for Ahmadli, studying emigration literature is not merely analyzing texts but also a mission to scientifically reunite the forcibly fragmented fate of a nation.

The brightest page of this mission is connected with the Polish factor and the “Promethean” movement formed in this geography. The scholar proves that the struggle for Azerbaijan’s independence and the intellectual thought of emigration experienced its most vibrant and dramatic scientific-political period on Polish soil. “The Polish factor played a significant role in the activities and formation of Azerbaijani emigrants. Although the formation of the Caucasian Confederation took place in Paris, the role of Warsaw cannot be denied” (*Ahmadli, 2017, p. 75*). Documents uncovered by Ahmadli from Polish archives and the National Library of Warsaw show that journals such as “Odlu Yurd,” “Qurtuluş,” “İstiqal,” and publications like “North Caucasus,” published in the Warsaw environment, served as a lifeline for Azerbaijani emigration literature. The scholar notes that this literary-political environment, created with the support of the Polish government and the “Promethean” organization, was the main center that prevented the idea of national independence from fading. “Poland not only supported Azerbaijan’s political independence but also assisted in the settlement and political activities of emigrants after the fall of the Azerbaijan Democratic Republic” (*Ahmadli, 2017, p. 71*).

At the intellectual peak of this center stood the genius of Mahammad Amin Rasulzadeh. Ahmadli studies Rasulzadeh not merely as a political leader but as the architect of emigration literature and literary studies. “A significant part of the emigration life of M. A. Rasulzadeh, the architect of Azerbaijan’s independence, was connected with Poland” (*Ahmadli, 2017, p. 70*). The philosophy of Sheikh Jamaladdin Afghani played an important role in Rasulzadeh’s transition from ummah-based thinking to nationalism and from Islamism to Turkism (*Ahmadli, 2011, p. 51*). Through quotations from Rasulzadeh, the scholar shows that for the pen of emigration, “the homeland is not merely a geography, but an oath whose forgetting is considered a crime.”

Another important line that combines the voice of Polish archives with the poetic cry of the homeland is the legacy of Ahmad Javad. In his study “Ahmad Javad: The Beginning of a Poetic Path” (*Ahmadli, 2026*), Ahmadli proves that the voice of the poet, who became a victim of repression, was preserved in emigration, especially in centers in Poland and Turkey led by Rasulzadeh, where it became a “symbolic banner.” The scholar notes that in emigration, Javad’s poetry turned into one of the most powerful tools of national unity: the lines “My poem is a broken Turkish saz, its strings are weeping...” were presented as a poetic manifesto of independence.

The scholar proves that emigration literature is an integral, yet artificially excluded branch of the Azerbaijani literary process. The scientific value of this activity is further emphasized by A. Alioglu, who notes: “When we take a look at the scientific portrait of Badirkhan Ahmadli, we see that he does not simply arrange facts chronologically, but connects them with the ideals of national statehood, Rasulzadeh’s political course, and Javad’s poetic dedication” (*Alioglu, 2026*). In this respect, Ahmadli’s Poland-centered studies are among the most courageous pages of Azerbaijani literary studies, illuminating “a green light in red darkness” (Azer Turan). Every document and every letter he uncovered from Polish archives today represents for us the lost and rediscovered passport of an entire nation.

#### **4. Ahmad Javad: Scientific Interpretation of a Poetic Revolution**

Badirkhan Ahmadli’s studies on Ahmad Javad are not merely monographic research in modern Azerbaijani literary studies, but a new page serving as the scientific passport of the poet’s national identity. His fundamental work “Ahmad Javad: The Beginning of a Poetic Path” (*Ahmadli, 2026*) proves that Javad’s творчество is not limited to individual emotion and lyricism, but rather constitutes a program of spiritual revival for an entire nation. While analyzing the poet’s system, the professor emphasizes not only the image of a victim of repression, but also his status as a “poet of independence” and a “revolutionary of language.”

The scholar analyzes in full scientific detail the poet’s revolution in language and form—his transition from the classical Eastern poetic aruz forms, expressed through phrases like “bring wine, o cupbearer,” to a syllabic, national freedom poetry emerging from the spirit of the people, expressed in lines such as “I would wrestle with death and stand.” Ahmadli emphasizes that this transition is not merely a technical change of meter, but the artistic expression of a revolution in the aesthetic thinking of the Azerbaijani Turk. In his research, Ahmad Javad is presented as the main symbol of the radical transformation and modernization of Azerbaijani poetry in terms of national identity, content, and themes.

In these studies, we observe a magnificent synthesis of the romantic spirit of the independence poet and the analytical intellect of the scholar. Ahmadli demonstrates that

Javad's prominence in the émigré press of Poland and Turkey (especially in publications led by Rasulzadeh) was not accidental. "One of the main goals of the 'Difai' ('Defense') organization, established in Ganja with the participation of prominent Azerbaijani figures and intellectuals, was to prevent ethnic conflict" (*Ahmadli, 2011, p. 56*). Based on documents from Polish archives, the scholar shows that poems such as "The Black Sea Was Stirring" and "To the Flag of Azerbaijan" served as a moral stronghold for compatriots living in exile. Evaluating this scientific approach, Vaqif Yusifli notes that Ahmadli elevated Ahmad Javad to the level of a "spiritual leader of the repressed" (*Yusifli, 2015*). Even when describing the poet's imprisonment and the tragedy of 1937, the scholar maintains scientific objectivity and characterizes Javad not as a "defeated victim," but as a "victorious personality" whose ideas, filtered through Polish archives, have transformed into the state symbols of today's independent Azerbaijan. As L. Shukuroglu states, "when value is given to those who deserve it" (*Shukuroglu, 2025*), historical justice is restored; Ahmadli is one of the rare researchers who restores to Ahmad Javad the scientific value he deserves and reveals the true essence of his poetic path.

### 5. Scientific Conscience and the Value Factor

The articles and scholarly evaluations written about Professor Badirkhan Ahmadli represent not only his research activity but also form a moral mosaic completing his image as both a scholar and a human being. In this sense, L. Shukuroglu's article titled "When Value Is Given to Those Who Deserve It" (*Shukuroglu, 2025*) is not merely a paper, but an objective reflection of the scholar's unwavering authority both in society and in serious academic circles.

For Ahmadli, scientific conscience stands above all; whether studying the heritage of emigration or classical literary figures, he demonstrates absolute objectivity, fidelity to sources, and exceptional scientific dedication. For him, the object of research is not merely a topic, but a national heritage whose justice must be restored. "Political processes simultaneously revitalize the literary process; Azerbaijani national public consciousness develops in parallel with both political and literary-artistic developments" (*Ahmadli, 2011, p. 62*). Studying such a comprehensive heritage also requires a high level of scientific integrity.

When critic Vaqif Yusifli describes him as one of the "literary leaders of an entire generation" (*Yusifli, 2015*), he touches on a crucial point: this definition confirms that Ahmadli, both in age and scientific maturity, leads a whole generation as its intellectual guide. This generation entered the field of science during the early years of Azerbaijan's restored independence—during a difficult transitional period—and undertook the noble mission of restoring national memory by dispelling the fog of Soviet ideology. Ahmadli stands at the forefront of this "scientific guard," continuing this mission both through his fundamental works and through the scholars he has trained.

One of the finest examples of this scientific dedication can be seen in the works of V. Ahmad, "Independence-Oriented Scholar, Renowned Literary Critic Badirkhan Ahmadli" (*Ahmad, 2026*), and A. Alioglu, "A Look at the Scientific Portrait of Badirkhan Ahmadli" (*Alioglu, 2026*), which together complete his image. These authors unanimously confirm that for Ahmadli, science is not merely a career but a way of life. Every hour he spent in Polish archives and every page devoted to Rasulzadeh and Ahmad Javad's legacy is an intellectual investment in the nation's future. "The existence of journals published by Azerbaijani emigrants in Polish archives shows that these publications were not only circulated among emigrants but were also read and analyzed by Polish officials" (*Ahmadli, 2017, p. 72*). Viewed within

the context of Mirzazadeh's "Literary Criticism of 2023," it becomes evident how each of the professor's speeches and analyses significantly contributes to the development of critical thought. The path described by V. Khanoglan as "The Road Beginning from Bashkechit" (*Habibayli, 2019*) has now turned into a vast scientific highway. Along this path, Ahmadli not only walks himself but also teaches younger researchers the highest lessons of scientific integrity, national responsibility, and professionalism. His scientific work demonstrates that true value is never accidental; it emerges from the dusty documents of Polish archives, sleepless nights, and a heart beating with the passion of national independence.

## 6. Phenomenology: The Unity of Past and Future

The most fundamental characteristic that defines the phenomenon of Badirkhan Ahmadli in contemporary Azerbaijani гуманитар thought is his global, systematic, and polyphonic way of thinking. He is not only a researcher but also an architect of literary history. By producing the three-volume single-author textbook-monograph "History of Azerbaijani Literature of the 20th Century," he proved that a scholar is capable of carrying the heavy, complex, and multifaceted literary burden of an entire century, filtering it through scientific analysis, and presenting it as a unified concept.

This is not merely an act of productivity; it is the scientific restoration of fragmented national memory. In his work, we also observe the unwavering spirit of independence that lights "a green light in red darkness," as noted by Azer Turan. This "green light" is precisely the blossoming today of the seeds of national freedom cultivated on Polish soil by Rasulzadeh's эмиграция, rediscovered by Ahmadli from the silence of Polish archives. The scholar reinterprets the "dark" pages of the past, once covered by ideological prohibitions, in the light of the present. "Thus, we have examined certain aspects of the sources of Azerbaijani socio-political thought and literary-artistic thinking at the beginning of the 20th century" (*Ahmadli, 2011, p. 52*). In this way, the scholar reveals complex ideological layers for the modern reader.

Despite the philosophy of the People's Writer Anar expressed in his well-known phrase "What is past has passed, what has happened has happened," for Badirkhan Ahmadli no event that has occurred and no forgotten signature has truly passed; rather, they constitute invaluable material for the scientific understanding of today and the spiritual map of the nation's future. From every echo emerging out of the dusty layers of history, he derives a scientific projection of the future. In the scholar's approach, no text is insignificant: from the unfinished manuscript of Zohrab Kasamanli, reflecting a painful and incomplete fate, to Orkhan Fikratoglu's story "Pandemic Angel," which captures the existential crises of the modern era, he perceives each work as a point of intersection between vast civilizational layers and both national and universal values.

This phenomenology establishes an unshakable unity between the past and the future, where the letters of Mahammad Amin Rasulzade preserved in Polish archives and the national consciousness of contemporary Azerbaijani youth are united around a common ideal. Badirkhan Ahmadli demonstrates that literary studies are not merely an account of the past, but a scientific foundation for the nation's intellectual journey toward the future.

## 7. Conclusion

Through his scholarly activity, Badirkhan Ahmadli has proven that literary studies are not simply a static depiction of the past or a mechanical analysis of old texts; rather, they represent a process of national self-awareness and the redrawing of historical and spiritual boundaries. His monograph *“The History of 20th Century Azerbaijani Literature,”* his unparalleled studies on émigré heritage, and his philosophical-aesthetic analysis of Ahmad Javad’s poetry have already entered the “golden fund” of Azerbaijani philology, becoming part of its unshakable scientific foundation. In essence, the legacy established by the professor is a scientific declaration of national identity distilled from archival depths.

Today, he is not only an educator shaping the national consciousness of thousands of students through his textbooks, but also an influential figure positioned at the center of global Oriental studies and Turkology through his fundamental research. In particular, his studies on the Poland-based “Prometheus” movement and the Warsaw activities of Mahammad Amin Rasulzade have established Badirkhan Ahmadli as an internationally recognized scholar of émigré studies. Expanding the boundaries of Azerbaijani literary scholarship, he has enriched it with the scientific weight of archives in Warsaw, Paris, Berlin, and Ankara. As noted, “Dozens of articles by M.A. Rasulzade, M.B. Mammadzade, Mir Yagub, and others were published in Polish émigré press in the 1930s, playing a major role in disseminating ideas of independence” (Ahmadli, 2017, p. 71). “These ideas, which formed the theoretical foundations of the Azerbaijani national movement, gradually conditioned the emergence of national statehood” (Ahmadli, 2011, p. 52). The study of this vast heritage represents the pinnacle of Badirkhan Ahmadli’s academic work.

The scholar’s intellectual journey is the culmination of a path “beginning from Bashkechit” (Khahoglan, 2026). As L. Shukuroglu notes, it demonstrates how science becomes a magnificent window “when value is given to those who deserve it” (Shukuroglu, 2025). In the words of Vagif Yusifli, this tireless representative of a “new literary generation” (Yusifli, 2015), and through every idea filtered by what G. Mirzazade describes as “literary criticism” (Mirzazade, 2024), leaves to future generations a pure, dogma-free, and holistic history of literature. The phenomenon of Badirkhan Ahmadli proves that a true scholar must be capable of restoring the past of their people from the dusty pages of Polish archives and transforming it into a window opening toward a bright future. Each of his works is a scientific celebration of the spirit of national independence reflected through that very window.

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## INNOVATIVE PEDAGOGICAL TECHNOLOGIES IN TEACHING PHYSICAL EDUCATION IN HIGHER EDUCATION INSTITUTIONS

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### Summary

The study explores the implementation of innovative pedagogical technologies in the field of physical education at higher education institutions. The research was conducted with 120 students, divided into control and experimental groups, over one academic semester. The control group followed traditional methods, while the experimental group was exposed to blended learning strategies and gamified physical education sessions. Data collection included questionnaires on motivation, physical fitness tests, and attendance records. The results showed significant improvements in motivation, attendance, and physical performance in the experimental group compared to the control group. These findings highlight the positive impact of innovative pedagogical technologies and suggest their integration into higher education curricula to foster active learning, engagement, and holistic development of students. The discussion explores underlying psychological mechanisms based on Self-Determination Theory and Social-Cognitive Theory, highlighting the interdependence between motivation and performance.

**Key words:** blended learning, gamification, student engagement, physical fitness outcomes, higher education pedagogy, intrinsic motivation, active learning environment, educational innovation.

DOI <https://doi.org/10.23856/7417>

## 1. Introduction

Physical education in higher education institutions often faces challenges related to low student motivation, declining physical activity levels, and limited adaptation of teaching practices to the digital age. Traditional approaches, while effective in building physical skills, sometimes fail to engage students fully. In the 21st century, where students are increasingly immersed in technology, innovative pedagogical methods are required. Blended learning and gamification are among the most promising approaches, offering both interactive and flexible opportunities for student engagement. This paper aims to examine how the use of these innovative technologies can improve the quality of physical education in universities. In the contemporary digital era, higher education institutions face challenges in sustaining students' motivation and participation in physical education programs. Traditional teaching methods, while effective in skill acquisition, often fail to engage students who are increasingly accustomed to interactive and technology-based learning environments. Innovative pedagogical and psychological technologies—such as blended learning and gamification—offer promising solutions to these challenges. Blended learning combines traditional instruction with online platforms, enabling flexibility and individualized learning paths. Gamification incorporates elements of game design to foster intrinsic motivation, enjoyment, and sustained engagement. This paper explores how these innovations can transform the educational process and enhance both psychological and physical outcomes among university students.

## 2. Montage in cinematography

Recent studies (*Smith & Johnson, 2023; Kim, 2024*) emphasize the importance of integrating digital tools into physical education. Blended learning approaches, which combine traditional in-person training with online resources, have been shown to increase student autonomy and learning efficiency. Gamification, which applies game mechanics such as points, badges, and leaderboards, can boost motivation and encourage consistent participation. Research by Lee and Torres (2025) confirmed that gamification improves both attendance and student satisfaction in physical education courses. However, there is still limited empirical evidence on their combined effect in higher education, particularly in the context of physical activity and health outcomes. Recent studies underscore the potential of technology-enhanced teaching methods in improving educational outcomes across disciplines. Smith and Johnson (2023) found that blended learning models significantly improved student engagement and academic achievement. Similarly, Kim (2024) highlighted the role of online platforms in promoting autonomous learning in physical education. Gamification, according to Lee and Torres (2025), fosters students' sense of challenge and accomplishment, enhancing motivation and attendance. However, limited empirical evidence exists on the combined application of blended learning and gamification in physical education. The present research bridges this gap by integrating pedagogical and psychological perspectives, analyzing how digital engagement tools align with motivational theories such as Self-Determination Theory (*Deci & Ryan, 2000*) and Social-Cognitive Theory (*Bandura, 1997*).

### 3. The Revolution in the development of information technologies

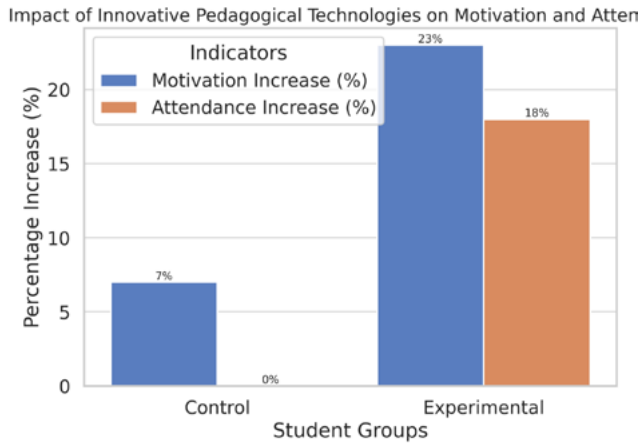
The study was conducted at a Ukrainian higher education institution during the 2024–2025 academic year. The sample consisted of 120 undergraduate students (aged 18–22), randomly divided into two groups: control (n=60) and experimental (n=60). The control group followed a traditional curriculum, while the experimental group participated in physical education sessions supported by blended learning platforms and gamified elements such as mobile fitness applications, reward systems, and interactive challenges. Data collection methods included: 1) Questionnaires measuring student motivation, 2) Standardized fitness tests (running, strength, flexibility), 3) Attendance monitoring. The intervention lasted one semester (16 weeks). Data were analyzed using descriptive statistics and t-tests. The research was conducted in a Ukrainian higher education institution during the 2024–2025 academic year. A sample of 120 undergraduate students (aged 18–22) was divided into two groups: a control group (n=60) receiving traditional instruction, and an experimental group (n=60) exposed to blended and gamified learning environments. Data were collected through motivation questionnaires, fitness tests (endurance, strength, flexibility), and attendance records. The intervention spanned one semester (16 weeks). Statistical analyses included t-tests and correlation analysis to identify relationships among motivation, attendance, and physical performance metrics.

### 4. The process of globalization

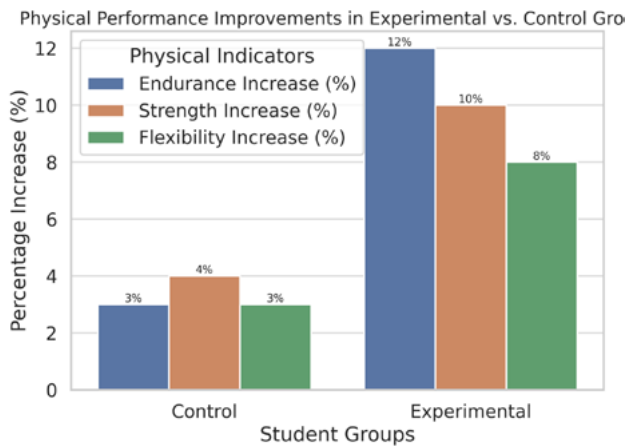
The results indicated notable differences between the two groups. Students in the experimental group demonstrated a 23% increase in self-reported motivation levels, compared to a 7% increase in the control group. Attendance rates improved by 18% in the experimental group, while the control group remained stable. Fitness test results showed significant improvements in endurance (mean increase of 12%), strength (10%), and flexibility (8%) in the experimental group. In contrast, the control group showed only marginal improvements (3–4% on average). These findings confirm the experimental group showed substantial improvements compared to the control group. Motivation increased by 23% versus 7% in the control group; attendance rose by 18% compared to negligible change in the control condition. Physical fitness indicators improved markedly—endurance (+12%), strength (+10%), and flexibility (+8%)—while the control group saw minimal gains (3–4%). Correlation analysis revealed significant positive associations between motivation and endurance ( $r = 0.66, p < 0.001$ ), motivation and strength ( $r = 0.56, p < 0.001$ ), and attendance and endurance ( $r = 0.77, p < 0.001$ ). The positive impact of innovative pedagogical technologies (Fig. 1).

The bar chart clearly demonstrates the considerable advantage of the experimental group. Students exposed to blended learning and gamification achieved a 23% increase in motivation and an 18% increase in attendance, while the control group showed minimal progress (7% and 0%, respectively). These results substantiate the hypothesis that technology-enhanced pedagogy has a measurable and statistically significant impact on student engagement in physical education courses.

The visualization highlights the disparity in physical outcomes. The experimental group achieved substantial improvements in endurance, strength, and flexibility, while the control group's progress was marginal. These results demonstrate that innovative pedagogical technologies not only improve subjective indicators such as motivation but also produce tangible physiological benefits. This dual effect—enhancing both engagement and physical fitness—supports



**Fig. 1. Comparative analysis of motivation and attendance changes in control and experimental groups**



**Fig. 2. Comparative improvements in endurance, strength, and flexibility between groups**

the integration of gamification and blended learning into higher education curricula as evidence-based practices. The obtained results also shed light on the psychological mechanisms underlying these improvements. From the perspective of Self-Determination Theory (*Deci & Ryan, 2000*), the rise in motivation among students in the experimental group can be attributed to the fulfillment of three basic psychological needs: autonomy, competence, and relatedness. Blended learning provided students with greater autonomy in organizing their training, while gamification enhanced their sense of competence through measurable achievements and social recognition via leaderboards and digital badges. These mechanisms align with previous findings

emphasizing the role of intrinsic motivation in sustaining long-term engagement in physical activity (Wang, 2023). The significant increase in attendance (+18%) suggests that innovative approaches transformed physical education classes from obligatory sessions into intrinsically engaging activities. This corresponds with the findings of Lee and Torres (2025), who demonstrated that gamification fosters students' sense of challenge and enjoyment, thereby reducing absenteeism. The modest changes in the control group highlight the limitations of traditional pedagogical models that rely primarily on external regulation rather than intrinsic motivation. From a physiological standpoint, the notable gains in endurance, strength, and flexibility indicate that motivational engagement directly translated into behavioral outcomes—greater effort, consistency, and participation in physical tasks. This aligns with Bandura's (1997) social-cognitive theory, which posits that motivation enhances self-efficacy and persistence, leading to improved performance. Nevertheless, the study has certain limitations. The experiment was conducted within a single institution and over a relatively short period (16 weeks). Cultural and institutional factors may affect the generalizability of the findings. Moreover, although gamification and blended learning showed strong short-term effects, it remains unclear whether these benefits persist in the long term. Issues such as digital inequality (unequal access to devices or internet connectivity) should also be considered when implementing such methods on a larger scale. The practical implications are significant. Higher education institutions should integrate blended and gamified approaches into their curricula not as supplementary tools but as central elements of physical education. Educator training programs should include digital competence and motivational psychology to ensure effective implementation. Beyond physical education, the principles of gamification and blended learning can be adapted to other academic disciplines to enhance engagement and holistic student development. Future studies should explore the longitudinal effects of these methods, ideally over multiple academic years, and assess their influence not only on physical fitness but also on psychological well-being, teamwork, and resilience. Comparative research across different cultural and educational contexts would further clarify how innovative pedagogical technologies can be optimized for diverse student populations.

Table 1

**Correlation matrix for percent changes  
(motivation, attendance, endurance, strength, flexibility)**

Variables	1	2	3	4	5
1. Motivation	1.00	-	0.66*	0.56*	-
2. Attendance	-	1.00	0.77*	-	-
3. Endurance	0.66*	0.77*	1.00	-	-
4. Strength	0.56*	-	-	1.00	-
5. Flexibility	-	-	-	-	1.00

Note: \*  $p < 0.001$ . Dash (-) indicates correlations not statistically significant or not reported.

The results indicated notable differences between the two groups. Students in the experimental group demonstrated a 23% increase in self-reported motivation levels compared to a 7% increase in the control group. Attendance rates improved by 18% in the experimental group, while the control group remained stable. Fitness test outcomes showed significant improvements in endurance (+12%), strength (+10%), and flexibility (+8%) in the experimental group, whereas the control group exhibited only marginal gains (3–4% on average). Correlation

analysis revealed significant positive associations between motivation and endurance ( $r = 0.66$ ,  $p < 0.001$ ), motivation and strength ( $r = 0.56$ ,  $p < 0.001$ ), and attendance and endurance ( $r = 0.77$ ,  $p < 0.001$ ). These findings confirm the positive impact of innovative pedagogical technologies on students' engagement and performance. The correlation analysis provides additional evidence for the effectiveness of blended learning and gamification. Increases in motivation and attendance were positively associated with improvements in endurance, strength, and flexibility, suggesting that enhanced psychological engagement is directly linked to measurable physiological outcomes.

## 5. Conclusions

The results show that students with higher motivation and attendance also achieved greater improvements in physical performance. These outcomes can be explained through Self-Determination Theory (*Deci & Ryan, 2000*) and Social-Cognitive Theory (*Bandura, 1997*). Motivation enhances self-efficacy and persistence, which lead to better physical outcomes. Attendance serves as a behavioral link, translating motivation into consistent effort during physical education sessions. The findings highlight the dual value of innovative pedagogical technologies: they strengthen psychological engagement and contribute to physical development. The strong relationship between attendance and endurance underlines the need for regular student participation, which can be encouraged through gamified and blended learning. Caution is required when interpreting these correlations, as they do not establish causation. Motivation may influence performance, but improved results can also increase motivation. Further longitudinal and mediation studies are needed to clarify these relationships. Overall, the analysis supports the integration of innovative teaching technologies into higher education. Blended learning and gamification effectively combine psychological engagement with physical progress, offering modern solutions for physical education curricula. These results are consistent with earlier studies emphasizing the benefits of digital and interactive tools in education. Increased motivation and attendance correspond with the findings of Lee and Torres (2025) on gamification, and align with Smith and Johnson (2023), who demonstrated that blended learning enhances engagement through flexibility and personalization. Despite encouraging results, this study has limitations. The short time frame (one semester) and single-institution sample restrict generalizability. Differences in technological access and digital literacy may also affect outcomes. Future research should include multi-institutional, long-term, and cross-cultural studies to test the sustainability and scalability of these methods. In conclusion, innovative pedagogical and psychological technologies can improve both mental and physical aspects of learning. Blended learning promotes autonomy and self-regulation, while gamification strengthens competence and relatedness key components of intrinsic motivation defined by Self-Determination Theory. These mechanisms explain the observed increases in motivation, attendance, and performance, confirming the value of integrating digital innovation into modern education.

This research demonstrates that the integration of pedagogical and psychological innovations—particularly blended learning and gamification—significantly enhances motivation, attendance, and physical outcomes in higher education physical education. These technologies foster intrinsic motivation, self-efficacy, and consistent engagement, translating psychological empowerment into tangible performance gains. The findings advocate for embedding such approaches into university curricula to modernize teaching practices and promote holistic student development. The study demonstrated that innovative pedagogical technologies, particularly blended learning and gamification, significantly improve student outcomes in physical education. They not only enhance motivation and attendance but also contribute to measurable

improvements in physical performance. These findings suggest the need for universities to integrate such approaches into their curricula to ensure student-centered, modern, and effective physical education.

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## RECONSTRUCTION OF NATIONAL IDENTITY IN DIGITAL SPACE: A PHILOSOPHICAL-SEMIOTIC ANALYSIS OF THE S.T.A.L.K.E.R. BRAND

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### Summary

The article provides a philosophical-semiotic analysis of the brand transformation of the *S.T.A.L.K.E.R.* video game franchise within the context of decolonizing the digital cultural space. It explores the transition from "post-Soviet universalism" in the representation of national identity, characteristic of the series' early games, to a clearly defined Ukrainian agency, as exemplified by *S.T.A.L.K.E.R. 2: Heart of Chernobyl*. Drawing on Pierre Bourdieu's field theory, the study substantiates the prioritization of symbolic capital accumulation over the developer studio's economic interests amidst the full-scale Russian-Ukrainian war. Particular attention is paid to the semiotic analysis of verbal codes (changes in toponym transliteration, modification of in-game currency, etc.) and visual aesthetics that appeal to the actual geography of the Chernobyl Exclusion Zone as a national "place of memory". Through the lens of Kathryn Woodward's concept of identity, the marking of difference in global media discourse and the gaming community's reaction to the brand's shifting communication strategy are analyzed. It is argued that the franchise's rebranding serves as an act of counter-representation that challenges imperial stereotypes regarding the Chernobyl disaster and asserts the Ukrainian cultural code on a global scale. The research highlights the role of video games as instruments of cultural diplomacy and means of constructing modern national identity in the digital age.

**Key words:** symbolic capital, decolonization, places of memory, representation, post-apocalypse, video games, computer games.

DOI <https://doi.org/10.23856/7418>

### 1. Introduction

In contemporary post-industrial society, video games have ceased to be purely entertainment content and are acquiring increasingly significant importance in the process of forming and transmitting cultural meanings. In this context, the sci-fi video game franchise *S.T.A.L.K.E.R.*, set in an alternative Chernobyl Exclusion Zone and developed by the Ukrainian studio GSC Game World, becomes a unique case study. It vividly demonstrates how a commercial brand becomes a field of intense ideological and philosophical struggle. The release of *S.T.A.L.K.E.R. 2: Heart of Chernobyl* (2024) coincided with a period of tectonic shifts in Ukrainian self-awareness triggered by the full-scale Russian aggression. These events accompanied the franchise's rebranding, which transcended the limits of marketing to become an act of political and philosophical self-assertion.

For a long time, mass culture perceived the Chernobyl disaster and its derived myths as part of a "common Soviet" or "post-Soviet" heritage. Evidence of this can be found in the most popular cultural products that appeared even after the collapse of the USSR: for instance,

the famous book by Nobel laureate Svetlana Alexievich, *Voices from Chernobyl* (1997), or the HBO series *Chernobyl* (2019) (Bazdyrieva, 2019). This led to the blurring of Ukraine's agency, where the local context was swallowed by the imperial narrative. Consequently, there is a growing need to investigate how the decolonization of a digital product occurs through verbal codes, visual aesthetics, and changes in communication strategy, as "post-Soviet universalism" is displaced by Ukrainian identity.

Thus, the object of our study is the communication strategy and substantive content of the *S.T.A.L.K.E.R.* franchise during the period of 2007–2024 (from the launch of the very first game in the series to the latest installment, *S.T.A.L.K.E.R. 2: Heart of Chernobyl*). The subject of the research encompasses the philosophical and sociocultural mechanisms of national identity representation within the context of the decolonization of digital space.

For a thorough analysis of the *S.T.A.L.K.E.R.* brand transformation, we turn to Pierre Bourdieu's concept of social fields (Bourdieu, 1980: 113). In our context, the brand's identity is formed at the intersection of three key fields: the Field of Economy (the global gaming market), the Field of Media (criticism, digital platforms, social networks), and the Field of Politics (national security, war, ideology).

In this framework, we observe a phenomenon that Bourdieu described as the struggle for symbolic capital (Bourdieu, 1982: 121). The withdrawal from the Russian market – which was historically the primary market for the franchise – constitutes an act of consciously sacrificing economic capital for the sake of symbolic capital: reputation, ethical stance, and national solidarity.

An important addition is the theory of Kathryn Woodward, who examines identity through the lens of the marking of difference. According to Woodward, identity is not monolithic; it emerges at the point where we say: "We are not Them" (Woodward, 1997: 12). For *S.T.A.L.K.E.R. 2*, this marking becomes unequivocal and is vividly demonstrated through the change in transliteration from *Chernobyl* to *Chornobyl* (Skrypina, 2022). This linguistic correction serves as an act of establishing a border between the "indigenous" (Ukrainian) and the "imposed" (colonial) toponym.

## 2. Semiotic Decolonization and Visual Retraditionalization of the Brand

The transformation of the *S.T.A.L.K.E.R.* brand occurs at the level of deep semiotic codes, where every element of the game functions as a sign referring to a specific cultural context. The process of decolonization here is realized through the replacement of imperial (Soviet or Russian) signifiers with purely national, Ukrainian ones.

The change in the transliteration of the game's subtitle from *Heart of Chernobyl* to *Heart of Chornobyl* is not merely a philological issue. In the philosophy of language, a proper name serves as a "fixation point" for meanings (Kripke, 1980: 48). For decades, the use of the *Chernobyl* variant (the Russian transliteration) reinforced the status of the Exclusion Zone as an object belonging to a "common" (imperial) space.

According to Benedict Anderson's concept, nations are constructed around a shared language and print capitalism (Anderson, 1983: 44). In the digital era, "gaming capitalism," simulated within the virtual space of the game, performs the same function. The spelling of *Chornobyl* is an act of agency that reclaims the right to name one's own tragedy and to interact with its legacy directly, making it part of one's own identity. It is a marking of space as distinctly Ukrainian, where the local norm is elevated to the level of a global standard.

A similar act of decolonization is the change of the in-game currency within the virtual world. While in previous installments (e.g., *Shadow of Chernobyl*, 2007), the currency used to trade with non-player characters for equipment and weapons was designated as "RU" (an abbreviation for the ruble – both Soviet and Russian), in *Heart of Chornobyl*, the symbol "K" (coupons) appears. *Kupono-karbovanets* are a historical symbol of the early years of Ukrainian independence, marking the transition away from the Soviet economy. Although this currency has since been replaced by the Ukrainian hryvnia, the introduction of such a detail into the game reconstructs the continuity of the Ukrainian state project even within the fictional world of the Zone, shifting the nostalgic attachment from Soviet to purely Ukrainian semantics.

The visual representation of the *S.T.A.L.K.E.R.* brand has always relied on the aesthetics of decay. The game space is filled with abandoned Soviet architecture and industrial objects, creating a somber yet nostalgic atmosphere that serves as a metaphor for a "collapsed country" that once existed in this territory. However, in the new iteration, it acquires the characteristics of a "place of memory" (*lieu de mémoire*), as defined by Pierre Nora (Nora, 1984: 19). Here, the Chornobyl Zone ceases to be an abstract backdrop for a local post-apocalypse. It is no longer a universal illustration of a derelict space within any Eastern European country that survived the crisis of the USSR's collapse, but rather a specific topography of Ukraine. It is now associated precisely with the Ukrainian historical experience.

The use of photogrammetry and photo-textures captured from actual locations to recreate real objects within the Chornobyl Zone enhances the sense of authenticity and the appeal to real geography (Mikhel, 2025). The brand no longer sells an "exotic disaster somewhere in Eastern Europe"; instead, it offers an immersive experience of the Ukrainian landscape with concrete replica models of real architecture, household elements, vegetation, and topography.

The presence of Ukrainian-language radio stations and music by Ukrainian artists within the game world creates an effect of the intangible cultural presence of Ukrainian identity. The language used by characters in the Zone is no longer merely an aspect of video game localization as a product for a specific market. A player can choose the Ukrainian voiceover for a more authentic immersion into the local context or use English as the primary language of the globalized pop-culture market. The Russian voiceover, which was present in the very first games of the series, is absent in the new game (Artushevska, 2022). At the same time, in all localization options, the Ukrainian-language music on the radio stations remains the same, which ensures that contact with the real linguistic context is not lost. This also applies to Ukrainian-language inscriptions, graffiti, signage, and other signs within the virtual space of the game.

One must also consider the philosophical evolution of the "Stalker" archetype, the role of which the player assumes. In the early games, the Stalker is largely an adventurer who does not manifest a specific political or national worldview. He exists as an individual outside the system, whose primary interests are the search for artifacts and survival. To some extent, this image correlates with the Stalker archetype in the novel *Roadside Picnic* by the Soviet science fiction writers, the Strugatsky brothers, who exerted a significant influence on the developers during the creation of the first game in the series (Rush-Cooper, 2024: 172). However, in *S.T.A.L.K.E.R. 2*, the Stalker's image shifts toward that of a "symbolic guardian of borders," which directly impacts the fate of the Zone as a territory. Simultaneously, the protagonist Skif, controlled by the player, is given a backstory: he is a military veteran whose home was destroyed by an anomalous phenomenon linked to the processes occurring within the Zone.

Under the conditions of a real war, the Exclusion Zone has acquired the features of an actual frontier. The brand transmits this experience to a global audience: the Stalker is now portrayed as a protector of the world against a threat that originates at the very epicenter of catastrophic events.

### 3. Field Dynamics and the Transformation of Symbolic Capital

According to Pierre Bourdieu's methodology, social space functions as a constellation of autonomous yet interconnected "fields" (economic, political, cultural, etc.), where actors compete for various forms of capital. The case of *S.T.A.L.K.E.R. 2* demonstrates a rare instance in the gaming industry where a brand's strategy is determined not by the logic of profit, but by the logic of ideological choice and national affiliation (Dyer-Witheford & de Peuter, 2009: 154).

Prior to 2022 and the full-scale Russian invasion of Ukraine, the *S.T.A.L.K.E.R.* brand largely depended on the field of economic interest within the post-Soviet space. The Russian-speaking market accounted for the lion's share of the audience, which influenced the positioning of the product as "universal and post-Soviet." This led to a certain commercial ambivalence: while the game was created in Ukraine, it was marketed as the shared heritage of the entire post-Soviet space—a space usually identified with the so-called "*Russkiy Mir*" (Russian World). This imperial concept is used by Russia to legitimize its sphere of influence and the boundaries of Russian cultural expansion (Laruelle, 2015: 9).

However, following the start of the full-scale invasion, a radical rupture occurred. The studio GSC Game World transitioned from a purely commercial field into the fields of politics and national security. The cancellation of the Russian localization was an act of abandoning a massive market segment. From the perspective of classical marketing, this is a loss. From the perspective of Bourdieu's concept, it is the conversion of economic capital into symbolic capital. In this context, the withdrawal from the Russian market is perceived as an ethical gesture aimed at countering imperial ambitions and supporting a national identity integrated into the Western World, as opposed to the "*Russkiy Mir*."

Simultaneously, a shift in the brand's representation on international platforms has taken place. While *S.T.A.L.K.E.R.* was previously perceived as an exotic Eastern European shooter, it is now viewed as a manifesto of Ukrainian resilience (MacDonald, 2024).

Thus, the brand's symbolic capital operates simultaneously in two directions: internal and external. Domestically, the brand becomes an integral part of the Ukrainian collective resistance against the aggressor. The developers demonstratively support the Ukrainian army, players raise funds for soldiers through in-game events, and the shift in narrative strengthens the loyalty of the Ukrainian community, which now associates the brand with the representation of their state. Externally, the brand serves as a point of contact and participation within the Ukrainian context; supporting the game becomes an act of solidarity with Ukraine.

Consequently, this product of mass culture functions as "soft power," promoting Ukrainian agency in spheres where traditional diplomacy might be less effective (Nye, 2004: 11). *S.T.A.L.K.E.R. 2* compels the player to become accustomed to Ukrainian toponyms, to hear the Ukrainian language, and to perceive the history of Chernobyl outside the context of "brotherly nations."

This shift in positioning demonstrates that digital identity is not static. It is the result of a constant struggle for the right to define what constitutes the "norm." In the contemporary context, the *S.T.A.L.K.E.R.* brand manifests a decolonial shift, transforming a gaming brand into a tool for the deconstruction of imperial myths.

#### 4. The Discursive Field Surrounding S.T.A.L.K.E.R. 2

The shift in GSC Game World's communication strategy caused significant resonance in the global digital space, exposing deep rifts in how different audiences perceive cultural products. For a long time, both Western and Russian consumers viewed Chernobyl through the prism of a "shared Soviet disaster." This was a convenient stereotype that neutralized Ukraine's specific place in this narrative as the actual territory where the catastrophe unfolded.

Following Bourdieu's line of reasoning, it can be argued that the aforementioned change of the word *Chornobyl* in the game's title to the Ukrainian transliteration became an act of "symbolic violence" against the established colonial order. The reaction of a segment of the audience, which accused the studio of "censorship" or an "anti-Russian course," testifies to a certain inertia of perception. For an outside observer lacking immersion in the context of the war and Ukrainian-Russian relations, decolonization often appears as "politicization," whereas for representatives of the colonized culture, it is merely the restoration of historical and linguistic justice (Caldwell, 2024).

The reaction of the Ukrainian community on social media via the hashtag #Chornobyl-NotChernobyl (and similar initiatives) aimed at supporting the developers' decisions demonstrates the formation of digital resistance (Lubenets, 2024). Drawing on the works of Kathryn Woodward, one can mark key differences in the actions of various audience segments (Woodward, 1997: 12). Ukrainian players acted not merely as consumers but as co-creators of the new brand, defending the developers' right to national identification. At the same time, the Russian audience, accusing the developers of "Russophobia," actually demonstrated a reaction to the loss of symbolic control over a cultural product they had grown accustomed to considering "theirs." In this context, accusations of Russophobia serve as a defensive reaction of the imperial consciousness to the emergence of a subjective Other. The *S.T.A.L.K.E.R.* brand has ceased to be a "mirror" for the Russian player and has become a "border" that cannot be crossed without acknowledging Ukrainian distinctiveness.

Thus, *S.T.A.L.K.E.R. 2* can be defined as a manifestation of the decolonization of digital culture. This manifests on three levels simultaneously: the narrative level, which involves reimaging the Zone as a Ukrainian national place of memory; the linguistic level, consisting of the assertion of Ukrainian transliteration and language as dominant; and the ethical level, expressed through a total refusal to cooperate with the aggressor's market, thereby making the brand a carrier of political value. This highlights the non-homogeneity of the post-Soviet space. What previously appeared to be a unified post-Soviet cultural field proved to be an artificial construct that crumbles as soon as a local producer asserts their agency.

#### 5. Conclusions

The transformation of the *S.T.A.L.K.E.R.* video game franchise brand has been analyzed as a complex process of reconstructing national identity within digital and media fields. Based on this analysis, the following conclusions can be drawn.

The rebranding of the franchise has become an act of agency. The change in transliteration, the transition to the Ukrainian language, and the implementation of other national markers in *S.T.A.L.K.E.R. 2: Heart of Chernobyl* have transcended the boundaries of linguistic corrections. This process can be defined as semiotic decolonization, which reclaims Ukraine's right to name and interpret its own history and geography. The brand has ceased to be part of "post-Soviet universalism" and has become a tool for asserting Ukrainian distinctiveness.

The game's developers, GSC Game World, have also demonstrated the priority of symbolic capital (reputation, ethical stance, national identity) over economic capital. This conversion of capital occurred through a conscious withdrawal from the Russian market, which had historically been one of the largest for the franchise. This is an unprecedented example of how national values become the decisive factor in the strategy of a global commercial brand.

The process of brand transformation triggered a conflict of interpretations in the global media space. Accusations of "Russophobia" or "politicization" from a segment of the audience are manifestations of the inertia of colonial perception. Conversely, the #ChornobylNotChernobyl campaign in support of the developers' decisions initiated a process of counter-representation and proved that the digital community is capable of acting as an active subject in the defense of national identity.

Due to the shift in positioning, the Chornobyl Zone in the game has transformed from an abstract post-apocalyptic playground into a distinctly Ukrainian "place of memory" (*lieu de mémoire*). It now encompasses both the knowledge of the traumatic experience of the Chornobyl disaster and metaphorical imagery of the Russian-Ukrainian war.

Thus, the *S.T.A.L.K.E.R.* brand case serves as an example of successful digital decolonization, where a video game becomes a powerful instrument of cultural diplomacy and the protection of national identity in the face of an existential threat.

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## PSYCHOLOGICAL EFFECTS OF HATE SPEECH IN VISUAL MEDIA

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### Summary

The research will explore the hate speech concept and its psychological impact on society in the context of visual media. For the prevention of hate speech or to understand how to struggle, learning or being aware about media literacy are very essential. In this direction, the investigation focuses on effectiveness of media literacy, and its promotes possibilities among people via broadcasting. Visuals for teaching people are extremely important to react to hate speech when they face this kind of issue. Thus, this paper will examine what makes visuals very crucial in this case. Furthermore, there will be some examples, indicators, and expert opinions about considered topic as well. The core purpose of the exploration consists of discussion of hate speech and presenting solutions to it.

**Key words:** Hate Speech, Visual Media, Journalism, Psychological Effects of Hate Speech, Media Literacy, Social Media.

DOI <https://doi.org/10.23856/7419>

### 1. Introduction

Hate speech in visual media has become a critical issue, particularly in the digital age where social media platforms like Facebook, Instagram, and TikTok facilitate rapid dissemination of harmful content. Undoubtedly, visual representations, such as images and videos, have a unique ability to influence emotions and perceptions, making hate speech in these formats especially damaging. With growing concerns over mental health and online harassment, it is crucial to examine the psychological impact of visual hate speech and explore solutions like media literacy to mitigate its effects.

Research has focused on verbal and written forms of hate speech; there is limited literature addressing the psychological consequences of visual hate speech. This study aims to answer the question: How does exposure to hate speech in visual media impact individuals' psychological well-being, and what role can media literacy play in mitigating these effects?

### 2. Objectives of the Study

Investigate the psychological impacts of hate speech in visual media, specifically on anxiety, depression, and social alienation. Analyze how media literacy can empower individuals to critically engage with harmful content and reduce its negative effects. Offer recommendations for educators and policymakers to implement strategies that enhance media literacy and protect vulnerable groups.

The study focuses on visual hate speech across digital platforms, specifically social media, and examines its impact on the mental health of marginalized communities. It does

not cover verbal hate speech or hate speech in traditional media formats. The study limits its analysis to the effects of visual content that explicitly targets individuals or groups based on race, religion, or gender.

### 3. Theoretical Framework of Hate Speech and Media Literacy

Development of technological innovations affects people's lifestyles and their behaviors. In this case, sustainable use of social media has also an undeniable impact on their behaviors. It changes their speaking, and approaches as well. Thus, hate speech arises as a negative part of human behavior. There are several opinions and definitions on hate speech also in the context of journalistic approach. The term 'hate speech' goes beyond being a simple label for a particular type of expression; it also serves as an evaluative term that condemns its subject and calls for potential punishment. Some argue that the term is misleading because it implies that "intense hatred toward a person for any reason" is the core characteristic. However, this is not the interpretation commonly held by most legal scholars and philosophers (*Anderson & Barnes, 2022*).

On the other hand, Sellars (2016) emphasizes that defining hate speech objectively is challenging, especially when trying to distinguish between the harmful forms of speech and those that are acceptable. The numerous different approaches to the term are difficult to summarize, but by examining them along with their contexts, scholars can gain a deeper understanding of the complexities involved in studying hate speech.

### 4. Key Theories on Hate Speech

Defining hate speech is particularly challenging due to its complexity and the varying contexts in which it occurs. The consensus view is that different types of speech may or may not qualify as hate speech, depending on the context, which is often overlooked in definitions. While insults and epithets can be easily recognized, the lack of context can lead to misinterpretations of hate speech (*Sellars, 2016*). Furthermore, online hate groups have developed ways to conceal their messages using symbols or benign terms as codes, which are only identifiable to those familiar with them. She also mentions that determining which forms of hate speech are most harmful is even more elusive, as the link between harmful speech and its consequences is hard to predict.

### 5. Media Literacy: Theoretical Perspectives

Media education, known as "media literacy," refers to the "knowledge, skills, and competencies required in order to use and interpret media." Contemporary views of media literacy involve a "critical" approach, where individuals reflect, analyze, and evaluate not just the content of media messages but also the social, economic, political, and historical contexts in which those messages are created, distributed, and consumed (*Kamerer, 2013*). Similarly, media literacy is about "taking control" of one's media experiences. He suggests that being media literate allows individuals to clearly differentiate between the "real world" and the "world manufactured by the media," providing them with tools to navigate media effectively and avoid harmful distractions.

Furthermore, about this issue Potter (2022) notes that media literacy is a widely discussed concept in communication studies, with varying interpretations across different disciplines and groups, including academics, activists, educators, and policymakers. While some scholars argue that there is a shared understanding of what media literacy entails, pointing to definitions like the one created at the 1992 National Leadership Conference on Media Literacy, others contend that the term's meaning varies significantly depending on context. This disagreement is not confined to a specific region but appears globally, indicating that the understanding of media literacy can differ greatly. Despite this diversity, certain common elements, such as the ability to access, analyze, and produce media for specific purposes, are consistently recognized by scholars as central to the concept.

## 6. Link between Hate Speech and Media Literacy

Despite the broad range of perspectives on media literacy, there is a general consensus among scholars that it involves both knowledge and skills (Potter, 2022). Knowledge about media industries, messages, audiences, and effects is essential, but it is the application of this knowledge that empowers individuals to protect themselves from harmful content and make informed decisions to improve their lives. Some researchers, like Martens (2010) emphasizes the importance of this combination of knowledge and skills in media literacy education, with a focus on using media consciously and self-reflectively. Scholars also agree that media literacy involves a reciprocal relationship between media producers and consumers, as outlined by Rosenbaum, Beentjes, and Konig, where both parties influence each other in the processes of media production and consumption. This interaction further illustrates the complexity of defining media literacy, as it encompasses a broad range of factors and skills necessary to navigate the media landscape effectively. Livingstone (2004) argues and claims that, similar to print literacy, media literacy should be recognized as an essential tool that enables citizens to actively participate in society, while also allowing the state to regulate the ways in which citizens engage and the purposes of that engagement.

## 7. Psychological Impacts of Hate Speech

To understand hate speech is really important to review some other term, such as free speech which impacts directly on it. So, Howard says that (2019) the term "free speech" can refer to different concepts. One meaning is the moral right to freedom of expression, which is a fundamental ethical principle that individuals should be free to express themselves and communicate with others. Another interpretation is the legal right to freedom of expression, which is enshrined in the laws of specific jurisdictions, such as the First Amendment of the U.S. Constitution. Political theorists often assume that this legal right should, or at least should be interpreted as a direct reflection of the moral right to free speech. However, concerns about human error and institutional design suggest that the moral right to free speech might not always align perfectly with legal frameworks. However, Howard essentially notes (2019) the definition of hate speech varies widely. It does not simply refer to speech expressing hatred; for instance, expressing hatred in response to a grave injustice might be considered appropriate. Hate speech, however, is a legal term used to describe expressions of hatred directed at specific individuals or groups in certain contexts. (Sellars, 2016) The rapid advancement of technology

and the widespread use of social media platforms such as X, Facebook, Instagram, and TikTok have significantly contributed to the global spread of hate speech. This unprecedented ability for hate speech to proliferate online presents unique challenges in terms of prevention and counteraction. According to the United Nations, there is no universal definition of hate speech under international human rights law, as the standards for defining it vary between countries with laws that prohibit such speech. Although defining hate speech is complex, some nations have tackled the issue by addressing it within their legal frameworks, taking into account their unique social norms and historical contexts. So, it appears in media in a different according to those details. Historical factors, mental approaches affect hate speech perception, and it also forces to promote media literacy in this direction.

## 8. Analysis of Hate Speech

Hate speech on social media platforms has become a significant challenge in the digital era, with the rapid spread of harmful content facilitated by the increasing use of social networks. Social media platforms, such as Reddit, have shown that hate speech can easily spread across different sections of the platform, often starting in niche areas and extending to broader communities. The technological features of social media, such as anonymity and the rapid sharing of content, both enable and exacerbate the spread of hate speech, while certain technology-based solutions may help mitigate this issue. These platforms' architecture, including recommendation systems and content-sharing mechanisms, unintentionally amplify hate speech, encouraging engagement and making it more likely for such content to reach a wide audience quickly. The anonymity offered by social media creates a toxic environment, where users may post offensive comments without facing real-life consequences, leading to aggressive behavior and a lack of trust within online communities. This fosters social fragmentation, anxiety, and stress, particularly among minority groups who are often the targets of online hate speech. The spread of hate speech through social media not only causes harm on a personal level but also fuels social unrest, radicalization, and even hate crimes. Politically, hate speech can distort public discourse, creating echo chambers where users are only exposed to content that reinforces their biases, hindering healthy debates and policymaking. The digital age complicates the regulation of hate speech, as content crosses borders, and social media platforms struggle to balance free speech with user safety, leading to inconsistent policies and enforcement (*Hassim, Nasir, & Zamri, 2024*).

## 9. Consequences of Hate Speech

The passage by Abuín-Vences, Cuesta-Cambra, Niño-González, and Bengochea-González (2022) explores the detrimental consequences of repeated exposure to hate speech, populism, and selective perception, showing how they contribute to desensitization and the development of cognitive biases. These psychological shifts can deeply influence both behavior and beliefs. Discourse, as a form of human communication, includes verbal and non-verbal messages that can communicate ideologies and influence individuals' attitudes. When harmful messages such as hate speech become common in discourse, they lead to desensitization. Initially, individuals may react strongly to hate speech, but over time, these negative reactions diminish, causing people to normalize the harmful messages. This desensitization reduces

emotional responses to violence, decreases empathy for victims, and makes individuals more accepting of violence as normal behavior. The more desensitized an individual becomes, the more persuasive hate speech becomes, leading to an escalation in prejudice and aggression. Beyond individual effects, hate speech can contribute to broader societal issues, such as political intolerance, which undermines democratic values and threatens equal rights for marginalized groups. The delivery of hate speech by figures, especially those with aggressive or untrustworthy characteristics, can also harm the credibility of the speaker, particularly when the speaker holds a position of power, such as a political leader. These further damages the integrity of public discourse and promotes division. Another key element in the consequences of hate speech is "selective perception." Individuals tend to favor messages that align with their pre-existing beliefs while rejecting those from opposing perspectives. This bias not only influences personal opinions but also exacerbates political polarization, where emotional reactions to the identity of the speaker overshadow rational engagement with the content of the message. This phenomenon is particularly evident in political communication, where the emotional response to the speaker often trumps a thoughtful analysis of the message itself. The Elaboration Likelihood Model (ELM) suggests that peripheral cues, such as the credibility of the message sender, play a significant role in persuasion. In political communication, individuals are often less motivated to carefully evaluate messages, which makes them more susceptible to biases like selective perception and intergroup prejudice. These cognitive biases, combined with desensitization and polarization, shape how people process hate speech and political discourse. In summary, repeated exposure to hate speech, populism, and selective perception leads to desensitization and cognitive biases. These processes not only escalate prejudice and aggression but also fuel political polarization, ultimately undermining democratic values and social cohesion.

## 10. Media Literacy in Mitigating the Influence and Results of Hate Speech

### *Role of Media Literacy in Society*

Media literacy is crucial because it addresses the relationship between textuality, competence, and power. Literacy, a concept rooted in a long-standing struggle between enlightenment and critical scholarship, is seen by some as a democratizing tool that empowers ordinary people, while others view it as elitist and a source of inequality. Essentially, debates around literacy reflect discussions about how and for what purposes the public engages in society. Without a democratic and critical approach to media literacy, individuals will remain passive recipients, simply consuming online information (*Livingstone, 2004*). The real promise of media literacy lies in its ability to transform media users into active participants, shifting them from being passive consumers to engaged citizens. Because of media literacy society learn important information about several nuances.

### *Approaches to Hate Speech*

This study explores students' opinions and attitudes toward the integration of media literacy (BF) in the educational environment. The general consensus among students is that educating adolescents in the area of audiovisual media literacy (AMI) is highly important (*Santiago del Pino & Goenechea Permisán, 2020*). The responses to most statements, covering aspects of analysis, production, and active participation as agents of societal change, reflect a strong agreement, with ratings generally falling between "Fairly agree" and "Strongly agree." However, when asked about their interest in the legal practices of adolescents across various formats and media channels, the values drop slightly to the "Fairly agree" level. Notably,

34.7% of students expressed only moderate interest, and 7% (representing five future secondary school teachers) showed little to no interest in the topic. In this context the table shows a medium overall perception of hate speech and violence online. Respondents report occasional exposure to violent content and note that trolling discourages online participation, while concern about preventing online bullying of minors is particularly high.

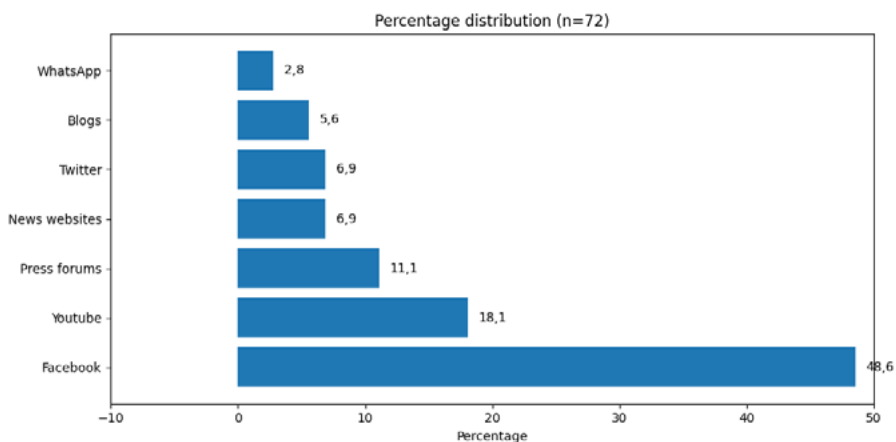
Table 1

**Perception of hate speech and violence online**

Affirmations	Average
On the Internet I have come across videos or material published by violent groups by chance.	4.97
The comments of the provocateurs (trolls) on the Internet negatively affect my level of participation.	5.29
I'm concerned about how to prevent bullying that affects minors online.	8.86
Abstract: Degree perception of hate speech and violence online (0=min and 30=max) (0 to 15= low, 15 to 24=medium, 24 to 30=high)	19.13

Source: (Santiago del Pino & Goenechea Permisán, 2020)

On the other hand, this figure illustrates the distribution of information sources reported by the 72 respondents. Facebook emerges as the dominant platform, accounting for nearly half of all responses (48.6%), indicating its central role in information dissemination. YouTube follows at a considerably lower level (18.1%), while press forums (11.1%) play a more moderate role. Traditional news websites and Twitter are used to a similar extent (6.9% each), with blogs contributing slightly less (5.6%). WhatsApp is the least used source (2.8%), suggesting a comparatively minor role in this context.



**Fig. 1. Presence of the discourse of Hate and Violence online**

Source: (Santiago del Pino & Goenechea Permisán, 2020)

The table indicates moderate self-perceived competence in dealing with hate speech and online violence. Respondents recognize the risks posed by digital media while expressing a reasonable, though not high, level of confidence in their ability to help teenagers cope with such content.

Table 2

**Self-Perpection of coping and teaching competence in the face of hate speech and violence**

Affirmations	Average
The internet, the media and mobile phones offer more risks of spreading hateful and aggressive speech that opportunities to eliminate them	7.21
I can train teenagers to deal with hateful, violent or aggressive speech on the Internet	6.90

Source: (Santiago del Pino & Goenechea Permisán, 2020)

Table 3 shows a high level of perceived importance of teaching media literacy among respondents. The highest average score relates to the need to train adolescents to distinguish between high- and low-quality media content (9.33), underscoring the value placed on critical evaluation skills. Respondents also strongly agree on the importance of enabling adolescents to create quality multimodal content (8.74) and believe that critically educated citizens can positively influence the quality of media and information in their country (8.64). Interest in the legal practices of adolescents across media formats, while still notable, receives a comparatively lower score (7.14).

Overall, the composite AMI score of 34.44 places the assessment in the high range, indicating strong consensus on the importance of media literacy education.

Table 3

**Importance of teaching media literacy**

Affirmations	Average
It is important to train adolescents so that they can distinguish good quality media and content from poor quality media, both digital and analog.	9.33
I am interested in the legal practices of adolescents in any format and channel, and in all kinds of languages.	7.14
It is important to train adolescents so that they can create quality multimodal content.	8.74
Citizens critically educated about the media and information can influence the quality of the media and information in my country.	8.64

Abstract: Level of assessment of the importance of teaching in AMI = 34.44 (0 = min., 40 = max.)

(0 to 20 = low, 20 to 32 = medium, 32 to 40 = high)

Source: (Santiago del Pino & Goenechea Permisán, 2020)

**11. Analogical Thinking and Media Literacy Education**

Visual language, in contrast to verbal language, is often described as "analogical." This term captures the unique semantic features of visual communication, particularly the way visual images can serve as analogies to real-world objects. For instance, a photograph of an object

closely mirrors its real-life counterpart in shape, color, and structure, creating an analogical relationship between the image and reality. However, visual communication often extends beyond representational realism. A clear example of this is a TV commercial for Microsoft's Windows 95, which uses an abstract representation to convey the concept of multitasking. Rather than showing a person using a computer, the ad uses four colored squares from the Windows logo, each performing a routine (Messaris, 1998). As the tasks multiply, all squares perform their routines simultaneously, visually representing multitasking without showing any direct visual similarity to the actual process on a computer screen. This highlights that analogical thinking in visual media doesn't always require a clear visual match; instead, it relies on conceptual relationships between the visual form and its meaning.

This form of analogical thinking also applies to abstract and nonrepresentational images. Scholars like Rudolf Arnheim have argued that abstract images evoke meaning through conceptual relationships, not direct representation. For example, abstract art can be understood through its analogy to real-world phenomena, such as the association of chaotic expressionism with American freedom during the Cold War. However, abstract analogy isn't limited to art. Visual media in popular culture also use analogical thinking, such as the stylistic choices in "MTV-style" camerawork, which includes jump cuts, tilted framing, and eccentric cropping. These techniques, deviations from traditional visual composition, are interpreted as analogical expressions of youthful rebellion (Messaris, 1998).

Furthermore, visual styles can reflect cultural values, with rigid compositions often associated with authoritarian regimes. These examples show that visual images, whether abstract or representational, communicate meaning through both their content and form, where the style and structure of the image can carry deep analogical significance.

## 12. Summary of Key Findings

This study explored the psychological effects of hate speech in visual media, with a particular focus on its impact on vulnerable groups within digital spaces. The findings indicate that hate speech in visual media contributes significantly to psychological harm, causing emotional distress, anxiety, and depression, particularly for marginalized communities targeted by racial, religious, or gender-based hate. Additionally, the social fragmentation caused by the rapid spread of hate speech through social media exacerbates social polarization, fuels political intolerance, and undermines democratic values. Desensitization is another critical effect, where prolonged exposure to hate speech diminishes empathy for victims and increases the acceptance of violence. Finally, the study highlights the effectiveness of media literacy as a promising tool in mitigating the harmful psychological effects of visual hate speech. By promoting media literacy, individuals can be empowered to critically engage with media, recognize harmful content, and reduce their exposure to hate speech.

## 13. Solutions to the Hate Speech Threat

To combat hate speech in visual media, a comprehensive approach is needed, involving legal, technological, and educational actions. Governments should strengthen legal frameworks to regulate hate speech on digital platforms, ensuring clear definitions and international enforcement. Legal efforts should focus on preventing harm and holding offenders accountable

for the psychological and societal impact of their actions. Social media platforms must enhance content moderation by combining AI tools and human oversight to detect and remove harmful content, while also addressing the use of coded language and symbols targeting marginalized groups. Lastly, promoting digital empathy is crucial, tech companies should prioritize content that fosters tolerance and understanding, rather than harmful, divisive material, creating a more inclusive online space.

#### 14. Media Literacy and Educational Recommendations

Media literacy education is key to reducing the psychological impact of hate speech. To improve media literacy, schools should incorporate programs that help students identify, analyze, and understand the effects of hate speech, promoting responsible media consumption. Since young people are especially vulnerable to online content, it's important for them to learn to critically engage with digital media. Public awareness campaigns by governments, NGOs, and community groups should educate the public on the risks of hate speech and provide advice on reporting harmful content. Additionally, teachers should receive specialized training to recognize hate speech and guide discussions on media literacy and its psychological impacts. These initiatives will help both students and educators effectively confront and challenge hate speech in visual media.

#### 15. Recommendations for Journalism and Media Professionals

Journalism plays a vital role in combating hate speech in visual media. Journalists should follow ethical guidelines, avoiding the sensationalization of hate speech and ensuring responsible reporting that doesn't reinforce harmful stereotypes. Promoting counter-narratives is also crucial, highlighting positive stories of inclusion and unity to counter divisive hate speech. Collaboration with media literacy experts can help raise awareness of the effects of hate speech and educate the public on recognizing it. Lastly, transparency and accountability are essential; media organizations should openly discuss their editorial choices and take responsibility for their content. By doing so, journalists can build trust and foster a more responsible media environment.

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## LARGE LANGUAGE MODELS IN FOREIGN LANGUAGE LEARNING AND ITS PEDAGOGICAL AND ETHICAL IMPLICATIONS

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### Summary

This study investigates the use of large language models (LLMs) by university students in foreign language learning, analysing usage patterns, perceived benefits and limitations, cognitive effects, and academic integrity awareness. A survey of 398 students at the State University of Trade and Economics revealed that 84% actively use LLMs, primarily for information retrieval, translation verification, and text editing rather than conversational practice. While students report reduced anxiety and improved access to learning support, concerning trends emerge: over half experience at least occasional emotional dependence on AI, and significant proportions report declining memorisation abilities and reduced speaking confidence. Students prioritise efficiency-oriented benefits over language-specific affordances, a pattern partly attributable to the challenging learning conditions caused by Russia's ongoing war of aggression against Ukraine. Notably, the overwhelming majority of students believe that LLM use should be regulated rather than forbidden, reflecting a broad recognition that these tools require structured institutional frameworks to be used responsibly and effectively. The findings underscore the need for clear ethical guidelines, responsible integration strategies, and assessment approaches that ensure LLMs enhance rather than replace the development of genuine language competencies.

**Key words:** artificial intelligence, EFL learners, academic integrity, language acquisition, AI dependency, ChatGPT, higher education, communicative competence.

DOI <https://doi.org/10.23856/7420>

### 1. Introduction

The Large Language Model became widely available to the general public in 2023, when ChatGPT created a real sensation among users worldwide. Students and educators quickly discovered that this chat tool not only conducted natural conversations, but could also answer questions, search for information, write essays and letters, and translate texts into any language. Since then, universities have faced a new challenge: students began completing their assignments using these language models, often without critically evaluating the correctness of the answers or the quality of their work. This shift in learning practices has raised important questions about academic integrity, cognitive development, and the role of technology in language education.

There is no single definition of artificial intelligence, because its tools are capable of performing a wide range of tasks and producing various types of outputs. According to the Encyclopædia Britannica, AI is the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings (*Copeland, 2026*). The Cambridge

Dictionary defines AI as “the use or study of computer systems or machines that have some of the qualities that the human brain has, such as the ability to interpret and produce language in a way that seems human, recognise or create images, solve problems, and learn from data supplied to them” (Cambridge, 2026). The same dictionary characterises a large language model as “a complex mathematical representation of language that is based on very large amounts of data and allows computers to produce language that seems similar to what a human might say” (Cambridge, 2026).

In our research, we distinguish between artificial intelligence (AI) and large language models (LLM). AI is a broad field encompassing many technologies, while LLM represents a specific application focused on language processing. While AI includes various technologies such as computer vision, robotics, and recommendation systems, a large language model (LLM) is specifically designed to understand and generate human language based on patterns learned from vast amounts of text. Well-known examples of LLMs include GPT-4, Claude 4.5, and Gemini. These tools have become particularly relevant for foreign language learners, as they offer immediate feedback, translation assistance, and conversational practice opportunities that were previously unavailable or limited.

The phrase “students are exposed to a vast amount of information during their studies” has become not only a cliché in recent years but also a defining characteristic of modern education. However, with the integration of LLMs into learning processes, this information overload has taken on new dimensions. Teachers and researchers around the world, closely monitoring the development of these technologies and their implementation in education, recognise both the opportunities and the challenges they present. The concerns are multifaceted and growing. One of the primary questions educators now face is whether student work was completed independently or with the assistance of LLMs. Beyond this fundamental issue of academic integrity, educators are also questioning whether students are developing critical thinking skills or merely learning to prompt AI effectively. There is concern about the potential decline in students’ writing abilities, as they may rely on LLMs to generate rather than compose texts. Additionally, teachers wonder if students are retaining information when they can instantly retrieve it through AI tools, and whether the dependency on LLMs might hinder the development of problem-solving skills essential for independent learning. The psychological dimension is equally troubling: are students becoming emotionally dependent on these tools, and does this reliance affect their academic confidence and motivation? Furthermore, in the context of foreign language learning, a critical question emerges: are students actually acquiring language proficiency, or are they simply learning to use translation and text generation tools as a crutch?

These concerns have prompted educators and researchers to examine the impact of LLM use on student learning outcomes, cognitive development, and academic performance, particularly in the domain of foreign language acquisition.

## 2. Theoretical Background and Literature Review

Research on LLM integration in foreign language learning has gained momentum in recent years, with scholars examining both the pedagogical opportunities and challenges these technologies present.

M. Bagni analysed the linguistic characteristics of student essays and LLM-generated texts through metadiscourse analysis. The study found that most student submissions exhibited hybrid characteristics, combining authentic and AI-generated content. Students with limited

writing proficiency relied more heavily on LLMs and particularly struggled to establish reader engagement through interactional metadiscourse, features that AI tools fail to replicate effectively. M. Bagni argues that “the application of critical thinking remains essential for using these tools effectively and responsibly in academic settings” (Bagni, 2025: 137).

A. Zhang and C. Jiang examined the impact of LLM-assisted writing instruction on self-regulated learning strategies among Chinese EFL learners. Their findings indicate that this approach effectively promotes students’ cognitive engagement, metacognitive planning, and motivational regulation in writing tasks. However, students consistently emphasised the irreplaceable role of teacher guidance, particularly in areas requiring contextual judgment and personalised feedback. The researchers argue that teachers should guide students to critically evaluate LLM-generated feedback and help them learn when and how to apply suggestions strategically (Zhang, Jiang, 2026: 12).

This guidance is particularly crucial given the dual nature of LLMs in language learning. While these tools offer valuable support – explaining grammar rules, providing feedback, and generating essay outlines – their very convenience and accessibility can encourage students to delegate entire writing tasks to AI rather than engaging in the composition process themselves. The uncritical copying of AI-generated content may ultimately undermine students’ confidence in their own writing abilities (Wu, 2024: 530).

It should be noted that essay quality does not impact the consistency of either AI-generated or student-provided feedback, suggesting that both sources maintain reliable feedback standards regardless of writing proficiency level (Banihashem et al., 2024). However, EFL writing performance can be significantly improved when students perceive AI technologies as interesting, effective, supportive, and goal-oriented, as demonstrated by the positive outcomes with Writerly and Google Docs (Wale, Kassahun, 2024).

While research on LLM integration in higher education has explored broad pedagogical opportunities and challenges, less attention has been given to their impact on specific language skills. Beyond writing instruction, reading comprehension presents equally important considerations. The need for clear guidelines and institutional preparedness in LLM integration has become evident across both writing and reading instruction (Barrett, Pack, 2023). Understanding how students use LLMs in reading contexts is particularly important, as independent text engagement develops essential competencies: reading literacy (comprehension, analysis, information retrieval) and cognitive abilities (attention, memory, logical thinking). Whether students turn to LLMs due to limited proficiency, lack of confidence, or other reasons, such delegation undermines the learning processes that reading assignments are designed to foster.

However, LLMs can effectively aid reading instruction and promote reading culture among EFL students when integrated through structured pedagogical frameworks, as demonstrated by positive teacher perceptions of AI-driven Differentiated Reading Circles (Dahia et al., 2026). Yet, the effectiveness of LLM use in reading contexts depends significantly on how these tools are combined with traditional learning activities. Research indicates that while students value LLMs for making complex material more accessible and reducing cognitive load, combining LLM use with traditional note-taking produces superior outcomes in reading comprehension and retention compared to using LLMs alone (Kreijkes et al., 2026). This suggests that LLMs should not replace but rather complement established learning practices, as note-taking promotes deeper cognitive engagement and aids memory, whereas LLMs primarily facilitate initial understanding and student interest. The combined approach maximises the benefits of both methods while maintaining the cognitive engagement essential for meaningful learning (Kreijkes et al., 2026). Recent systematic reviews corroborate these findings,

demonstrating that ChatGPT's pedagogical value across language skills is optimised through integration with traditional teaching methods (*Aljohani, 2026*).

The promising pedagogical applications of LLMs in language learning must be balanced against significant ethical and academic integrity concerns that have sparked considerable debate in educational contexts. Central to these concerns is academic dishonesty, as educators fear that students may use ChatGPT for cheating or to complete assignments without genuine cognitive engagement (*Kohnke et al., 2023*). The issue is compounded by ChatGPT's failure to provide sources or citations for its responses, raising questions about plagiarism, as the tool essentially paraphrases unattributed sources, potentially violating academic integrity standards (*Kohnke et al., 2023*). A second critical challenge involves accuracy: while ChatGPT's responses sound authoritative and definitive, they may contain factual errors that users – particularly less experienced learners – may accept uncritically due to the absence of hedging or uncertainty markers (*Kohnke et al., 2023*). Research across diverse academic disciplines confirms that nearly half of students express reservations about the reliability of AI-generated content, alongside concerns that over-dependence on technology may erode critical thinking and independent problem-solving capacities (*Vieriu, Petrea, 2025*). Cultural bias embedded in ChatGPT's training data, which predominantly derives from English corpora, poses particular concerns for language learners from diverse backgrounds who may be unaware that AI outputs are not culturally neutral (*Kohnke et al., 2023*).

Beyond these operational concerns, a comprehensive ethical framework for LLMs in education must address fundamental human rights principles. W. Holmes and I. Tuomi argue that educational AI ethics cannot be reduced to questions of data and computation alone but must encompass broader dimensions including pedagogy, assessment, knowledge construction, and learner agency (*Holmes, Tuomi, 2022*). A rights-based approach suggests that students should maintain the right to autonomy – including the choice not to engage with AI systems without negatively affecting their education – and the right to human dignity, ensuring that teaching and assessment are not entirely delegated to AI systems (*Liu, 2023*). Data privacy emerges as another critical issue, particularly when students share personal or academic information with commercial AI platforms without understanding how their data may be used or stored (*Liu, 2023*). In language learning specifically, these concerns are amplified by the ease with which LLMs can generate translations, essays, or responses that may appear authentic but bypass the cognitive processes essential for genuine language acquisition.

These ethical challenges have prompted strong institutional reactions, including bans on ChatGPT access in some school systems and returns to traditional pen-and-paper assessment methods (*Kohnke et al., 2023; Vieriu, Petrea, 2025*). Importantly, research on AI chatbots in language learning demonstrates that even when technology proves pedagogically effective, students recognise that human instruction remains essential and that specific teacher guidance on accuracy problems should complement AI-based practice (*Ye et al., 2022*). This finding underscores a critical principle: ethical AI integration in education must ensure that technology augments rather than replaces the irreplaceable elements of human teaching, including nuanced feedback, motivational support, and pedagogical expertise that responds to individual learning contexts.

### 3. Research Aims and Methodology

The purpose of this article is to investigate the use of large language models by university students for learning foreign languages, in particular to analyse the frequency, purposes, and patterns of LLM use, and to assess their impact on the development of language competencies

(translation skills, grammatical accuracy, vocabulary development, speaking skills, understanding of cultural context). Additionally, this study aims to investigate the pedagogical implications of LLM integration, including changes in critical thinking, memory retention, writing skills, and learning autonomy, and to assess students' awareness of academic integrity principles and institutional policies regarding the ethical use of artificial intelligence in education.

#### 4. Results and Discussion

To achieve this, we surveyed students at the State University of Trade and Economics using Google Forms. A total of 398 respondents participated in the 2025 survey. The majority were 18 years old (41.6%), followed by 19 (26.7%), with smaller proportions aged 17 (18.3%), 20 (8.9%), 21 (1.5%), and 22+ (3%). Gender distribution showed 66.3% female and 33.7% male respondents from various university faculties.

The 16-question survey employed skip logic: respondents not using LLMs for language learning (15.3%) exited after Question 1, while LLM users (84%) completed the full questionnaire. Questions addressed usage patterns (frequency, duration, purposes), verification practices, perceived benefits and limitations, cognitive effects, academic integrity awareness, and institutional policy knowledge. Data were analysed using descriptive statistics (frequencies and percentages).

The survey revealed widespread integration of LLMs in foreign language learning, with 84% of respondents (n=334) actively using these technologies, while 15.3% reported no LLM use in their language studies. This high adoption rate aligns with recent systematic reviews documenting the rapid integration of ChatGPT and similar tools across educational contexts, where usage rates among students frequently exceed 80% (Aljohani, 2026; Vieriu, Petrea, 2025). Among LLM users, duration of engagement revealed substantial variation. The largest cohort (43.3%) reported 1-2 years of experience, followed by those using LLMs for more than 2 years (25.7%), 6-12 months (20.5%), and less than 6 months (10.5%). This distribution suggests that students rapidly adapted these technologies to their learning needs following the public release of advanced conversational AI tools in late 2022.

Regarding the frequency of LLM use in foreign language learning, the majority of respondents (45.6%) reported using these technologies 2-3 times per week, representing the modal category. Daily use was reported by 25.1% of students, while 14.6% used LLMs once a week, and another 14.6% only a couple of times per month. This distribution reveals that for 70.7% of users, LLM engagement occurs at least weekly, indicating that these technologies have become regular rather than occasional learning tools.

When asked about their purposes for using LLMs in foreign language learning (with multiple selections permitted), respondents identified diverse applications. The most common purpose was to find information or resources (79.5%), followed by translating or checking translations (65.5%), and generating ideas (58.5%). Over half (52.6%) used LLMs to find mistakes or reformat text, while 45.9% sought grammar explanations and 43.3% used them to solve complex problems. The least common purpose was practising conversation or dialogue (40.6%).

This pattern reveals that students primarily employ LLMs for support functions – locating resources, verifying translations, and checking accuracy – rather than for interactive practice. The dominance of information retrieval (79.5%) and translation verification (65.5%) indicates that LLMs serve primarily as on-demand reference tools. The relatively modest engagement with conversational practice (40.6%) is noteworthy, as interactive dialogue represents one

of the most distinctive affordances of AI chatbots for language learning (Kohnke et al., 2023; Ye et al., 2022), suggesting either limited awareness of this capability or preference for human interaction in developing speaking skills.

Regarding verification of LLM outputs, 43.2% of respondents reported always checking AI-generated responses, while 45.6% verified selectively depending on task importance. Only 9.9% rarely checked LLM outputs, and a minimal 1.3% expressed complete trust without verification. This indicates that 88.8% of students maintain critical engagement with AI-generated content, either consistently or situationally, suggesting awareness of potential accuracy issues (Kohnke et al., 2023; Vieriu, Petrea, 2025).

When asked whether they constantly need AI confirmation even for simple language tasks, 12.9% responded affirmatively, while 48.5% reported occasional dependency and 38.6% indicated no such need. The finding that 61.4% experience at least occasional reliance on AI verification for straightforward tasks reveals a potential shift in learning autonomy. This pattern may reflect either strategic use of AI as a confidence-building tool or emerging dependency that could undermine independent language processing skills.

When asked to identify the single most important benefit of LLMs for their foreign language learning, respondents' preferences revealed a clear hierarchy. Nearly half (45.6%) selected the ability to analyse large amounts of information, while a quarter (25.1%) valued the reduction of mechanical work and increased free time. These two efficiency-oriented benefits accounted for 70.7% of responses. In contrast, language-specific affordances received markedly lower recognition: understanding cultural context and nuances (10%), practising language skills anytime (8.2%), and receiving instant feedback on language errors (5.8%). The remaining 5.3% selected performing calculations without mistakes.

The dominance of efficiency-oriented benefits over language-specific capabilities presents a noteworthy pattern. Despite extensive research documenting that instant feedback and conversational practice represent distinctive pedagogical affordances of AI chatbots for language learning (Kohnke et al., 2023; Ye et al., 2022), students prioritise LLMs primarily as time-saving information processing tools rather than as interactive language partners. This finding suggests either that students have not fully explored LLMs' language-specific capabilities, or that their immediate pragmatic needs take precedence over engaging with specific language learning features.

When asked to identify the single most significant disadvantage of LLMs for foreign language learning, respondents' concerns clustered around two primary issues. Nearly a quarter (24.6%) identified AI-generated misinformation or incorrect translations as the most serious limitation, while an almost identical proportion (23.9%) worried that habitual AI use may not lead to genuine language proficiency. These two concerns accounted for 48.5% of responses, highlighting a tension between immediate utility and long-term learning outcomes.

The remaining concerns were more evenly distributed: reduced independent writing practice (14%), concern that work is not entirely one's own due to AI influence (13.5%), feelings of AI addiction (12.3%), deteriorating vocabulary and grammar memory (6.4%), and worry that AI can produce superior language output (5.3%).

The near-equal weighting of accuracy concerns (24.6%) and authentic proficiency concerns (23.9%) reflects the dual challenges identified in recent research: LLMs' documented tendency to generate authoritative-sounding but potentially erroneous content (Kohnke et al., 2023), and the risk that over-reliance on AI may bypass the cognitive processes essential for genuine language acquisition (Wu, 2024). The finding that nearly half of students identify these as primary concerns suggests widespread awareness of LLMs' fundamental limitations,

despite their high adoption rate (84%). This critical awareness, however, has not translated into rejection of these technologies, indicating that students perceive the benefits as outweighing the risks or feel they lack viable alternatives for managing their academic workload.

Regarding changes in anxiety levels since beginning LLM use, the majority of respondents (45%) reported no change, while 43.9% experienced decreased anxiety (16.4% significantly, 27.5% somewhat). Only 11.1% reported increased anxiety (8.8% somewhat, 2.3% significantly).

The finding that nearly half of students report reduced anxiety suggests that LLM access may provide psychological support in managing foreign language tasks, potentially lowering barriers to engagement. However, the 45% reporting no change indicates that for many students, LLMs neither alleviate nor exacerbate existing task-related stress. The minimal proportion experiencing increased anxiety (11.1%) suggests that LLM use does not create additional psychological burden for most learners.

Regarding the effect of LLM use on confidence in foreign language abilities, nearly half of respondents (48%) reported no noticeable change, while 24% experienced increased confidence and 11.7% reported decreased confidence. A substantial minority (16.4%) found the question difficult to answer.

The finding that positive effects on confidence (24%) outweigh negative effects (11.7%) suggests that for some students, LLM support enhances self-assurance in language tasks. However, the predominance of unchanged confidence (48%) indicates that LLMs do not fundamentally alter most students' self-perception of their language abilities. The proportion reporting decreased confidence (11.7%) aligns with research suggesting that over-reliance on AI-generated content may undermine learners' trust in their own language capabilities (Wu, 2024). The significant uncertainty (16.4%) may reflect difficulty in distinguishing between confidence derived from LLM assistance and confidence in one's independent language proficiency.

When asked about emotional dependence on LLMs for language tasks, only 6.4% reported constant dependence, while 46.8% experienced dependence depending on task complexity. Nearly a fifth (18.1%) rarely felt dependent, and 28.7% reported no dependence.

The finding that 53.2% experience at least occasional emotional dependence (6.4% constantly, 46.8% sometimes) indicates that LLMs have become psychologically significant tools for many students, particularly when facing challenging tasks. The task-contingent nature of most reported dependence (46.8%) suggests that students recognise their reliance increases with difficulty level, potentially reflecting reduced confidence in handling complex language tasks independently. However, the substantial proportion reporting rare or no dependence (46.8%) indicates that nearly half of students maintain psychological autonomy from these technologies.

Regarding changes in motivation for independent foreign language learning since beginning LLM use, the majority (52.6%) reported no change. Among those experiencing shifts, motivation increased for 29.2% of respondents (11.1% significantly, 18.1% somewhat), while it decreased for 18.1% (15.8% somewhat, 2.3% significantly).

The finding that positive effects on motivation (29.2%) outweigh negative effects (18.1%) suggests that LLM access may encourage rather than discourage independent learning for some students. However, the predominance of unchanged motivation (52.6%) indicates that LLMs do not fundamentally alter most students' intrinsic drive for language learning. The proportion experiencing decreased motivation (18.1%) aligns with concerns that convenient AI assistance may reduce learners' willingness to engage in effortful independent practice.

When asked about cognitive changes following regular LLM use (with multiple selections permitted), the most frequently reported change was a modified approach to problem-solving

(51.5%), followed by improved critical thinking skills (35.1%) and enhanced understanding of language patterns (28.7%). Over a quarter (26.3%) noticed changes in their writing skills. However, negative cognitive effects were also reported: 24.6% experienced reduced speaking confidence, and 21.1% noted decreased ability to memorise vocabulary and grammar. Notably, 20.4% reported no cognitive changes whatsoever.

The data reveal both benefits and concerns regarding LLMs' cognitive impact. The predominance of problem-solving changes (51.5%) suggests that LLM integration fundamentally alters how students approach language learning challenges, potentially shifting from memorisation-based strategies toward resource-dependent approaches. While some students report improved critical thinking (35.1%) and pattern recognition (28.7%), the substantial proportions experiencing memory decline (21.1%) and reduced speaking confidence (24.6%) align with research concerns that LLM convenience may undermine traditional skill development (Wu, 2024). The finding that one-fifth of users notice no cognitive changes suggests considerable individual variation in how LLM integration affects learning processes.

When asked whether they consider it necessary to indicate LLM use in their academic work, only 8.2% of respondents believed attribution should always be provided, while 40.9% considered it necessary for serious academic work specifically. Over a quarter (27.5%) did not consider attribution necessary, and nearly a quarter (23.4%) found the question difficult to answer.

This distribution reveals considerable uncertainty and divergence regarding ethical LLM use. While 49.1% recognise some obligation to acknowledge AI assistance, the situational nature of most responses (40.9% "for serious academic work") suggests that students apply different ethical standards depending on perceived assignment importance rather than consistent attribution principles. The substantial proportions expressing either outright rejection of attribution requirements (27.5%) or uncertainty (23.4%) indicate that clear institutional guidance on LLM acknowledgment remains inadequate or insufficiently communicated (Kohnke et al., 2023). This ambiguity is particularly concerning given documented concerns about academic dishonesty and plagiarism associated with unattributed AI-generated content (Kohnke et al., 2023).

When asked whether LLM use should be forbidden at universities, an overwhelming majority rejected outright prohibition: only 5.8% supported a ban, while 39.8% opposed restrictions and 54.4% favoured regulation without prohibition.

The finding that 94.2% of respondents oppose complete prohibition indicates widespread recognition that LLMs have become integral to contemporary learning practices. More significantly, the majority preference for regulated use (54.4%) over unrestricted access (39.8%) suggests that students themselves recognise the need for structured frameworks governing AI integration. This pattern aligns with research emphasising that educational institutions must establish clear ethical guidelines and policies for LLM use rather than attempting suppression (Kohnke et al., 2023). The minimal support for prohibition (5.8%) indicates that blanket bans – such as those implemented by some educational systems in response to ChatGPT's release – do not reflect learner perspectives or practical pedagogical needs.

When asked about awareness of university policies on LLM use, 66.1% of respondents indicated familiarity with institutional guidelines, while 33.9% were unaware of such policies.

While two-thirds of students report awareness of university LLM policies, the substantial minority lacking this knowledge (33.9%) is concerning, particularly given the majority preference for regulated rather than unrestricted LLM use (54.4% in Question 15). This gap between students' desire for clear frameworks and actual policy awareness suggests either insufficient communication of existing guidelines or their absence. The finding aligns with

research identifying the need for explicit institutional guidelines and comprehensive communication strategies to ensure students understand expectations for ethical AI use (Barrett, Pack, 2023; Kohnke et al., 2023). The 66.1% awareness rate, while representing a majority, leaves a substantial cohort potentially navigating LLM integration without understanding institutional expectations or ethical boundaries.

## 5. Conclusions

This study demonstrates that LLMs have become a routine component of foreign language learning for the vast majority of university students surveyed, with 84% actively integrating these tools into their academic practices. While LLMs offer genuine benefits – reducing anxiety, providing accessible support, and facilitating information processing – the findings also reveal concerning patterns: over half of students experience at least occasional emotional dependence on AI verification, a significant proportion report declining memorisation abilities and reduced speaking confidence, and many apply academic integrity standards inconsistently.

The strong preference for efficiency-oriented benefits (70.7%) warrants consideration of the broader context in which this study was conducted. Ukrainian students are currently learning under exceptionally challenging circumstances resulting from Russia's ongoing war of aggression against Ukraine, which has systematically targeted the country's critical and civilian infrastructure, causing widespread power outages and profound daily uncertainty. These conditions may lead students to prioritise tools that help them meet immediate academic requirements over those offering long-term skill optimisation. This pragmatic adaptation suggests that LLM integration patterns cannot be understood separately from the conditions in which learning occurs.

Crucially, students themselves recognise the need for structured frameworks: the majority favour regulated rather than unrestricted use, and many demonstrate awareness of the risks associated with over-reliance on AI. This receptiveness to guidance offers a constructive foundation for pedagogical reform.

Educational institutions must therefore establish clear ethical frameworks and guidelines for AI use, provide comprehensive training on responsible integration, develop assessment methods that distinguish between AI-assisted learning and AI-dependent task completion, and ensure that technology enhances rather than replaces the development of essential language competencies.

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## PILGRIMAGE AS A SOCIAL AND COMMUNICATION INSTITUTION: FROM TRADITIONAL PRACTICE TO MEDIA PILGRIMAGE IN THE CONTEXT OF HIDDEN MEDIA EFFECTS

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### Summary

The article examines pilgrimage as a social and communication institution in the context of transformations driven by digitalization and the development of the media environment (Costantino et al., 2022; George, 2025). The analysis follows the algorithm: pilgrimage as a social and communication institution → media pilgrimage as a form of its implementation → hidden media effects as a deep level of influence. An analytical formula of pilgrimage is proposed, combining spiritual, communicative, institutional, and cultural components. Based on this formula, the model of media pilgrimage as a media-mediated form of performing pilgrimage practices is analyzed. Special attention is given to the study of hidden media effects in the context of media pilgrimage, drawing on the methodological approaches of the Hidden Media Effects Lab under the supervision of Professor V. Rizun. The research demonstrates that media pilgrimage not only expands access to sacred heritage but also shapes latent levels of influence on identity, emotions, and audience behavioral attitudes. The study employs a social and communication approach (according to V. Rizun), within which pilgrimage is considered a stable form of organizing social experience, functioning through communication, symbols, media, and institutional practices (Гаврилець & Різун, 2024; Hidden Media Effects Lab, n.d.).

**Key words:** pilgrimage, social and communication institution, media pilgrimage, hidden media effects, social and communication approach.

DOI <https://doi.org/10.23856/7421>

### 1. Introduction

Pilgrimage as a socio-communication institution is a spatially transformative social phenomenon that plays a significant role in the formation and strengthening of social ties and interpersonal communication. This form of travel has deep historical roots in religious traditions and shows the human need for spiritual self-knowledge, the search for the meaning of life and moral guidelines (Turner & Turner, 1978; Panchenko & Rizun, 2024).

Pilgrimage clearly defines the purpose of the trip – visiting a holy place or religious holiday with the provision of spiritual purification, appeal to higher powers, the performance of religious rites or acts of repentance. The unity of this goal creates favorable conditions for interaction between participants who share common beliefs, values and worldviews.

As a socio-communication institution, pilgrimage improves the formation of group identity and a sense of belonging to the community. Pilgrims perceive themselves as part of a higher social group, united by a common faith and spiritual goals (Olawuyi et al., 2026). During the pilgrimage, there is active communication, exchange of experiences, meeting new people and interaction with local residents and other pilgrims, which contributes to the spread of ideas, views and mutual understanding.

In addition, pilgrimage creates conditions for the development of social and communicative skills. Interacting with representatives of different cultures, confessions and social groups, pilgrims learn tolerance, mutual respect, empathy and acceptance of diversity. They improve their ability to listen, conduct dialogue and be aware of their own role in the community.

Pilgrimage appears not only as a religious practice, but also as an effective socio-communication institution that ensures interaction between people, the formation of communities, the development of a communicative culture and the spiritual enrichment of the individual. Interaction with different people contributes to the development of social and communicative competencies, forms tolerance, empathy, mutual respect and the ability to dialogue, and also helps the individual to realize oneself as part of the community (Panchenko & Rizun, 2024).

Thus, pilgrimage as a socio-communication institution provides unique opportunities for interpersonal communication, exchange of experience and knowledge, as well as deepening the spiritual development and enrichment of the life experience of each pilgrim (Chatzopoulou, 2022). In the modern conditions of digital culture, traditional forms of pilgrimage are undergoing transformations, which actualizes the need for theoretical understanding of media pilgrimage and the hidden media effects associated with it.

The purpose of the study. The aim of this study is to conceptualize pilgrimage as a socio-communication institution and analyze its transformation from traditional religious practice to media pilgrimage in the context of digital mediatization (Panchenko & Rizun, 2025a). The study aims to integrate the formula of pilgrimage as a socio-communication institution, the scheme of media pilgrimage and the methodological framework of hidden media effects, developed within the Laboratory of Hidden Media Effects under the leadership of Professor V. Rizun, into a single analytical algorithm. The study is based on Professor V. Rizun's socio-communication approach, within which pilgrimage is considered as a sustainable form of organization of social experience, functioning through communication, symbols, media and institutional practices (Couldry, 2007; Panchenko, 2025).

The research aims to identify how digital media transform pilgrimage practices by expanding communicative spaces, institutional roles, and symbolic interactions, as well as producing latent media effects that influence social cohesion, collective identity formation, and patterns of participation in pilgrimage communities (Kalia et al., 2022).

Particular attention is paid to the analysis of the mechanisms of functioning of media pilgrimage as a stable form of social communication and institutionalized social order in the digital environment (Rachman & Rosyadi, 2024). At the same time, the research focuses on the socio-communicative dimension of media influence, without raising the issue of consciousness or subconsciousness.

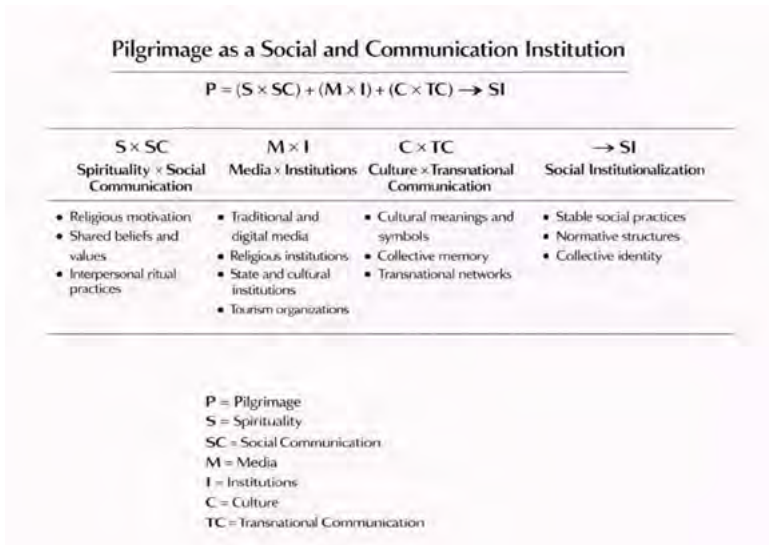
Overall, the aim of the research is to expand the theoretical and methodological foundations of pilgrimage research within media and pilgrimage studies by proposing an original methodological synthesis that allows for a systematic analysis of pilgrimage in the context of modern digital media transformations (Kim et al., 2020; Zheng et al., 2023).

Research in the field of digital religion shows that new media technologies not only change the forms of access to sacred practices, but also create subtle changes in the communicative models, interpretations, and social connections of participants (Campbell, 2010; Panchenko & Rizun, 2025b; Qurashi & Sharpley, 2018; Allen-Perkins, 2025).

**2. The formula of pilgrimage as a socio-communicative institution**

The formula of pilgrimage as a socio-communication institution sets the theoretical framework of the study, the model of media pilgrimage specifies the mechanisms of its implementation in the digital environment, and the Hidden Media Effects Lab approach allows us to identify hidden media effects and latent levels of influence of sacred media content on the perception and behavioral reactions of the audience. The algorithm is as follows: pilgrimage as a socio-communication institution → media pilgrimage as a form of its implementation → hidden media effects as a deep level of influence.

Based on Professor V. Rizun’s theory of social communications, pilgrimage can be described through a generalized formula of the social-communication institution proposed by the author within this theoretical framework:



**Fig. 1. The formula of pilgrimage as a socio-communication institution (according to the socio-communication approach of Professor V. Rizun)**

$$P = (S \times SC) + (M \times I) + (C \times TC) \rightarrow SI,$$

де:

- P – pilgrimage;
- S – spirituality;
- SC – social communication;
- M – media;
- I – institutions;
- C – culture;
- TC – transnational communication;
- SI – social institutionalization.

The model conceptualizes pilgrimage as a socio-communicative institution formed at the intersection of spirituality, media, culture, and institutional structures.

The  $S \times SC$  (Spirituality  $\times$  Social Communication) component reflects the religious motivations, shared values, and ritual communicative practices of pilgrims.

The  $M \times I$  (Media  $\times$  Institutions) component represents the role of traditional and digital media, religious, state, and tourism institutions in the mediatization of pilgrimage.

The  $C \times TC$  (Culture  $\times$  Transnational Communication) component captures the cultural meanings, collective memory, and transnational networks of pilgrimage.

The resulting SI (Social Institutionalization) vector signifies the stabilization of pilgrimage as a social practice, normative structure, and mechanism for forming collective identity (Panchenko & Rizun, 2025a; Panchenko & Rizun, 2025b).

This formula reflects the multidimensional nature of pilgrimage, in which spiritual motivation is combined with communicative practices, media infrastructure, and cultural contexts (Gonçalves *et al.*, 2022). Of particular importance is the component ( $M \times I$ ), which captures the institutionally mediated role of the media in the reproduction and transmission of the pilgrimage experience (Couldry, 2007; Panchenko, 2025).

### 3. Media Pilgrimage as a form of implementation of a social communication institute

Media pilgrimage is emerging as a modern form of pilgrimage in the digital environment. Its model is based on the processes of documenting sacred heritage, digital cataloguing, and media mediation of spiritual experience.

Key elements of media pilgrimage include:

- sacred space (churches, monasteries, pilgrimage routes);
- digital tools (QR codes, virtual maps, multimedia guides);
- media platforms (online archives, digital catalogs, interactive routes) (Kalia *et al.*, 2022).

Thus, media pilgrimage expands the boundaries of physical presence and forms new types of participation in the sacred experience (Gemzöe, 2020; Campbell, 2010). It does not replace traditional pilgrimage, but functions as its media extension.

At the same time, media pilgrimage creates conditions for the formation of a double coding of sacred content and possible interpretative drift, which manifest themselves at the level of emotional and symbolic perception of the audience (Lundby, 2014).

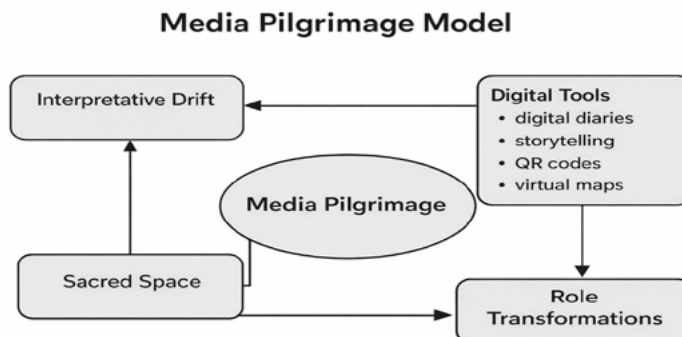
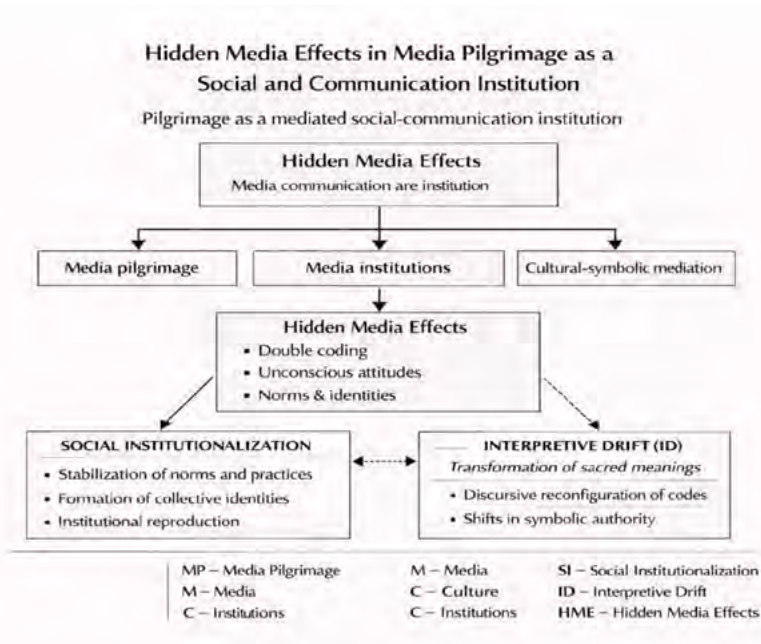


Fig. 2. Media pilgrimage model (Panchenko, S., & Rizun, V., 2025a)

#### 4. Hidden Media Effects in the Context of Media Pilgrimage

The analysis of media pilgrimage at the level of hidden media effects opens up new methodological perspectives that are consistent with the approaches of the Hidden Media Effects Lab under the leadership of Professor V. Rizun (Gavrylets & Rizun, 2024; Hidden Media Effects Lab, n.d.).



**Fig. 3. Scheme of hidden media effects in the context of pilgrimage (within the framework of the social communication approach and the concept of Hidden Media Effects of Professor V. Rizun)**

Hidden media effects manifest themselves through:

- double coding of sacred content (explicit and latent levels);
- the influence of visual and symbolic codes on emotions and identity;
- possible interpretative drift that changes the perception and assessment of sacred experience;
- the formation of implicit behavioral orientations.

In the context of media pilgrimage, media content functions not only as a source of information, but also as a powerful psycho-emotional stimulus that can influence the perception of the sacred, a sense of belonging, and spiritual experiences (Rizun, 2012; Gavrylets & Rizun, 2024).

The concept of Hidden Media Effects, developed within the scientific school of Professor V. Rizun, guides the researcher towards identifying latent media influences and demonstrates the need to expand traditional socio-communication analysis in an interdisciplinary direction (Rizun, 2012; Hidden Media Effects Lab, n.d.).

## 5. Research methods

The methodological basis of the study is an interdisciplinary socio-communication approach, which allows us to analyze pilgrimage as a socio-communication institution in the context of modern media transformations (*Rizun, 2012; Couldry, 2007*). This approach is combined with the theory of the mediatization of religion, which explains how the media not only transmit religious meanings, but also actively transform religious practices, experiences and institutional forms (*Hjarvard, 2008*).

To conceptualize pilgrimage as a sustainable form of social order and communication, elements of institutional analysis are applied, which allows us to consider pilgrimage not only as an individual religious practice, but also as an institutionalized system of norms, roles, symbolic interactions and communicative practices that evolve in the context of digitalization (*Martino, 2012; Panchenko & Rizun, 2024*).

The empirical-analytical framework of the study includes qualitative methods adapted to the study of media pilgrimage, including:

- discourse analysis of media texts related to pilgrimage in digital platforms and social networks;
- visual-interpretive analysis of digital narratives, symbols, and audiovisual representations of sacred sites (*Kanaan Amat, Crous-Costa & Aulet, 2019; Wu, Chang, & Wu, 2019*);
- elements of digital ethnography aimed at studying the formation of virtual communities of pilgrims and their communicative practices in the digital environment (*Johannsen & Ohrvik, 2020; Jorge, 2023*).

Separately, the research methodology is based on the conceptual provisions developed within the Laboratory of Hidden Media Effects under the leadership of Professor V. Rizun. The application of this theoretical and methodological framework allows us to identify hidden media effects produced by religious and pilgrimage media content, in particular at the level of symbolic influence, emotional involvement and implicit value orientation, without directly addressing the issues of consciousness or subconsciousness (*Rizun, 2012*).

The integration of these approaches allows us to practically apply the author's theoretical model, which combines the formula of pilgrimage as a socio-communication institution, the scheme of media pilgrimage and the framework of hidden media effects. Such a methodological algorithm makes it possible to trace the transformation of traditional pilgrimage practices into media pilgrimage through the processes of media mediation, to analyze the institutionalization of communicative structures in the digital environment, and to identify the functioning of hidden media effects as a stabilizing and influential mechanism of social communication (*Campbell, 2010; Campbell, 2012*).

## 6. Results and discussion

Within the framework of this study, pilgrimage is understood not only as a traditional religious practice, but also as a socio-communication institution that functions in the conditions of digital media reality. The proposed author's theoretical and methodological framework, which combines the formula of pilgrimage as a socio-communication institution, the scheme of media pilgrimage and the approaches of the Hidden Media Effects Lab according to V. Rizun, allows expanding the analytical possibilities of studying religious practices in the media environment (Hidden Media Effects Lab).

The results of the analysis show that media pilgrimage is not just a technological extension or digital representation of traditional pilgrimage (Farooq & Altintas, 2022). It appears as an independent level of socio-communication interaction, within which sacred meanings are transmitted, structured and reproduced using the media. It is in this dimension that hidden media effects manifest themselves, which are not reduced to direct information or religious propaganda, but are implemented through symbolic, visual and narrative mechanisms of media content.

The application of the concept of Hidden Media Effects within the socio-communication approach made it possible to interpret media pilgrimage as an environment for the formation of latent communication influences. This is not about measuring individual psychophysiological reactions, but about structural media effects that affect collective perceptions of the sacred, the sense of belonging to the pilgrim community and the institutional legitimation of religious experience in the digital space.

In this context, media pilgrimage is a key element that integrates the double coding of sacred content, visual-symbolic strategies and socio-communication mechanisms of influence. It is important that double coding within the framework of this study is considered not as an autonomous phenomenon, but as an internal mechanism of media pilgrimage, which is implemented precisely through the media infrastructure (Wu W., 2020).

Thus, the proposed model allows us to move from the description of individual digital practices to the institutional analysis of media pilgrimage, considering it as a systemic phenomenon embedded in the broader context of social communication. This confirms the feasibility of using the Hidden Media Effects Lab concept not as an empirical toolkit, but as a methodological framework that ensures theoretical coherence of the research and opens up prospects for further interdisciplinary studies (Kim et al., 2020; Petrova et al., 2025).

**Praxeological Case Fragment** «Praxeology of Pilgrimage: From Local Churches to Global Routes» with the Implementation of the Formula «Pilgrimage as a Social and Communication Institution»

Table 1

**Pilgrimage as a socio-communication institution:  
praxeological cases of local and international dimensions**

Pilgrimage Site / Route	Scale	Dominant Form of Pilgrimage	Key Elements of the Formula	Media Function	Type of Institutionalization
Church of St. Paraskeva (Transcarpathia)	Local	Limited physical + media pilgrimage	$(S \times SC) + (M \times I)$	Preventive, mobilizing	Local, partially institutionalized (partial institutional decline)
Bell Tower, village of Nimetska Mokra (Transcarpathia)	Local / memorial	Exclusively media pilgrimage	$(M \times I) + (C \times TC)$	Memorial	Physically deinstitutionalized, symbolically reproduced through media
Camino de Santiago	Transnational	Mass physical + digital	Full formula P	Navigational, narrative	Transnationally institutionalized
Fátima	Global	Mass physical + media-mediated	$(S \times SC) + (M \times I)$	Symbolic, emotional	Centralized global institutionalization

Within the framework of the study, praxeological cases of media pilgrimage are analyzed according to a step-by-step algorithm that reflects the logic of the functioning of pilgrimage as a socio-communication institution. At the first level, pilgrimage is considered as an institutionalized form of social communication that combines spiritual motivation, collective practices and cultural codes. It is this level that sets the normative and symbolic framework of pilgrimage interaction regardless of the specific spatial or media context (*Hjarvard, 2023*). At the second level, the institutional model is concretized through media pilgrimage as a form of pilgrimage implementation in the conditions of digital media reality. In praxeological cases, this is manifested through the use of digital catalogs, visual narratives, cartographic interfaces and shared memory platforms that transform sacred space into a media-mediated communication node. Thus, media pilgrimage serves as a practical mechanism for reproducing the institutional functions of pilgrimage in the context of limited or absent physical presence (*Allen-Perkins, 2025*).

At the third, deeper level of analysis, latent media effects emerge that arise as a result of the audience's systematic interaction with media-mediated forms of sacred content. Within the cases considered, these effects manifest themselves not in the form of direct conviction or religious mobilization, but through the latent formation of emotional involvement, symbolic presence, and a sense of belonging to a broader pilgrimage community. It is at this level that media pilgrimage acquires a stabilizing function, ensuring the institutionalization of pilgrimage as a socio-communication practice in the digital environment (*Qurashi & Sharpley, 2018*).

## 7. Conclusions

As a result of the conducted research, the possibility of a comprehensive analysis of pilgrimage within the framework of a socio-communication approach, taking into account modern processes of mediatization of religious practices, was substantiated. The author of the article applied the author's concept of analysis, built on a combination of the formula of pilgrimage as a socio-communication institution, the scheme of media pilgrimage and the methodological framework of the laboratory of hidden media effects of Professor V. Rizun (*Panchenko & Rizun, 2025b*).

Using the formula of pilgrimage as a socio-communication institution made it possible to clearly structure pilgrimage as an institutionalized communication process in which sacred space, a community of pilgrims, communicative practices and media interact. This made it possible to trace how pilgrimage ensures the formation of social ties, group identity, the transmission of values and the reproduction of institutional tradition.

The application of the media pilgrimage scheme expanded the analytical field of the study, making it possible to single out media pilgrimage as an institutionalized form of pilgrimage practice in the digital environment. Within the framework of this scheme, the relationship between the processes of digital cataloguing of sacred heritage (*Gemzöe, 2020*), the use of multimedia tools and the formation of new formats of socio-communicative interaction was clearly traced. This made it possible to show that media pilgrimage does not deny traditional pilgrimage, but functions as its structural extension. The methodological involvement of the concept of hidden media effects of Professor V. Rizun, developed within the activities of the Hidden Media Effects Lab (*Gavrylets & Rizun, 2024*), provided the opportunity to analyze latent communication effects associated with media-mediated forms of pilgrimage. Within this approach, media are considered not only as channels of information transmission, but as a communication environment in which the effects of forming involvement, symbolic presence,

collective interpretation of sacred space and social integration of pilgrims are structurally embedded (Panchenko et al., 2025).

Thus, the combination of the formula of pilgrimage as a socio-communication institution, the scheme of media pilgrimage and the methodology of the laboratory of hidden media effects made it possible to clearly trace, isolate and systematize the key socio-communication mechanisms of modern pilgrimage, in particular in its media-mediated forms.

The proposed author's model creates a holistic theoretical and methodological basis for further research into media pilgrimage, digital sacred heritage and latent communication processes in the field of social communications.

The choice of pilgrimage as an object of study is due to its unique socio-communication status among religious practices. Unlike other forms of religious activity, pilgrimage combines interpersonal, group, institutional and media-mediated communication, functioning simultaneously as an event, a process and a spatially localized communicative action. It is this multilevel nature that makes it methodologically representative for analysis as a socio-communication institution.

In addition, pilgrimage is historically associated with mass social mobility and the transmission of symbols, meanings and values, which enhances its communication potential compared to local religious practices. In modern conditions of mediatization, pilgrimage demonstrates structural compatibility with digital formats, which allows us to consider media pilgrimage as a logical extension of traditional practice.

It is in this context that pilgrimage creates a productive field for the application of the methodology of V. Rizun's Hidden Media Effects Lab, since media-mediated forms of sacred communication contain latent effects related to symbolic involvement, a sense of presence, and the formation of collective identity. Thus, pilgrimage is not an exceptional but a model phenomenon that allows for a theoretically correct study of the transformation of religious communication in the conditions of the modern media environment (Panchenko & Rizun, 2025a; Hidden Media Effects Lab, n.d.).

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## WOMEN-CENTRED PROSE BEYOND GENRE LABELS: FROM CHICK-LIT TO EMOTIONAL ETHICS

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### Summary

The article proposes a reconceptualisation of women-centred popular prose beyond established genre labels such as chick lit or women's fiction. Genre-based approaches have been productive in mapping the emergence and commercial success of female-authored popular narratives since the late 1990s. Contemporary popular fiction increasingly focuses on emotional experience, care, and everyday ethical concerns.

This article examines a selection of English- and French-language popular novels published in the late twentieth and early twenty-first centuries and proposes a different approach to such texts. Instead of relying on established genre labels, it focuses on how these narratives are organised around a female point of view, everyday emotional experience, and changing value priorities. Special attention is given to the gradual shift away from postfeminist irony towards more open, emotionally attentive forms of narration, in which relationships, vulnerability, and responsibility play a central role. Taken together, these features allow women-centred prose to be discussed as a meaningful analytical category rather than as a fixed genre.

**Key words:** women-centred prose, female narrative perspective, popular women's fiction, postfeminist discourse, ethics of care, emotional labour, narrative focalisation.

DOI <https://doi.org/10.23856/7422>

### 1. Introduction

The category of chick lit has played a central role in how women-authored popular fiction has been discussed. It was commonly used to describe novels about young urban women, characterised by ironic tone, romantic plots, and self-awareness. Scholars initially approached these texts as expressions of postfeminist culture, exploring how they dealt with independence, consumption, and intimate relationships (*Ferriss & Young, 2006; Whelehan, 2005*). Over the past two decades, however, the thematic range and narrative focus of women-authored popular prose have broadened in noticeable ways. In many recent novels, the focus has changed. Romantic comedy and lifestyle satire play a smaller role, while attention is given to emotional vulnerability, care, illness, friendship, ageing, and grief as they appear in everyday life. As a result, these texts do not sit comfortably within established genre labels. In response to this development, the article proposes women-centred prose as an analytical category that allows these narratives to be discussed in terms of perspective, thematic focus, and value orientation, rather than through fixed genre boundaries. Building on these observations, the aim of the article is to examine contemporary women-authored popular fiction through the lens of women-centred prose and to show how this approach offers a more flexible and accurate framework than established genre labels. The study seeks to identify the narrative and thematic features that characterise this body of texts, with particular attention to narrative perspective, everyday emotional experience, and changing value orientations.

The research is based on a qualitative analysis of selected English- and French-language popular novels published from the late twentieth to the early twenty-first century. The article examines contemporary women-authored popular fiction through detailed textual analysis, focusing on narrative perspective, emotional emphasis, and representations of care and responsibility.

## 2. Limits of Genre-Based Approaches to Women's Popular Fiction

Genre labels such as chick lit or women's fiction have been important in bringing popular prose into academic discussion. They helped scholars recognise recurring themes, shared narrative patterns, and the cultural role of women-authored texts, especially within debates on postfeminist media culture (Gill, 2007; Tasker & Negra, 2007). At the same time, these labels grew out of publishing and marketing practices, which tend to favour familiar formulas and easily recognisable storylines.

This becomes a problem when we look at more recent novels that are still marketed as chick lit (Albenga, 2015) or feel-good fiction but no longer follow the conventions usually associated with these categories. In English-language popular fiction (Gail Honeyman's *Eleanor Oliphant Is Completely Fine* (2017) and Dolly Alderton's *Ghosts* (2020)), authors depict protagonists whose everyday life is portrayed in dark tones: loneliness, mental health concerns, ongoing attempts to establish some personal relationship. Although these novels remain accessible and grounded in everyday experience, their stories are driven less by genre expectations than by vulnerability, care, and ethical self-reflection.

A comparable shift can be seen in contemporary French-language prose. Novels often grouped under popular women's fiction increasingly centre on emotional and ethical concerns rather than on genre conventions. In French-language fiction (Delphine de Vigan's *Les Grâtes* (2019) and Mélissa Da Costa's *Tout le bleu du ciel* (2019)) protagonists are shown through calm, introspective narration facing ageing, illness, and interdependence in care relationships. These texts are not marked by romanticism, comedy or overt irony, one can find meaning in ordinary acts of attention, listening, and emotional responsibility. As a result, they sit uneasily within fixed genre categories.

As a number of scholars have pointed out, continuing to apply the chick lit label to texts that no longer follow its original model can limit how these works are read and interpreted (Harzewski, 2011; Hache-Bissette, 2012; Tsapro, 2025). In both English- and French-language contexts, many recent novels written by women move away from humour-based irony towards quieter, more reflective narrative voices. They are often not easy to be classified.

So, it becomes necessary to look for an analytical approach that does not rely primarily on genre labels but instead pays attention to narrative perspective, thematic focus, and the values shaping these texts.

## 3. Women-Centred Prose as an Analytical Category

The term women-centred prose is used to describe narratives in which female experience shapes the text from within. This term does not refer to a fixed genre, it does not imply a specific type of plot, style, or readership. Instead, it offers a way of talking about texts that organise meaning around how women perceive, interpret, and live through everyday situations. In this sense, women-centred prose is approached as an analytical category rather than a genre label.

One of its key features is narrative perspective. Such texts are typically told from a female point of view, either through first-person narration or through a closely aligned internal perspective. This point of view influences not only how characters are portrayed, but also which events are considered important and how they are understood. Attention is often directed towards inner experience, emotional response, and reflection, rather than towards fast-moving, action-driven plots.

Another defining aspect lies in thematic focus. Women-centred prose tends to bring to the foreground experiences that have often been treated as secondary or marginal in genre-based fiction. These include emotional labour, care for others, everyday routines, moments of uncertainty, and small ethical choices made in ordinary contexts. Rather than serving as background to romance or professional success, such experiences form the core of the narrative.

These texts are marked by a particular ethical sensibility. They draw attention to responsibility, interdependence, and emotional attentiveness instead of emphasising self-fulfilment through consumption, achievement, or romantic closure. Meaning is created through relationships and forms of care, while resolution or triumph are not in the center any more. This orientation signals a broader shift away from postfeminist irony towards a mode of storytelling grounded in what can be described as emotional ethics.

#### 4. From Postfeminist Irony to Emotional Ethics

Early chick lit narratives often relied on irony as a key narrative strategy. Through humour and self-distance, protagonists were able to navigate conflicting cultural expectations while keeping a critical stance towards them. Irony made it possible to express dissatisfaction with social norms without openly rejecting postfeminist ideas of choice, independence, and self-management. In this sense, ironic narration functioned as a form of empowerment that balanced critique with cultural belonging.

In more recent women-centred prose, this ironic mode becomes noticeably less central. Many contemporary narratives turn instead towards emotional openness and sincerity. Rather than building stories around witty self-observation or romantic fulfilment, these texts dwell on care for others, intergenerational ties, illness, loss, and processes of psychological recovery. Emotional vulnerability comes to the foreground, while ironic distance becomes less important. Fragility is not presented as something to overcome but as part of the story itself. This shift is especially clear in novels where humour and self-distance fade into the background and quieter forms of storytelling take over. In Emily Henry's *People We Meet on Vacation* (2021), the romantic plot is still there, but it no longer holds the text together. The narrative is more often about friendship, emotional tiredness, and the ongoing effort of staying close to another person. A similar narrative logic can be found in Sophie Tal Men's novels, including *De battre la chamade* (2023) and *La tendresse des autres* (2025), where work, illness, and caring for others shape the characters' choices and relationships. Across these texts, irony gives way to a more direct and emotionally open mode of narration.

This transformation can be linked to wider cultural changes. As ironic discourse has become increasingly familiar and widespread, its critical force has weakened. At the same time, forms of affective and emotional labour have gained greater visibility in social life. Women-centred prose turns attention to ethical questions as they appear in everyday life: in small decisions, ongoing relationships, and ordinary forms of care.

Table 1 sets out the main differences between genre-based popular fiction and women-centred prose, comparing how these texts organise narrative focus, themes, plot development,

and ethical concerns. While genre-driven texts tend to emphasise formulaic structures and individual fulfilment, women-centred prose is shaped by lived experience, relational responsibility, and an ethics of care.

Table 1

**Genre-based popular fiction and women-centred prose: analytical comparison**

Aspect	Chick lit / genre-based fiction (representative texts)	Women-centred prose (representative texts)
Organising principle	Genre conventions and market logic (e.g. Helen Fielding, <i>Bridget Jones's Diary</i> ; Sophie Kinsella, <i>Confessions of a Shopaholic</i> )	Female experience as the structuring principle (e.g. Gail Honeyman, <i>Eleanor Oliphant Is Completely Fine</i> ; Delphine de Vigan, <i>Les Gracititudes</i> )
Narrative mode	Irony and humour as dominant modes (e.g. Marian Keyes, <i>Watermelon</i> ; Meg Cabot, <i>Queen of Babble</i> )	Emotional sincerity and restrained introspection (e.g. Dolly Alderton, <i>Ghosts</i> ; Mélissa Da Costa, <i>Tout le bleu du ciel</i> )
Central themes	Romance, consumption, lifestyle, self-fashioning (e.g. Emily Henry, <i>Beach Read</i> ; Jenny Colgan, <i>Meet Me at the Cupcake Café</i> )	Care, vulnerability, illness, emotional labour (e.g. Sophie Tal Men, <i>La tendresse des autres</i> ; Claire Lombardo, <i>The Most Fun We Ever Had</i> )
Plot dynamics	Resolution-oriented plots (romantic or professional closure) (e.g. Beth O'Leary, <i>The Flatshare</i> ; Lindsey Kelk, <i>I Heart New York</i> )	Process-oriented narration focused on emotional development (e.g. Marian Keyes, <i>Grown Ups</i> ; Virginie Grimaldi, <i>Les possibles</i> )
Ethical focus	Individual fulfilment and self-optimisation (e.g. Sophie Kinsella, <i>Can You Keep a Secret?</i> )	Relational responsibility and ethics of care (e.g. Agnès Martin-Lugand, <i>Les gens heureux lisent et boivent du café</i> ; Delphine de Vigan, <i>No et moi</i> )

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Stories in women-centred prose keep the focus on how people relate to one another in daily life and give ethical questions a quiet but persistent presence in the text. This way of telling the story also changes what holds the reader's attention. Rather than building towards a clear payoff, women-centred prose follows time, emotional build-up, and moments that remain unresolved. Interest comes from staying with the process, which invites a slower and more attentive kind of reading.

In *Eleanor Oliphant Is Completely Fine* (2017), the first-person narrative keeps the focus on Eleanor's inner life. Events are filtered through her limited understanding of social interaction, leading her to prioritize emotional experience over external action. Much of the narrative unfolds through small observations, habitual thoughts, and repeated situations rather than through dramatic plot developments.

This restricted perspective creates a narrative rhythm centred on emotional accumulation. Ordinary moments – conversations at work, phone calls, weekly routines – gain significance because they reveal gradual changes in Eleanor's relation to herself and others. Emotional focus is maintained not through explicit commentary but through repetition and delay. What matters is not what happens, but how Eleanor registers it and how her responses slowly change over time.

A similar narrative approach appears in Dolly Alderton's *Ghosts* (2020). Although the novel is set in a familiar world of dating apps and online communication, it is not driven by romantic progress or resolution. Much of the story is shaped by waiting, uncertainty, and the emotional traces left by relationships that fade or never fully begin. Attention stays with how the protagonist experiences absence, silence, and delayed responses rather than with decisive events.

As in Eleanor Oliphant *Is Completely Fine*, narrative perspective keeps the focus on everyday emotional experience. Meaning develops slowly, through reflection and repetition, not through clear turning points. Relationships remain important even when they fail to take a conventional shape, reinforcing the idea that women-centred prose values emotional process over narrative payoff and stays close to ordinary life rather than genre expectations.

A similar narrative logic can be observed in *Ghosts* (2020) by Dolly Alderton, although the tone and social setting differ. The novel is also organised around a closely aligned narrative perspective that prioritises emotional reflection over plot-driven progression. Here, attention is directed towards uncertainty, waiting, and the emotional aftermath of relationships rather than towards decisive events. In both texts, narrative perspective functions as a structuring device that keeps the story grounded in lived emotional experience, reinforcing the centrality of subjectivity within women-centred prose.

Within this framework, emotional labour becomes a key organising principle of the narrative. Acts of listening, caring, waiting, and managing emotional responses shape both character development and the progression of relationships. These practices are not presented as extraordinary or dramatic. They appear in recognisable contexts such as family life, friendships, professional settings, or situations involving care for others. By sustaining attention on such everyday forms of work, women-centred prose brings into view aspects of experience that are often marginalised or overlooked in genre-based fiction.

Many of these narratives do not move towards a neat ending but remain open and slow to develop. Relationships are presented as ongoing and in need of care. Responsibility emerges gradually, shaped by time, experience, and everyday choices.

This openness is closely linked to a broader change in narrative tone. In much contemporary women-authored fiction, irony quietly recedes. What takes its place is not sentimentality, but a calmer, more attentive way of telling the story. Emotions appear, but they are not overstated. Vulnerability meets care; it is not a climax in the text. Such storytelling responds to a cultural moment in which ironic distance has lost much of its critical force, offering alternative ways of engaging with emotional experience.

The in-between position of women-centered prose is defined by changing reading practices and expectations in contemporary popular culture.

## 5. Conclusions

The analysis suggests that many contemporary women-authored popular novels are no longer well described by established genre labels such as chick lit. While these labels were useful for understanding earlier stages of women's popular fiction, they struggle to account for texts that place emotional experience, care, and everyday ethical concerns at the centre of the narrative. The concept of women-centred prose offers a more flexible way of talking about such works, as it draws attention to narrative perspective, thematic focus, and value orientation rather than to formal genre features. Seen in this light, women-centred prose captures ongoing changes in how popular fiction written by women organises meaning and addresses the reader.

The novels discussed here are organised around everyday situations and relationships that change slowly over time. Approaching such texts through the lens of women-centred prose makes it possible to recognise their shared narrative logic while avoiding restrictive genre classifications, and it opens up further possibilities for comparative research into contemporary popular fiction.

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**INNOVATION, WORK, SOCIETY****PSYCHOLOGICAL FEATURES OF LEADERSHIP AND MANAGERIAL STYLE  
IN HR-MANAGERS PROFESSIONAL ACTIVITY****Nataliia Avdymyrets**

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**Summary**

The article presents a comprehensive theoretical and empirical analysis of the psychological characteristics of leadership and managerial style in the professional activity of an HR manager under conditions of contemporary organizational transformations driven by digitalization, globalization processes, increasing labor market competition, and the need for continuous staff adaptation to change. The relevance of the study is determined by the growing role of the HR specialist as a strategic partner of top management, a mediator between administration and employees, and a facilitator of organizational development. The significance of personal, communicative, motivational, and emotional-volitional characteristics of a manager in shaping an effective human resource management system capable of ensuring organizational sustainability in conditions of uncertainty is substantiated.

Special attention is paid to the role of emotional intelligence, reflexivity, social responsibility, stress resilience, and self-regulation as key factors of professional success for HR managers. It is demonstrated that a high level of development of these qualities contributes to constructive conflict resolution, the formation of a positive socio-psychological climate, the maintenance of trust within teams, and the strengthening of corporate identity. An effective HR manager is shown to combine strategic thinking with empathy, analytical abilities with a humanistic orientation, thereby ensuring a balance between organizational interests and employees needs.

The study analyzes classical and contemporary approaches to leadership styles, including authoritarian, democratic, and laissez-faire styles, as well as situational, transformational, and servant leadership concepts. Their impact on organizational climate, employee engagement, work motivation, productivity, and the effectiveness of managerial decision – making is determined. It is argued that rigidly regulated leadership styles in dynamic environments require flexible leadership models based on partnership, delegation of authority, and the development of employee autonomy. The psychological mechanisms underlying the formation of the HR managers leadership style are revealed, taking into account individual psychological characteristics, professional experience, value orientations, and the specific features of corporate culture.

Within the empirical part of the research, the relationship between leadership qualities, managerial style, and indicators of HR professionals performance effectiveness was examined, including employee satisfaction, recruitment efficiency, quality of onboarding processes, and

staff retention. The findings indicate that the combination of a democratic management style with elements of transformational leadership promotes the establishment of trust-based relationships within teams, increases employees sense of responsibility, fosters the development of their professional potential, enhances intrinsic motivation, and reduces the risk of professional burnout among both employees and HR managers.

The practical significance of the study lies in the possibility of applying the obtained results in the system of professional training and advanced development of HR managers, in designing programs for the development of leadership competencies, in forming models for assessing managerial potential, and in improving human resource management strategies. The proposed provisions can be implemented in organizations of various types and forms of ownership to enhance personnel management effectiveness and ensure sustainable organizational development.

**Key words:** emotional intelligence, transformational leadership, organizational climate, professional effectiveness, managerial competencies, employee motivation, psychological well-being.

DOI <https://doi.org/10.23856/7423>

## 1. Introduction

In the context of dynamic socio-economic transformations, rapid digitalization of management processes, globalization of labor markets, and the ongoing reconfiguration of organizational culture, the professional activity of HR managers acquires strategic importance. Contemporary organizations increasingly recognize human capital as their primary competitive advantage, which shifts the role of HR specialists from administrative support to that of strategic partners in organizational development. HR managers are no longer limited to recruitment and personnel documentation; they actively participate in shaping corporate culture, facilitating change management, developing talent, ensuring employee engagement, and maintaining organizational sustainability in conditions of uncertainty. Accordingly, the effectiveness of a modern organization largely depends on the level of leadership qualities, managerial style, psychological competence, and value orientations demonstrated by HR professionals.

The growing complexity of organizational environments requires HR managers to integrate analytical thinking with emotional intelligence, strategic planning with interpersonal sensitivity, and operational efficiency with ethical responsibility. In conditions characterized by remote and hybrid work models, multicultural teams, technological acceleration, and heightened employee expectations regarding well-being and work – life balance, the psychological dimension of HR leadership becomes particularly significant. Managerial decisions increasingly involve not only procedural or structural considerations but also deep understanding of motivation, communication patterns, group dynamics, and individual differences. Thus, leadership in HR management should be viewed as a multidimensional psychological phenomenon that encompasses cognitive, emotional, behavioral, and axiological components.

Despite the expanding body of research devoted to leadership theories and management styles, HR practice often reveals a contradiction between the growing demands for professional and personal maturity of HR managers and the insufficient development of evidence-based frameworks for forming an optimal managerial style within the HR domain. Many organizations prioritize technical HR competencies while underestimating

the psychological foundations of leadership effectiveness. As a result, insufficient attention to emotional regulation, reflexivity, stress resilience, and communicative flexibility may lead to decreased employee motivation, increased levels of professional burnout, deterioration of interpersonal relationships, resistance to organizational change, and reduced overall effectiveness of human resource management systems.

Moreover, contemporary organizational transformations, such as digital HR analytics, automation of recruitment processes, and the integration of artificial intelligence into personnel management, require HR managers to reconsider traditional leadership approaches. Authoritarian or rigidly structured management styles often prove ineffective in dynamic and innovation – driven environments. Instead, flexible, participatory, and transformational leadership models appear more consistent with the needs of modern organizations, as they promote autonomy, responsibility, creativity, and shared values among employees.

Therefore, there is a clear need for an in – depth and systematic analysis of the psychological characteristics of leadership and managerial style of HR managers within the framework of contemporary organizational psychology. Such analysis should integrate theoretical approaches to leadership with empirical investigation of professional performance indicators, allowing for a more holistic understanding of how personal qualities and management styles influence organizational outcomes.

The scientific novelty of this study lies in its comprehensive examination of the interrelationship between leadership qualities, managerial style, and professional effectiveness of HR managers, with particular emphasis on psychological determinants of successful HR practice in transforming organizational environments.

**Aim of the study.** To theoretically and empirically investigate the psychological characteristics of leadership and managerial style of HR managers and their impact on personnel management effectiveness.

Objectives of the study: to analyze theoretical approaches to leadership; to identify psychological factors of managerial style; to investigate the relationship between leadership style and professional effectiveness.

## 2. Theoretical Background on Leadership and Managerial Style

The issue of leadership and managerial style remains a central topic of interdisciplinary inquiry within management psychology, organizational psychology, and human resource management. Leadership is conceptualized as a complex socio-psychological phenomenon that shapes patterns of interaction between leaders and employees, influences organizational climate, and determines collective performance outcomes. Classical Western theories developed by K. Lewin, F. Fiedler, J. Burns, and B. Bass laid the foundation for understanding leadership styles as structured systems of behavioral strategies and value orientations. Lewin's typology distinguished authoritarian, democratic, and laissez-faire styles; Fiedler emphasized situational contingency; Burns introduced the distinction between transactional and transformational leadership; and Bass further operationalized transformational leadership as a construct integrating inspirational motivation, individualized consideration, intellectual stimulation, and idealized influence.

Classical management theory identifies three primary leadership styles. The authoritarian style is characterized by centralized decision-making, strict regulation of activities, formal control mechanisms, and limited employee autonomy. Although it may ensure short-term efficiency in crisis situations, it often reduces intrinsic motivation and suppresses initiative.

The democratic style involves participatory decision-making, open communication, and shared responsibility, thereby fostering trust, engagement, and professional growth. The laissez-faire style emphasizes maximum autonomy and minimal direct supervision; however, its effectiveness largely depends on employees competence and self-regulation capacities.

Contemporary theoretical developments increasingly focus on situational, transformational, and servant leadership models. Situational leadership theory highlights the need to adapt managerial behavior to employees professional maturity, competence, and motivational readiness. Transformational leadership, significantly elaborated in European empirical studies over the past decade, underscores the psychological mechanisms of value-based influence, emotional intelligence, and the leaders capacity to inspire collective meaning. Recent European research (*Hoch, 2022; Knippenberg & Sitkin, 2021*) emphasizes the relationship between transformational leadership and employee engagement, innovation, and organizational resilience in conditions of digital transformation and hybrid work.

In the Ukrainian academic context, the psychological foundations of leadership have been actively explored in recent years, particularly in response to social instability and organizational change. L. Karamushka (2023, 2024) analyzes leadership within the framework of organizational development, psychological well-being, and resilience of personnel under crisis conditions, emphasizing the importance of emotional competence and value – based management. S. Maksymenko's scientific school, whose ideas continue to develop in contemporary Ukrainian psychology (*Maksymenko & colleagues, 2022–2023*), highlights the role of personality-oriented approaches, self-regulation, and the development of leader potential in professional environments. Recent Ukrainian empirical studies (*Kokun, 2022; Blynova, 2023*) examine leadership in relation to psychological safety, stress resistance, and adaptation to uncertainty.

Thus, modern theoretical discourse positions the HR manager not merely as an administrator of personnel procedures but as a strategic leader responsible for shaping corporate culture, maintaining psychological health, fostering motivation, and facilitating sustainable organizational development. Leadership in HR management is therefore interpreted as an integrative construct that combines managerial competence with psychological maturity, ethical responsibility, and the capacity to guide organizational transformation.

### 3. Psychological Mechanisms of HR Managerial Style Formation

The formation of an HR managers managerial style represents a dynamic and multilevel psychological process shaped by the interaction of personal characteristics, professional competencies, and organizational context. Managerial style is not a static behavioral pattern but rather an integrated system of cognitive, emotional, and value – based orientations that regulate decision – making, communication strategies, and leadership behavior in professional settings. Understanding these psychological mechanisms allows for a deeper explanation of why certain leadership models prove more effective in contemporary HR practice.

Among the key psychological determinants, emotional intelligence occupies a central position. The ability to recognize, understand, and regulate ones own emotions, as well as to perceive and respond adequately to the emotional states of others, directly influences the quality of interpersonal interaction. For HR managers, whose professional responsibilities involve conflict resolution, mediation, staff adaptation, and performance feedback, emotional intelligence functions as a foundational competence. A high level of emotional awareness enhances empathy, reduces impulsivity in decision-making, and supports constructive dialogue, thereby facilitating trust-based relationships within teams.

Communicative competence represents another essential determinant. It encompasses verbal and non – verbal communication skills, active listening, assertiveness, and the capacity to structure professional dialogue in a manner that balances organizational objectives with employees needs. Effective communication strengthens transparency and psychological safety, which are crucial for maintaining engagement and preventing resistance to organizational change. HR managers with advanced communicative skills are better equipped to align individual expectations with corporate values.

Reflexivity and self-regulation further shape managerial style by enabling conscious evaluation of ones professional behavior and its consequences. Reflexivity supports critical self-analysis, adaptability, and openness to feedback, while self-regulation ensures emotional stability under stress and uncertainty. In rapidly transforming organizational environments, these qualities contribute to flexibility in leadership approaches and prevent rigid or authoritarian tendencies.

Motivation for professional growth and clearly defined value orientations also significantly influence managerial style. HR managers oriented toward continuous development, ethical responsibility, and humanistic principles are more likely to adopt democratic or transformational leadership patterns. Their behavior reflects not only procedural efficiency but also commitment to employee well-being, inclusivity, and sustainable development. Conversely, limited intrinsic motivation or poorly articulated professional values may lead to formalistic or bureaucratic management practices.

Professional experience, organizational culture, and the structure of managerial relationships serve as contextual moderators of these psychological mechanisms. In open, supportive, and innovation-oriented cultures, democratic -transformational leadership styles tend to prevail, emphasizing collaboration, empowerment, and shared accountability. Within such environments, HR managers act not merely as administrators but as psychological facilitators, consultants, and coordinators of human capital development. These roles require high emotional stability, social responsibility, ethical consistency, and the ability to integrate strategic organizational goals with individual developmental trajectories.

Thus, managerial style emerges from the interplay between individual psychological resources and organizational conditions. A comprehensive understanding of these mechanisms creates a conceptual foundation for empirical verification. Therefore, it becomes methodologically necessary to examine how specific leadership qualities and psychological determinants correlate with indicators of professional effectiveness in HR practice.

#### **4. Empirical Study: Design and Methods**

The empirical study aimed to examine the relationship between leadership qualities, managerial style, and professional success of HR managers.

Methods used: leadership Style Questionnaire; leadership Qualities Diagnostic Method; professional Motivation Scale; correlation analysis.

Sample: HR specialists from various organizational structures with a minimum of three years of professional experience (Table 1).

Table 1

**Level of Leadership Qualities in HR Managers (%)**

N <sup>o</sup>	Level	Number of respondents	% of sample
1.	High	18	45
2.	Medium	14	35
3.	Low	8	20
Total		40	100

Data indicate a predominance of medium and high leadership levels among most HR managers, with democratic and mixed management styles positively influencing organizational climate and personnel performance.

Table 2

**Distribution of Management Styles among HR Managers (%)**

N <sup>o</sup>	Management Style	Number	%
1.	Democratic	17	42, 5
2.	Authoritarian	9	22, 5
3.	Laissez – faire	6	15
4.	Mixed (Democratic – Transformational)	8	20
Total		40	100

The most effective managers combined democratic style with transformational leadership elements, promoting: trustful workplace relationships; increased employee responsibility; initiative and creativity; reduced burnout; strengthened organizational identity.

Authoritarian styles correlated with decreased employee motivation and poorer socio-psychological climate.

Table 3

**Correlation between Management Style and Professional Success**

N <sup>o</sup>	Indicators	r	Significance (p)
1.	Leadership – Employee Motivation	0, 62	< 0, 01
2.	Management Style – Job Satisfaction	0, 58	< 0, 01
3.	Leadership – Professional Effectiveness	0, 65	< 0, 01
4.	Management Style – Organizational Climate	0, 54	< 0, 05

Results confirm modern leadership theories emphasizing flexible and personally – oriented management.

**Practical significance.** The practical significance of this research lies in its potential application in various domains of organizational development and human resource management. On our view, the obtained findings may serve as a conceptual and methodological basis for improving HR training systems, leadership development strategies, and corporate governance standards. In this way, the study contributes not only to theoretical discourse but also to the optimization of everyday HR practice.

First of all, the results can meaningfully inform HR training and professional development programs. Clearly, contemporary HR specialists require not only technical knowledge in recruitment, performance management, and labor legislation, but also advanced psychological

competencies. Thus, integrating modules focused on emotional intelligence, reflexivity, communicative competence, stress management, and ethical decision-making into professional training curricula appears both timely and necessary. On our opinion, systematic development of these competencies will increase HR managers readiness to function effectively in conditions of uncertainty, organizational change, and increased employee expectations.

Secondly, the findings may be used in designing and implementing leadership competency programs within organizations. In this way, leadership development initiatives can move beyond abstract models toward evidence-based frameworks that consider psychological determinants of managerial effectiveness. Of course, organizations that invest in structured leadership assessment and development systems are more likely to cultivate democratic-transformational leadership styles associated with higher engagement, innovation, and psychological safety. Thus, competency models may include clearly operationalized indicators of emotional stability, value orientation, adaptability, and collaborative behavior.

Furthermore, the research outcomes may contribute to the improvement of corporate management standards. On our view, incorporating psychological criteria into corporate governance policies allows organizations to align managerial behavior with strategic goals and human-centered values. In this way, leadership expectations become transparent and measurable, which strengthens accountability and supports sustainable organizational culture. It becomes clear that managerial style is not merely an individual preference but a strategic factor influencing organizational climate and long-term performance.

Another important area of practical implementation concerns the prevention of employee burnout. Obviously, ineffective leadership styles characterized by excessive control, emotional detachment, or inconsistency significantly increase stress levels and reduce motivation. Therefore, promoting leadership models grounded in empathy, participatory decision-making, and constructive feedback can reduce the risk of emotional exhaustion and professional dissatisfaction. In this way, HR managers become active agents in maintaining psychological well-being and resilience within teams. Moreover, strengthening their own self-regulation skills contributes to preventing burnout among HR professionals themselves.

Thus, the practical value of the study lies in the possibility of translating psychological knowledge into concrete managerial tools and organizational strategies. On our opinion, systematic implementation of the proposed approaches will contribute to the formation of competent, emotionally mature, and socially responsible HR leaders. Consequently, organizations that adopt these principles are more likely to achieve sustainable development, high employee engagement, and long-term competitive advantage.

## 5. Conclusions

The study revealed key patterns and practical insights:

1. HR managers effectiveness significantly depends on emotional intelligence and communication skills. High emotional intelligence facilitates trust-building and reduces workplace conflicts.
2. Leadership style correlates with personal traits: transformational leadership appears in managers with high social activity and openness, whereas administrative-bureaucratic style is linked to control-oriented managers.
3. Adaptation of managerial style to organizational specifics and corporate culture enhances employee motivation and job satisfaction, confirming the importance of psychological flexibility in HR leadership.

**Future research directions** include:

- studying the influence of cultural and organizational contexts on HR leadership competencies;
- exploring the link between psychological leadership traits and strategic HR management effectiveness across sectors;
- developing training programs to enhance emotional intelligence and flexibility of HR managers, optimizing personnel motivation and development.

Overall, the results confirm the significance of psychological aspects in HR leadership and provide a foundation for further research on effective human resource management through psychological competencies.

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## FROM STATE IMAGE TO NORMATIVE INFLUENCE: THE EVOLUTION OF SOFT POWER STRATEGIES ACROSS REGIONS

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### Summary

The article examines soft power as an instrument of political and legal positioning of states in contemporary international relations with particular attention to regional dimensions. The study aims to analyse the transformation of soft power strategies in different geopolitical contexts and to determine their role in shaping international influence. The research applies comparative, systemic and institutional analysis to examine the mechanisms through which states construct international image and normative influence.

The findings demonstrate that soft power has become a key element of foreign policy strategies, particularly under conditions of global competition and digital transformation. The European Union represents a normative model of soft power based on regulatory influence, legal standards and value promotion. The Asia-Pacific region illustrates an adaptive model combining technological leadership, cultural diplomacy and digital communication strategies. The Middle East demonstrates a modernisation-oriented model focused on economic diversification, global branding and international investment attractiveness.

The study argues that contemporary soft power is increasingly hybrid in nature, integrating cultural, technological and regulatory instruments. Regional political environments significantly influence the selection and effectiveness of soft power tools. The scientific novelty of the research lies in identifying regional patterns of soft power transformation and in conceptualising soft power as a dynamic instrument of geopolitical competition. The results contribute to the development of theoretical and practical approaches to international political communication and state image formation.

**Key words:** soft power; normative power; regional models; political strategy; legal instruments; public diplomacy; international relations.

DOI <https://doi.org/10.23856/7424>

### 1. Introduction

In contemporary international relations, the capacity of states to construct and sustain a positive international image has increasingly evolved into an autonomous resource of political influence. Processes of globalization, digital transformation, and intensified geopolitical competition have substantially reduced the effectiveness of purely coercive instruments, while amplifying the role of non-material sources of power related to legitimacy, reputation, and normative authority. In this context, soft power has emerged as a central mechanism through which states advance political objectives, consolidate international credibility, and shape global governance frameworks (Nye, 2004; Anholt, 2010).

The growing relevance of soft power is inseparable from structural changes in the international system, marked by multipolarity, fragmented authority, and heightened strategic rivalry. States are no longer confined to traditional diplomatic or military instruments; instead,

they increasingly deploy public diplomacy, cultural engagement, digital communication strategies, and regulatory influence to enhance their international positioning. Contemporary research emphasizes that soft power today operates through hybrid configurations that combine cultural appeal with institutional capacity, technological innovation, and governance practices (Melissen, 2005; Pamment, 2013). As a result, attraction-based influence is progressively embedded within formal structures rather than relying solely on symbolic or cultural projection.

Importantly, the implementation of soft power strategies demonstrates significant regional differentiation. The European Union represents a distinctive normative model, in which influence is exercised through regulatory standards, legal harmonization, and the promotion of democratic values and rule-based governance (Manners, 2002; Farrell & Newman, 2020). In contrast, many Asia-Pacific states integrate cultural diplomacy with technological development, innovation-driven branding, and digital governance instruments, reflecting the region's competitive economic environment and rapid modernization. Middle Eastern countries, in turn, increasingly employ selective soft power strategies centred on economic diversification, global branding, investment diplomacy, and symbolic international visibility, often combined with traditional hard power tools.

Despite the extensive scholarly literature on soft power, several analytical gaps remain. A substantial share of existing research focuses on individual national cases or isolated policy instruments, while comparatively fewer studies systematically examine soft power transformation across regions under shared conditions of global political change. Moreover, the accelerating development of digital communication technologies, artificial intelligence, and platform-based governance has profoundly altered the mechanisms of attraction and influence, creating new channels of international power that remain insufficiently conceptualized in mainstream soft power theory (Zeng, 2020; Edelman, 2024). These dynamics call for a more integrated analytical framework that captures the institutional, legal, and technological dimensions of contemporary soft power.

Against this background, the purpose of this study is to analyse the evolution of soft power from state image-building toward normative and institutional influence in contemporary international relations through a comparative examination of regional models. The research seeks to identify key mechanisms through which soft power is formed and operationalized, to assess how regional political environments shape the selection of soft power instruments, and to evaluate the growing role of hybrid communication and governance strategies in international positioning.

Methodologically, the study employs a qualitative comparative approach that combines conceptual analysis with region-focused case studies. The research design integrates comparative, institutional, and systemic analytical perspectives, enabling the identification of structural patterns and contextual variations in soft power strategies across different geopolitical settings. Empirical material is drawn from contemporary academic literature, international analytical reports, and policy documents published predominantly within the last three to five years, ensuring both analytical relevance and temporal validity. The Asia-Pacific region, the European Union, and the Middle East are selected as comparative cases due to their contrasting political systems, levels of institutionalization, and strategic priorities, which together provide a robust basis for examining diverse trajectories of soft power development.

The article is structured as follows. The second section develops a theoretical framework that reinterprets soft power as an institutional and legal phenomenon, critically engaging with both classical and contemporary approaches. The third section examines soft power strategies in the Asia-Pacific region, with particular attention to developmental and cultural-institutional

models. The fourth section analyses the European Union as a case of normatively embedded and legally institutionalized soft power. The fifth section explores selective and hybrid soft power strategies in the Middle East. The sixth section offers a comparative analysis of regional models, identifying key patterns of convergence and divergence. The final section summarizes the main findings, discusses their theoretical and practical implications, and outlines directions for future research.

## 2. Theoretical Framework: Soft Power as an Institutional and Legal Phenomenon

The concept of soft power has occupied a central position in debates on power and influence in international relations for more than three decades. Its analytical value lies in its capacity to capture forms of influence that cannot be adequately explained by material capabilities alone. However, the transformation of the international system—characterized by legal globalization, institutional density, digitalization, and intensified normative competition—requires a reassessment of soft power beyond its original formulation. This section develops an analytical framework that conceptualizes soft power as an institutional and legal phenomenon embedded within governance structures and regionally specific contexts (*Melissen, 2005; Pamment, 2013*).

Joseph Nye introduced the concept of soft power as an alternative to coercive and material forms of influence dominant in realist and neo-realist traditions. He defined soft power as the ability of an actor to obtain preferred outcomes through attraction rather than coercion or inducements, identifying culture, political values, and foreign policy legitimacy as its primary sources (*Nye, 2004*). In this framework, soft power operates when a state's practices and values are perceived as legitimate, morally authoritative, and worthy of emulation.

Nye's contribution was transformative in several respects. First, it expanded the analytical scope of power by integrating ideational and normative dimensions into international relations theory. Second, it challenged materialist assumptions by emphasizing legitimacy and consent as sources of influence. Third, it provided a conceptual link between power politics and public diplomacy, enabling systematic analysis of how communication, culture, and values shape international outcomes.

At the same time, the classical formulation of soft power was deeply embedded in the post-Cold War context, marked by liberal optimism, U.S. dominance, and the expansion of liberal democratic norms. Soft power was largely conceptualized as an attribute of states possessing attractive cultures and liberal values operating within a relatively stable international order. This historical context explains both the explanatory power and the limitations of the original theory.

Subsequent scholarship has subjected Nye's concept to substantial critique. One major line of criticism concerns its conceptual ambiguity. Soft power has often functioned as an umbrella concept encompassing diverse and sometimes contradictory phenomena, ranging from cultural exports and diplomatic narratives to institutional participation. This analytical elasticity complicates empirical operationalization and risks conflating resources, instruments, and outcomes.

A second critique highlights the implicit liberal bias of the classical framework. Nye's emphasis on democratic values presupposes a normative hierarchy in which liberal norms are inherently attractive. However, contemporary international relations are characterized by normative pluralism and contestation. Authoritarian and hybrid regimes increasingly deploy soft power strategies without adhering to liberal democratic standards, challenging the assumption that attraction necessarily aligns with liberal values.

Third, classical soft power theory underestimates the role of institutions and law. By focusing primarily on voluntary attraction generated by culture and values, it overlooks how influence is embedded in formal rules, regulatory regimes, and organizational practices. As a result, the theory struggles to explain cases in which influence operates through conditionality, compliance mechanisms, or structural incentives rather than spontaneous admiration.

These critiques suggest the need not to abandon soft power, but to reconceptualize it in line with contemporary global conditions. Rather than viewing soft power as a diffuse and informal resource, it is increasingly productive to analyse it as a structured and institutionalized form of influence operating within governance and legal frameworks.

The institutionalization of soft power represents a key transformation in its contemporary evolution. Soft power is no longer confined to symbolic image-building or cultural diplomacy; it is increasingly designed, managed, and embedded within formal policy architectures. Governments establish specialized agencies, legal mandates, and strategic documents to coordinate public diplomacy, educational exchange, cultural outreach, and international communication. This institutional turn reflects the recognition that legitimacy and attraction can be cultivated through sustained organizational efforts rather than relying on organic cultural appeal alone.

International and regional institutions play a central role in amplifying soft power. By setting agendas, defining standards, and coordinating collective action, institutions extend the reach of influence beyond bilateral interactions. Participation in institutional frameworks enhances legitimacy and enables actors to shape norms indirectly. In this sense, institutionalization transforms soft power from a supplementary instrument into a core component of foreign policy strategy.

Institutionalized soft power also exhibits path dependency. Once norms and practices are embedded within institutional arrangements, they shape expectations and behavior over time, often independently of short-term political preferences. This temporal dimension distinguishes institutional soft power from short-lived image campaigns and underscores its strategic importance for long-term influence.

The legal dimension constitutes one of the most significant yet underexplored aspects of soft power. Law serves as a powerful vehicle for norm diffusion by translating values into binding or semi-binding rules. Compliance with legal standards frequently occurs not through coercion, but through incentives, reputational considerations, and the desire for integration into valued institutional frameworks.

Legal soft power operates through several mechanisms. First, regulatory standards generate de facto global norms when market access or institutional participation depends on compliance. Second, legal conditionality links adherence to norms with tangible benefits such as trade preferences, financial assistance, or membership prospects. Third, legal discourse shapes perceptions of legitimacy by framing certain practices as “modern,” “responsible,” or “acceptable.” These mechanisms demonstrate how influence can be exercised through governance structures without overt coercion (*Manners, 2002; Farrell & Newman, 2020*).

The relationship between soft power and normative power is central to understanding contemporary influence. Normative power refers to the capacity to shape conceptions of what is legitimate, appropriate, and desirable in international relations. While soft power emphasizes attraction, normative power highlights authority in defining standards and rules. Analytically distinct, these concepts are empirically intertwined. Soft power facilitates norm acceptance through legitimacy, while normative power institutionalizes those norms through legal and governance mechanisms.

Governance structures—both formal and informal—constitute the arena in which this interaction unfolds. Through governance, norms are operationalized, monitored, and internalized over time. This perspective shifts analytical attention from isolated acts of persuasion toward systemic patterns of influence and reveals soft power as a contested process shaped by institutional access, power asymmetries, and strategic competition.

Digitalization has profoundly altered the mechanisms of soft power. Digital platforms enable rapid dissemination of narratives and norms, expanding influence beyond traditional diplomatic channels. Strategic communication, data governance, and algorithmic regulation have become integral components of contemporary soft power strategies (Edelman, 2024). At the same time, digital environments intensify competition and vulnerability. Disinformation, reputational attacks, and information warfare undermine trust and complicate efforts to project legitimacy.

The digital dimension reinforces the need to conceptualize soft power as embedded within regulatory and institutional frameworks. Control over digital standards, platforms, and governance rules increasingly shapes the distribution of influence in the global system.

Finally, soft power must be understood as a regionally differentiated phenomenon. Regions vary in institutional density, normative coherence, and strategic priorities, producing distinct soft power models. The Asia-Pacific region emphasizes developmental success and innovation; the European Union relies on legal and normative institutionalization; the Middle East combines selective attraction with strategic rebranding under security constraints. Regionalization underscores the pluralization of soft power and challenges universalist assumptions, making comparative regional analysis essential for understanding contemporary influence in international relations.

### 3. Regional Models of Soft Power Implementation

#### 3.1. Asia-Pacific Region

The Asia-Pacific region constitutes one of the most dynamic arenas for the evolution of soft power strategies in the contemporary international system. Rapid economic growth, technological transformation, demographic diversity and intensifying geopolitical competition have created conditions in which influence is increasingly exercised through non-coercive and hybrid mechanisms (Nye, 2004; Melissen, 2005). Unlike regions where soft power is primarily grounded in legal or normative authority, Asia-Pacific soft power has largely emerged through developmental success, cultural production, educational outreach and innovation-driven governance (Pamment, 2013). These elements together form developmental and cultural-institutional models of soft power.

The region demonstrates significant structural heterogeneity, encompassing advanced industrial economies, emerging middle-income states and rapidly developing technological hubs alongside persistent inequalities and diverse political systems (Dent, 2023; Levyts'kyy, 2023). This diversity has produced distinctive pathways of soft power formation. Rather than relying on universal normative claims, many Asia-Pacific actors project influence by demonstrating economic performance, social stability and adaptive governance capacity (Nye, 2004; Dergachov, 2018). Developmental credibility therefore functions as a key source of attraction, particularly for states seeking alternatives to Western models of modernisation (Anholt, 2010).

Since the early 2000s, the Asia-Pacific has become a major engine of global economic growth, reinforcing perceptions of regional governance models as effective and pragmatic. Soft

power in this context often operates through emulation rather than persuasion, as policy practices and institutional arrangements become reference points for external actors (*Dent, 2023; Sliusarenko, 2020*). At the same time, intensifying strategic rivalry has transformed soft power into a contested field of influence, where major powers compete over narratives, standards and institutional leadership (*Levyts'kyi, 2023; Dent, 2023*).

Japan and South Korea represent illustrative examples of cultural-institutional soft power. Both states have transformed cultural production into strategic assets by embedding cultural diplomacy within broader economic and foreign policy frameworks (*Kim, 2011; Melissen, 2005*). Cultural appeal in these cases is supported by institutional coordination, long-term policy planning and cooperation between state and non-state actors (*Pamment, 2013*).

Japan's soft power has traditionally been associated with cultural distinctiveness and technological sophistication. Popular culture, including anime, manga, design, cuisine and fashion, has significantly shaped Japan's global image (*Anholt, 2010*). Government-supported initiatives promoting cultural exports, combined with public-private partnerships and international cultural exchange programmes, have enabled Japan to convert cultural popularity into sustained symbolic and diplomatic capital (*Dergachov, 2018; Melissen, 2015*).

South Korea's soft power demonstrates a highly institutionalised model centred on the global expansion of Korean popular culture, commonly known as the Korean Wave. Music, film, television and digital content have been integrated into national branding strategies and supported through targeted investment and international promotion mechanisms (*Kim, 2011*). Cultural industries in South Korea function not only as sources of attraction but also as instruments for projecting narratives of technological advancement, creativity and modernity (*Anholt, 2010*). The credibility of these strategies is reinforced by relatively open institutional environments that allow creative industries, universities and civil society actors to participate in soft power projection (*Melissen, 2005*).

Education and innovation represent additional pillars of Asia-Pacific soft power. Educational exchanges, international academic partnerships and research cooperation programmes contribute to the formation of elite networks, professional standards and epistemic communities (*Pamment, 2013; Gavrylova, 2021*). Educational soft power operates through long-term mechanisms in which individuals trained within particular institutional environments internalise governance practices and policy preferences that influence future international cooperation (*Nye, 2004; Shaigorodskiy, 2022*).

Technological innovation further strengthens Asia-Pacific soft power. The region has emerged as a global leader in digital infrastructure, artificial intelligence, consumer electronics and smart manufacturing. Technological standards and digital platforms increasingly function as instruments of influence by shaping compatibility and long-term systemic dependence (*Zeng, 2020*). Such influence operates through widespread technological adoption rather than coercion, reflecting broader patterns of structural power diffusion (*Farrell & Newman, 2020*).

China represents the most complex and contested case of soft power development in the Asia-Pacific. Unlike Japan and South Korea, whose strategies rely significantly on decentralised cultural industries and market-based frameworks, China has developed a hybrid model combining economic outreach, state-led cultural diplomacy and expanding technological and regulatory influence (*Zeng, 2020*).

Economic initiatives constitute a central component of China's soft power strategy. Infrastructure investment, development financing and trade integration projects have expanded China's global presence while reinforcing narratives of modernisation and economic partnership (*Levyts'kyi, 2023; Anholt, 2010*). Cultural diplomacy complements economic engagement

through language promotion, educational exchanges and international media expansion. However, the strong role of state coordination often raises concerns regarding authenticity and instrumentalisation, which may limit normative resonance (*Melissen, 2005; Zayani, 2015; Edelman, 2024*).

A distinctive feature of China's contemporary strategy is its emphasis on digital governance and technological influence. Advances in artificial intelligence, digital infrastructure and data governance enable China to shape technological ecosystems domestically and internationally, thereby influencing regulatory preferences and governance practices (*Zeng, 2020*). Nevertheless, concerns regarding political transparency, information control and human rights frequently complicate the conversion of economic and technological success into normative legitimacy (*Edelman, 2024; Shaigorodskiy, 2022*).

Institutionalisation remains a defining feature of Asia-Pacific soft power, although its forms vary significantly across political systems. Japan and South Korea benefit from dense institutional ecosystems linking culture, education, innovation and diplomacy within relatively open governance structures (*Melissen, 2015*). In more centralised systems, stronger coordination may enhance strategic coherence but may also reduce flexibility and credibility (*Pamment, 2013; Sliusarenko, 2020*).

At the regional level, institutional fragmentation limits the consolidation of Asia-Pacific soft power into a unified collective model. Unlike the European Union, the region lacks a common normative or legal framework capable of amplifying influence through shared governance mechanisms (*Manners, 2002; Fisun, 2019*). Regional organisations primarily prioritise economic cooperation and security dialogue, resulting in a pluralistic but fragmented soft power landscape (*Dent, 2023*).

Soft power strategies in the Asia-Pacific operate within an environment of intensifying geopolitical competition. Narratives of development, governance efficiency and technological leadership are increasingly politicised, while standards-setting and digital ecosystems have become central arenas of influence (*Farrell & Newman, 2020; Nye, 2004*). The Asia-Pacific experience demonstrates that soft power has evolved into a multifaceted strategy grounded in development, innovation and governance performance rather than universal normative claims. Cultural industries, education and technological leadership function as key sources of attraction, while economic success provides developmental legitimacy (*Anholt, 2010; Gavrylova, 2021*). At the same time, the region illustrates the limitations of soft power in the absence of normative coherence and institutional integration, offering important insights into contemporary geopolitical competition (*Levyts'kyi, 2023*).

### **3.2 The European Union Region**

The European Union occupies a distinctive position in the global system of international relations, challenging traditional assumptions about power, sovereignty and influence. Unlike classical state actors, the EU lacks a unified military force and a single foreign policy authority, yet it exercises substantial influence through norms, regulatory standards and institutional practices. This configuration has positioned the EU as a paradigmatic example of post-Westphalian power, where legitimacy and attraction derive primarily from governance capacity and regulatory reach rather than coercion.

Scholars increasingly conceptualise the EU as a non-traditional power actor whose influence is rooted in its ability to define standards and shape expectations across borders (*Manners, 2002*). The EU's external impact is therefore most effectively understood through the interaction of soft and normative power, where persuasion, conditionality and institutional

diffusion replace direct force. This model reflects the historical evolution of the EU from a peace-oriented integration project into a regulatory and normative hub in global governance.

The concept of Normative Power Europe remains central to understanding the EU's soft power strategy. According to this approach, the EU shapes international understandings of political and legal norms, particularly in areas such as democracy, human rights, rule of law and sustainable development (*Manners, 2002*). These norms are not limited to rhetorical promotion but are embedded in policy instruments, agreements and internal compliance mechanisms, which enhance their credibility and external attractiveness.

The EU's soft power is closely linked to its regulatory capacity. Through the externalisation of internal legal standards, the EU influences global governance processes and establishes international benchmarks. The extraterritorial effects of EU law illustrate how regulatory institutionalisation transforms soft power into a durable and often unavoidable form of influence. The General Data Protection Regulation represents a prominent example, establishing global data protection standards that multinational corporations and third countries frequently adopt in order to access the European market.

Similarly, climate governance initiatives, particularly the European Green Deal, demonstrate the EU's capacity to project normative influence through regulatory alignment, trade conditionality and financial instruments. Such initiatives illustrate how legal frameworks translate normative aspirations into practical governance mechanisms and reinforce the EU's global environmental leadership.

Enlargement and neighbourhood policies further demonstrate the EU's use of conditionality as a soft power instrument. By linking access to markets, funding and institutional cooperation to compliance with democratic and legal standards, the EU incentivises reforms without direct coercion. Although the effectiveness of conditionality varies across regions, it remains a central component of the EU's external engagement.

Institutional diplomacy constitutes another core dimension of EU soft power. Bodies such as the European External Action Service, the European Commission and the European Parliament perform complementary roles in shaping external relations. This multi-level institutional structure strengthens policy continuity, enhances credibility and supports the EU's role as a global norm entrepreneur. However, internal divergences among member states and overlapping competences may occasionally limit strategic coherence, particularly in foreign and security policy debates.

Recent discussions on strategic autonomy illustrate the evolving nature of EU soft power. By strengthening internal capacities and reducing technological and economic dependencies, the EU seeks to preserve its ability to act as a global rule-setter. Strategic autonomy therefore complements normative power by reinforcing regulatory authority in fields such as digital governance, climate policy and health regulation.

Despite structural challenges, including internal political fragmentation and external geopolitical competition, the EU demonstrates that soft power can be effectively institutionalised through law, governance and regulatory standards. The EU model illustrates a distinct transformation of soft power in the twenty-first century, where legal norms and institutional mechanisms become central instruments of international influence.

### **3.3 The Middle East Region**

The Middle East represents one of the most complex and contested regional environments in contemporary international relations. Persistent armed conflicts, authoritarian governance structures, geopolitical rivalries and external interventions have traditionally framed

the region as dominated by hard power dynamics. However, during the past two decades, and particularly since the 2010s, several Middle Eastern states have increasingly incorporated soft power instruments as complementary tools to enhance international legitimacy, diversify foreign policy strategies and reshape global perceptions.

Unlike the European and Asia-Pacific contexts, soft power in the Middle East develops under conditions of chronic insecurity and normative contestation. Regional actors operate within a fragmented political order characterised by competing governance models, weak regional institutions and limited normative convergence (*Ulrichsen, 2016; Marets'kyi, 2020*). Consequently, soft power strategies tend to be highly selective, state-centred and closely connected to regime stability and political survival.

The absence of a strong regional normative framework comparable to the European Union or ASEAN significantly restricts collective soft power initiatives. Influence is therefore pursued primarily at the national level, often through symbolic, reputational and media-oriented strategies designed to counterbalance negative associations related to conflict, human rights concerns and regional instability (*Dergachov, 2018; Teleshun, 2020*).

A central dimension of Middle Eastern soft power is deliberate national image transformation. Several states, particularly in the Gulf region, have invested extensively in national branding initiatives aimed at repositioning themselves as modern, innovative and globally integrated actors. These initiatives reflect a broader shift from security-dominated foreign policy toward economic diversification and reputational diplomacy (*Almezaini & Rickli, 2020*). Branding campaigns frequently target international investors, tourists and strategic partners by emphasising narratives of modernisation, tolerance and reform while minimising references to domestic political constraints (*Gavrylova, 2021; Sliusarenko, 2020*).

Nevertheless, such image-building strategies often encounter credibility challenges. Sustained reputational influence requires consistency between external narratives and domestic governance practices. Discrepancies between projected modernisation narratives and political realities frequently undermine long-term soft power effectiveness (*Sharpatyy, 2020; Teleshun, 2020*).

Cultural diplomacy and sport diplomacy have become visible instruments of Middle Eastern soft power (*Shevchenko, 2021*). Hosting international exhibitions, cultural festivals and global sporting events enhances visibility, normalises international presence and signals global integration. These initiatives embed regional actors into transnational cultural and media networks while generating symbolic legitimacy (*Manzhos, 2021*). However, critics note that such strategies sometimes function as reputational buffering mechanisms rather than channels of normative influence. Cultural diplomacy in the region is predominantly state-driven and top-down, limiting societal participation and reducing authenticity compared to more pluralistic cultural soft power models (*Zayani, 2015*).

Media diplomacy constitutes another core component of regional soft power strategies. Transnational broadcasting networks and digital platforms allow Middle Eastern states to shape international narratives, influence public discourse and frame regional conflicts beyond traditional diplomatic channels. Simultaneously, digital communication technologies introduce new vulnerabilities, as networked publics can rapidly challenge and reinterpret state-driven narratives, particularly during political crises (*Zayani, 2015*).

Education and knowledge diplomacy have emerged as additional instruments of reputational transformation. Investments in international universities, research centres and academic cooperation programmes aim to position several Middle Eastern states as emerging hubs

of innovation and intellectual exchange. While these initiatives expand international engagement, their academic autonomy and normative credibility remain subject to political constraints (Lisnychenko, 2022).

Despite extensive financial and institutional investments, Middle Eastern soft power strategies face structural limitations. Legitimacy deficits related to governance transparency, political participation and human rights remain major constraints, as international audiences increasingly evaluate soft power through normative expectations (Fisun, 2019). Ongoing conflicts and geopolitical rivalries further complicate soft power projection, as military engagement frequently contradicts narratives of peace, cooperation and modernisation (Ulrichsen, 2016).

The lack of regional institutionalisation also limits norm diffusion and long-term influence. Unlike the European Union's regulatory model, Middle Eastern soft power remains episodic and leadership-driven, dependent on political priorities and resource allocation (Levyts'kyi, 2023).

The Middle Eastern experience demonstrates a pronounced hybridisation of soft and hard power instruments. Soft power initiatives are rarely implemented independently and are typically combined with economic, military and security policies. Such hybridity allows states to compensate for legitimacy gaps by combining attraction with deterrence, although it simultaneously blurs distinctions between persuasion and coercion (Nye, 2004; Shaigorodskiy, 2022).

From a theoretical perspective, the Middle Eastern case challenges universalist interpretations of soft power by demonstrating its strong dependence on political context, institutional capacity and normative environment. Soft power in the region represents a distinct model characterised by strategic branding, centralised control and symbolic international engagement. While these strategies may generate short-term reputational benefits, their long-term effectiveness remains constrained by legitimacy challenges and normative inconsistencies, reinforcing the broader argument that soft power operates within specific institutional and political conditions.

#### 4. Comparative Analysis of Regional Soft Power Models

Comparative analysis of soft power strategies across the Asia-Pacific region, the European Union, and the Middle East reveals substantial variation in the sources, institutional mechanisms, and sustainability of influence. Although all three regions rely on attraction-based instruments, they differ markedly in the degree of institutionalisation, normative coherence, and reliance on legal, economic, or symbolic resources. These differences demonstrate that soft power is not a universalised instrument of influence but a context-dependent phenomenon shaped by regional political and institutional environments.

The Asia-Pacific model can be characterised as predominantly developmental and cultural-institutional. Soft power in this region is closely associated with economic modernisation, technological advancement, and the global diffusion of cultural industries, particularly in countries such as Japan and South Korea (Kim, 2011; Dent, 2023). Attraction is generated primarily through societal performance, high-quality education systems, and innovation ecosystems rather than through the export of formalised legal norms. Institutional structures support soft power indirectly by strengthening national competitiveness and reputational capital, thereby reinforcing international attractiveness without explicitly imposing external regulatory standards.

In contrast, the European Union represents the most institutionalised and legally embedded model of soft power. The EU's influence is grounded in its ability to externalise internal regulatory frameworks and governance norms, transforming legal instruments into mechanisms

of international attraction and compliance (*Manners, 2002; Farrell & Newman, 2020*). Unlike Asia-Pacific strategies, EU soft power is primarily normative rather than cultural, functioning through rule-based governance structures that encourage voluntary alignment by external actors. This regulatory capacity allows the EU to exercise structural influence without relying on traditional coercive instruments.

The Middle Eastern model, by comparison, remains predominantly selective, symbolic, and state-centred. Soft power instruments are employed strategically to counterbalance security-driven perceptions and enhance international visibility. Cultural diplomacy, media outreach, and global branding campaigns dominate regional strategies; however, these initiatives remain weakly institutionalised and are heavily centralised within state apparatuses (*Almezaini & Rickli, 2020; Ulrichsen, 2016*). The limited integration of legal and normative dimensions significantly constrains the depth and durability of influence, reinforcing the instrumental character of regional soft power strategies.

Normative consistency emerges as one of the most significant differentiating variables across regional models. The European Union benefits from a comparatively high level of coherence between declared values and institutional practices. Although internal political tensions and policy contradictions persist, the EU's regulatory framework provides external actors with a stable and predictable normative reference point, enhancing both credibility and legitimacy (*Fisun, 2019*).

In the Asia-Pacific region, legitimacy tends to be performance-oriented rather than normatively universalist. Economic success, social stability, and technological leadership function as primary sources of international attraction, enabling states to exercise influence without demanding ideological or normative alignment from partners. This pragmatic legitimacy reduces resistance to regional influence and allows Asia-Pacific actors to maintain considerable strategic flexibility (*Dent, 2023; Vasyl'yeva, 2021*).

By contrast, Middle Eastern soft power strategies face persistent legitimacy challenges. National branding initiatives and image-building campaigns frequently conflict with international perceptions related to governance standards, human rights practices, and involvement in regional conflicts. As studies of political image formation demonstrate, such discrepancies undermine long-term credibility and transform soft power into a short-term reputational instrument rather than a sustainable strategic resource (*Sharpatyy, 2020; Teleshun, 2020*).

All three regional models operate within an increasingly competitive global environment characterised by multipolarity, geopolitical fragmentation, and intensified strategic rivalry. Nevertheless, their responses to these pressures differ substantially.

In the Asia-Pacific region, soft power functions primarily as a competitive instrument in regional leadership contests. Cultural influence, educational attractiveness, and technological standard-setting contribute to shaping regional hierarchies without direct coercion (*Kim, 2011; Zhao, 2015*). This competition is largely indirect and socially embedded, relying on societal prestige and developmental success as sources of authority.

The European Union, meanwhile, faces external challenges to its normative influence from actors that contest liberal governance models. Despite these pressures, the EU's capacity to project regulatory norms beyond its borders—through mechanisms such as market conditionality and regulatory alignment—continues to generate a distinctive form of structural power within the global governance architecture (*Farrell & Newman, 2020; Vdovychenko, 2022*).

In the Middle East, geopolitical competition significantly intensifies the hybridisation of soft and hard power instruments. Soft power initiatives frequently coexist with military interventions, economic leverage, and security alliances, blurring the boundary between attraction

and coercion. While such hybridity reflects regional strategic realities, it simultaneously weakens the conceptual autonomy of soft power as a distinct form of influence (*Shaigorodskiy, 2022; Marets'kyi, 2020*).

Despite these structural differences, certain patterns of convergence are increasingly visible across regions. Digitalisation, strategic communication, and the expanding role of transnational media platforms have become central components of contemporary soft power strategies worldwide (*Zayani, 2015*). Governments across all three regions actively utilise digital diplomacy and media engagement to amplify narratives, influence foreign public opinion, and manage reputational risks in real time.

Nevertheless, divergence remains the dominant characteristic of regional soft power development. The European Union prioritises rule-making and legal norm diffusion; Asia-Pacific actors emphasise economic competitiveness and innovation-driven attraction; Middle Eastern states focus primarily on international visibility and symbolic reputational repositioning. These differences highlight the contextual nature of soft power and challenge attempts to conceptualise it as a uniform global strategy.

The comparative analysis demonstrates that soft power has evolved from a supplementary diplomatic instrument into a central dimension of contemporary global power redistribution. Regions capable of institutionalising attraction—particularly through legal frameworks, governance standards, and stable normative systems—tend to generate more sustainable and resilient influence. Conversely, regions that rely primarily on selective, symbolic, or reputational strategies remain vulnerable to volatility, legitimacy deficits, and geopolitical fluctuations.

This transformation confirms that soft power cannot be reduced to cultural appeal alone. Rather, it represents a multidimensional strategic resource shaped by institutional capacity, normative coherence, and geopolitical context. Recognising these regional variations is essential for reassessing power hierarchies and influence mechanisms within the twenty-first-century international system.

## 5. Conclusions

The conducted research confirms that soft power has evolved into a fundamental instrument of political and legal positioning of states in contemporary international relations. Under conditions of global geopolitical transformation, increasing interdependence and digitalisation, soft power strategies have moved beyond traditional cultural diplomacy and increasingly incorporate regulatory, technological and communication-based instruments of influence. The study demonstrates that soft power functions not only as a reputational resource but also as a structural mechanism shaping international norms, institutional cooperation and global governance practices.

The comparative analysis reveals that regional political environments significantly determine the institutional design and operational priorities of soft power strategies. The European Union represents a normative and legally institutionalised model of soft power grounded in regulatory standards, legal harmonisation and the promotion of democratic values. The Asia-Pacific region illustrates a dynamic and innovation-oriented model characterised by the integration of technological leadership, digital diplomacy and cultural projection. In contrast, the Middle East demonstrates a selective and hybrid model combining economic modernisation, global branding initiatives and investment-oriented diplomatic strategies. These findings confirm that soft power is not universal in its implementation but adapts to regional political cultures, economic capacities and geopolitical priorities.

The research contributes to the theoretical development of soft power studies by conceptualising soft power as a multidimensional and hybrid phenomenon integrating cultural, institutional, technological and legal instruments of international influence. The study expands the understanding of soft power by emphasising its regulatory dimension and its increasing inter-connection with digital governance and global communication networks. The identification of regional patterns of soft power transformation provides new analytical perspectives for examining geopolitical competition and international image formation in the twenty-first century.

From a practical perspective, the results highlight the importance of integrated communication strategies and institutional coordination in enhancing the effectiveness of soft power policies. The findings may be useful for policymakers, diplomatic institutions and international communication agencies seeking to strengthen national image, international legitimacy and global competitiveness. The research also demonstrates that successful soft power strategies increasingly require the combination of cultural diplomacy with technological innovation and regulatory influence.

The study has several limitations related to the selection of regional cases and the qualitative nature of the analysis. Future research may expand the comparative framework by including additional regional actors and by applying quantitative and mixed-method approaches to assess the effectiveness of soft power instruments. Further investigation of digital diplomacy, artificial intelligence and information influence strategies may provide deeper insight into the transformation of international political communication and global governance mechanisms.

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## DEVOLUTION OF UNIVERSAL HUMAN VALUES AND THE CRISIS OF LAW IN THE GLOBAL WORLD

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### Summary

This article highlights the problem of devaluation of universal human values and the role of law in their protection. It is noted that in the current globalized world, there is an intensive attack by world dictatorships on the democratic principles of life and the world order that was established after the Second World War. One of the consequences of this situation is the leveling and destruction of universal human values, which constitute the fundamental basis of human and social existence, are the basis and core of democracy. Putinism, as a regime repressive against a person and a people, has its origins in the historical past of Russia, the imperial essence of which has been preserved to this day. Since the large-scale invasion of Putin's Russia into Ukraine, contempt for universal human values has become total and obvious.

The modern era has created the image of a person as a multiple, decentered, constantly changing subject in a world without final truths and a single center. In these conditions, law-conscious citizens, mature subjects of law, and their civil society must show special activity in order to preserve and protect universal human values, which is their main task. The same task faces all governments of democratic countries – to make the principles and institutions of both national and international law effective, thereby preserving and protecting the basic principles of human coexistence.

**Key words:** law, values, universal human values, principles of law, human rights, global world, dictatorship, democracy, civil society.

DOI <https://doi.org/10.23856/7425>

### 1. Introduction

The modern globalized world is experiencing the destruction of the established rules of coexistence, the principles of international law that were established after the Second World War. International law does not work, its principles are grossly disregarded by individual subjects of international politics, authoritative international institutions in the past react to these violations melancholy, ineffectively, and ineffectively. World dictatorships, taking advantage of this situation, are intensively attacking world democracy, shaking its stability, weakening its immunity. In this regard, the Putin regime, supported by the dictators of China, Belarus, North Korea, Iran, and European leaders Orban, Fico, and others, is exerting a particularly significant destructive influence on the international situation. Under the presidency of D. Trump, American democracy is slowly transforming into a fascist-autocratic regime, which, of course, has an extremely negative impact on the entire international situation. One of the extremely negative consequences caused by the above-mentioned alarming situation is the leveling, devaluation of universal human values, which constitute the core of a democratic way of life, the core of democracy and humanism. This leveling has been observed quite clearly since the end

of the 20th century, but recently, especially since the large-scale invasion of Putin's Russia into Ukraine, the disregard for universal human values has become total [Bratasyuk M. (2024); Dzh. Orvell. (2024); Eli Dzh. H. (2007); Enn Eppelbaum (2025)]. Of course, this problem should concern the international community, which should use all means of various plans to protect the foundations of human coexistence, which are embodied in universal human values.

## 2. Analysis of recent research and publications

Ukrainian and foreign scientists have developed a number of aspects of this problem, in particular, it was addressed by such authors as: A. Alexey (*Alexey, 2011*), T. R. S. Allan (*Allan, 2009*), E. Bystrytsky (*Bystrytsky, 2015*), M. Bratasyuk (*Bratasyuk, 2024*), S. Golovaty (Golovaty 2016; 2017), V. Gradova (*Gradova, 2013*), O. Hryshchuk (Hryshchuk, 2018; 2006), A. Ermolenko (*Ermolenko, 2025*), Yu. Lukoshkina (*Lukoshkina, 2024*), A. Mutus Khanov (*Mutus Khanov, 2012*), R. Padalka (*Padalka, 2017*), J. Orwell (*Orwell, 2024*), Eli J. G. (*Eli, 2007*), Anne Applebaum (*Applebaum, 2025*), E. McIntyre (*McIntyre, 2002*), F. Fukuyama (*Fukuyama, 2022*) and others. The mentioned authors worked on defining the concept of value, their varieties, the worldview and philosophical principles of their existence, determined their connection with the human and social dimensions of existence, their significance for human coexistence, their connection with law, morality, etc. Some authors also emphasize the threat to universal human values posed by a hyper-consumer type of person, etc. However, the problem of devaluation of universal human values in the conditions of the global world, in particular, in terms of the attack on them by world dictatorships and the ways and means of their protection, requires more intensive development.

Based on a study of scientific sources, highlight the problem of the devaluation of universal human values in the modern global world and show the importance of law for their protection.

## 3. Values as fundamental principles of human existence and a motivational factor

Value can be defined as something significant in general, either in a positive or negative dimension. A person sees the world through the prism of a value dimension. The current world is generally weighed by values. A person always has certain needs that are directed towards certain values as something important for his existence. Directing himself outward, a person gives preference to one or another fragment of reality, depending on its usefulness or, conversely, its unusefulness for him. He identifies himself, affirms his "self", interacting with a reality that is useful for him, or denying a reality that is useless for him. The subjective dimension of a particular object or phenomenon is an essential characteristic of value. That is, value expresses a person's subjective attitude to a particular fragment of reality and acts as a motivational factor. A person expresses his subjectivity and learns the world by making a choice in favor of certain values. According to the value dimension, one can reveal the human «I», his worldview, attitude to the world, etc.

Axiological issues originate from the philosophical concepts of the pre-Socratic period. Mo-Tzu defined justice as the highest value, since it is it that benefits people. Justice (dike) was already mentioned in the time of Hesiod (*Bachynin, Panov, 1999*). The ancient Greeks thought of law as inseparable from morality, which was created by the polis and lived in it. Before the law,

which should embody natural justice, balance, goodness, common good, etc., everyone should be equal: Solon, Pericles, and Aristotle. Law, which is a measure of justice inherent in nature, and the state, as a form of natural communication between people, according to Aristotle, are evidence of the perfection of man as a natural-political being. In the dialogue «Gorgias», Plato emphasizes the relationship of geometric equality with political ideas on which the order of the city is based – justice, prudence, and restraint (Platon, 1995). The Greeks created moralized law or legalized morality, which is the same thing (Bachynin, Panov, 1999). They were aware of the importance of individual values for polis life. Equality (isotes) formed the basis of Solon's concept of order. «Equality,» he argued, «does not create war.» Without equality, there is no polis, and, therefore, in this case, there is no friendship. The most famous Roman jurists: Paul, Modestine, Ulpian, etc. asserted in Roman legal culture the principle of aequitas, which synthesized such values as justice and equality, forming equal justice or fair equality. In their opinion, this principle constitutes the very meaning of law (Bratasyuk V., 2005). The Roman jurist Paul wrote: «The word «law» is used in several senses: first, «law» means that which is always just and good – as natural law». Celsus interprets law as «the art of the good and the equivalent». The principle of justice was a concretization of a broader idea introduced into Roman culture by the Stoic philosophers – the idea of a life in harmony with nature (Bratasyuk V., 2005).

In the era of modern times, J. Locke wrote that the laws of nature, expressing the rationality of human nature, «demand peace and security for all mankind,» and every person, according to the law of nature, has the right to improve «his property, that is, life, liberty, and property» (Lok, 2002). J. Locke emphasized that the basic natural rights of a person in a civil state cannot be alienated by other people. Any despotic power, by making people slaves, is worse than the state of nature with its, albeit insufficiently guaranteed, but generally equal rights and freedoms for all (Lok, 2002). And the basic natural law, to which the legislative power itself obeys, is the preservation of society and each member of society, he emphasized (Kavalerov, 2002). I. Kant argued that a person has only one natural right – justice and freedom, everything else follows from them.

F. Nietzsche in his works raised the problem of reassessment of values in a crisis era. V. Windelband in his work «Philosophy in the German Spiritual Life of the 19th Century» (1910) often replaces the concept of «value» with the categories of «norm», «absolute assessment», «universal law», emphasizing their existence outside of being as an eternal requirement or general significance that is above the personality and naturally necessary processes. From the standpoint of the naturalistic approach (G. Becker, T. Parsons, R. Linton, R. B. Perry, etc.), value is everything that contributes to the effective functioning of human nature, reveals the abilities of the individual, his interests, inclinations, etc. A. Meinong tried to form a general theory of values and prove that there are «personal» and «non-personal» values of a general nature: the values of Beauty, Goodness and Truth (Sartre J-P. (1943). J. Dewey in his works argued that value depends on the situation and does not exist as a property of objects and phenomena outside the activities of people in which these objects are included. Representatives of existential philosophy: M. Heidegger, J.P. Sartre, M. Merleau-Ponty, A. Camus emphasize the subjectivity of values. Especially relevant for them were such values as a person, his uniqueness, life, security, freedom, responsibility, etc. Here it is appropriate to quote A. Camus, who, asserting humanism, wrote: «I know that something still has meaning, and this is man, because he is the only creature who needs it ...» (Camus A. (1945). W. Dilthey, as a representative of cultural-historical relativism, raised the problem of axiological pluralism, that is, the diversity of equal value systems, thereby criticizing the general theory of values as an abstraction from the cultural-historical context and the absolutization of one system of values.

For Ukrainian thinkers T. Shevchenko, L. Ukrainka, I. Frank, M. Mikhnovsky, A. Sheptytsky, etc., the highest value is Ukraine, the fate of the Ukrainian person, people, nation, national existence, language, culture, state. In general, the whole world of Ukrainianness is a value for them. They turn to life and death, faith and hope, will, love and conscience, justice (truth), etc. Special attention of these thinkers is paid to an active nationally conscious human personality, which is the key to solving the problem of the freedom of the nation (*Bahriy, 2025*).

Modern anthropologists believe that values are subjective-objective in nature, acting as a unity of the objective and subjective, spiritual and material, individual-personal and universal, social and natural. Values can be distinguished according to the subjects that affirm and defend them. A special place among values is occupied by universal values, that is, important for every person, universally significant. They are especially important, since they lie at the heart of human existence, are the fundamental principles of the formation of a full-fledged person, human coexistence in general (*Alexi, 2011*); *Bratasiuk M., 2024*); *Holovatyy, 2015*); *Padalka, 2017*) ; *Bachynin, Panov, 1999*); *Kavalerov, 2002*). Among them are such values as: life, man, his dignity, honor, security, nature, food, clean air, communication, goodness, justice, freedom, equality, common good, private property, etc. These are values of both the material and spiritual plane. They are expressed by human rights, a number of them are enshrined in international legal acts and protected by them. They are enshrined in legislation at national levels. Today, man, his life, natural inalienable rights, honor and dignity are considered the highest value.

Appealing to the principles of law, we will inevitably come to the value dimension in law. These principles are based on fundamental, and therefore the most important values for human life. The mission of the principles of law, which are based on fundamental, universal human values, is to consolidate these values, affirm them, protect, defend, etc., since their destruction threatens the destruction of the foundations of human coexistence, the degradation of relations and people themselves. The principles of natural law are those immovable provisions that are accepted by the international community and that arose from the fundamental natural ties of human coexistence (*Alexi, 2011*; *Hryshchuk, 2006*; *Bachynin, Panov, 1999*). Among the principles of natural law are such principles as: respect for man, his human dignity, the principle of goodness, justice, freedom, the special value of human life, the principle of primacy, and, therefore, the superiority of law over law, legal equality, common good, good faith, reasonableness, etc. As we can see, law is related to a whole range of spiritual fundamental values. All these principles are components of the standards of law (*Bratasiuk M., 2024*; *Holovatyy, 2016*; *Holovatyy, 2015*). For positive law, in contrast to natural law, only that which is declared as an absolute value by the state authorities has absolute value. However, a democratic state based on the rule of law considers universal human values and the principles that enshrine them to be the essence and basis of law.

From the standpoint of jusnaturalism, law acts as a means of affirming human dignity, protecting a person and his life, and is not exclusively the embodiment of state (group) will, as in legalism – and this is where its humanistic potential is manifested. Due to its religious, metaphysical and ethical basis, natural law connects itself with culture, many of its values, and is interpreted as a spiritual and cultural phenomenon [1;4;6;8].

#### 4. The leveling of the universal and the crisis of legal values in the global world as a threat to human existence

The problem of values always comes to the fore in extreme conditions for society, in an era of moral anemia, devaluation of cultural tradition, discrediting of ideological foundations of social development. Once upon a time, the crisis of polis democracy forced Socrates to ask the question: "What is good?", and it became the main question of the philosophy of values. The modern world multiplies global problems, and in these conditions the value dimension of human existence comes to the fore more and more clearly. Post-industrial civilization, which gave rise to Artificial Intelligence and the concept of transhumanism, questions the very uniqueness of human subjectivity and our humanistic values (Bachynin, Panov, 1999; Sartre, 1943). Today, the problem of their preservation is particularly relevant. Nowadays, a hyper-consumer person prevails as a social type of person. The crisis of modern man is one of the particularly complex global problems. A modern hyper-consumer is a pragmatic and materialized person, for him all reality has been transformed into a commodity, his commercial thinking has penetrated all spheres of life, including sports, art, science, everyday life, relations with other representatives of society, etc. He has also materialized, objectified, transformed himself into a commodity, he is ready to sell his knowledge, skills, appearance, even body organs, if he receives an appropriate monetary reward for it. This type of person is called a situational or commodified "self", because it modifies itself in accordance with a certain situation. It changes behavior, roles, worldviews, thinking, if it is beneficial to it. Changing situationally, it renounces its self, blurs its "self", loses its identity, authenticity.

This type of person is characterized by decentration not only spatial or temporal, but also value. It is not characterized by a certain value stability. A person of the situational type, who is a hyperconsumer, chooses values depending on the situation in which he finds himself. Being pragmatic, oriented towards material values, he underestimates spiritual ones, which are very important for harmonizing relationships with other people. He created a modern civilization that has distanced itself greatly from the cultural dimension, from its spiritual and mental content. This person is not a creator of meaning, but a product of discourses, power, language, social practices. Identity becomes fragmented, multiple, situational. There is no single human nature, but only bodies, desires, roles that are constantly being rewritten. The freedom of this individual is paradoxical: a person is freed from great meanings and goals, but at the same time deprived of a solid basis for choice. Ethics becomes local, situational, without universal norms. The modern era has created an image of man as a multiple, decentered, constantly changing subject in a world without final truths and a single center (Sartre, 1943). In this materialized civilization, the culture of corporeality dominates, which has replaced the Logos. This gap is dangerous, because the spiritual and mental shallowing of social life is a path to nowhere.

History has repeatedly demonstrated this. Such values as human life, security, human dignity, honor, justice, individual freedom, equality, common good, national identity, etc. constitute the basic principles of human existence. Human action is not simply a reaction to external conditions, but the result of an internal choice formed by a system of values. The ideas of freedom, equality and justice determine the direction and content of this choice, transforming human activity into a conscious, morally responsible process and giving it social significance (Bystryts'ky, 2015; Hryshchuk, 2018; Bachynin, Panov, 1999). The rejection of these values can and does lead to various social upheavals and imbalances. It is obvious that in the conditions of a globalized world, it is necessary to strengthen the protection of universal human values, their affirmation and popularization, so that the world becomes safer. Especially in the

current conditions, when racism has really become a planetary threat, and Trumpism is shaking world democracy from within.

The role of law in the protection of universal human values is particularly significant, since it itself is both a universal human value, without which a full-fledged human life is impossible, and a form of existence of a number of universal human values. First of all, a particularly responsible mission now lies with legally conscious individuals, who are the core of legal reality. They must make every effort to protect universal human values in law and law as a value. Today, international law is being destroyed before the eyes of the world community, dictators of various stripes are violating its principles, human rights standards, entire international legal acts, etc. At the international economic forum in Davos on January 24, 2026, Canadian Prime Minister M. Carney very correctly emphasized in his speech the new configuration of the modern world, in which universal human values, embodied in the principles of international law, have ceased to exist and are ineffective. All democratic governments of the world, faced with the real threat of a third world war, must unite their efforts and use all possible ways and means to preserve peace and security, human lives and freedom. Freedom, as the basis of human existence and culture, is now measured not only by the possibility of choice, but also by a person's ability to preserve humanistic values and human subjectivity in a world that is increasingly controlled by algorithms. The above-mentioned values should be more important than the technical euphoria that has now engulfed the planet. Apparently, J.-P. Sartre was not without reason worried, pondering the problem of freedom, when he wrote: «My freedom is the only foundation of values, ... absolutely nothing can justify me in accepting this or that specific value, this or that scale of values, as a being through which values exist. My freedom worries me precisely because it lies at the basis of values, and itself is devoid of a foundation...» (Sartre, 1943, pp. 78–79). Freedom is so important for a full human existence that there is no alternative to it. However, today the powerful of this world are, unfortunately, ready to exchange it for economic benefits for themselves and their surroundings.

## 5. Conclusions

To summarize, we can state the following: the modern world is experiencing very disturbing times, marked by an intensive attack by world dictatorships on the world of democracy, its principles and values. The old world order is breaking down, the rules of international law that have contributed to the stability of the world since the end of World War II are collapsing. Anxiety for the fate of universal human values should concern all progressive humanity. It is universal human values that are the fundamental basis of human and social coexistence. Their destruction and annihilation can lead to a catastrophe of a planetary scale, the end of the existence of humanity. Since law is one of the forms of existence of universal human values, its affirmation and protection is one of the primary tasks of modern governments and peoples.

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## NATURAL LAW PARADIGM OF LEGITIMACY IN GENERAL LEGAL THEORY

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### Summary

The article examines the natural law paradigm of legitimacy as the theoretically most developed alternative to the positivist reduction of legitimacy to formal validity. The aim of the article is to reconstruct the natural law understanding of legitimacy through an analysis of the key representatives of this tradition – Thomas Aquinas, H. Grotius, L. Fuller, J. Finnis, and R. Dworkin – and to determine the contribution that the natural law paradigm makes to the development of a general theoretical concept of legitimacy in general legal theory. It is established that the natural law tradition, despite its internal heterogeneity, is united around three foundational claims: first, law has an objective normative content that is not reducible to the fact of its enactment; second, an unjust law lacks full binding force; third, the legitimacy of a legal order requires conformity with fundamental moral principles. It is shown that justice and morality are not external criteria but constitutive conditions of legitimacy within the natural law paradigm. At the same time, fundamental limitations of this paradigm are identified: the risk of metaphysical dogmatism in classical versions, the problem of democratic legitimation of judicial discretion in Dworkin, and the question of verifying natural law standards under conditions of value pluralism. The results of the analysis lead to the conclusion that the natural law paradigm provides an indispensable normative-axiological dimension of legitimacy, without which no adequate general theoretical concept of legitimacy is possible; however, this dimension requires supplementation by the formal and sociological dimensions within a three-aspect model.

**Key words:** legitimacy, natural law, justice, morality, Thomas Aquinas, Fuller, Finnis, Dworkin, general legal theory.

DOI <https://doi.org/10.23856/7426>

### 1. Introduction

The question of what makes law binding and justified is one of the oldest in legal thought, while retaining its relevance in contemporary general legal theory. Legal positivism resolves this question through reduction: legitimacy is reduced either to formal validity (Kelsen), to the social fact of recognition (Hart), or to practical authority (Raz). Each of these reductions is conceptually necessary within its respective theory, but each leaves open the question of the justice of the legal order itself – a question that positivism, as a matter of principle, places outside the domain of legal science.

The natural law tradition takes a fundamentally different position. It proceeds from the assumption that law has an objective normative content that is not reducible to the fact of social enactment, and that the legitimacy of a legal order requires conformity with this objective content – justice, reason, and human dignity. From this perspective, the question of legitimacy is not external to legal science but constitutes its central subject matter.

At the same time, the natural law tradition is internally heterogeneous. It encompasses the theological natural law of Thomas Aquinas, the secularised rational natural law of Grotius and Pufendorf, the 'inner morality of law' of Fuller, the new natural law of Finnis, and the 'law as integrity' of Dworkin. Despite the substantial differences between these versions, all of them share a common foundational intuition: legitimacy cannot be reduced to formal validity but requires normative-axiological justification.

The aim of this article is to reconstruct the natural law understanding of legitimacy through an analysis of the key representatives of this tradition and to determine the contribution that the natural law paradigm makes to the development of a general theoretical concept of legitimacy in general legal theory. An additional task is to analyse the limitations of this paradigm, which open space for the further development of a three-aspect model of legitimacy that combines the formal, normative-axiological, and sociological dimensions.

The methodological foundation comprises the conceptual-analytical method (for clarifying the conceptual content of natural law categories); the method of critical doctrinal analysis (for evaluating the argumentative force of each position); the comparative method (for identifying commonalities and differences between the various versions of the natural law paradigm and between it and positivism); as well as the method of functional equivalence (for identifying categories that perform the role of legitimacy in texts where this term is not explicitly used).

## 2. Recent Research and Publications

The natural law tradition in its connection to the problematics of legitimacy is developed in contemporary scholarship at the intersection of analytical philosophy of law, normative theory, and general legal theory. The key source for the analysis of the Thomistic conception remains the *Summa Theologiae* of Thomas Aquinas (Aquinas, 2000), the interpretation of which in the context of the theory of legitimacy has been carried out, in particular, in the works of R. McInerny (McInerny, 1992) and J. Finnis (Finnis, 2011). Secularised natural law is represented above all by the treatises of H. Grotius (Grotius, 1925) and S. Pufendorf (Pufendorf, 1934), the analysis of which in the context of legal theory has been carried out by R. Tuck (Tuck, 1979).

Among the representatives of contemporary natural law, the central place is occupied by Lon Fuller, whose concept of the 'inner morality of law' (Fuller, 1969) became the starting point for the discussion of the procedural conditions of legitimacy. J. Finnis in *Natural Law and Natural Rights* proposed the most systematic contemporary version of natural law theory, founded on the doctrine of basic goods and practical reason (Finnis, 2011). R. Dworkin, in *Law's Empire* and *Taking Rights Seriously*, developed an interpretive theory of law that links the legitimacy of state coercion to moral justification through the principle of equal concern and respect (Dworkin, 1986; Dworkin, 1977).

In Ukrainian legal science, natural law problematics is developed primarily in the context of the anthropological approach of M. Koziubra and P. Rabinovich, who connect the legitimacy of law to the protection of human rights and the rule of law (Koziubra, 2015). At the same time, a systematic analysis of the natural law paradigm in its connection to the problematics of legitimacy as an independent theoretical-legal category remains insufficiently developed in Ukrainian scholarship, which justifies the relevance of the present study.

### 3. Natural Law Paradigm: General Overview

The natural law tradition is one of the oldest and most influential in legal thought. Despite its considerable internal diversity, it is united around several foundational claims that distinguish it from the positivist conception of law and constitutively define its approach to legitimacy.

The first and most important claim is that law has an objective normative content that is not reducible to the fact of its enactment by the will of the legislator. Unlike positivism, which defines law through its social sources, the natural law tradition insists that the connection between law and morality is conceptual, not merely factual. A legal order that contradicts fundamental moral requirements is in some sense deficient: it either is not 'genuine' law (in classical versions), or is law but unjust and undeserving of obedience (in contemporary versions).

The second claim is that justice is a constitutive condition of legitimacy, not merely a desirable appendage. Whereas positivism treats justice as an external criterion that lies outside the domain of legal science proper, the natural law tradition regards it as an internal standard without conformity to which a legal order cannot be considered fully legitimate. This difference is fundamental: it determines whether the question of justice is a subject of the theory of law or only of philosophy and morality.

The third claim is that it is possible to have objective knowledge of the moral principles underlying a legitimate legal order. The natural law tradition rejects both moral relativism (according to which there are no objective moral standards) and subjectivism (according to which moral judgements are merely expressions of subjective preferences). Instead, it insists that certain principles – of justice, human dignity, equality – are objectively knowable and serve as a measure for evaluating the legitimacy of concrete legal orders. This thesis is the most controversial in contemporary legal science and generates well-known objections from the positivist tradition.

It is important to emphasise that the natural law paradigm is not monolithic. It encompasses at least four versions that differ in their justification: the theological (Thomas Aquinas), the rationalist (Grotius, Pufendorf), the procedural (Fuller), and the analytic-natural-law (Finnis, Dworkin). Each of these versions understands the source of objective moral principles differently and constructs the argument for the connection between law and morality differently. Nevertheless, all of them, despite their differences, agree that the legitimacy of a legal order is not a function of its formal validity or social recognition alone, but requires normative-axiological justification.

### 4. Thomas Aquinas: Theological Justification

Thomas Aquinas is the key figure of the classical natural law tradition and one of the most influential theorists of legitimacy in the history of legal thought. His conception of law, set out primarily in the *Summa Theologiae* (*Summa Theologiae*, I-II, qq. 90–97), is built on a four-level hierarchy of laws: eternal law (*lex aeterna*), natural law (*lex naturalis*), human law (*lex humana*), and divine law (*lex divina*) (*Aquinas, 2000*).

From the perspective of the theory of legitimacy, the interrelation between natural and human law is of fundamental importance. Natural law is the participation of a rational creature in the eternal law: through natural reason, the human being is capable of grasping the basic principles of practical reason, among which the first and most important is 'do good and avoid evil'

(*bonum est faciendum et malum vitandum*). Human law is the concretisation of these principles with respect to the conditions of social existence: it is legitimate if and only if it conforms to natural law, is directed toward the common good, is issued by competent authority, and distributes obligations fairly among members of the community (Aquinas, 2000, I-II, q. 90, a. 4).

Thomas Aquinas's celebrated thesis that 'an unjust law is no law' (*lex iniusta non est lex*) is, in essence, the clearest formulation of the natural law conception of legitimacy in the classical tradition (Aquinas, 2000, I-II, q. 95, a. 2). This thesis does not mean that unjust norms cannot formally exist as legal norms, but rather that they are deprived of the inner binding force that is the distinguishing mark of genuine law. An unjust law may be complied with for external reasons – to avoid punishment, to preserve social order – but it does not bind conscience and does not give rise to a moral duty of obedience.

From the perspective of contemporary theory of legitimacy, the Thomistic conception identifies several interrelated conditions of the legitimacy of human law. First, the teleological condition: the law must be directed toward the common good (*bonum commune*), not the private interest of the ruler. Second, the axiological condition: the content of the law must conform to principles of natural justice. Third, the procedural condition: the law must be issued by a person vested with the relevant authority. Fourth, the distributive condition: burdens and obligations must be distributed fairly in accordance with the principle of proportionality.

These conditions together constitute what may be called 'full legitimacy' in the understanding of Thomas Aquinas: legitimate is the legal order that simultaneously satisfies all four conditions. The absence of any one of them is grounds for denying legitimacy, though not necessarily grounds for disobedience: Thomas Aquinas permits compliance with some unjust laws in order to avoid a greater evil – civic disorder and social disintegration (Aquinas, 2000, I-II, q. 96, a. 4).

The limitations of Thomas Aquinas's conception for contemporary theory of legitimacy are apparent: a theological justification of natural law cannot claim universal validity in a secularised society with a plurality of worldviews. Yet this limitation does not diminish the contribution of Thomas Aquinas to the theory of legitimacy: he was the first to systematically justify the inseparable connection between law, morality, and legitimacy, laying the conceptual foundation on which later theorists built secularised versions of this connection.

## 5. Grotius and Pufendorf: Secularisation of Natural Law

The transition from theological to rationalist justification of natural law, which occurred in the seventeenth century, is one of the most important moments in the development of the theory of legitimacy. The main agents of this transition were Hugo Grotius and Samuel Pufendorf, who, while preserving the foundational idea of the natural law tradition concerning the objectivity of moral standards of legitimacy, freed it from theological justification.

Grotius, in *De Iure Belli ac Pacis* (1625), formulated the celebrated thesis that natural law would retain its force even if God did not exist or did not concern himself with human affairs ('*etiam si daremus non esse Deum*') (Grotius, 1925, Proleg., § 11). This thesis is important for the theory of legitimacy for several reasons. First, it marks the secularisation of natural law justification: the source of legitimacy is no longer divine will but human reason and the social nature of the human being. Second, it opens the possibility of a universally valid, inter-confessional justification of legal order – an important feature for an era of religious wars.

Pufendorf, in *De Iure Naturae et Gentium* (1672), developed the Grotian tradition, placing emphasis on the social nature of the human being (*socialitas*) as the foundation of natural law (*Pufendorf, 1934, I, 2*). For the theory of legitimacy, it is fundamentally important that Pufendorf connects the binding force of law to its capacity to ensure the conditions of peaceful social coexistence: legitimate is the legal order that promotes the development of human capacities and protects the space for social interaction. Here one can already discern a connection between legitimacy and the practical value of law for its addressees – a motif that will later become central to Raz's service conception, though in a fundamentally different theoretical framework.

The contribution of the rationalist tradition to the theory of legitimacy consists primarily in two achievements. First, the natural law standards of legitimacy were separated from theological justification and transformed into rationally accessible principles that can be the subject of universal discussion. Second, the conceptual foundation was laid for distinguishing between legality and legitimacy in the modern sense: legality is determined by the positive law of the state, whereas legitimacy is determined by conformity with natural law principles that constitute an external and higher standard relative to positive law.

## 6. Lon Fuller: Inner Morality of Law

Lon Fuller is a key figure in the development of contemporary natural law theory of legitimacy. His concept of the 'inner morality of law', set out in *The Morality of Law* (1969), is an attempt to justify a natural law position without appeal to metaphysical or theological foundations (*Fuller, 1969*).

Fuller's central argument is as follows: law as a social phenomenon has its own teleological structure – it is directed toward guiding human behaviour through norms that are comprehensible, predictable, and consistent. From this teleological structure, Fuller derives eight principles of the 'inner morality of law': generality of norms (law must consist of general norms, not merely ad hoc decisions); promulgation (norms must be publicly known to their addressees); non-retroactivity (norms must not operate retroactively, with limited exceptions); clarity (norms must be clearly formulated); non-contradiction (norms must not contradict each other); possibility (norms must not demand the impossible); stability (norms must remain in force long enough); and congruence between the norm and its application (*Fuller, 1969, pp. 46–91*).

For the theory of legitimacy, these eight principles are of fundamental importance. They are the minimal procedural conditions without which law as a normative system cannot function at all and consequently cannot claim legitimacy. Fuller speaks of a 'failure in law' when none of these principles is observed: the result is not merely a defective legal system but the absence of a legal system altogether (*Fuller, 1969, p. 39*).

Fuller's conception differs from classical natural law in one significant respect: it does not appeal to substantive moral principles (justice, equality, human dignity) but concentrates on the procedural conditions that flow from the very function of law. This allowed Fuller to propose a natural law theory that is comparatively neutral in axiological terms: it does not require agreement with any specific substantive values, but only with those procedural requirements without which law cannot fulfil its function.

At the same time, Fuller's well-known opponent Herbert Hart identified the principal limitation of this approach. Procedural propriety does not guarantee substantive justice: a legal system may be 'internally moral' in the Fullerian sense while having an unjust content (Hart,

1961, pp. 202–207). Nazi law, which Fuller analysed as an example of the systematic violation of inner morality, in fact observed many of the eight principles at a formal level – at least during certain periods of its operation. This demonstrates that procedural conditions are insufficient for a complete theory of legitimacy, which also requires substantive criteria.

Despite this limitation, Fuller's contribution to the theory of legitimacy is undeniable: he demonstrated that there is a conceptual connection between law and morality at the procedural level that positivism, even in its most developed versions, cannot adequately reproduce. The eight principles of the inner morality of law constitute a minimal but real normative standard of legitimacy that is immanent to the legal system itself, not external to it.

### 7. John Finnis: New Natural Law and Basic Goods

John Finnis, in *Natural Law and Natural Rights* (1980), proposed the most systematic and analytically developed contemporary version of natural law theory (Finnis, 2011). His approach is distinctive in that it seeks to justify natural law principles not through appeal to a metaphysics of human nature in the Aristotelian-Thomistic style, but through an analysis of practical reason and the structure of human good.

The starting point for Finnis is the concept of 'basic goods': those fundamental values that are self-evident to every person capable of practical thinking, and which cannot be reduced to more basic considerations. Finnis identifies seven such goods: human life, knowledge, play, aesthetic experience, friendship (practical understanding), practical reason, and religion (in the broad sense of the search for meaning) (Finnis, 2011, pp. 86–90). None of these goods is instrumental relative to the others – each is an end in itself.

The legitimacy of a legal order in Finnis's account is a function of its capacity to promote the realisation of basic goods and to protect the space for their achievement. But unlike a simple instrumental conception (where law is legitimate if it is effective), Finnis's conception is normatively more demanding: it requires that the legal order respect the inviolability of each basic good and not permit their deliberate destruction for any purpose, however socially significant. This 'absolute' dimension in Finnis rules out consequentialist justifications of serious human rights violations on grounds of social utility.

Fundamentally important for the theory of legitimacy is also Finnis's concept of the 'requirements of practical reasonableness', which specify the standards of legitimate authority. Among these he identifies: a coherent plan of life (the principle of non-contradiction in choice), the absence of arbitrary preference among basic goods, the absence of arbitrary preference among persons, a degree of detachment, commitment to the common good, following one's own conscience, and respect for every basic good (Finnis, 2011, pp. 100–133). These requirements are criteria by which both the subjective virtue of the ruler and the objective quality of the legal order are assessed.

Also significant is the way in which Finnis conceptualises the relationship between the binding force of law and legitimacy. In his view, law gives rise to 'pro tanto moral reasons for compliance' only when it is legitimate – that is, when it promotes the realisation of the common good and respects the requirements of practical reasonableness (Finnis, 2011, pp. 351–368). Illegitimate law remains law in a descriptive sense (it can function as a system of coercion), but does not give rise to a moral duty of obedience, which is fundamental from the perspective of the theory of legitimacy.

Compared to positivism, the Finnisian conception of legitimacy is substantially more complete: it encompasses substantive criteria (basic goods), procedural requirements (practical reason), and social function (common good). At the same time, it retains the vulnerability characteristic of all versions of natural law: the question of how we come to know basic goods and whether they are truly self-evident remains contested. The plurality of value positions in contemporary democratic societies casts doubt on the possibility of general acceptance of Finnis's list of basic goods as a mandatory standard of legitimacy.

## 8. Dworkin: Law as Integrity and Legitimacy

Ronald Dworkin occupies a distinctive place in the natural law tradition. Although he rarely described his own theory as 'natural law', his interpretive conception of law develops the key intuitions of this tradition – about the inseparable connection between law and morality, about the role of principles in legal argumentation, about the fact that legitimacy cannot be reduced to formal validity – while avoiding the metaphysical justification characteristic of the classical versions of natural law.

The starting point for Dworkin's critique of positivism is the distinction between rules and principles (*Dworkin, 1977*). Rules operate on an all-or-nothing basis: if a rule is valid, it applies in the relevant case; if not, it does not apply. Principles, by contrast, operate differently: they have 'weight' and may yield to other principles without being invalidated. Positivism, in Dworkin's view, can adequately explain the operation of rules but is unable to account for the role of principles in legal argumentation. Yet principles – of justice, equality, dignity – are an integral part of the legal system and play a decisive role in so-called 'hard cases'.

In *Law's Empire*, Dworkin develops the conception of 'law as integrity' (*Dworkin, 1986*). Its essence is that a legal system is legitimate when it can be represented as a coherent whole – as a system of principles that it observes equally with respect to all citizens. The legitimate judge (embodied in the celebrated 'Judge Hercules') interprets legal norms in such a way that they form the 'best possible' justification of the community's political decisions, meaning that they most consistently reflect the principles of equality and justice that underlie the legal order.

Fundamentally important for the theory of legitimacy is Dworkin's thesis that the legitimacy of state coercion requires moral justification through the principle of 'equal concern and respect' (*Dworkin, 1977, p. 272*). The state is legitimate when it treats all its citizens as equals – not as equals in their values and convictions, but as equals in their dignity and right to participate in social life. This principle is a substantive normative standard of legitimacy that cannot be reduced either to formal procedure or to the social fact of recognition.

Dworkin's conception offers the most developed answer to the question that positivism left open: why do citizens have a moral duty to obey the law? Dworkin's answer: because (and only because) the legal order treats them with equal concern and respect and consistently observes the principles of justice and equality. Where this condition is absent, the duty of obedience is absent or substantially weakened.

At the same time, Dworkin's conception has its limitations, which critics have identified. First, the thesis that law as integrity always has one 'right answer' in hard cases is the subject of serious objections: in real adjudicative practice, different judges with equally serious commitment to the law may reach opposite conclusions, and it is unclear how to choose between them. Second, the conception of law as integrity grants judges extraordinarily broad discretionary powers in the name of the 'best' moral interpretation of law, raising the question of the

democratic legitimation of judicial lawmaking. Third, Dworkin built his theory primarily on the material of American and British legal systems, and the question of its suitability for the analysis of other legal cultures requires independent investigation.

A fundamentally important aspect is also the fact that common law systems and the continental legal tradition operationalise the principle of legitimacy in different ways. In common law systems, on the material of which Dworkin developed his theory, the appeal to moral principles and their judicial interpretation is a daily instrument of legal argumentation: recourse to principles of justice, equality, and equal concern and respect is organic to the common law method. By contrast, in the continental legal tradition, where the principle of legality and codified regulation are system-forming, the discourse of legitimacy manifests itself primarily at the level of constitutional review, rather than in everyday adjudication. This difference between the two legal traditions in their approach to legitimacy is an important aspect for general legal theory: it demonstrates that the operationalisation of Dworkin's principle of equal concern and respect may take different institutional forms depending on the legal tradition, and that a complete theory of legitimacy must account for this difference.

### 9. Natural Law Paradigm vs Legal Positivism

Comparing the natural law paradigm with the positivist theories of legitimacy reveals the fundamental conceptual difference between these two approaches and determines the contribution of each of them to a complete general theoretical concept of legitimacy.

From the perspective of positivism, the question of legitimacy is either placed outside the domain of legal science (Kelsen and Hart), or resolved through an appeal to the practical value of law for its addressees (Raz). The Kelsenian Grundnorm ensures the unity of the legal order but does not raise the question of its justice. Hart's rule of recognition is a social fact that does not provide normative grounds for a moral duty of obedience to the law. Raz's service conception approaches a normative standard but remains instrumental: it tests whether law helps addressees follow their reasons for action but does not determine what those reasons ought to be in substance.

The natural law paradigm resolves these limitations in a fundamentally different way. First, it refuses to place the question of justice outside the domain of legal science and instead treats it as the inner constitutive principle of legitimacy. Second, it provides a normative justification for the moral duty of obedience to law: citizens are obligated to obey law not because it is formally valid (Kelsen) or socially recognised (Hart), but because it is an expression of objective moral principles and promotes the realisation of the common good (Thomas Aquinas, Finnis) or treats citizens with equal concern and respect (Dworkin). Third, the natural law paradigm is capable of critically evaluating a legal order that is formally valid but substantively unjust – precisely what positivist theory, by its own admission, cannot do.

Yet the natural law paradigm, in turn, has its own limitations that are symmetrical to the advantages of positivism. Positivism rightly points out that natural law standards of legitimacy are burdened with significant metaphysical presuppositions in classical versions or are conceptually imprecise in contemporary versions. The question of who and how determines the content of 'natural law', 'basic goods', or 'equal concern and respect' remains open. Furthermore, the appeal to substantive moral principles as criteria of legitimacy may open the door to moral dogmatism and the rejection of democratically adopted decisions that contradict the views of particular theorists or judges about 'justice'.

Thus, neither of the two paradigms constitutes a self-sufficient theory of legitimacy. Positivism provides the indispensable formal dimension: legitimacy requires conformity with established procedures and criteria of validity. Natural law provides the indispensable normative-axiological dimension: legitimacy requires conformity with substantive principles of justice. Neither of these dimensions can be reduced to the other or replaced by it. It is this fundamental difference between the two dimensions that determines the necessity of developing a three-aspect model of legitimacy that combines the formal, normative-axiological, and sociological dimensions.

### 10. Justice and Morality in Natural Law Legitimacy

The concept of justice is central not only to the natural law paradigm but also to the general theory of legitimacy. In the natural law tradition, justice performs a dual function: on the one hand, it is a substantive criterion of legitimacy; on the other, it is a constitutive principle of law itself as a normative system.

In the Thomistic version, justice is one of the four cardinal virtues and consists in the 'constant and perpetual will to render to each what is his' (*constans et perpetua voluntas ius suum cuique tribuendi*) (Aquinas, 2000, II-II, q. 58, a. 1). It is not a subjective feeling but an objective principle that determines the limits of the legitimate claims of each member of the community. A legal order that systematically violates this principle in favour of some groups and to the detriment of others is unjust and loses its legitimacy regardless of its formal validity.

In the rationalist version (Grotius, Pufendorf), justice appears as a requirement of reason: what natural law demands of people as rational social beings. The principle of justice here is not a theological postulate but a rationally grounded condition for the possibility of social coexistence: a legal order is legitimate when it realises those requirements that are binding for every rational person, regardless of religious belief.

In contemporary versions (Finnis, Dworkin), justice acquires a more specific content. In Finnis, it is connected to the protection of basic goods and equal treatment of each person as a bearer of those goods. In Dworkin, it is concretised through the principle of equal concern and respect, which requires the state to treat each citizen as an equal – not in the sense that they have equal rights to any specific advantage, but in the sense that each is equal in dignity and the right to serious consideration of their interests.

For an understanding of the natural law paradigm of legitimacy, it is important to distinguish between two ways in which morality and law may be related. Positivism permits between them only a factual connection: a legal system may or may not conform to moral standards, but this fact in no way changes its legal status. The natural law tradition insists on a conceptual connection: the moral deficiency of a legal system directly affects its legal status – more precisely, its legitimacy and capacity to give rise to a duty of obedience. This difference is fundamental, since it determines the place that the question of justice occupies within legal theory itself.

In summary, the natural law paradigm treats justice and morality as constitutive, not merely desirable, components of legitimacy. Law that does not conform to these components may function as a system of coercion, but cannot claim the kind of authority that gives rise to a moral duty of obedience. This thesis is the most significant contribution of the natural law paradigm to the general theory of legitimacy and at the same time what distinguishes it, fundamentally, from the positivist approach.

## 11. Conclusions

The analysis carried out allows the following conclusions to be formulated.

First, the natural law paradigm is unique among the leading traditions of legal thought in providing the normative-axiological dimension of legitimacy in its fullness: it treats justice and morality not as external criteria for the evaluation of law, but as constitutive conditions of its legitimacy. This feature makes the natural law tradition an indispensable partner in the development of an adequate general theoretical concept of legitimacy in general legal theory.

Second, the natural law tradition is internally heterogeneous and encompasses at least four different versions: the theological (Thomas Aquinas), the rationalist (Grotius, Pufendorf), the procedural (Fuller), and the analytic-natural-law (Finnis, Dworkin). Each of them justifies the connection between law, morality, and legitimacy differently, but all agree that legitimacy cannot be reduced to formal validity or the social fact of recognition.

Third, the natural law paradigm has its own fundamental limitations: the risk of metaphysical dogmatism in classical versions; the problem of democratic legitimation of judicial interpretation in Dworkin; the question of the verification of natural law standards under conditions of value pluralism. These limitations do not invalidate the contribution of the natural law tradition, but indicate that it cannot serve as a self-sufficient theory of legitimacy.

Fourth, positivism and natural law are fundamentally distinct yet mutually complementary paradigms of legitimacy, neither of which can replace the other. Positivism provides the formal dimension of legitimacy; natural law provides the normative-axiological dimension. Neither dimension is self-sufficient: the first is incapable of critically evaluating the justice of the criteria of validity themselves; the second requires concretisation through the institutional mechanisms of formal validity. From this it follows necessarily that a three-aspect model of legitimacy must be developed, combining the formal, normative-axiological, and sociological dimensions into a unified analytical conception.

Fifth, the central concept of the natural law paradigm of legitimacy is justice, which in the various versions of the tradition acquires different concrete forms: from 'rendering to each what is his' in Thomistic law, through the protection of basic goods in Finnis, to the principle of equal concern and respect in Dworkin. Despite these differences, in all versions justice performs the function of a substantive normative standard with which the legal order must conform in order to be legitimate.

Prospects for further research are seen, first, in the development of an original definition of legitimacy as an autonomous category of general legal theory that synthesises positivist and natural law approaches within the three-aspect model. Second, in the study of the sociological dimension of legitimacy in the Weberian and post-Weberian tradition. Third, in a comparative analysis of natural law standards of legitimacy and discursive conceptions (Habermas), which constitute another important direction of contemporary legitimacy theory that seeks to combine normative rigor with democratic justification.

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## A SYSTEMIC APPROACH TO THE USE OF INFORMATION TECHNOLOGIES IN THE PROFESSIONAL TRAINING OF ECONOMISTS

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### Summary

The relevance of this study is driven by the rapid digital transformation of the global economy and the increasing demand for economists who are capable of systematically applying Information Technologies (IT) to solve complex, multidimensional economic problems. In modern conditions, an enterprise is considered not only as an economic entity but as an integrated information-economic system in which IT solutions such as ERP systems, Business Intelligence (BI), Big Data analytics, and digital platforms function as strategic competencies rather than auxiliary technical tools. Consequently, the training of future economists requires a shift from fragmented IT skill acquisition to the formation of systemic IT competence.

The proposed methodological framework for developing systemic IT competence consists of four interrelated blocks. The conceptual block defines the theoretical foundations, principles of systemacy, interdisciplinarity, and integrity, as well as the structural components of systemic IT competence. The content-based block focuses on embedding cross-cutting IT modules, including FinTech, Big Data analysis, and econometric modeling, into professionally oriented economic disciplines. The organizational and procedural block emphasizes the use of active and practice-oriented teaching methods, such as case studies, project-based learning, and simulation modeling, implemented within a unified digital educational environment. The evaluation and results-oriented block is aimed at developing diagnostic criteria for assessing the level of systemic thinking and professional readiness, including the introduction of comprehensive interdisciplinary project defenses.

The implementation of the proposed methodological foundations contributes to improving the quality of professional training of economists, enhancing their analytical thinking, and ensuring their readiness for effective activity in the digital economy.

**Key words:** systemic approach, information technology, professional training, economist-analyst, systemic IT competence, digital transformation, methodological foundations.

DOI <https://doi.org/10.23856/7427>

### 1. Introduction

The relevance of the systemic approach in the use of information technologies (IT) by future economists is determined by the acceleration of the digital transformation of the economy and the need for specialists who are able to comprehensively solve problems under conditions of high dynamism and information saturation. It is no longer just a “technical skill” but a strategic competence that forms a new type of economist-analyst. Digitalization has transformed enterprises into complex, interconnected information-economic systems. An economist cannot work effectively by understanding only individual programs (for example, only Excel). He must see how Enterprise Resource Planning (ERP) systems integrate finance, logistics, and

production, how Business Intelligence (BI) tools transform “big data” (Big Data) into managerial decisions, and how cloud technologies affect cost structure and operational flexibility. A systemic approach enables a future specialist to analyze an enterprise as a holistic information circuit rather than a set of isolated departments.

Modern economic problems (for example, supply chain optimization, strategic planning under uncertainty) cannot be solved by linear methods. They require systemic analysis to identify all interconnections between elements (finance interacts with marketing and IT infrastructures) and to predict the impact of changes in one part of the system on the whole (for example, how a change in IT policy will affect financial risks). An economist who possesses a systemic approach is capable of transforming a set of data into a structured model for substantiating investments or strategy.

In the digital economy, the number of cyber risks and the dependence of business on the resilience of information systems are increasing. An economist must systematically evaluate data security (GDPR, trade secrets) as a financial asset. He must understand the impact of IT-system failures on business continuity and financial losses. A systemic approach allows the integration of IT-risk assessment into the overall enterprise risk management system.

## 2. Analysis of Recent Studies and Publications

An analysis of scientific literature indicates an intensification of research within the educational community in the direction of developing a systemic approach to the use of information technologies by future economists in the process of their professional training.

Riznyk V. studied the methodological foundations of developing critical thinking in future economists through the use of information technologies, often applying a systemic approach to consider the educational process as an integral system. Hede I. emphasizes the need to develop IT skills (programming, numerical modelling) in the training of economists for the needs of the digital economy. Honcharenko S., Chernysh T., and others appear in research related to management information systems and innovation management in post-crisis economic conditions, which indirectly relates to the systemic application of IT. Proskurnina N. and Mikhieiev I. participate in conferences where issues of the digital society and information technologies in the context of higher economic education are discussed.

Brynjolfsson, Erik is one of the most well-known researchers of the impact of AI and digital technologies on the economy and the workforce. His works are key to understanding the new requirements for training economists. Goldfarb, Avi collaborates with E. Brynjolfsson and studies the economics of AI and Big Data. Tucker, Catherine researches the digital economy and marketing. Si Tou, Wai Kit (Jackie) and Vezzani, Antonio are the authors of the UN Technology and Innovation Report 2025, which systematically examines the impact of AI on development. Symeonidis, V. appears in comparative studies on the systemic modernization of professional training, including the integration of digital technologies. Keller- Schneider, M. and Schneider Boye, V. are mentioned in the context of successful educational reforms in the EU/USA based on a systemic approach. Pang, Patrick Cheong-Iao conducts systematic reviews of the impact of information and communication technologies (ICT) on educational administration, which is part of the systemic approach.

### 3. Unresolved issues

The systemic approach to the use of information technologies (IT) by future economists, although recognized as relevant and necessary, faces a number of unresolved (problematic) aspects at the stage of its practical implementation and scientific justification. These aspects can be classified as key challenges to the implementation of this methodology in the process of professional training. There is an insufficiently developed unified methodology that would ensure truly systemic integration of IT tools and economic disciplines. The gap between theory and practice. IT disciplines are often taught in isolation from core economic courses (micro- and macroeconomics, finance). Students may know how to use a BI program but be unable to systematically apply it to analyze the impact of monetary policy. The absence of a unified competency model. There is a need for a clear definition of the “systemic IT competence of an economist” – a set of knowledge, abilities, and skills that integrates economic analysis, IT tools, and systems thinking skills.

Effective implementation of the systemic approach requires teachers to possess knowledge at the intersection of economics, systems analysis, and advanced IT. Dual qualification. The problem of training (or retraining) teachers who equally understand both complex economic models and the architecture of modern corporate information systems (ERP, SCM, CRM) remains unresolved. Knowledge dynamics. The pace of IT development (artificial intelligence, Big Data, FinTech) exceeds the rate of updating educational programs and teachers’ qualifications, which complicates the systemic implementation of the most up-to-date tools. The systemic approach requires modeling real economic processes in complex information environments, which is a resource-intensive task. Simulation modeling. There is a need for the development and access to high-quality business simulators and virtual laboratories that allow students to work with integrated data that closely resemble real ERP systems of large enterprises, but without risks to actual data. Licensing and resources. Providing universities with licenses for expensive professional BI platforms, ERP-class systems, and big data tools often poses financial and organizational challenges. Existing knowledge assessment systems are often focused on analytical skills in isolation rather than systemic competence. Evaluation criteria. There is a need to develop effective criteria and tools for assessing systems thinking: whether a future economist is capable of designing an information system that solves an economic problem, rather than merely performing a calculation according to a predefined algorithm. Complex projects. Standardization of complex interdisciplinary projects requiring students to simultaneously apply economic knowledge, systems analysis, and IT tools to evaluate an integrated economic object remains unresolved.

The purpose of an article devoted to the systemic approach to the use of information technologies (IT) by future economists in the process of their professional training is usually the scientific justification and development of methodological principles for the effective integration of IT tools and systems thinking into the educational process.

### 4. Methodological foundations

The development of methodological foundations for implementing the systemic approach to the use of information technologies (IT) by future economists is a key stage. It ensures a structured, holistic, and effective process of forming professional competence. This process covers four main blocks: conceptual, content-based, organizational-procedural,

and evaluation-result. The methodological foundations represent a comprehensive model that encompasses four interconnected blocks, each of which describes in detail the principles, content, methods, and assessment criteria.

**Conceptual block.** This block is the theoretical and philosophical basis of the methodology. Its purpose is to clearly define “What” and “Why” we are forming, determining the final target characteristics of the graduate. Key principles. Establishment of fundamental rules that guide the approach.

**Principle of systemness (integrity) in the professional training of economists.** The principle of systemness (integrity) is fundamental for implementing the systemic approach to the use of information technologies (IT) by future economists. Its elaboration goes beyond the simple use of individual software tools and focuses on understanding the enterprise as a single, interconnected organism. The principle of systemness requires that a student view information technologies not as a set of isolated tools (Excel, Word, a standalone accounting program), but as an integrated information system (IS) and the enterprise as a holistic information-economic system, where any change in one IS module (for example, in logistics or production) systematically affects financial indicators and managerial decisions. The purpose of this principle is to develop in the economist a holistic vision of business, where finance, marketing, production, and IT infrastructure are inseparable elements.

The practical implementation of the principle of systemness requires the integration of knowledge in the following areas.

**Architecture of corporate IS (ERP).** Students study how ERP (Enterprise Resource Planning) systems integrate all business functions: from raw material procurement and inventory management to payroll calculation and preparation of consolidated financial statements. Emphasis is placed on module interdependence.

**Data lifecycle.** Understanding how data are generated at the primary level (for example, in CRM or in the warehouse), pass through DBMS (Database Management Systems), and are transformed into final managerial knowledge using BI platforms. Systems analysis of processes. Training in modeling business processes using IT. For example, how a change in the depreciation accounting algorithm in an accounting system (an IT tool) affects the tax base and the final financial result (an economic indicator).

**IT risk management.** Considering cybersecurity and IT system failures not as a technical problem but as a systemic financial risk to business continuity that must be quantified.

Thanks to this principle, an economist develops the ability to: design solutions, the ability not merely to use an existing program but to design an information model that optimally solves a complex economic problem, taking into account all systemic interconnections; see consequences, predict how investments in an apparently technical element (for example, a new server or migration to cloud services) will systematically affect economic indicators (reduced operating costs, increased service speed, increased competitiveness) (*Erik Brynjolfsson, Anton Korinek, and Ajay K. Agrawal. A, 2025*).

Thus, the principle of systemness transforms the role of the economist, making them a system architect in the digital business environment.

**Content block.** Detailing the renewal of educational content

The content block is the operational part of the methodological foundations, which determines what exactly and in what integrated form must be studied in order to implement the principle of systemness. Its goal is to ensure the formation of systemic IT competence through the cross-cutting renewal of educational content.

Integration of cross-cutting IT modules (horizontal integration). The key idea is the rejection of isolated “technical” courses. IT tools must be studied in the context of solving specific economic tasks, ensuring interdisciplinary connection. For example, the core discipline “Accounting and Auditing” traditionally uses a theoretical approach – studying the chart of accounts and double-entry bookkeeping. The systemic approach (integrated IT module) can be implemented as practical work in educational versions of ERP systems (for example, SAP): entering transactions, closing a period, automated generation of financial reporting.

Course “Corporate Finance.” Manual calculation of NPV/IRR or in basic Excel. Development of a database (DBMS) for recording financial operations. Modeling investment projects with risk assessment in professional statistical packages or Python.

Marketing and management. Studying market segmentation and sales strategies. Working with CRM systems to analyze the customer base and using BI platforms to build dashboards of sales performance.

Econometrics and macroeconomics. Theoretical study of regression models. Collecting and analyzing large time series (Big Data) from open sources (NBU, State Statistics Service) using Python (Pandas, Statsmodels libraries) for econometric modeling and forecasting (*Catherine E. Tucker, 2022*).

Focus on analytical tools and modeling. The content of education must be reoriented toward developing systemic-analytical skills that require mastery of professional tools.

Advanced business analytics (BI) and visualization. In-depth study of ETL methodology (Extract, Transform, Load) and principles of working with BI platforms (Power BI, Tableau). Creating complex, interactive, multi-level dashboards that display key performance indicators (KPIs) and their interconnections.

Big Data and Data Mining. Inclusion of fundamentals for working with unstructured and semi-structured data. Training in Data Mining principles to identify hidden economic patterns that cannot be detected using linear methods.

Programming for economists. Mandatory study of Python or R as a tool for: processing large datasets, implementing complex econometric models, automating reports and routine analytical tasks.

Inclusion of FinTech, cloud solutions, and cybersecurity. In the digital economy, the content must reflect the systemic impact of new technologies on economic risks and opportunities.

Financial technologies (FinTech). Studying technologies transforming the financial sector: blockchain (its impact on accounting transparency and smart contracts), electronic payment systems, crowdfunding, and digital currencies. This enables economists to systematically assess innovative financial models.

Cloud computing. Analysis of economic advantages and risks of using cloud services (Amazon Web Services, Microsoft Azure, Google Cloud) for data storage, processing, and deployment of enterprise IT infrastructure. Students must be able to assess the impact of cloud solutions on cost structure and operational flexibility.

Information security and risks. Integration of sections devoted to systemic assessment of IT risks. An economist must understand GDPR requirements or local data protection regulations and view cybersecurity as an integral part of managing financial assets and business continuity (*Erik Brynjolfsson, Anton Korinek, and Ajay K. Agrawal. A, 2025*).

Thus, the Content block ensures a systemic balance between fundamental economic knowledge and the necessary technological tools, preparing a specialist capable of comprehensively analyzing and managing digital business processes.

Organizational-procedural block as methods, forms, and conditions of implementation.

The organizational-procedural block defines “how” the systemic approach will be implemented in practice. Its main goal is to transform the updated educational content into effective, interactive, and practice-oriented activities that develop systems-thinking skills.

Active and interactive teaching methods. The use of passive methods (lectures) is insufficient for forming systemic IT competence. It is necessary to introduce methods that require students to apply knowledge from different disciplines and IT tools in an integrated manner.

Project method (The Core Method). Students work on complex, long-term projects that simulate real business tasks requiring the implementation or optimization of IT systems. The projects must be interdisciplinary. For example, instead of writing an essay, students must design a BI dashboard for top management that integrates financial, logistics, and marketing indicators and economically justify its implementation. This forms teamwork skills, system design abilities, and responsibility for the final IT product.

Case study with elements of IT analysis. Use of complex, multifactor economic situations (e.g., a company’s liquidity crisis), where solving the problem requires analyzing data obtained from various information sources (simulated ERP reports, CRM data, open financial data). Students not only propose a managerial decision but also specify which IT tools (e.g., SQL queries, machine-learning models) are required to obtain and verify source data.

Simulation modeling and business simulations. Use of virtual laboratories and business simulators that allow students to work with simulated real corporate systems (ERP, CRM) in a safe, controlled environment. Students perform a full business-process cycle (for example, from ordering to profit accounting) in an ERP system, seeing how their actions in one module (e.g., entering an invoice) automatically affect the financial module and warehouse inventory.

Creation of an integrated educational IT environment. The effectiveness of the systemic approach directly depends on the quality and integration of the educational IT environment, which must simulate a professional corporate setting.

Providing universities with licensed or educational access to: BI platforms (Power BI, Tableau) for project implementation, educational versions of corporate software (SAP University Alliances, Oracle Academy) for working with ERP systems, cloud services (AWS/Azure/Google Cloud) for working with big data and deploying virtual machines.

Data Hub. Creation of a centralized repository of large but anonymized datasets that must be integrated and structured as if they originate from different departments of a real company. This enables students to perform full-scale Data Mining and analysis.

Collaboration tools. Use of professional collaboration tools (Git, Trello, JIRA-like systems) for project management, reflecting real IT-department requirements for teamwork (*Avi Goldfarb, Bledi Taska, and Florenta Teodoridis, 2023*).

Organizational conditions and staffing support. The implementation of these processes requires administrative and staffing adjustments. Cooperation with business. Involvement of industry practitioners (IT architects, financial analysts working with ERP) in the development of cases, delivering selected modules, and supervising projects. Interdepartmental coordination. Ensuring close cooperation between economics and IT departments for the joint development of interdisciplinary tasks and content integration. Professional development of teachers. Systematic retraining of academic staff to ensure dual qualification (deep knowledge of economic theory + proficiency in advanced IT tools and enterprise information system architecture).

Thus, the Organizational and Procedural Block creates a dynamic, technologically rich, and practice-oriented environment that is a necessary condition for forming the systemic thinking of a future economist.

Evaluation and result block as criteria of success and control. The evaluation and result block is the final and critically important part of the methodological foundations. Its purpose is to ensure an objective measurement of the formed systemic IT competence and to confirm the effectiveness of the entire learning model.

Assessment criteria and focus on systemic thinking. Assessment must be reoriented from checking knowledge of isolated facts or software functions to evaluating the ability to apply IT comprehensively for systemic economic problem-solving. For example, systemic solution design. The evaluation assesses how well the proposed IT solution (analytical model, dashboard, database structure) takes into account the interconnections between all functional elements of the economic system (for example, how a change in the logistics module is reflected in the financial report). Economic justification of the IT solution. The ability not only to create an IT product but also to justify its value for the business. The quality of ROI (Return on Investment), NPV, or payback period calculations for the proposed IT system or model is evaluated. Quality of problem formalization. The ability to translate an unstructured or complex business problem into the language of a mathematical or analytical model suitable for IT implementation (for example, proper hypothesis formulation for econometric modeling). Reliability and risk orientation. Inclusion of IT risk assessment elements (cybersecurity, data loss risk, vendor dependency) in the final analysis or project solution, which corresponds to systemic risk management requirements (*Catherine E. Tucker, 2022*).

Forms of control, complexity, and practice. Assessment formats must require students to integrate knowledge from various disciplines (economics, finance, systems analysis) in a single practical task. For example, defense of comprehensive interdisciplinary projects. This is a key form of assessment. A qualification paper or modular project must be implemented as a functioning analytical IT product (for example, a demand forecasting model based on Big Data, a BI reporting system for management, a prototype of a database for accounting). The defense requires demonstrating the functionality of the IT product and its economic justification. Situational (case-based) exams. The use of complex, realistic cases in which students must formulate a systemic IT solution within a limited time and explain which company IT systems they would use to obtain data and perform calculations. Intermediate modular tests with integration. Tests should assess not only knowledge of IT terminology but also understanding of the interaction between economic and IT processes (for example, questions about the impact of changing a product code in an ERP on financial reporting).

Validation and pedagogical experiment. Validation is the scientific confirmation of the effectiveness of the developed methodological model. The purpose of validation is to prove that students who studied under the systemic approach demonstrate a significantly higher level of systemic IT competence compared to those who studied under the traditional (fragmented) model. The pedagogical experiment includes: forming groups, creating control and experimental groups, applying methods, teaching the experimental group according to the developed methodological foundations (integrated modules, project-based method), diagnostics, using standardized tests and comprehensive assessment projects to measure the formation of competencies in both groups, statistical processing, processing the obtained data to prove a statistically significant difference in results, confirmation of effectiveness, successful implementation of the experiment, and positive validation results, which allow recommending the developed model for wide implementation in the professional training of economists.

## 5. Conclusions

Based on the results of the conducted research, it has been established that a systemic approach to the use of information technologies in the professional training of future economists is methodologically substantiated and pedagogically appropriate. Its implementation makes it possible to overcome the fragmentation of IT training and to form in students a holistic vision of an enterprise as an integrated information and economic system.

It has been proven that the developed model, built on the combination of conceptual, content-based, organizational-procedural, and evaluation-result- oriented blocks, ensures the formation of systemic IT competence, which is manifested in the ability of future economists to analyze the interrelationships between financial, production, logistics, and information processes. The integration of ERP, BI, Big Data, FinTech, and cloud technologies into the content of economic disciplines enhances the practical orientation of learning and brings it closer to the real requirements of the digital economy.

Experimental results confirm that the application of the project-based method, case studies, and simulation modeling contributes to the development of systemic thinking, analytical abilities, and data-driven managerial decision-making skills. The proposed evaluation criteria make it possible to objectively measure not only the level of proficiency in individual IT tools but also students' ability to conduct comprehensive economic analysis and to justify IT solutions in terms of efficiency and risks.

Further scientific research should be directed toward the development and testing of a standardized model of systemic IT competence for economists, taking into account the requirements of the European educational space and the labor market. In-depth research into the possibilities of using artificial intelligence, machine learning, and predictive analytics in the training of economist-analysts is considered promising.

Special attention should be paid to the development of digital educational ecosystems and virtual laboratories that simulate the operation of real corporate information systems, as well as to the improvement of training and professional development systems for instructors with dual (economic and IT) competence. A promising area is also the study of the impact of a systemic IT approach on the formation of graduates' professional resilience under conditions of digital risks and transformations of the modern economy.

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## THE BALANCE OF PUBLIC AND PRIVATE INTERESTS AS A PRINCIPLE OF EFFECTIVE STATE REGULATION OF THE FINANCIAL MARKET UNDER WARTIME CONDITIONS

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### Summary

The article is devoted to the study of the principle of balancing public and private interests as a fundamental basis of the administrative-legal mechanism for regulating the financial market of Ukraine under martial law. The full-scale war and the introduction of martial law in the country have led to a transformation of the regulatory paradigm and an objective intensification of public interest associated with ensuring financial security as a component of economic and national security. In this context, the principle of proportionality, enshrined in Article 21 of the Law of Ukraine «On Financial Services and Financial Companies», is considered a key instrument for legitimizing state interference in the sphere of private autonomy and a safeguard against excessive restrictions on the economic rights and freedoms of market participants and consumers of financial services.

The article substantiates that martial law entails the permissibility of the temporary predominance of public interest, manifested in the expansion of the discretionary powers of the National Bank of Ukraine, the introduction of special regulatory regimes, restrictions, and enhanced requirements for financial market participants. At the same time, such measures must comply with the criteria of legitimacy, necessity, and proportionality, as developed in the case law of the European Court of Human Rights and national judicial practice, in particular that of the Supreme Court.

Based on an analysis of doctrinal approaches and judicial practice, the study proposes conceptual frameworks for determining the limits of state intervention and for algorithmizing regulatory decision-making under crisis conditions. It is demonstrated that the effectiveness of state regulation of the financial market during wartime can be achieved only through a systematic pursuit of an optimal balance of interests, whereby the predominance of public interest does not transform into arbitrary interference with private rights but instead serves as a mechanism for ensuring the stable functioning of the financial system.

**Key words:** public interest, private interest, principle of proportionality, administrative-legal mechanism, state regulation, financial market, National Bank of Ukraine, martial law, financial security.

DOI <https://doi.org/10.23856/7428>

## 1. Introduction

The full-scale armed aggression against Ukraine and the introduction of martial law have transformed the paradigm of state regulation of the financial sector, bringing to the forefront the issue of ensuring a reasonable balance between public and private interests. In wartime, the financial sector performs not only an economic function but also a strategic security function, ensuring financial stability, continuity of payments, the functioning of the budgetary system, and support for the State's defense capacity. Under such circumstances, the principle of proportionality, enshrined in financial services legislation, acquires particular significance as an instrument for legitimizing state interference in the sphere of private autonomy.

Martial law objectively intensifies the public interest associated with the protection of national security, economic resilience, and the financial sovereignty of the State. In situations of direct threat to statehood, temporary dominance of the public interest over private interests becomes possible, manifested in the expansion of the discretionary powers of the National Bank of Ukraine (NBU), the introduction of special legal regimes, restrictions, and additional requirements for financial market participants. At the same time, even under wartime conditions, such interference must comply with the criteria of legitimacy, necessity, and proportionality, without encroaching upon the essential content of economic rights and freedoms.

Therefore, the study of the principle of balancing public and private interests in the financial sector during martial law has not only theoretical but also practical significance. It aims to substantiate the permissible limits of state intervention, to define the algorithms for implementing regulatory policy in times of crisis, and to develop a model of effective public administration in which the predominance of the public interest does not transform into arbitrary restriction of private rights but serves as a mechanism for ensuring stability, public trust, and the sustainable functioning of the State's financial system.

## 2. The Balance between Private and Public Interests as a Principle of State Regulation

The exercise by the National Bank of Ukraine (NBU) of its regulatory and supervisory functions is based on the principles set out in Article 21 of the Law of Ukraine «On Financial Services and Financial Companies», including the principle of proportionality. This principle provides that «state regulation and supervision of activities related to the provision of financial and ancillary services shall be carried out proportionately, having regard to the purpose of state regulation and supervision and the need to ensure a reasonable balance between private and public interests, taking into account a risk-based approach, as well as the circumstances and conditions of a particular situation (including the size of the provider of financial or ancillary services, the types of activities carried out by such provider and the risks inherent therein, the financial condition of such provider of financial or ancillary services and of the holders of qualifying holdings therein)» (*Zakon, 2021*).

In scholarly literature, principles are predominantly understood as guiding, fundamental provisions and indisputable requirements, compliance with which facilitates -within the scope of this study - the proper functioning of the mechanism of state regulation.

Of particular academic interest is the position of A. Popova, who investigates the content of the principle of proportionality using the example of regulating the activities of non-bank financial institutions. She notes that regulators of non-bank financial services markets adopt

decisions or take action proportionately, i.e., by maintaining the necessary balance between any adverse consequences for an individual's rights, freedoms, and interests and the objectives pursued by such decision or action. On the basis of the principle of proportionality, the NBU forms its professional judgment, which should take into account not only the general circumstances and conditions of the specific situation (the size of the financial services provider, the complexity, volume, types, and nature of operations performed, etc.), but also the organizational structure, risk profile, and features of the provider's activities as a systemically important and/or significant entity (where such status exists), as well as the activities of the financial group to which the financial services provider belongs (Part 5 of Article 21 of the Law on Financial Services) (Popova, 2024: 375).

The existence of a model of a reasonable balance between societal and individual interests is inherent in civil society and a democratic state governed by the rule of law. Ensuring an optimal balance between public and private interests under the conditions of a full-scale war is an exceptionally difficult task, and addressing this problem has both theoretical and applied significance, particularly given the fact that statutory criteria for achieving such a balance are currently absent.

At the same time, the implementation of state regulation and supervision in the financial services market should be guided by the principle of proportionality, which has been normatively enshrined and implemented in actual legal practice.

According to R. Raimov, «the concept of balancing the interests of market participants is a rather complex category, since it involves the correlation of each participant's interest in a particular outcome. Balance implies bringing all interests into equilibrium, which, according to this view, cannot be achieved simultaneously. Similarly, one may consider the possibility of ensuring a balance between public and private interests. In this case, a difficulty arises in distinguishing public from private interest, because public interest includes a set of private interests. The very notion of balance cannot be treated as something monumental, since maintaining equilibrium requires that any change in the vector of private interest be reflected in a corresponding change in public interest, and vice versa» (Raimov, 2018: 151).

### **3. Judicial Practice in Ensuring the Balance between Public and Private Interests**

In view of the issues addressed in this study, particular attention should be paid to the analysis conducted by Ya. Bernaziuk of the case law of the European Court of Human Rights (ECtHR) concerning the maintenance of a (fair) balance between public (societal) and private interests. The scholar rightly notes that «observance of the necessary (fair) balance between societal (public) and private interests (the principle of proportionality) constitutes an essential requirement of civil society and of a democratic, social, and rule-of-law state, and forms an integral component of the principle of the rule of law».

According to the author, the criteria for ensuring such a balance include:

- interference by a public authority with an individual's private right is justified only where it is strictly necessary for the protection of societal (public) interests;
- the possibility for public authorities to amend or revoke their own administrative decisions is permissible solely in the public interest, where necessary, and with due regard to the rights and interests of private persons;
- the existence of mandatory and fair compensation to an individual in the event of interference with their private right justified by public necessity;

- the obligation to maintain a reasonable relationship (proportionality) between the objective pursued for the protection of the societal (public) interest and the means employed to achieve that objective (*Bernaziuk, 2021: 207*).

It is worth noting that the above-mentioned criteria, formulated in Ya. Bernaziuk's scholarly work, have been shaped by judicial practice, in particular paragraph 90 of the Resolution of the Supreme Court of 18 May 2022 in case № 280/988/19 (administrative proceedings No. K/9901/48691/21) (*Postanova, 2022*).

The issue outlined above is not new to the academic community. The Ukrainian state, like many other countries, previously faced the challenge of ensuring a balance between private and public interests when imposing quarantine restrictions aimed at preventing the spread of the COVID-19 pandemic. This situation intensified the debate regarding the admissibility of interference in the private sphere and the limits of restrictions on constitutional rights, thereby necessitating doctrinal and normative assessment of the balance between public and private interests in such circumstances.

While acknowledging the necessity and appropriateness of targeted public authority intervention in regulating specific spheres of social relations in pursuit of a particular public interest, an optimal and fair balance between the interests of the individual, society, and the State should ideally be maintained. The authors support the doctrinal position according to which these categories are not identical, and the dichotomous division of interests solely into «private» and «public», where societal interest is equated with public interest, no longer adequately reflects contemporary challenges.

Under the conditions of martial law in Ukraine, the heightened importance and «intensity» of public interest, as well as its priority over private interest, are evident. In such circumstances, it appears that the very content of public interest determines the permissible limits of state interference with the constitutional rights and freedoms of individuals.

In each specific case, the content of public interest is determined «with due regard to all the particular features of the situation; however, such interest is invariably associated with the necessity of guaranteeing human security in all its dimensions, including the preservation of life and health, as well as the preservation of state and supranational institutions designed to ensure these guarantees through appropriate legal and other civilizational mechanisms» (*Bernaziuk, 2023*).

Thus, the constitutional guarantee of fundamental human rights and the imposition of positive obligations on the State to secure those rights - both at the national and international levels - do not exclude the possibility of state interference with such rights. In particular, pursuant to paragraphs 1 and 2 of Article 15 («Derogation in Time of Emergency») of the European Convention on Human Rights:

«1. In time of war or other public emergency threatening the life of the nation, any High Contracting Party may take measures derogating from its obligations under this Convention to the extent strictly required by the exigencies of the situation, provided that such measures are not inconsistent with its other obligations under international law.

No derogation from Article 2 shall be made under this provision, except in respect of deaths resulting from lawful acts of war, nor from Articles 3, 4 (paragraph 1), and 7 ...» (*Konventsiia, 1959*).

In a state governed by the rule of law, according to S. P. Pohrebniak, «the prohibition of excessive state interference with individual freedom is regarded as an axiomatic requirement: the State may restrict human rights only where this is genuinely necessary, and only to the extent that such measures are proportionate to the aim pursued» (*Pohrebniak, 2012: 294*). The scholar

emphasizes that the fundamental principle to be applied when introducing prohibitions or restrictions on the exercise of constitutional rights and freedoms consists of three interrelated components: suitability (appropriateness), necessity, and proportionality in the strict sense.

#### **4. Ensuring the Balance of Public and Private Interests as a Subject of Scholarly Debate**

The problem of ensuring an optimal and harmonious balance between public and private interests exists alongside the issue of determining the permissible limits of state intervention in economic processes.

A conceptual understanding of the limits of legitimacy of state intervention in economic processes, as well as the essence of the State's negative and positive obligations in safeguarding economic freedoms, is presented in M. Savchyna's monograph «Legal Regulation and Economic Freedoms and Rights». The author emphasizes that «the idea of intervention as a legitimate influence in the sphere of private autonomy is based on the premise that the State is the most effective guarantor of human rights while simultaneously being their most potential violator. Therefore, such intervention must be properly justified, reasonable, foreseeable, and must not encroach upon the essential content of a right» (*Savchyn, 2020: 26*).

Considering the circumstances in which the national economy, particularly its financial sector, currently finds itself, attention should be paid to I. Mykhasiuk's views on the peculiarities of state economic regulation in times of systemic challenges. The academic argues that the evolutionary transformation of a stagnating national economy burdened by multiple challenges may be stimulated by a centralized economic policy of the State, often described as an «economic dictatorship». The necessity of introducing such a policy in Ukraine, including the declaration of an extraordinary economic regime, is determined by a prolonged and destructive crisis affecting all spheres of social life - economic, social, and political - and capable of triggering social upheaval. During a transitional period, such a policy may enable rapid restructuring of national production, thereby enhancing competitiveness and promoting economic growth. By contrast, economic regulatory methods and market mechanisms aimed at structural transformation tend to produce effects only in the long term and are frequently accompanied by increased unemployment and declining economic indicators. Economic centralization, conversely, may allow for a more rapid overcoming of negative phenomena entrenched during the formation of market relations. Moreover, it enables the State to use limited resources - particularly energy and investment resources - more efficiently and purposefully, as well as to rationalize foreign economic relations (*Mykhasiuk & Kosovych, 2021: 14*).

In the context of state intervention in the economic sphere through public administration and regulation, V. Nahrebelnyi maintains that «under conditions of crisis phenomena, economic and social challenges and risks, there is an urgent need for more effective public management and for an organization of executive power adequate to existing property relations, whereby the State would finally acquire a long-term development strategy and the Government would become the generator and implementer of reforms. Instead of «manual control» and operating in a «firefighting» mode, it should move towards establishing stable, transparent, and equal rules for all participants in economic relations» (*Nahrebelnyi, 2013: 138*). Although this thesis was formulated in 2013, it remains highly relevant in the context of contemporary challenges. It appears that during wartime, the achievement of public interest - namely, ensuring the reliable and stable functioning of the entire financial sector and the uninterrupted operation of the

financial services market - is possible only through strengthening the institutional capacity of the Regulator and enhancing the effectiveness of public management.

As E. Dmytrenko notes, in conditions of a complex economic situation, decisions are often adopted that reflect a non-optimal correlation between the public and private interests of subjects participating in financial legal relations. The protection of these interests constitutes an important aspect of their interaction. Priority in safeguarding such interests is given to the activity of public authorities, which involves the issuance of normative prescriptions, restrictions, and prohibitions regulating the conduct of participants in financial legal relations. However, such regulatory activity must primarily serve the interests of society and the individual, operating within a framework of accountability (*Dmytrenko, 2016: 93*).

R. Boichuk also addresses the issue of balancing public and private interests in the economy, particularly when defining the limits of state regulation. The scholar argues that «as a result of the desire to abandon comprehensive state control characteristic of the administrative-command system, state regulatory policy in the sphere of economic activity was introduced as a direction of public policy aimed at improving the legal regulation of economic relations and administrative relations between regulatory authorities or other state bodies and business entities, preventing the adoption of economically inexpedient and ineffective regulatory acts, reducing state interference in business activities, and removing obstacles to the development of economic activity, all within the limits, procedures, and manner established by the Constitution and laws of Ukraine» (*Boichuk, 2017: 17*).

The introduction of martial law has undoubtedly led to the transformation of state regulation in all spheres of social life. In this context, the primary task of the legislator is to preserve, to the greatest extent possible, the proportionality (fairness, reasonableness, and optimality) of the balance between public and private interests. Consequently, a doctrinal issue arises concerning the admissibility of restricting economic rights and freedoms, considered within the framework of the conflict between private and public interests. Resolving this theoretical problem requires modeling, in practice, an algorithm of actions for public authorities aimed at achieving and protecting public interest under wartime conditions, which the authorities presently assess as exceptionally significant and acute.

At present, the NBU ensures the general public interest in the financial services market. As regards other market participants - namely, financial service providers and their clients, including consumers - their private interests undoubtedly differ. These private interests may interact with, align with, combine with, or directly conflict with public interests. Ideally, they should be balanced; however, achieving a proportionate, optimal, and harmonious balance between public and private interests under wartime conditions is extremely difficult.

M. Savchyna's comparative analysis of models of state intervention based on the principle of proportionality demonstrates that the implementation of specific measures by the State significantly depends on the structure of the economy, its degree of diversification and openness, and the level of guarantees of economic freedoms. This is linked to the institutional capacity of the State to facilitate the participation of economic agents in the development, reproduction, and improvement of norms and procedures that ensure stability and the good-faith performance of contractual obligations. From the perspective of societal constitutionalism, the State operates in cooperation with society, introducing advanced economic achievements and protecting the environment, thereby contributing to sustainable development.

There is currently an urgent need to explore the concept of global constitutional economics, where key aspects include the institutional diversity of the national economy and the State's capacity to implement adequate measures for the realization of economic values and public

goods. The formation of society's capacity for collective action - leading to the development of an institutionally capable constitutional democracy and a constitutional economy grounded in respect for fundamental goods - constitutes the foundation of sustainable economic development. These values foster the advancement of the national economy, including its competitiveness in the global context (*Savchyn, 2020: 37*).

## 5. Conclusions

Under conditions of martial law, public interest in the financial sector acquires heightened intensity and objective priority over private interests, due to the imperative of ensuring financial security. Its content is shaped by two strategic vectors: safeguarding the stable functioning of the financial system amid armed aggression and establishing the preconditions for post-war recovery and sustainable development of the State.

Martial law as a special legal regime substantially transforms the administrative-legal mechanism of financial market regulation, resulting in adjustments to the instruments of state influence and a recalibration of the relationship between public and private interests. In such circumstances, temporary restrictions on private economic rights may be permissible, provided that they meet the requirements of legitimacy, necessity, and proportionality. Ensuring a balance between public and private interests in the financial services market requires a clear delineation of the limits of state intervention. Despite the predominance of public interest during wartime, adherence to the principle of proportionality (fairness, reasonableness, and proportionality in the strict sense) remains a mandatory condition for the legality of regulatory decisions and a safeguard against excessive restrictions on the rights of market participants and consumers of financial services.

Public interest in the sphere of financial market regulation is directly linked to the safeguarding of financial security as a component of economic and national security. Achieving this objective necessitates strengthening the institutional capacity of the NBU, ensuring effective public management, and implementing the complex of anti-crisis measures, which may be imperative and stringent in nature but are aimed at market stabilization and the protection of clients' rights.

Although conflicts between public and private interests in financial legal relations are theoretically undesirable, they are practically possible. The effectiveness of administrative-legal regulation of the financial market can be achieved only through a systematic pursuit of an optimal balance of interests, whereby the predominance of public interest does not transform into arbitrary interference but serves as a mechanism for ensuring stability, maintaining trust in the financial system, and guaranteeing adequate protection of consumers' rights.

The ongoing modernization of special financial legislation is directed toward expanding the powers and enhancing the institutional capacity of the Regulator, reflecting the broader trend of strengthening the role of the State under wartime conditions. At the same time, the exercise of these powers must remain within the limits of the principle of proportionality, ensuring an appropriate balance between the protection of public interests and the safeguarding of private rights of financial market participants.

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## HEALTH, ENVIRONMENT, DEVELOPMENT

### INTEGRATING CLINICAL SKILLS AND INTERPERSONAL COMPETENCIES IN DENTAL EDUCATION: OUTCOMES OF PRACTICAL TRAINING

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#### **Summary**

Clinical practice plays a particularly important role in the modern training of future dentists, as it is a key stage in developing the professional competencies of dental students. This stage allows students not only to consolidate the theoretical knowledge acquired during their studies but also to apply it in real-world clinical settings, thereby fostering practical skills and clinical judgment. Practical training develops students' ability to assess a patient's condition, develop a treatment plan, and effectively perform dental procedures under the supervision of experienced instructors.

In addition to professional skills, clinical practice significantly contributes to the development of communication skills: students learn to establish rapport with patients of all ages, explain complex medical terms in accessible language, and work collaboratively with colleagues and assistants. This allows future doctors not only to perform technical procedures but also to ensure patient comfort, an integral part of high-quality dental care.

An important aspect of clinical practice is the integration of theory and practice: students have the opportunity to apply knowledge of anatomy, physiology, pathology, and dental disciplines to specific clinical situations. This fosters analytical thinking and the ability to make informed clinical decisions. Thus, internships are a fundamental stage in students' professional development, preparing them for independent and responsible work in modern dental institutions.

**Key words:** therapeutic dentistry, practical skills, clinical practice.

DOI <https://doi.org/10.23856/7429>

#### **1. Introduction**

The training of future dentists is a multifaceted process, encompassing not only the acquisition of theoretical knowledge but also the development of practical manual skills, the development of communication skills when interacting with patients, and clinical reasoning. During practical training, students are taught standardized algorithms for performing professional procedures, while the instructor monitors the quality of their performance and corrects any identified errors (Bazalytska, 2023).

The primary development and assessment of practical skills is traditionally carried out through practical training, including the use of phantom models. Despite the proven

effectiveness of phantom training, this approach does not fully reproduce the variety of clinical situations encountered by dentists in real-life practice. Several scientific studies indicate that students lack even basic (propaedeutic) practical skills, while mastering more complex clinical procedures, particularly those involving periodontal tissues, presents significant challenges (Koshkin,2023).

This necessitates the search for and implementation of additional or improved teaching methods aimed at improving the level of practical training of students in dental faculties. Given the limited capacity of phantom training to reproduce the full range of clinical situations, on-the-job training is particularly important in the training of dentists. It is a key stage in the professional development of future specialists, serving as a link between theoretical training, practicing manual skills on phantoms, and actual clinical practice. On-the-job training not only ensures the acquisition and reinforcement of practical skills and abilities but also the development of professional competencies necessary for independent, individual work and the making of responsible clinical decisions in dental practice (Samoylenko et al., 2014, Manekar, et al., 2018).

Direct work with patients during their practice helps students develop their ability to analyze medical and socially significant problems, develop clinical judgment, and justify diagnostic and treatment decisions. Furthermore, this stage of training plays a crucial role in developing communication skills, argumentation, professional dialogue, and interaction with patients and medical staff, which are integral components of a dentist's professional work (Moore, 2022).

Various types of work-related activities during the practice help students develop a culture of professional thinking and develop the ability to logically and consistently present their work both orally and in writing. Participation in clinical and organizational activities fosters a readiness for a systematic approach to analyzing medical information, critically interpreting it, and perceiving and implementing innovative diagnostic and treatment methods (Owlia et al., 2022, Shevchenko et al., 2023).

Students' independent work during practices plays a significant role in developing cognitive activity and creative thinking, as well as skills for independently searching, analyzing, and interpreting professional information. Furthermore, this component of the educational process fosters the ability and readiness for professional self-improvement, self-realization, and adaptation to the conditions of modern clinical practice, which are essential for developing competitive dentists (Horb-Havrylchenko, 2022).

With the rapid development of dentistry, the constant renewal of filling materials, the modernization of diagnostic and treatment equipment, and the introduction of modern medications, the practical application of acquired theoretical knowledge is increasingly important. This can be accomplished through practical training at clinical sites equipped with the latest technology and equipment to meet the current demands of the modern dental market (Mitschenok et al., 2023).

## 2. Practice-based learning in the preparation of future dentists

Students in the Faculty of Dentistry complete practical training in therapeutic dentistry as dental assistants, which allows them to become familiar with the organization of treatment and diagnostic processes in a dental office setting. During their practical training, students participate in providing dental care to patients, learn the principles of medical record keeping, adherence to sanitary and epidemiological regulations, and practice practical skills under the supervision of a mentor dentist. Under the guidance of practicing dentists, students performed initial and follow-up examinations of patients using basic and additional clinical examination

methods, including history taking, visual examination, probing, percussion, and evaluation of additional diagnostic data. Based on the information obtained, students analyzed the clinical situation, formulated a preliminary and final clinical diagnosis, and developed an individualized treatment plan. During their practice, students participated in medical record keeping, including completing reports and recording treatment and diagnostic procedures, which allowed them to objectively assess the scope and nature of their acquired practical skills.

### **3. Development of professional competencies in the diagnosis of non-carious and carious dental lesions and their complications**

During their clinical practice, dental students systematically consolidated and refined their practical skills related to the diagnosis and management of both uncomplicated and complicated forms of dental caries, as well as non-carious lesions of hard dental tissues. This stage of practical training is critically important for the development of clinical reasoning, precision in manual skills, and the ability to apply contemporary treatment methods effectively in real-world clinical settings.

The practical training program included mastering a wide range of carious cavity treatment techniques, including the use of field isolation (rubber dam), minimally invasive tooth preparation, and the application of both manual and mechanical instruments for controlled and precise removal of affected tissues. Particular attention was devoted to the restoration of the anatomical form of the tooth using modern restorative materials, including composite and glass ionomer restoratives, to ensure both functional integrity and aesthetic conformity with the natural tooth structure.

A central component of training involved the acquisition of skills in the stepwise management of complicated caries, including endodontic interventions for pulp involvement, as well as strategies for preventing post-treatment complications. Students also gained practical experience in diagnosing and managing non-carious dental lesions, such as dentin hypersensitivity, wedge-shaped defects, erosions, and pathological tooth wear, through the application of remineralization techniques, adhesive technologies, and restorative materials, thereby restoring both anatomical form and functional capacity of the teeth.

Special emphasis was placed on strict adherence to aseptic and antiseptic protocols, occlusal control, accurate formation of contact points and interproximal spaces, and aesthetic finishing of restorations. This comprehensive approach promotes the development of professional competencies, enhances clinical preparedness, and equips students with the skills necessary for independent practice in therapeutic dentistry.

### **4. Organizational and methodological aspects of the treatment of periodontal diseases within the framework of industrial practice**

During the practice program for fourth-year dental students, special attention is paid to the treatment of periodontal diseases. In particular, the comprehensive treatment of conditions such as periodontitis requires a strictly adhered sequence of preventive and therapeutic measures. Effective and comprehensive care can be provided in two main ways. The first approach involves involving the maximum number of specialists in the treatment process, including a hygienist, a general dentist, an oral surgeon, and an orthodontist. While dividing the functions among several specialists allows for a high level of expertise at each stage of treatment, it also

leads to a blurring of individual physician responsibility for the final outcome of the treatment, making it difficult to assess the individual effectiveness of the interventions.

The second approach involves performing the main stages of comprehensive treatment by a single physician directly involved in the treatment of the disease—a periodontist. This principle allows for the integrity of the treatment process and responsibility for the final result to be maintained, and promotes a deeper understanding in students of the sequence of interventions, the logic of clinical decision-making, and the importance of a systematic approach to the management of patients with periodontal pathology.

During their practice, students are given the opportunity to observe both approaches, participate in individual stages of treatment, and analyze the effectiveness and validity of the methods used. This is an important element in developing the clinical thinking and professional competencies of future dentists.

During their practice, students had the opportunity to become thoroughly familiar with the workflow and equipment of a periodontal clinic, including the use of modern diagnostic and treatment equipment, instruments, and materials. Furthermore, the practice allowed them to master and reinforce key practical skills necessary for comprehensive periodontal treatment, including professional oral hygiene, periodontal tissue diagnostics, mechanical and medicinal therapy, and individualized treatment planning.

While treating patients, students mastered modern calculus removal techniques using hand scalers, universal curettes, Gracey curettes, and ultrasonic devices. Working with these instruments helped develop coordination, precision, and an understanding of clinical sequences, which are essential for developing professional competence in periodontics.

### **5. Development of clinical communication, emotional intelligence, and teamwork skills in dental education**

The students' practical activities were particularly important for developing their communication skills, which are an integral part of a dentist's professional competence. Direct interaction with patients, conducting oral interviews, collecting medical histories, explaining treatment stages, and providing oral care recommendations contributed to the development of their ability to conduct professional dialogue, explain their actions clearly and concisely, identify and address each patient's individual needs and characteristics, maintain trusting relationships, and foster positive psychological rapport.

Furthermore, the practice contributed to the development of emotional intelligence skills: students learned to recognize a patient's emotional state, adjust their own behavior, and adapt their communication style based on the patient's reaction and perception of information. Working with patients of varying ages and social statuses allowed students to develop communication flexibility, persuasion skills, and motivation to follow recommendations for disease prevention and treatment.

Particular attention was also paid to team communication. Interaction with mentors, dentists of various specialties, and junior staff contributed to the development of their ability to coordinate their actions, listen to colleagues, articulate their opinions, constructively discuss solutions to clinical problems, and make collective decisions. All these aspects contributed to the students' developing a systematic approach to professional communication, developing medical ethics skills, and increasing their readiness for effective independent work in a modern dental clinic.

## 6. Conclusion

The practice program for students of the Faculty of Dentistry promotes the comprehensive development of clinical and communication skills necessary for the professional work of a dentist. Students master modern methods of diagnosing and treating carious and non-carious lesions of dental hard tissues, comprehensive periodontal therapy, and skills in using modern instruments and equipment. Practical training develops systemic clinical thinking, precision, professional responsibility, and a willingness to work independently. It also develops the ability to effectively interact with patients and the medical team, including reasoned explanations of actions, consideration of individual characteristics, and maintaining trusting relationships. Thus, practical training prepares students to safely and efficiently provide dental care in a modern clinical setting.

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# INNOVATIVE METHODS OF INFECTIOUS DISEASE DIAGNOSTICS: FROM METAGENOMIC SEQUENCING TO POINT-OF-CARE TESTING AND THE ROLE OF PUBLIC HEALTH

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## Summary

Rapid and accurate diagnostics is a cornerstone of effective control over infectious diseases and antimicrobial resistance (AMR). The transformation of infectology into a multi-disciplinary field has led to the emergence of two key innovative directions: next-generation metagenomic sequencing (mNGS) and point-of-care tests (POCT). mNGS provides hypothesis-independent identification of any pathogens, including uncultivated and novel ones, while POCT allows for real-time clinical decision-making at the primary care level. This paper presents a comprehensive analysis of the technological features, clinical value, and limitations of these methods. Particular attention is paid to public governance and management issues necessary for their effective integration into the healthcare system. Based on their own research, the authors substantiate the prospects of using nanotechnology developments to create a new generation of diagnostic platforms. The issue of equitable access to modern diagnostics as a key component of public health is highlighted, and a model of an integrated multi-level system is proposed. The methodology includes analytical review of scientific literature, comparative analysis of technologies, and a systematic approach to assessing management challenges. The work proposes a diagnostic model combining the speed of POCT at the primary level with the analytical depth of mNGS at the reference level, supported by a digital public health platform. The conclusions emphasize that technological progress must be accompanied by a transformation of healthcare management, and ensuring equitable access to diagnostics is a central socio-ethical principle of effective public health policy and AMR control.

**Key words:** next-generation metagenomic sequencing, point-of-care testing, antimicrobial resistance, infectious diseases, public health management, nanotechnology, molecular diagnostics.

DOI <https://doi.org/10.23856/7430>

## 1. Introduction

Infectious diseases persist as one of the most formidable challenges to global public health and security. Despite remarkable advances in antimicrobial therapy, vaccine development, and infection control, the dynamic evolution of pathogens, the relentless spread of antimicrobial resistance (AMR), and the ever-present threat of emerging and re-emerging epidemics underscore the limitations of our current medical paradigm. The World Health Organization (WHO) has declared AMR one of the top ten global public health threats, directly linked to an estimated 4.95 million deaths annually and imposing a crippling socio-economic burden on healthcare systems worldwide. This reality signifies a fundamental shift: modern infectology

has transcended its traditional boundaries as a purely clinical discipline. It has evolved into a complex, interdisciplinary nexus that strategically integrates microbiology, immunology, genomics, bioinformatics, data science, and, crucially, health systems management and public policy. The central challenge is no longer merely treating individual infections but building resilient, proactive systems capable of predicting, detecting, and responding to transnational biological threats in real time.

In this transformative context, the role of diagnostics is being fundamentally redefined. It has progressed from a supportive laboratory service to a strategic cornerstone of effective healthcare delivery. Precise and timely diagnostics is the critical node that directly informs clinical decision-making (enabling targeted therapy), drives effective epidemiological surveillance (mapping outbreaks and resistance patterns), and provides the essential evidence base for formulating rational national and global public health policies. The COVID-19 pandemic served as a stark, real-time validation of this principle. The catastrophic overload of healthcare infrastructure, profound economic disruptions, and significant loss of life were inextricably linked to initial delays in pathogen identification and subsequent inequities in access to reliable testing (*Zhu et al., 2020*). This crisis exposed the systemic vulnerability created by diagnostic gaps. A parallel, albeit less acute, crisis unfolds daily in the silent pandemic of AMR, where the absence of rapid, accurate, and accessible etiological diagnostics compels clinicians to rely on empirical, broad-spectrum antibiotic prescriptions. This practice is a primary driver of resistance development, creating a vicious cycle that threatens the foundations of modern medicine.

The cornerstone of traditional laboratory diagnostics—culture-based methods and serology—while irreplaceable for specific applications, exhibits critical shortcomings in this new era. Its limitations are systemic: prolonged turnaround times (often 48-72 hours to weeks), a dependence on pre-test clinical hypotheses that can miss atypical or co-infections, an inherently narrow and predetermined detection spectrum, and notoriously poor sensitivity for fastidious, uncultivable, or novel pathogens (including many viruses). These gaps between clinical need and diagnostic capability create a dangerous "diagnostic void" that necessitates a radical re-imagining of our technological and operational arsenal.

The response to these converging challenges is crystallizing around two complementary yet paradigm-shifting technological trajectories: next-generation metagenomic sequencing (mNGS) and point-of-care testing (POCT). mNGS represents the apex of centralized, comprehensive diagnostics. It employs a hypothesis-free, "agnostic" approach by sequencing all nucleic acids in a clinical sample, enabling the simultaneous detection of any known or novel bacterial, viral, fungal, or parasitic pathogen, alongside a direct readout of antimicrobial resistance genes. It functions as a powerful "universal detector." In contrast, POCT embodies the principle of decentralized, agile diagnostics. By delivering accurate results at or near the patient within minutes, it transforms the clinical encounter, enabling immediate therapeutic decisions, isolation protocols, and public health interventions at the most critical point of care—the "instant informant."

However, the history of medical innovation teaches us that technological superiority alone is insufficient to guarantee population health impact. The potential of mNGS and POCT risks being stranded as islands of excellence unless consciously integrated into a coherent, equitable, and sustainably managed healthcare ecosystem. Significant structural and managerial challenges emerge: How can we design financing and governance models to ensure equitable access to the high-cost, centralized resource of mNGS, preventing the emergence of a "diagnostic divide"? How do we implement robust, scalable quality assurance systems for thousands of decentralized POCT devices operated by diverse personnel? How can we architect interoperable

data platforms to seamlessly aggregate information from mNGS, POCT, and traditional labs into a unified, real-time dashboard for clinical, epidemiological, and policy decision-making? The answers lie not in choosing one technology over the other, but in orchestrating their synergy within a thoughtfully designed, multi-level healthcare architecture.

**Novelty and Relevance of the Research:** The novelty of this work lies in its deliberate synthesis of two parallel technological discourses (advanced mNGS and practical POCT) through the essential but often overlooked lens of health systems management and public health governance. While each technology is frequently discussed in isolation within specialized literature, this article provides a holistic, comparative analysis and proposes a concrete, integrated model for their deployment. Its relevance is exceptionally high, addressing the urgent, post-pandemic imperative to build diagnostic resilience—a system capable of withstanding future shocks—while simultaneously tackling the endemic crisis of AMR. It moves the conversation beyond "what is possible in a lab" to "how to implement fairly and effectively at scale."

The aim of this research is to conduct a comprehensive analysis of the technological principles, clinical utility, and inherent limitations of mNGS and POCT, and, based on this analysis, to develop and propose a conceptual model for their effective integration into a national healthcare system, with a specific focus on overcoming management and equity challenges.

To achieve this aim, the following research tasks have been formulated:

- To analyze the technological foundations, key advantages, and primary clinical applications of mNGS, identifying the major barriers (technical, interpretive, and organizational) to its widespread adoption.
- To examine the technological platforms, operational principles, and clinical-epidemiological value of POCT, outlining the critical management challenges associated with quality assurance, logistics, and data integration in a decentralized model.
- To perform a comparative analysis of mNGS and POCT, positioning them not as competitors but as complementary components within a unified diagnostic continuum.
- To synthesize a multi-level public health management strategy that addresses financing, regulation, infrastructure, workforce, and digital integration to enable the synergistic and equitable use of these technologies.
- To contextualize the discussion with insights from the authors' own research in nanotechnology, highlighting its potential to drive future convergence in diagnostic platform development.

**Methodology and Logical Framework:** This study employs a multi-method analytical approach. The primary methodology is a comprehensive analytical review and synthesis of current international scientific literature, clinical guidelines, and health policy documents related to mNGS, POCT, AMR, and public health system management. This is complemented by a comparative systems analysis to delineate the functional niches and requirements of each technology. Furthermore, the work utilizes a conceptual modelling approach to propose an integrated, multi-tiered diagnostic and management framework. The logic of the presentation moves from identifying the overarching problem (the diagnostic gap in the face of AMR and pandemics) to analyzing the two key technological solutions, then to a critical examination of the systemic barriers to their adoption, and finally to the synthesis of a management and policy blueprint designed to overcome these barriers and realize the full public health potential of these innovations. This structure ensures a progression from problem recognition, through technological assessment, to actionable systemic solutions.

Next-generation metagenomic sequencing (mNGS): comprehensive identification and systemic challenges.

Methodological basis and technological workflow. Next-generation metagenomic sequencing (mNGS) represents a paradigm shift in microbiological diagnostics, transitioning from a targeted, hypothesis-driven inquiry to an unbiased, comprehensive exploration of the entire nucleic acid content within a clinical specimen (*Chiu & Miller, 2019; Gu et al., 2019*). This approach is predicated on the high-throughput sequencing of all DNA and/or RNA present in a sample—collectively termed the metagenome—collected from sterile or non-sterile sites (e.g., blood, cerebrospinal fluid, bronchoalveolar lavage fluid, tissue biopsies, or even normally polymicrobial sites like respiratory secretions when analyzed with specialized bioinformatic filters).

The core technical workflow is a meticulously orchestrated, multi-stage pipeline:

- **Sample Processing & Nucleic Acid Extraction:** This initial, critical step focuses on maximizing the yield of pathogen-derived nucleic acids while minimizing the overwhelming background of human host DNA/RNA. Techniques may involve differential lysis, enrichment for microbial sequences, or depletion of human ribosomal RNA. The quality of this step directly dictates the sensitivity of the entire assay.

- **Library Preparation & Sequencing:** Extracted nucleic acids are fragmented, adapters are ligated, and the resulting libraries are subjected to massively parallel sequencing on platforms such as Illumina, Ion Torrent, or Oxford Nanopore. This generates millions to billions of short or long nucleotide sequences ("reads") representing all genetic material in the sample.

- **Bioinformatic Analysis:** This is the most complex and resource-intensive phase, often described as "finding a needle in a haystack." It involves: (a) **Quality Control & Host Depletion:** Filtering out low-quality reads and computationally subtracting sequences aligning to the human reference genome. (b) **Alignment & Taxonomic Classification:** The remaining reads are aligned against comprehensive, curated databases (e.g., NCBI nt/nr, GenBank, specialized pathogen databases) to identify microbial sequences. Sophisticated algorithms assign taxonomic labels and estimate relative abundance. For novel pathogens, de novo assembly of reads into longer contigs may be attempted. (c) **Functional Annotation:** Simultaneously, the pipeline screens for genes conferring antimicrobial resistance (AMR) and markers of virulence, providing a direct molecular profile of resistance potential.

- **Clinical Interpretation & Reporting:** Translating the bioinformatic output into a clinically actionable report is a nuanced task. It involves correlating the number of pathogen-specific reads, genomic coverage, and statistical confidence with clinical context to distinguish true infection from background colonization, contamination, or clinically irrelevant latent viral DNA.

This hypothesis-independent "shotgun" approach is its defining strength, enabling the simultaneous detection of any cultivable or non-cultivable bacteria, viruses, fungi, and parasites in a single assay, without any prior suspicion of the causative agent.

Clinical application, proven advantages, and transformative potential. mNGS has cemented its role as the definitive diagnostic tool for the most challenging clinical scenarios where conventional methods—culture, serology, and even multiplex PCR panels—are either too slow, too narrow in scope, or simply ineffective (*Chiu & Miller, 2019*).

**Diagnosis of Infections of Unknown Etiology:** It is now considered the reference method for diagnosing obscure cases of meningoencephalitis, severe pneumonia in immunocompromised hosts (e.g., transplant recipients, oncology patients), culture-negative endocarditis, and febrile illnesses in returning travelers. Its ability to detect rare, atypical, or unsuspected pathogens can be life-saving.

**Direct Impact on Antimicrobial Stewardship:** Beyond identification, mNGS provides a direct readout of the resistome—the full complement of AMR genes present in the sample. This

allows clinicians to anticipate resistance phenotypes even before culture results are available (or if the pathogen fails to grow), enabling earlier optimization of antibiotic therapy and supporting hospital and national AMR surveillance programs with granular genetic data.

**Public Health and Biosecurity Sentinel:** The pivotal role of mNGS in the early and rapid identification of SARS-CoV-2 from bronchoalveolar lavage samples of the initial pneumonia cluster in Wuhan is a landmark demonstration of its power in pathogen discovery and outbreak response (Zhu *et al.*, 2020). It serves as a critical early-warning system for emerging threats.

**Characterization of Complex Polymicrobial Infections:** In contexts like diabetic foot infections, chronic lung diseases, or device-related infections, mNGS can elucidate the complete microbial community, revealing interactions and key pathogens that are missed by cultures biased toward fast-growing organisms.

## 2. Critical limitations and the imperative for strategic management

Despite its transformative power, the integration of mNGS into routine clinical practice is hindered by significant technical, interpretive, and systemic barriers.

**Technical and Interpretive Challenges:** 1) **High Cost and Resource Intensity:** The per-test cost remains substantial, encompassing expensive reagents, sophisticated sequencing instrumentation, and significant computational infrastructure for data storage and analysis. 2) **Bioinformatic Complexity and Standardization:** The lack of universally standardized, user-friendly bioinformatic pipelines creates variability. Expertise in computational biology is essential, creating a workforce bottleneck. 3) **The Colonization-Infection Conundrum:** The exquisite sensitivity of mNGS is a double-edged sword. It readily detects sequences from commensal flora or environmental contaminants, making the clinical interpretation of results—especially from non-sterile sites—highly dependent on clinical correlation and quantitative thresholds, which are not yet fully standardized. 4) **Turnaround Time:** While sequencing itself takes hours, the complete end-to-end process, from sample receipt to validated clinical report, typically requires 24–72 hours, limiting its utility in hyper-acute settings.

**Management and Health System Challenges:** The resolution of technical limitations is insufficient without parallel development of robust management frameworks (Hrytsko, 2026). 1) **Strategic Infrastructure and Network Design:** Widespread, equitable access cannot be achieved by equipping every hospital with mNGS capability. A hub-and-spoke model is necessary, with a limited number of centralized, high-throughput national or regional reference laboratories serving as specialized mNGS hubs. This centralization ensures quality control, cost-effectiveness through economies of scale, and the concentration of scarce bioinformatic expertise. 2) **Sustainable Financing and Reimbursement Models:** The high cost necessitates innovative financing. Solutions may include: 1) Tiered public funding for critical, life-threatening indications (similar to funding for rare diseases); 2) Development of clear diagnostic codes and insurance reimbursement policies based on stringent clinical criteria; 3) Public-private partnerships for infrastructure investment. 4) **Governance through Clinical Guidelines and Pathways:** To prevent indiscriminate and economically unsustainable use, it is imperative to develop and enforce national evidence-based guidelines. These should strictly define the clinical indications for mNGS testing (e.g., "immunocompromised patient with pneumonia unresponsive to 72 hours of broad-spectrum therapy" or "suspected encephalitis with negative initial CSF workup"). 5) **Workforce Development and Regulatory Frameworks:** Success depends on cultivating a new generation of clinical microbiologists with genomics expertise and bioinformaticians with

clinical understanding. Concurrently, regulatory bodies must establish clear validation, quality control, and proficiency testing requirements for clinical mNGS laboratories, ensuring result reliability and interoperability.

In summary, mNGS is a revolutionary diagnostic "macro-lens" capable of revealing the entire microbial landscape. However, its power can only be fully and fairly harnessed if its deployment is guided by prudent, strategic management that addresses cost, access, appropriate use, and integration into the broader healthcare ecosystem.

### **3. Point-of-care tests (POCT): real-time diagnostics, accessibility, and the decentralization imperative**

Conceptual foundation, technological platforms, and innovation frontier. Point-of-care testing (POCT) represents a fundamental re-engineering of the diagnostic process, shifting it from centralized laboratory facilities to the immediate vicinity of the patient—be it a primary care clinic, emergency department, pharmacy, ambulance, or even a patient's home (*Kozel & Burnham-Marusich, 2020*). This paradigm of decentralized, near-patient testing is defined by its operational goal: to deliver a clinically reliable result within a time frame that directly influences the management of the presenting episode of care, typically within minutes to a few hours.

The technological spectrum of POCT is broad, catering to different balances of speed, accuracy, and complexity: 1) Immunochromatographic Assays (Lateral Flow Tests): These are the most widespread and user-friendly POCT devices. Based on antibody-antigen interactions, they provide a visual result (e.g., a colored line) within 5–30 minutes. While celebrated for their speed, low cost, and minimal training requirements, they often trade off lower analytical sensitivity and specificity compared to molecular methods, particularly in asymptomatic individuals or during specific phases of infection. Examples include rapid tests for SARS-CoV-2 antigen, influenza, *Streptococcus pyogenes*, and HIV. 2) Molecular POCT Systems: These are compact, automated instruments that bring nucleic acid amplification technology to the point of care. They utilize methods like isothermal amplification (e.g., LAMP, RPA, NEAR) or miniaturized real-time PCR cartridges. These systems close the accuracy gap, offering sensitivity and specificity comparable to central laboratory PCR, but with a turnaround time of 15–90 minutes. Devices like the Cepheid GeneXpert or BioFire FilmArray are prime examples, capable of detecting multiple pathogens (e.g., respiratory or gastrointestinal panels) from a single sample in a closed, "sample-to-answer" system. 3) The Nanotechnology Frontier: A transformative direction for future POCT lies in the integration of nanotechnology, which promises to overcome current limitations. Research by the authors, such as work on recombinant peptide-modified nanodiamonds for immune modulation (*Bilyy et al., 2021*) and studies on the fundamental interactions of nanoparticles with the immune system (e.g., their role in neutrophil extracellular trap formation) (*Bila et al., 2025*), provides foundational knowledge. This paves the way for next-generation nano-sensor platforms. These could combine the high sensitivity of molecular assays with the speed, low cost, and ease-of-use of lateral flow tests, while also enabling true multiplexing (simultaneous detection of dozens of pathogens and resistance markers) on a simple, portable device.

The value of POCT extends far beyond mere convenience; it is a catalyst for transforming clinical pathways and public health outcomes. 1) Immediate Clinical Decision-Making and Antimicrobial Stewardship: The most profound impact is the radical shortening of the "diagnostic-therapeutic loop." A physician can, within a single patient encounter, confirm or rule

out a specific infection (e.g., influenza, streptococcal pharyngitis, COVID-19). This enables: 1) Immediate, targeted antibiotic therapy, drastically reducing unnecessary empirical use of broad-spectrum agents—a primary driver of antimicrobial resistance (AMR). 2) Informed isolation and cohorting decisions, curbing nosocomial and community transmission. 3) Streamlined patient management, avoiding unnecessary referrals, hospital admissions, or additional imaging. 2) Enhancing Equity and Healthcare Access: POCT democratizes diagnostics by making them available in resource-limited settings, remote rural areas, and at the primary care level, where access to central labs is constrained. This is critical for achieving health equity and universal health coverage, ensuring that geographical or socio-economic status does not dictate diagnostic quality. Revolutionizing Epidemiological Surveillance: When deployed at scale and connected digitally, POCT becomes a powerful, real-time syndromic surveillance network. Aggregated, de-identified data from thousands of testing points can provide instantaneous insights into the community prevalence, geographic spread, and temporal trends of infectious diseases, allowing public health authorities to detect outbreaks early, monitor intervention effectiveness, and allocate resources dynamically.

Inherent limitations and the complex management architecture for integration. The decentralization that confers POCT its strengths also introduces significant systemic challenges that cannot be solved by the device alone but require a sophisticated management framework. Inherent Technological and Operational Limitations: 1) Limited Multiplexing Scope: Most current POCT devices are designed for a narrow, pre-defined panel of pathogens (often 1-6 targets). This contrasts with the complex, often polymicrobial differential diagnosis faced in clinical practice. 2) Variable Performance Characteristics: Particularly for antigen tests, sensitivity and specificity can vary widely between manufacturers, lot-to-lot, and based on operator technique and timing of testing relative to disease onset. This variability risks false reassurance or unnecessary anxiety. 3) Absence of Standardization and Quality Assurance: The proliferation of different platforms and tests, operated by non-laboratory personnel in diverse settings, creates a formidable challenge for ensuring consistent, high-quality results across the system.

Essential Management and Systemic Integration Tasks: For POCT to fulfill its promise as a reliable public health tool, a comprehensive management infrastructure must be built. Establishing a National Quality Management System: This is the non-negotiable foundation. It requires: a) Mandatory registration of all POCT devices and testing sites. b) A robust External Quality Assessment (EQA) scheme that regularly ships blinded control samples to all testing points. c) Standardized training and certification programs for operators. d) Implementation of built-in electronic readers or barcode scanners to minimize human error in result interpretation and recording. Digital Integration and Data Governance: The data generated by POCT is a public health asset. A mandatory, seamless digital linkage is required to automatically feed test results—with key metadata (test type, patient ID [anonymized for surveillance], location, timestamp)—into Electronic Health Records (EHRs) and a national public health surveillance platform. This creates a learning health system where data directly informs both individual care and population health strategy. Supply Chain and Logistics Mastery: Successful national scaling depends on a reliable, temperature-controlled supply chain for test kits and reagents, efficient distribution networks to prevent stock-outs in remote areas, and systems for managing inventory and preventing the use of expired tests. Sustainable Economic and Reimbursement Models: The business case for POCT must be clear. Financing models could include: a) Bundled payments that incorporate the cost of essential POCT into the tariff for a primary care consultation. b) Specific reimbursement codes for POCT procedures. c) Direct public procurement and provision for high-priority public health programs (e.g., AMR stewardship, outbreak

control). The cost must be justified by the savings achieved through reduced antibiotic misuse, fewer hospitalizations, and more efficient healthcare delivery.

In conclusion, POCT is not merely a simple test, but a strategic lever for healthcare system transformation. Its ultimate success hinges on recognizing it as a system-of-systems challenge, where the technological device is merely one component within a larger ecosystem of quality control, data connectivity, logistics, financing, and trained human resources. Only with this holistic management approach can POCT's potential to deliver equitable, timely, and impactful diagnostics be fully realized.

#### 4. Integration of approaches and systemic management: Building a resilient diagnostic architecture

Comparative analysis, functional synergy, and the diagnostic continuum. A simplistic view might pit the comprehensive power of mNGS against the operational speed of POCT. However, a strategic analysis reveals that these technologies are not competitors but complementary and synergistic components of a modern, tiered diagnostic ecosystem. Their relationship can be likened to that between a wide-area surveillance radar (mNGS) and a targeting system for point defense (POCT). One provides broad, unbiased situational awareness to detect any potential threat, while the other enables rapid, localized engagement of known, immediate dangers.

Table 1

#### Comparative characteristics of mNGS and POCT within an integrated system

Criterion	Metagenomic Sequencing (mNGS)	Point-of-Care Tests (POCT)
Strategic Role	Detective of last resort; Universal pathogen discovery tool	First-line screening and triage; Tool for immediate clinical action
Analysis Time	24–72 hours (from sample to validated report)	Minutes to 1 hour (sample-to-answer at site)
Pathogen Coverage	Universal, hypothesis-free. Detects all nucleic acids (bacteria, viruses, fungi, parasites), including novel/unknown agents.	Targeted, hypothesis-driven. Detects a pre-defined, limited panel of pathogens (typically 1-20 targets).
Primary Output	Comprehensive microbial identification + full resistome/virulome profile.	Binary or semi-quantitative result for specific pathogen(s).
Clinical Decision Impact	Guides definitive, often life-saving therapy in complex, unresolved cases; informs long-term management and public health policy.	Enables immediate therapeutic, isolation, or referral decisions during the clinical encounter.
Infrastructure and Expertise	Centralized, high-complexity reference laboratories requiring significant capital investment, bioinformatics infrastructure, and specialized expertise.	Decentralized, low-to-moderate complexity devices deployable at primary care, pharmacies, emergency departments; operated with minimal training.
Key Management Challenge	Ensuring equitable access and rational use through centralized hubs and clear referral pathways; managing high cost and data complexity.	Ensuring quality assurance, data integration, and sustainable financing across thousands of decentralized nodes.
Synergistic Link	Receives complex referrals from POCT/PCR-negative or immunocompromised patients. Provides validation and discovery data to refine future POCT panels.	Rapidly filters and triages the majority of cases. Creates an epidemiological map that guides mNGS utilization and public health response.

This comparative analysis underscores that POCT and mNGS operate on different axes of the diagnostic space: speed vs. breadth, and decentralization vs. centralization. The optimal system leverages the strength of each: POCT acts as a high-throughput filter and rapid responder, managing the vast majority of common infections at the point of need, while mNGS serves as a deep-investigation resource for the minority of perplexing, severe, or high-stakes cases that pass through this filter.

A multi-level national model: From point-of-care to reference genomics. To translate this synergy into practice and actively prevent the emergence of "diagnostic inequality"—where advanced tools become the privilege of major urban centers—a deliberately architected, multi-level national diagnostic strategy is essential. This model clearly defines the role and place of each technology within the healthcare delivery chain (See Figure 1).

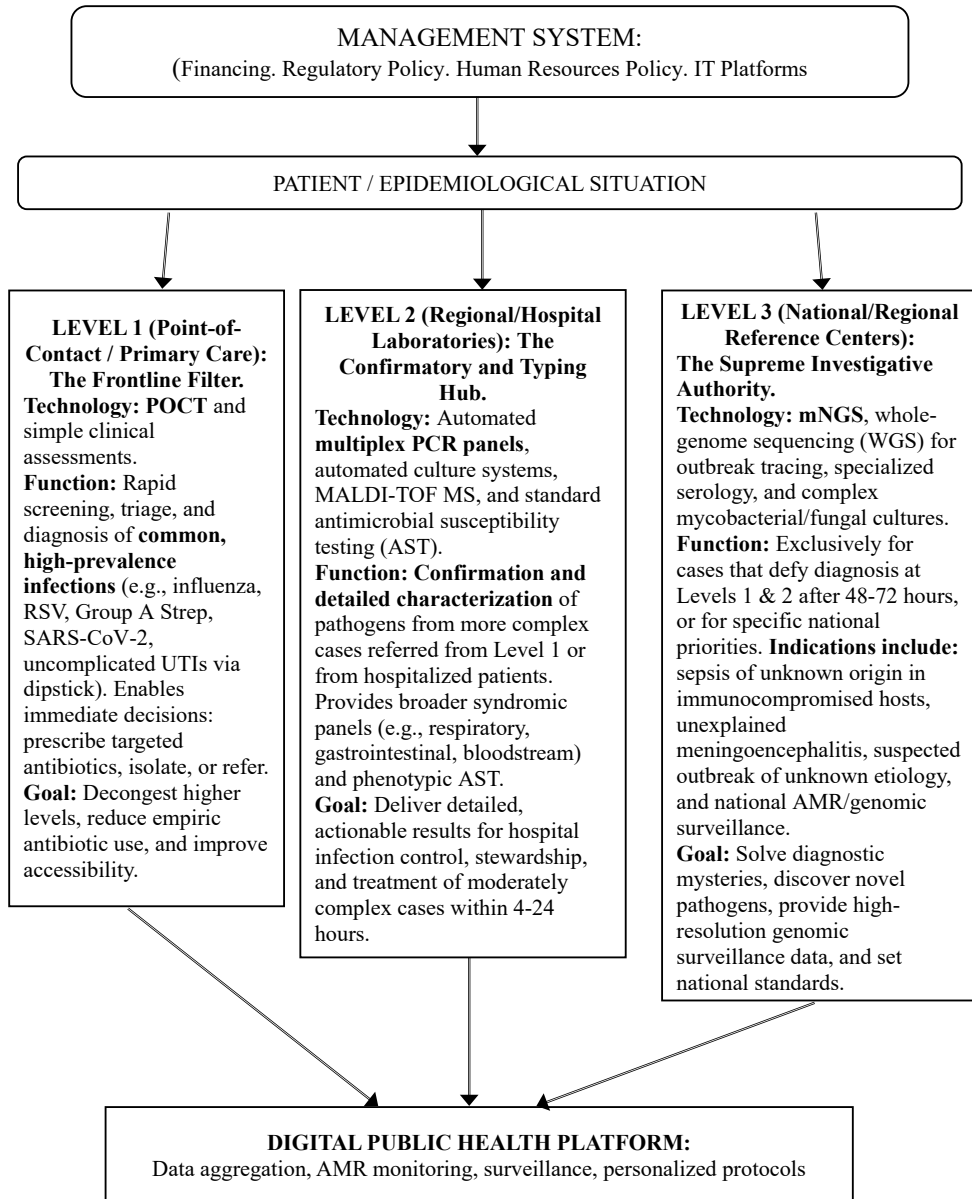
### **5. Foundational pillars for systemic implementation**

Building and sustaining this model requires concerted action on several interdependent management fronts: 1) Governance and Financing: Develop a National Diagnostic Strategy with a clear roadmap, milestones, and accountable agencies. Implement blended financing: Public investment in Level 3 reference infrastructure, insurance reimbursement for medically necessary mNGS (with strict criteria), and innovative purchasing models for POCT (e.g., volume-based guarantees, bundled payments for primary care episodes). Foster Public-Private Partnerships (PPPs) for technology deployment, local reagent production, and R&D, particularly for next-generation nanotechnology-based POCT. 2) Regulatory and Quality Framework: Create an accelerated but rigorous regulatory pathway for validating and approving novel diagnostic platforms, especially domestically developed ones. Mandate a national EQA scheme encompassing all levels, from POCT operators to mNGS bioinformatic pipelines. Establish national clinical guidelines with explicit criteria for patient and sample referral between levels. 3) Digital Health and Data Unification: Build a unified national digital health platform that integrates data from all three levels. This platform must: Securely aggregate anonymized POCT results for real-time syndromic surveillance. Facilitate electronic referral of samples and clinical data to higher-level laboratories. Host a national genomic epidemiology dashboard displaying mNGS/WGS-derived data on pathogen evolution and AMR trends. Provide decision-support tools for clinicians at all levels. 4) Workforce Development: Modernize medical and laboratory education curricula to include principles of genomics, POCT data management, and antimicrobial stewardship. Establish specialized training and certification programs for POCT coordinators, clinical bioinformaticians, and genomic epidemiologists.

In essence, the integration of mNGS and POCT is not a technical exercise but a systemic redesign of the diagnostic value chain. It demands moving from a fragmented, reactive model to a coherent, proactive, and intelligence-driven National Diagnostic Network. Only through such a structured, managed approach can the full potential of these transformative technologies be harnessed to deliver equitable, effective, and resilient healthcare for all.

### **6. Conclusions**

mNGS and POCT technologies are complementary foundations of a new paradigm in infectious disease diagnostics, focused on personalized medicine, effective public governance, and global biosecurity.



**Legend/Key Elements:**

*AST: Antimicrobial Susceptibility Testing*

*AMR: Antimicrobial Resistance*

*The arrows indicate the flow of samples and data, as well as management directives.*

*The **Digital Public Health Platform** serves as the unifying layer, integrating data from all levels to inform clinical and public health actions.*

**Fig. 1. Integrated Multi-Level Model for Infectious Disease Diagnostics: Synergy of Technologies and Management System**

Successful integration of these technologies requires a systemic transformation of healthcare management, including financial, regulatory, personnel, and organizational aspects.

Nanotechnology research opens prospects for creating next-generation diagnostic systems that combine the advantages of both approaches.

A key principle of state policy should be ensuring equitable access to diagnostics through a balance between centralization of mNGS and decentralization of POCT.

Only a comprehensive multidisciplinary approach that integrates advanced technologies, management competence, and an unwavering focus on equity can form the basis of a sustainable public health system capable of withstanding modern and future global infectious threats.

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## FACTOR ANALYSIS OF QUALITY OF LIFE INDICATORS AMONG OLDER INTERNALLY DISPLACED PERSONS WITHIN THE FRAMEWORK OF HEALTH-ENHANCING RECREATIONAL PHYSICAL ACTIVITY

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### Summary

The ongoing military conflict and forced displacement have significantly impacted the quality of life (QoL) of older individuals. This study aims to analyze the internal structure of QoL indicators among older internally displaced persons (IDPs) and substantiate the role of physical activity in their rehabilitation.

**Methods.** A sample of 152 older IDPs (aged 60+) was assessed using the SF-36 Health Survey. Statistical analysis included exploratory factor analysis (Principal Component Analysis with Varimax rotation), with preliminary validation via KMO (0.727) and Bartlett's tests ( $p < 0.001$ ).

**Results.** The study identified moderate QoL levels (45.6–46.3 points), with the lowest scores in Role-Physical (41.1) and Role-Emotional (42.3) domains. A two-factor model was established, explaining 33.9% of the total variance. Factor 1 ("Role and Physical Limitations") revealed a strong coupling between physical pain and emotional functioning. Factor 2 ("Socio-Emotional Resource") demonstrated that vitality is inextricably linked to social integration. Notably, Mental Health (0.971) and Physical Functioning (0.890) exhibited exceptionally high uniqueness, suggesting a "resource conservation mode" and functional decoupling under chronic stress.

**Conclusions.** The findings confirm that war and displacement impose a "double burden" on older IDPs, simplifying their QoL structure to basic survival dimensions. Improving QoL requires comprehensive health-improving recreational physical activity (HRPA) programs. An effective strategy must integrate moderate aerobic exercise (e.g., Nordic walking) with "mental fitness" modalities (yoga, Pilates) to simultaneously address physical limitations and bolster psycho-emotional resilience through group-based socialization.

**Key words:** SF-36 health survey, physical and mental health components, active aging, social integration, host communities.

DOI <https://doi.org/10.23856/7431>

## 1. Introduction

The hostilities in Ukraine have driven a substantial increase in the number of internally displaced persons (IDPs), with older adults emerging as a particularly vulnerable cohort. As of January 2026, approximately 3.7 million IDPs are registered in Ukraine, with individuals aged 60 and over accounting for more than 50% of this population (IOM, 2026). Older IDPs represent one of the most at-risk demographics within the context of contemporary armed conflict. Forced displacement, the severance of social ties, and the loss of a familiar living environment exert a multifaceted negative impact on their psychophysical well-being (Hakman et al., 2025). This underscores the urgent need for effective integration and socialization strategies, where health-enhancing and recreational physical activity serves as a primary intervention.

The WHO defines Quality of Life as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (WHO, 1998: 11).

In their research, N. Bielikova, S. Indyka, A. Tsos, and L. Vashchuk conceptualize the quality of life among conflict-affected populations as a complex, multidimensional construct encompassing physical health, psycho-emotional state, and social well-being. Their findings underscore the profound impact of hostilities on declining living standards and emphasize the critical role of an individual's subjective self-assessment (Bielikova et al., 2022).

In later life, quality of life is defined as a comprehensive attribute rooted in the fulfillment of physical, mental, and social potential within the "active aging" paradigm. The pivotal factors are subjective life satisfaction and health-enhancing recreational physical activity, which aim to preserve autonomy and bolster the psycho-emotional state (Andrieieva et al., 2021).

Recent psychometric evaluations of the SF-36 in geriatric groups have challenged the traditional two-component model. While some studies in general populations support the two-factor structure (Souza et al., 2018), research specifically focused on older adults often identifies more complex structures. A recent study on older adults found that a three-factor model provided a significantly better fit than the traditional two-factor version (Román-Quirós et al., 2024). Similarly, research on Mexican older adults confirmed a four-factor structure through Confirmatory Factor Analysis, suggesting that the instrument's dimensions are more nuanced in late life (Aguirre et al., 2022).

A 2024 meta-analysis specifically examining the use of SF-36 among refugees and displaced persons – a group highly comparable to elderly IDPs – concludes that the instrument remains a robust measure for assessing health-related quality of life in conflict-affected contexts (Essex et al., 2024).

Factor analysis using Principal Component Analysis with varimax rotation in geriatric samples has sometimes yielded an 8-factor solution, accounting for over 76% of the observed variance in quality-of-life indicators (Harith et al., 2020). This supports the structural validity of the eight individual scales rather than just the two aggregate scores (Bartsch et al., 2011).

Research indicates that the SF-36 effectively discriminates between health states in the elderly, with physical functioning scores typically declining linearly with age, whereas mental health scores may remain more stable (Bartsch et al., 2011). Furthermore, women in these populations consistently report lower quality-of-life scores across both physical and mental domains than men (El Osta et al., 2019). The consensus among recent researchers is that while the SF-36 is a valid and reliable instrument for monitoring the quality of life in elderly populations (El Osta et al., 2019), the use of factor analysis is essential to confirm which specific dimensions—such as physical functioning or social traits—are most impacted by the unique stressors faced by internally displaced persons (Aguirre et al., 2022).

Therefore, it is essential not only to assess quality-of-life indicators among older IDPs using the SF-36 survey but also to perform a factor analysis of the results. This approach enables the identification of critical factors requiring intervention and provides a scientific rationale for HERPA's efficacy in mitigating stress-related impacts and enhancing functional health status.

The study aims to identify the structure and interrelationships among quality-of-life indicators among older IDPs (assessed via the SF-36 Health Survey) using factor analysis. This approach seeks to provide a scientific rationale for the potential impact of health-enhancing recreational physical activity on their psychophysical well-being.

## 2. Materials and Methods

### *Participants.*

The study sample comprised 152 internally displaced persons (IDPs) residing in Chernivtsi, Ukraine, during the assessment period. The distinct patterns informed the decision to maintain gender homogeneity in quality-of-life perception and HERPA engagement, characteristic of older adults. Participants were categorized as older adults according to the WHO classification. The mean age of the respondents was  $M = 68$  years ( $SD = 4.2$ ).

### *Organization of research.*

Data collection was carried out at the "Turbota" Municipal Social Service Center in Chernivtsi. In accordance with ethical standards, all participants were briefed on the study objectives and provided voluntary informed consent for the processing of their personal information. To ensure respondent confidentiality, all surveys were conducted anonymously.

### *Methods.*

The primary assessment tool was the non-specific Short Form Health Survey (SF-36). This methodology allows for a comprehensive assessment of respondents across eight scales: Physical Functioning (PF) – reflects the extent to which physical health limits physical activities (self-care, walking, climbing stairs, carrying loads, etc.); Role-Physical (RP) – the impact of physical health on daily role activities (work, daily chores); Bodily Pain (BP) – pain and its impact on the ability to perform daily activities, including housework and outside work; General Health (GH) – a general self-assessment of health status; Vitality (VT) – implies feeling full of energy and vigor or, conversely, exhausted; Social Functioning (SF) – determined by the extent to which physical or emotional state limits social activities (communication); Role-Emotional (RE) – involves assessing the extent to which emotional state interferes with work or other daily activities (including increased time spent, reduced workload, decreased quality, etc.); Mental Health (MH) – characterizes mood, presence of depression, anxiety, and a general indicator of positive emotions. The eight scales listed above are classified into two categories, forming integral indicators of Physical Component Summary (PF, RP, BP, GH) and Mental Component Summary (VT, SF, RE, MH) (Krutsevych et al., 2019; Ware et al., 1992).

Data management and initial processing were conducted in Microsoft Excel 2016, with subsequent statistical analysis performed in JASP (Version 0.95.4). Descriptive statistics included the calculation of means ( $M$ ) and standard deviations ( $SD$ ). Factor analysis was executed using Principal Component Analysis (PCA). To achieve a more interpretable factor structure, Promax oblique rotation was employed, accounting for potential inter-factor correlations inherent in health-related data. Sampling adequacy for factor analysis was assessed using the Kaiser-Meyer-Olkin (KMO) measure (threshold  $> 0.7$ ) and Bartlett's test of sphericity ( $p < 0.05$ ), indicating the presence of significant patterned relationships among the variables.

### 3. Results

The analysis of the study findings revealed moderate levels of quality of life across the majority of the surveyed domains (Table 1).

Table 1

**Mean Scores for Individual SF-36 Domains of Physical and Mental Health Components Among Older IDPs (N=152)**

Quality of Life Components	Domain / Subscale	Mean Score	SD (%)
Physical Component Summary	Physical Functioning (PF)	50,2	17,68
	Role-Physical (RP)	41,1	36,89
	Bodily Pain (BP)	48,0	20,48
	General Health (GH)	43,2	14,20
Mental Component Summary	Vitality (VT)	46,3	14,71
	Social Functioning (SF)	49,2	19,07
	Role-Emotional (RE)	42,3	38,36
	Mental Health (MH)	46,3	6,03

Data analysis using the SF-36 questionnaire revealed that the composite scores for both the PCS and MCS are moderate (approximately 45–46 points out of 100). These findings suggest moderate functional limitations among the studied demographic.

Table 2

**Summary Quality of Life Scores for Older IDPs based on the SF-36 Health Survey (N=152)**

Quality of Life Components	Mean Score	SD (%)
Physical Component Summary	45,6	15,6
Mental Component Summary	46,3	13,3

PCS (comprising PF, RP, BP, and GH) yielded a mean score of 45.6. The most significant impairments were identified in the RP domain (mean = 41.1), characterized by high variability among respondents. BP and GH scores were moderate, potentially acting as limiting factors for physical activity. Specifically, the lower GH score (43.2) aligns with age-related morbidities exacerbated by the current national crisis.

MCS (comprising VT, SF, RE, and MH) averaged 46.3. While SF showed relative stability ( $\pm 49$ ), RE domain remains a critical area of concern ( $\pm 42$ ), highlighting substantial challenges in maintaining social and professional roles.

To elucidate the latent structure of quality-of-life indicators among older IDPs, an exploratory factor analysis was performed using PCA with Varimax rotation. Preliminary diagnostics confirmed the sampling adequacy: the KMO measure was 0.727, exceeding the threshold for adequacy, while Bartlett’s test of sphericity reached statistical significance ( $\chi^2 = 223,531$ ;  $p < 0,001$ ), validating the presence of robust correlations between the scales. The analysis yielded a two-factor model that accounted for 33.9% of the total variance in quality-of-life scores (Table 3).

Table 3

**Factor Loadings of SF-36 Domains for Older IDPs (N=152)**

Quality of Life Components	Factor 1 "Role and Physical Limitations"	Factor 2 "Social-Emotional Resource"	Uniqueness
Role-Emotional (RE)	0,753		0,502
Role-Physical (RP)	0,737		0,526
General Health (GH)	0,552		0,677
Bodily Pain (BP)	0,492		0,498
Social Functioning (SF)		0,651	0,686
Vitality (VT)		0,562	0,539
Mental Health (MH)			0,971
Physical Functioning (PF)			0,890

The first factor aggregates indicators reflecting the immediate impact of health status on respondents' daily functioning. The structure is anchored by the RE (0.753) and RP (0.737) domains. Given these predominant loadings, the factor was labeled "Role and Physical Limitations." This indicates that for older IDPs, the primary determinant of quality of life is the capacity to fulfill customary duties and social roles, irrespective of psycho-emotional or physical challenges. The inclusion of GH (0.552) and BP (0.492) reinforces the conclusion that physical discomfort is a direct correlate of social and role maladaptation.

The second factor, identified as the "Socio-Emotional Resource", characterizes the individual's adaptive potential and encompasses SF (0.651) and VT (0.562). The clustering of these domains underscores that energy levels and subjective vigor in older IDPs are inextricably linked to the quality of their social integration and the presence of communal support in their displacement settings. This underscores the critical need for group-based interventions and active social engagement to bolster their psychological and emotional resilience.

The domains of PF and MH warrant particular scrutiny, as they exhibited remarkably high uniqueness indices (0.890 and 0.971, respectively). These findings suggest that among IDPs aged 60 and older, the capacity for self-care and levels of anxiety or depression operate with relative autonomy from the broader quality of life framework. Specifically, mental health emerges as a standalone dimension. This phenomenon may be driven by prolonged chronic stress resulting from the military conflict, where an individual's internal psychological state undergoes a functional decoupling from physical comfort and social engagement.

#### 4. Discussion

Our findings delineate a distinct QoL profile for older IDPs, which diverges significantly from both the general population and younger IDP cohorts. The identified moderate scores for the Physical Component Summary (45.6) and Mental Component Summary (46.0) are broadly consistent with the data reported by Bielikova et al. (2024), who observed comparable trends (49.0 and 37.0, respectively). Notably, the mental health component in our sample is higher than previously reported; this discrepancy may be attributed to the specific psychological adaptation mechanisms inherent to older adults, potentially reflecting greater emotional resilience or life experience.

The low scores within the domains RP (41.12) and RE (42.32) are particularly alarming. When contrasting these findings with the pre-war data of Krutsevich et al. (2021), who studied women aged 50+ in peacetime (reporting RP = 46 and RE = 53), a marked decline is evident. This disparity reinforces the hypothesis that war and forced relocation impose a "double burden" on elderly IDPs. Their capacity to maintain daily roles is compromised not merely by age-related physical wear and tear but is further exacerbated by profound psycho-emotional distress.

The identified two-factor model – "Role and Physical Limitations" and "Socio-Emotional Resource" – illustrates a distinct QoL architecture shaped by the chronic stress of forced relocation, separation from social networks, and pervasive future uncertainty. The clustering of the RE domain with physical indices (RP, GH, BP) demonstrates a profound interdependence: for older IDPs, psychological equilibrium is inextricably bound to physical well-being. Consequently, their emotional backdrop is contingent upon physical comfort and pain levels; any experience of physical malaise triggers an almost instantaneous decline in emotional health.

It is noteworthy that while Mexican researchers (Aguirre et al., 2022) identified a four-factor SF-36 structure as typical for the elderly, our findings reveal a consolidation into only two factors. This structural narrowing suggests that under the pressure of constant stress and anxiety, the physiological and psychological systems of older IDPs have shifted into a "resource conservation mode." Rather than a multifaceted quality-of-life framework, the structure has collapsed into two fundamental pillars: the physical capacity to withstand strain and the availability of social scaffolding. This reflects a typical clinical picture of individuals whose internal reserves have been depleted by protracted adversity.

The exceptionally high uniqueness index of the Physical Functioning (PF = 0.890) underscores its operational autonomy within the factor structure. This finding aligns with the consensus that targeted, health-improving recreational physical activity is the most potent catalyst for enhancing QoL. Specifically, the data from Zaloilo et al. (2024) demonstrate that systematic Pilates training yielded a 1.3-fold increase in physical health scores and a 1.8-fold increase in mental health scores. Such evidence suggests that physical activity is not merely a motor task but a fundamental bridge to restoring the multifaceted quality of life for vulnerable populations.

Furthermore, the emergence of the second factor, "Socio-Emotional Resource," which bridges social activity and vitality, underscores the critical importance of group-based health-improving and recreational physical activity. As highlighted by Hakman et al. (2024), the synergy of physical recreation, novel experiences, and social interaction significantly enhances self-perception and emotional well-being in older adults. This reinforces the need for structured group activities as a primary tool for psychosocial rehabilitation among displaced elderly populations.

The observed autonomy of the Mental Health (MH) indicator suggests that conventional health programs may be inadequate for addressing the psychological needs of older IDPs. We propose the integration of "Mental Fitness" modalities (such as yoga, Pilates, and breathwork) that emphasize the mind-body connection – an approach validated by recent research (Zaloilo et al., 2024). Such interventions are uniquely positioned to simultaneously mitigate pain and physical constraints (Factor 1) while bolstering the socio-emotional resources (Factor 2) essential for this population.

Consistent engagement in HSPA enhances strength, endurance, and flexibility, thereby alleviating limitations in daily functioning and reducing fatigue (Krutsevich et al., 2019). Beyond biomechanical benefits, such activity stimulates circulation and muscle plasticity, improving pain modulation in chronic conditions and reducing cardiovascular risks (Geneen et al., 2017). Crucially, physical activity facilitates a reduction in stress, anxiety, and depressive symptoms via neurochemical pathways involving endorphins and serotonin (Eime et al., 2013).

Group-based sessions foster socialization, mitigate social isolation, and enhance both mood and self-regulatory capacity (Andrieieva et al., 2021).

Based on our findings, health-improving recreational physical activity is a robust intervention for improving quality of life in this population. The systematic integration of self-regulation techniques (including mental fitness, yoga, Pilates, breathwork, Tai Chi, Qigong, and relaxation methods), combined with moderate aerobic exercise (e.g., Nordic walking) and resistance training at least twice weekly, is expected to optimize the vital QoL domains. Specifically, these interventions target the two-factor structure identified in our study: "Role and Physical Constraints" (RE, RP, GH, BP) and the "Socio-Emotional Resource" (SF, VT).

## 5. Conclusions

The study established that Quality of Life scores among older IDPs remain at a moderate level (45.6–46.3), reflecting substantial limitations in daily functioning. The Role-Physical (41.1) and Role-Emotional (42.3) domains were identified as the most critical impairments, stemming from the cumulative impact of health decline and psychological stress.

Factor analysis yielded a two-factor model accounting for 33.9% of the total variance. The first factor, "Role and Physical Limitations," confirms that emotional well-being is not autonomous but is highly contingent upon physical comfort and pain management. The second factor, "Socio-Emotional Resource," highlights that vitality and vigor are inextricably linked to successful social integration within the host community.

A high degree of uniqueness was observed for Mental Health (0.971) and Physical Functioning (0.890). This suggests that under chronic war-related stress, psychological states may undergo functional decoupling from physical health, necessitating specialized interventions.

Scientific evidence indicates that improving QoL in this cohort requires comprehensive Health-improving and Recreational Physical Activity (HRPA) programs. An optimal strategy should integrate moderate aerobic exercise (e.g., Nordic walking) to address physical decline with "mental fitness" modalities (yoga, Pilates, breathwork) to bolster psycho-emotional resilience and foster group socialization.

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## BIOCHEMICAL AND HORMONAL FACTORS IN THE DEVELOPMENT OF ALOPECIA IN WOMEN: DIAGNOSTIC SIGNIFICANCE FOR TRICHOLOGICAL PRACTICE

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### Summary

The article is devoted to the study of biochemical and hormonal factors that may be associated with pathological hair loss, their diagnostic significance for trichological practice. Alopecia is not just a cosmetic defect, but a serious pathological process that may “hide” damage to other organs and systems. The aim of the study was to systematize current medical knowledge about the hormonal etiology of alopecia and to develop recommendations for trichologists on cooperation with doctors when endocrine disorders are suspected. To achieve this goal, we analyzed current scientific and methodological literature using theoretical methods of analysis, generalization, and synthesis. The main search was conducted in the Scopus, Google Scholar, LinkedIn, EuroPub, and ResearchBib databases. The main biochemical and hormonal changes in the female body that may be associated with alopecia were identified.

The most common causes of alopecia in women are non-scarring causes, such as telogen alopecia (or telogen effluvium) and female pattern hair loss (also known as androgenetic alopecia). Telogen alopecia is caused by a disruption in the hair growth cycle and is characterized by the loss of telogen hair. Androgenetic alopecia is characterized by the absence of complete baldness, but only a slow decrease in hair density on the head, mainly in the central (parietal) area, while maintaining hair growth in the frontal (forehead) area.

The life cycle of the hair follicle, a tiny self-renewing mini-organ with a complex structure characterized by periodic growth, plays a central role in the development of hair loss. Fundamentally, alopecia is characterized by an imbalance in the phases of the follicle's life cycle, namely the acceleration of the transition from anagen to telogen.

The life cycle of the hair follicle can be directly affected by deficiencies in certain nutrients (including vitamins and trace elements), changes in thyroid hormone levels, sex hormones and their ratio to each other, the presence of chronic inflammatory diseases associated with an increase in circulating inflammatory cytokines, harmful habits, acute or chronic stress with increased cortisol concentration, etc.

It is the presence of numerous factors affecting the hair growth cycle, significant gender differences in their impact, and several main types of alopecia in women with different pathogenesis that require a comprehensive approach to the additional examination of such women and the selection of individualized treatment for alopecia.

**Key words:** alopecia, hair loss, alopecia in women, trichology, female alopecia, biochemical factors of alopecia, hormonal factors of alopecia.

DOI <https://doi.org/10.23856/7432>

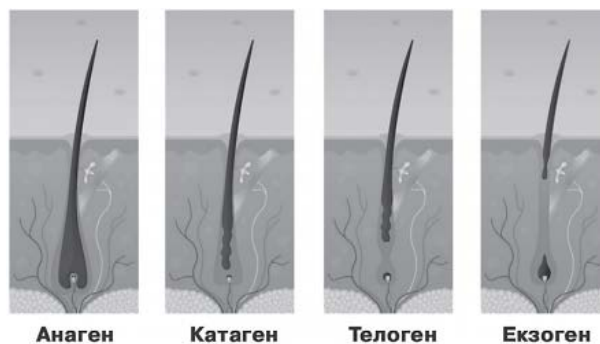
## 1. Introduction

Alopecia, or pathological hair loss, is a disorder characterized by a disruption in normal hair production. It can develop in people of both sexes at different stages of life. Hair loss is not just a cosmetic complaint that significantly impairs quality of life and lowers self-esteem. It is a complex clinical problem because it can be associated with a wide range of factors, such as stress, nutrient deficiency, hormonal imbalance, and can be one of the first signs of disease in other organs and systems.

The causes of alopecia are divided into scarring and non-scarring, which statistically account for the majority of cases seeking trichological help. The main types of non-scarring alopecia in women are telogen effluvium (TE or telogen effluvium) and female pattern hair loss (FPHL or androgenetic alopecia). TE can be acute or chronic in nature. It is caused by a disruption in the hair growth cycle and is characterized by the loss of telogen hair (*Bilik L., Kokcam I., & Esen M., 2024*). FFA is non-scarring diffuse alopecia, characterized by thinning and thinning of hair mainly in the parietal (central) area while preserving the frontal (frontal) area of hair growth, while complete baldness is usually not observed, only a slow decrease in hair density on the head (*Vozianova S.V., Bolotna L.A., & Sarian O.I., 2022*).

Data on the incidence of alopecia among women varies significantly across different regions of the world and depends on the age of the respondents. According to statistics, the incidence of alopecia at the age of 30 is about 12-15%, while at the age of 60, this figure is already 30-40% (*Herskovitz I., & Tosti A., 2013; Vozianova S.V., Bolotna L.A., & Sarian O.I., 2022*).

The life cycle of the hair follicle, a tiny self-renewing mini-organ with a complex structure characterized by periodic growth, plays a central role in the development of hair loss. The life cycle of scalp follicles lasts several years and consists of the following main phases: anagen (active growth and remodeling of the hair), catagen (regression phase), telogen (rest and dormancy phase), and exogen (phase of immediate hair loss or shedding) (Fig. 1) (*Vozianova S.V., Bolotna L.A., & Sarian O.I., 2022*).



**Fig. 1. Life cycle of a hair follicle (Vozianova Bolotna & Sarian, 2022)**

Each hair follicle goes through 10 to 30 cycles during its lifetime. At the same time, due to the fact that individual hair follicles are in different phases of the cycle under normal healthy conditions, the density and total number of hairs remain relatively stable. It is believed that most people have about 100,000 hairs on their head at any given time, and losing 100-150 hairs per day is normal (*Natarelli N., Gahoonia N., & Sivamani R. K., 2023*).

The life cycle of a hair follicle can be directly affected by deficiencies in certain nutrients (vitamins and trace elements), hormonal imbalances, the presence of chronic diseases and their severity, harmful habits, stress, etc.

**The aim of the study** is to systematize current medical knowledge about the hormonal etiology of alopecia and to develop recommendations for trichologists on cooperation with doctors when endocrine disorders are suspected.

## 2. Research methods

To achieve this goal, we analyzed contemporary scientific and methodological literature using theoretical methods of analysis, generalization, synthesis, induction, and deduction. The main search was conducted in the Google Scholar, Scopus, PubMed, Web of Science, LinkedIn, and EuroPub databases. The main biochemical and hormonal indicators were established, changes in which are most often associated with pathological hair loss in women (alopecia).

## 3. Research results and their discussion

As mentioned earlier, the main organ whose dysfunction causes alopecia is the hair follicle and the disruption of its life cycle. More specifically, alopecia is fundamentally characterized by an imbalance between anagen and telogen: the acceleration of the transition from anagen to telogen leads to an increase in the number of hairs falling out, while factors that act in the opposite direction – increasing the transition from telogen to anagen – lead to hair growth and can be used in trichological practice for treatment. The fact is that the exogenous time does not change, so the reduction of the previous phases (primarily anagen) leads to a prolongation of the “pause” between the life cycles of the follicle until the beginning of the next anagen. During this time, the follicle does not produce hair and remains “empty,” which initially leads to its reduction (miniaturization) with subsequent deletion (*Redler S., Messenger A.G., & Betz R.C., 2017*).

Inflammation is one of the factors contributing to the transition from anagen to telogen and, accordingly, to faster hair loss. As early as 1975, A. Lattanand and W.C. Johnson noted the presence of lymphocytes and histiocytes or significant perivascular infiltration of mast cells in tissues collected from patients with androgenetic alopecia (*Lattanand A., & Johnson W.C., 1975*). Subsequently, similar histological changes in various types of alopecia were described both in animal experiments and in human studies (*Natarelli N., Gahoonia N., & Sivamani R.K., 2023*). It should be noted that not only local inflammation of the scalp (as in atopic dermatitis or psoriasis) but also systemic inflammation plays a role in the development of alopecia. The latter, in turn, is characterized by an increase in circulating pro-inflammatory cytokines in the blood, such as interleukin-1 $\alpha$  and 1 $\beta$ , tumor necrosis factor- $\alpha$ , C-reactive protein, etc. (*English R.S., 2018*).

Literature data and observational findings indicate that nutrients, including vitamins, minerals, and trace elements, have a significant impact on hair health and hair loss rate. For example, children with protein-energy malnutrition (kwashiorkor, marasmus, and marasmic-kwashiorkor conditions) experience changes in their skin and hair. Deficiencies in essential amino acids such as histidine, leucine, valine, and cysteine are very common in patients with various types of alopecia (*Gowda D., Premalatha V., & Imtiyaz D.B., 2017*). Correction of protein deficiency with dietary supplements containing marine proteins and glycosaminoglycans

significantly improves patients' self-esteem and quality of life and is associated with an increase in the number of terminal hairs, their diameter, and a decrease in hair loss compared to placebo (Natarelli N., Gahoonia N., & Sivamani R.K., 2023).

Deficiencies in omega-3 and omega-6 fatty acids may contribute to an increase in the proportion of hair follicles in the telogen phase and, as a result, alopecia. Arachidonic acid (omega-6 fatty acid) in mouse models has demonstrated the ability to stimulate the expression of growth factors such as fibroblast growth factor FGF-7 and FGF-10, which are involved in hair growth, and arachidonic acid supplements can prolong the anagen phase, promoting hair shaft elongation (Natarelli N., Gahoonia N., & Sivamani R.K., 2023).

Micronutrients, including vitamins, in physiological doses promote cell renewal of matrix cells in hair follicle bulbs, thereby regulating the normal follicle cycle. However, excessive uncontrolled consumption can negatively affect hair parameters, increasing hair loss (Almohanna H.M. et al., 2018).

Vitamin A can stimulate stem cells and induce anagen, but excessive use of vitamin A-rich supplements and excess levels of vitamin A in the blood serum can have a detrimental effect on hair parameters (Almohanna H.M. et al., 2018).

B vitamins, such as niacin (vitamin B3), biotin (vitamin B7), folic acid (vitamin B9), and cyanocobalamin (vitamin B12), are associated with hair loss, but alopecia is not the leading symptom of their deficiency, but rather an additional clinical finding. Moreover, the use of drugs or supplements containing these vitamins without first determining their deficiency may be associated with worsening hair condition and increased hair loss (Almohanna H.M. et al., 2018; Natarelli N., Gahoonia N., & Sivamani R.K., 2023).

Vitamin D is an important nutrient in the body with many different functions, but its role in hair loss is not fully understood and controversial. A review conducted by Gerkowicz A. et al. found significantly lower vitamin D levels in patients with female pattern hair loss and telogen alopecia than in the control group (Gerkowicz A. et al., 2017). Other authors, however, noted the opposite changes in their studies, and monotherapy with vitamin D supplements was not associated with a reduction in the manifestations of alopecia (Natarelli N., Gahoonia N., & Sivamani R.K., 2023).

There is a belief that vitamin E, due to its antioxidant activity and inhibition of lipid peroxidation, can increase hair growth, but there is no data on the benefits of taking supplements rich in this vitamin. Moreover, excess vitamin E increases the risk of bleeding and reduces the production of thyroid hormones, which in turn can contribute to hair loss.

The main minerals involved in regulating the hair growth cycle are iron, zinc, and selenium. Zinc is an important component of various metalloenzymes that regulate protein synthesis and cell division, so its deficiency is associated with hair loss (including various types of non-scarring alopecia) and brittle hair in patients. Importantly, alopecia associated with zinc deficiency is reversible, so it is necessary to assess serum zinc levels in patients with unexplained alopecia before prescribing zinc supplements (Guo E.L., & Katta R., 2017).

The mineral selenium participates in the protection against oxidative damage and morphogenesis of hair follicles. Despite the reduction in alopecia and repigmentation of hair when selenium supplements are used by patients with selenium deficiency, as with other minerals, there is no evidence of the benefits of these supplements in patients without selenium deficiency. Moreover, selenium toxicity, along with skin blisters, gastrointestinal symptoms, and memory problems, can cause generalized hair loss (Guo E.L., & Katta R., 2017).

Iron deficiency is the most common nutrient deficiency in the world and may contribute to the development of telogen alopecia. Free iron inside cells leads to damage to the cellular

apparatus through the formation of free radicals. That is why it is stored intracellularly in a complex with the protein ferritin, whose level in blood serum serves as a marker of the total level of iron storage in the body. The potential effect of iron on the hair growth cycle is related to its function as a cofactor for the enzyme ribonucleotide reductase, which regulates the rate of DNA synthesis (Guo E.L., & Katta R., 2017). Since hair follicle cells divide rapidly, they require constant use of this enzyme, and iron deficiency can limit its effectiveness. This, in turn, leads to a decrease in cell metabolism and regeneration and causes a decrease in hair growth. Most studies indicating a decrease in ferritin levels in patients with alopecia compared to a healthy control group (Agarwal S. et al., 2019; Bilik L., Kokcam I., & Esen M., 2024; de Queiroz M., Vaske T.M., & Boza J.C., 2021; Al-Fawaeir S., & Al-Odat I., 2025) are limited to a specific period in a woman's life (pregnancy, perimenopause, or menopause). This fact limits the transfer of the results obtained to the general population, since these periods of a woman's life can significantly affect the health of her hair. Given that studies involving men did not observe a significant difference in ferritin levels between the main and control groups, it is likely that its deficiency in women is more important for hair condition or causes other pathological changes in the body that directly lead to alopecia (Natarelli N., Gahoonia N., & Sivamani R.K., 2023).

Thyroid dysfunction (both hypo- and hyperthyroidism) can cause reversible diffuse hair loss and promote premature transition from anagen to telogen, potentially leading to telogen effluvium. In this case, alopecia is often the only sign of thyroid dysfunction (Natarelli N., Gahoonia N., & Sivamani R.K., 2023). In an in vitro study analyzing the direct effect of T3 and T4 hormones on human hair follicles, their inhibitory effect on the apoptosis of hair matrix keratinocytes was found, and T4 additionally stimulated their proliferation (van Beek N. et al., 2008).

Hair loss is observed in approximately 33% of people with hypothyroidism and 50% of people with hyperthyroidism. In hypothyroidism, an increase in telogen can lead to increased dryness, brittleness, and stiffness of the hair, accompanied by a decrease in the proliferation of hair bulb cells, causing progressive hair thinning (Hussein R.S., Atia T., & Bin Dayel S., 2023). In 2015, Contreras-Jurado C. et al. showed in an experimental study that mice with a deficiency of thyroid hormone receptors had reduced stem cell activation and accumulation in the follicles. On the other hand, prolonged stimulation with thyroid hormones promotes the differentiation of progenitor cells, which subsequently leads to depletion. Thus, the authors concluded that both deficient and excessive levels of thyroid hormones can contribute to the transition from anagen to telogen and hair loss, and therefore thyroid-stimulating hormone and thyroxine levels should be determined as part of a standard examination for non-scarring alopecia (Contreras-Jurado C. et al., 2015).

Sex hormones and sex hormone derivatives formed in the body during their metabolism have a significant impact on hair growth and loss. One such derivative is dihydrotestosterone (DHT), an androgenic steroid hormone produced in target tissues from testosterone under the action of the enzyme 5-alpha-reductase type 2. Although androgens increase the size of hair follicles in androgen-dependent areas, they can lead to miniaturization of scalp follicles and contribute to androgenetic alopecia. After binding to androgen receptors in the hair follicle, DHT promotes a shortening of the anagen phase and a lengthening of the telogen phase, leading to increased apoptosis of hair cells and, thus, hair loss (Bassino E., Gasparri F., & Munaron L., 2020). Although men with genetically determined higher levels of 5-alpha-reductase and androgen receptor activity in hair follicles are more likely to suffer from male pattern androgenetic alopecia, and those with a deficiency of this enzyme are less likely to develop alopecia, the usefulness of determining DHT levels in blood serum during routine hair loss examinations is

a subject of debate. Thus, Urysiak-Czubatka I. et al., after analyzing DHT concentrations in the blood serum of women and men with androgenetic alopecia and healthy women and men without hair loss, found elevated DHT concentrations in the blood serum of both individuals with alopecia and the control group, with no statistically significant difference between the groups. In addition, the authors found no correlation between DHT concentrations and the progression of alopecia (Urysiak-Czubatka I., Kmiec M.L., & Broniarczyk-Dyla G., 2014).

Numerous studies have been devoted to the influence of testosterone and estrogen on hair parameters, including the duration of the anagen phase. Observation of hair parameters during pregnancy, the postpartum period, and menopause in women has contributed to the formation of the opinion that estrogen has a protective effect against hair loss, since each of these stages in a woman's life is characterized by a significant difference in estrogen concentration. During pregnancy, which is characterized by high estrogen levels, hair growth and diameter increase, while hair loss decreases. However, it should be noted that this does not take into account changes in other factors associated with pregnancy, such as increased levels of human chorionic gonadotropin, progesterone, prolactin, growth factors, and cytokines, which may also contribute to these hair changes. Conversely, a decrease in estrogen and progesterone levels after childbirth is associated with postpartum telogen alopecia, while estrogen depletion during menopause is associated with a decrease in hair density and diameter, a reduction in the duration of the anagen phase, and the development of female pattern hair loss (Grymowicz M. et al., 2020).

Absolute values of estrogen or testosterone cannot unequivocally indicate the risk of alopecia onset and progression, as their levels in the body are regulated not only by the gonads but also by other endocrine glands. Therefore, they may not differ significantly from the values of the control group. Moreover, sex hormones are not limited to testosterone and estrogen, but also include other substances: luteinizing and follicle-stimulating hormones, prolactin, progesterone, sex hormone-binding globulin, dehydroepiandrosterone sulfate, etc. Determining these substances and their ratios has greater diagnostic significance than the absolute values of testosterone and estrogen (Natarelli N., Gahoonia N., & Sivamani R.K., 2023; Ohn J. et al., 2022; Al-Fawaeir S., & Al-Odat I., 2025).

Cortisol is the main stress hormone that can affect the cyclical regulation of hair growth, promoting the transition from anagen to telogen. In addition, it reduces the synthesis of glycosaminoglycans and proteoglycans (such as versican and decorin), which are necessary for the normal functioning of hair follicles and the hair growth cycle. Versican protects cells from oxidative stress-induced apoptosis, and decorin promotes hair growth by acting as an anagen inducer. Thus, high cortisol levels lead to a decrease in synthesis and an increase in the breakdown of hair follicles, resulting in hair loss.

Stress with increased cortisol levels can often be the initiator of hair loss and then become its consequence. After all, hair loss itself causes stress or exacerbates existing stress, contributing to the formation of a "pathological circle" (Natarelli N., Gahoonia N., & Sivamani R.K., 2023). However, modern methods of determining cortisol levels in blood, saliva, or hair have certain technical difficulties and are quite expensive. Moreover, they do not always indicate the current state of the patient (especially hair testing, which is more of an indicator of chronic stress) and have not shown a clear link to the development, severity, and type of alopecia in clinical practice.

Thus, many different factors contribute to the development and progression of pathological hair loss in women, requiring a comprehensive approach to examining such women. These examinations should not be limited to a direct examination by a trichologist, but should also include an examination of other organs and systems of the body. That is why close cooperation

between trichologists and dermatologists on the one hand and doctors of other specialties (primarily family doctors, endocrinologists, and gynecologists) on the other is the key to establishing the correct diagnosis and, accordingly, prescribing the correct and effective treatment in each specific case.

#### 4. Conclusions

Thus, pathological hair loss (alopecia) in women is a multifactorial pathological condition, the development and progression of which involves various mechanisms, the combination and degree of manifestation of which differ in each individual woman.

Hair growth is mediated by a complex cycle consisting of anagen, catagen, telogen, and exogen, which is influenced by many factors, inducing the transition from anagen to telogen and vice versa, thereby causing the development and progression of alopecia in women. These factors include markers of inflammation, certain nutrients, including vitamins and minerals, thyroid hormones, cortisol, sex hormones, and others.

Numerous studies on the influence of various factors associated with hair loss cannot fully explain the mechanisms of alopecia. Moreover, there are quite a few contradictions related to the influence of a specific factor, because even establishing a close correlation between a certain indicator and the presence of alopecia is not always confirmed by attempts to correct this indicator with medication or dietary supplements.

It is the presence of numerous factors affecting the hair growth cycle, significant gender differences in their influence, and several main types of alopecia in women with different pathogenesis that require a comprehensive approach to the additional examination of such women and the selection of individualized treatment for alopecia.

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**TECHNOLOGY, CREATIVITY, IMPLEMENTATION****ANALYSIS OF THE ASSESSMENT OF LOGISTICS SUSTAINABILITY  
IN THE CONTEXT OF IMPLEMENTING SUSTAINABLE DEVELOPMENT  
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**Summary**

The implementation of sustainable development goals and principles is increasingly addressed in various spheres of economic activity, including logistics. Despite extensive scholarly research, a universal indicator for assessing sustainable development in logistics has not yet been established, which complicates research and the identification of existing shortcomings in this sector. Logistics is a key value-creating activity and a core component of the service-based economy in developed countries, significantly influencing economic conditions at both national and global levels. The objective of this study is to calculate an integral sustainability indicator for the logistics sector and apply it to several European countries in order to assess the level of sustainable development, identify strengths and weaknesses, and outline possible solutions for advancing sustainable logistics. The object of the research is the logistics systems of selected European countries, while the subject is the level of sustainable development in logistics. Scientific novelty consists in the development of an integral logistics sustainability indicator enabling interstate comparative analysis. The practical significance lies in the applicability of the results for public policy-making, corporate strategic planning, and further research.

**Key words:** sustainable development, sustainable logistics, integral sustainability indicator, logistics sector, European countries, comparative analysis.

DOI <https://doi.org/10.23856/7433>

## 1. Introduction

The theoretical foundations of sustainable development in logistics have been addressed in a number of scholarly studies. In particular, the issue has been examined by Saiensus M. A. in the study "Logistics as a component of strategies for sustainable development" (Saiensus M. A., 2018) as well as by Filip Z. Bugarcic and Vladimir Micic in "Analysis of the Sustainable Development Concepts in the Logistics Industry" (*Filip Ž. Bugarčić, Vladimir Mičić, 2023*). The implementation of sustainable practices in the field of freight transport is also examined in the study by Oksana Bilonoh, Serhii Yanishevskiy, Oleksandra Kostiuhenko, Volodymyr Fartuchnyi, Igor Chernenko and Yevgen Yanishevskiy entitled "Implementation of sustainable development approaches in the management of transport service processes of economic entities" (*O. Bilonoh, 2025*). Additionally, the study entitled "Specifics of project's decisions-making process and its formation in reverse supply chains management" examines specific measures and their implementation aimed at increasing the sustainability of the logistics system (*Halak I. I., Khrutba Y. S., 2022*). It is also worth noting the study by Kyrych N. B., "Indicators of Regional Sustainable Development," in which a system of indicators is proposed to determine the sustainability of a region, based on the principles of the "pressure-state-response" (PSR) model developed by experts from the Organisation for Economic Co-operation and Development (OECD) (*Kyrych N., 2018*).

It is logical to begin with the concept of "sustainable development" in general. The most appropriate approach is to refer to the internationally recognized definition. It is presented in the Report of the World Commission on Environment and Development titled "Our Common Future". The definition is as follows: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs". According to this report, sustainable development consists of two main components:

- the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given;
- the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.

In domestic scientific thought, the concept of sustainable development is considered as a multidimensional category that combines economic, social and environmental aspects of the development of society and economic systems. Thus, O. Kotykova focuses on the substantive content of the concept of sustainable development, emphasizing its integrative nature and the need to reconcile economic growth with long-term preservation of resource potential (*Kotykova O., 2007*). In the works of I. Tarasenko, sustainable development of enterprises is interpreted from the standpoint of management methodology, where institutional, organizational and strategic mechanisms for ensuring balanced development of production systems are of key importance (*Tarasenko I., 2011*). At the macro level, the concept of sustainable development is deepened in the national report edited by E. Libanova and M. Khvesyuk, where the sustainable development of Ukraine and its regions is considered as the result of effective use of socio-economic potential, taking into account interregional disparities and demographic challenges (*Libanova E., Khvesyuk M., 2014*). At the same time, Bagrov M., Kostrikov S., Chervanyov I. focus on the formalization of the environmental dimension of sustainable socio-economic development, emphasizing the need for quantitative measurement of environmental parameters in the system of management decisions (*Bagrov M., Kostrikov S., Chervanyov I., 2008*). The current stage of evolution of the concept of sustainable development is reflected in the works of M. Nahara, where sustainable development is interpreted as a transformation of

the paradigm of economic development in the context of the greening of the economy and the strengthening of the role of "green" innovations (Nahara M., 2011). Special attention is deserved by the studies of O. Khanova and S. Skibina, who analyze approaches to assessing sustainable development in EU countries, emphasizing the importance of a system of indicators as a tool for monitoring and comparative analysis of achieving sustainable development goals (Khanov O., Skibina S., 2017). Taken together, these approaches indicate the evolution of scientific views on sustainable development - from the conceptual understanding of its essence to the development of methodological and applied assessment and management tools. Considering this works and in the context of the development of the concept of sustainable development and its implementation at the international level and, in most countries, at the national level within legislative frameworks, the following definition is proposed: "Sustainable development is a system of measures that ensures a balanced development process, taking into account the equilibrium between the economic, social, and environmental components, thereby meeting the needs of society without causing negative consequences for future generations". According to the Resolution adopted by the United Nations General Assembly on September 25, 2015, 17 Sustainable Development Goals and 169 corresponding targets were established.

It is worth noting that the logistics approach serves as a means of achieving the majority of the Sustainable Development Strategy goals and their corresponding targets. For example, Goal 2: "End hunger, achieve food security and improved nutrition and promote sustainable agriculture", and Target 2.1: "By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round". The role of logistics in achieving this goal lies in the fact that year-round access to safe food requires the development of appropriate supply chains, the organization of distribution centers, storage methods, and the formation of procurement systems based on the established consumer basket. In other words, the development of logistics directly influences the advancement of the sustainable development concept. At the same time, the sustainable development strategy also directly affects the development of logistics and its methodologies. For example, Goal 13: "Take urgent action to combat climate change and its impacts". This goal necessitates the adaptation of transport infrastructure to climate change in order to prevent and mitigate further negative impacts.

Thus, it is important to emphasize that the concepts of logistics and sustainable development are closely interconnected and mutually complementary.

As a result of this strong interrelation, a unified concept has emerged – the concept of sustainable logistics (fig. 1). It involves the implementation of logistics functions and tasks in accordance with the requirements of the Sustainable Development Strategy.



**Fig. 1. Interconnection between logistics concepts and sustainable development**

Therefore, the study of the level of sustainability in logistics is highly relevant, since, as we have established, logistics and sustainable development directly influence one another. Accordingly, the definition of an indicator that would reflect the sustainability of logistics will make it possible to determine the prospects for further implementation and scaling of sustainable development in national economies through the influence of logistics as one of the key shaping factors.

## 2. Challenges in Assessing Logistics Sustainability in an International Context

All the reviewed studies provide a general overview of sustainable development, its relevance, and various measures to improve the efficiency and sustainability of logistics, as well as its compliance with the requirements of sustainable development. However, none of these works reflect the sustainability of logistics either in general or in individual countries, since there is no indicator that would represent it. Therefore, despite the recognition of the importance of logistics in achieving the Sustainable Development Goals, the main issue lies in the fact that a unified approach to evaluating the sustainability of logistics systems has not yet been established. This limits the ability to conduct monitoring, international and regional comparisons, and complicates the adoption of effective managerial decisions that would ensure and coordinate the implementation of the sustainable development strategy across various sectors of the economy, including logistics as the “circulatory system of the economy.” In today’s context, where issues of decarbonization, energy efficiency, accessibility, and inclusiveness are gaining global importance, the existence of a transparent and comparable tool for assessing the sustainability of logistics is not only desirable but also a necessary condition for the effective management of logistics processes in accordance with the Sustainable Development Goals.

This paper proposes the creation of an indicator that would reflect the sustainability of logistics in the following countries: Ukraine, Germany, Romania, Poland, Spain, and Turkey. The list of countries is formed based on their diversity in terms of economic development levels, geographical location, and the degree of integration into the European logistics system. Germany demonstrates advanced approaches to sustainable logistics, while Ukraine and Romania are examples of countries with a transitional economy. Poland serves as an example of effective logistics adaptation to the requirements of sustainable development in the context of rapid integration into the EU. Spain adds a southern European context to the study, with a focus on innovative urban logistics, while Turkey represents a country with an Asian-European context and high transit potential. This selection allows for a comparative analysis of different models of implementing sustainable solutions in logistics. The sustainability indicator in logistics will be based on the principle of the harmonious combination of economic, environmental, and social vectors, as Kuspljak H. I. and Kuspljak I. S. note that sustainable development requires interdependence between these three vectors (economic, environmental, social) (Kuspliak G., Kuspliak I., 2020).

Therefore, in the context of this study, the existing UNTAD SFT index (UNCTAD) will be examined. Although it characterizes the level of development in the logistics industry, it does not provide a complete assessment of the sustainability of the logistics sector, as it only integrates the quantitative indicators of the three vectors. However, the SFT index does not show the deviation in the development levels of these three vectors relative to each other. That is, due to the scale effect, the gap between them will only increase, which violates the core principle of sustainable development – the harmonious combination of economic, social, and

environmental vectors. Therefore, within the scope of this research, an indicator of the deviation of the sustainability indicators of the three interfaces in logistics relative to each other will be calculated to assess the sustainability of the logistics sector in the proposed countries.

Thus, the objectives of the research are defined as follows:

- Development of an approach for calculating the logistics sustainability indicator;
- Carrying out calculations for a number of European countries;
- Identification of the strengths and weaknesses of the examined logistics systems in ensuring the sustainability of their development.

### 3. Methodology of Logistics Sustainability Assessment

As previously mentioned, the SFT index was chosen as the basis for calculations. The UNCTAD SFT index measures and visualizes countries' performance in sustainable freight transport (SFT) in an internationally comparable manner, covering around 160 economies. Aligned with the UNCTAD SFT framework, the index comprises the overall score, scores for the three pillars of SFT (i.e., economic score, social score, and environmental score), and scores for the SFT categories (e.g., infrastructure score, safety score, etc.). These scores offer insights into an economy's relative standing in SFT performance worldwide. A score of 0 indicates that the economy has the worst performance in the world for all underlying SFT indicators, while a score of 100 indicates the best performance in the world for all indicators (UNCTAD). To reflect the overall level of sustainable development in logistics of the selected countries, it is appropriate to present the SFT index score and the scores for the SFT categories (table 1, fig. 2).

Table 1

**SFT index score and scores for the SFT categories for selected countries**

Country	SFT index score	Economic score	Social score	Environmental score
Germany	87,44	82,2	81,92	98,21
Spain	79,26	77	72,5	88,28
Turkey	73,44	70,62	60,87	88,82
Poland	70,78	65,87	64,15	82,33
Romania	67,47	52,31	56,87	93,23
Ukraine	52,02	37,21	54,83	64,02

We can see that among the countries considered, Germany is the leader both in the SFT index score and in all the scores for the SFT categories. However, in the case of other countries, discrepancies are observed. For example, Romania ranks second in the environmental indicator in the reviewed list, but fifth in all other categories, indicating a significant discrepancy in the sustainability vectors of the country's logistics, thus violating the balance between them. This highlights the need for measures to balance these indicators to enable economic scaling in the country, as failing to take necessary actions will only increase the discrepancy as scaling progresses. The situation is different in Spain, where the country ranks fourth in the environmental indicator but second in all others. Poland is ranked third for the social indicator, but fourth in all others. Turkey, on the other hand, ranks third in all indicators, with the social indicator being ranked fourth. Germany and Ukraine, although they occupy the same positions

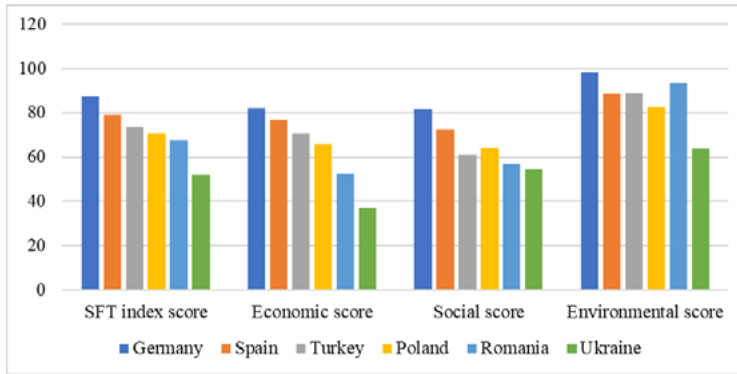


Fig. 2. SFT index score and scores for the SFT categories for selected countries

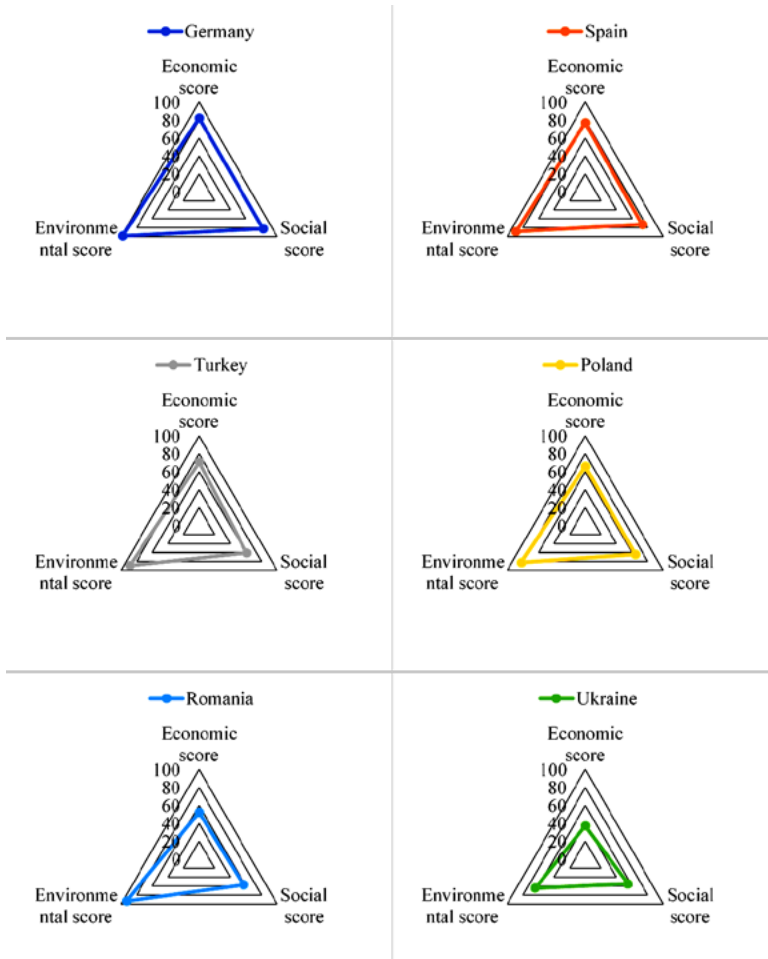


Fig. 3. Structure of sustainable development in logistics of selected countries

in the ranking – first and sixth respectively – also show significant discrepancies when examining the sustainability vectors in logistics in quantitative terms. Such discrepancies point to the imperfection of the UNTAD SFT index due to the failure to account for these differences, which means that this indicator requires improvement. Based on the provided data, the structure of sustainable development in logistics for the selected countries should be depicted (fig. 3).

Based on the graphical representation, it can be observed that in each country there is a more or less significant unevenness in the structural components of the SFT index. In other words, despite a certain level of sustainable development, it cannot be considered truly sustainable due to the failure to adhere to the fundamental principle – the harmonious integration of the economic, social, and environmental vectors.

Based on this, to reflect the sustainability of logistics in the listed countries, it is advisable to calculate the measure of unevenness between these vectors. The best approach for this is a calculation based on the Gini index, which measures the degree of disparity between values. This coefficient varies from 0 to 1, where 0 means all values are equal, and 1 represents maximum inequality of values. The Gini index is determined as follows:

$$G = \frac{\sum_{i=1}^n \sum_{j=1}^n |n_i - n_j|}{2n^2 \bar{x}} \quad (1)$$

where  $n_i$  and  $n_j$  – the value of the score for a specific SFT category;

$n$  – the number of attributes, in our case – 3;

$\bar{x}$  – значення SFT index.

Based on this, we can form an indicator reflecting the sustainability of logistics development in each country, i.e., the uniformity of each vector relative to one another. We will denote this indicator as Slogistic, and calculate it as follows:

$$S_{\text{logistic}} = (1 - G) \quad (2)$$

Considering this indicator, we can calculate the SFT index by adjusting it for its sustainability, and we will represent it as SFT\* and calculate it as follows:

$$\text{SFT}^* = \text{SFT index} * S_{\text{logistic}} \quad (3)$$

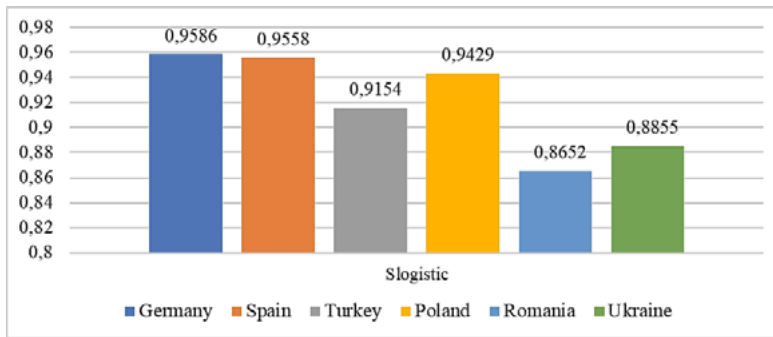
Based on the formulas, we can calculate the corresponding indicators for each country (table 2).

Table 2

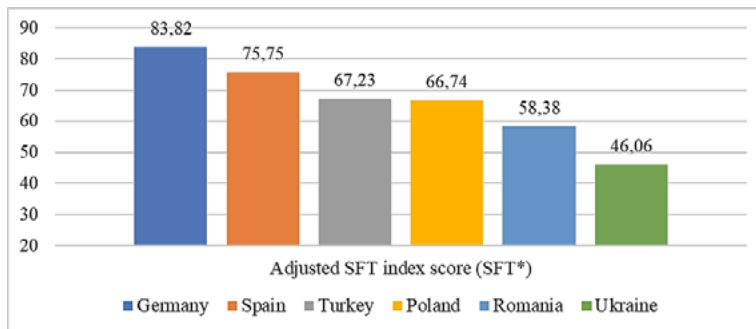
#### Calculation of the SFT index score adjusted for the level of logistics sustainability

Country	SFT index score	Economic score	Social score	Environmental score	G	Slogistic	SFT*
Germany	87,44	82,2	81,92	98,21	0,0414	0,9586	83,82
Spain	79,26	77	72,5	88,28	0,0442	0,9558	75,75
Turkey	73,44	70,62	60,87	88,82	0,0846	0,9154	67,23
Poland	70,78	65,87	64,15	82,33	0,0571	0,9429	66,74
Romania	67,47	52,31	56,87	93,23	0,1348	0,8652	58,38
Ukraine	52,02	37,21	54,83	64,02	0,1145	0,8855	46,06

Next, we can visualize the values of the logistics sustainability indicator (Slogistic) in the selected countries (fig. 4). We can also display a comparison of the adjusted SFT index score (SFT\*) (fig. 5).



**Fig. 4. The value of the logistics sustainability indicator (Slogistic) in the selected countries**



**Fig. 5. Comparison of the adjusted SFT index score (SFT\*) in the selected countries**

Based on the calculations, it can be noted that the logistics sustainability indicator (Slogistic) in the selected countries shows that despite the gap between Germany and Spain in the SFT index score, Spain's logistics activity is just as sustainable as Germany's. In other words, when the scale of logistics activities in Spain increases to Germany's level, the unevenness in indicators will not increase, and the logistics activity will remain equally sustainable. A different trend can be observed in the indicators for Poland and Turkey. Poland's logistics activity is more sustainable and is approaching the level of highly developed countries like Germany, while Turkey's indicator is lower. Therefore, with further development and expansion of logistics activity in Poland, it will remain sustainable. In contrast, in Turkey, the discrepancy between the sustainability vectors in logistics will increase, making logistics activity in the country less sustainable. As for Romania and Ukraine, they have the lowest values in this indicator, which indicates the need for a review of national policies and the promotion of underdeveloped vectors, according to fig. 3, these are the economic and social indicators.

At the same time, the adjusted SFT index score shows a slightly different difference between the countries, similar to the basic SFT index score. However, the difference in the indicators for Poland and Turkey has become less significant, while for countries like Romania and Ukraine, the need to stimulate and develop both the lagging vectors and logistics activity

in general is clearly visible. Based on the examined indicators, we can identify the problems and propose certain solutions to enhance the level of sustainable development in logistics in the countries considered.

In Germany, the current situation indicates high performance across all categories of the SFT index. Therefore, the country should continue its comprehensive approach to logistics development with a focus on balance. We can also suggest that Germany serves as a model for other countries by offering expertise and partnerships in the transfer of sustainable transport technologies.

In Spain, despite lagging behind in the overall index, the sustainability of logistics is very close to that of Germany. Therefore, the country could focus its policy on the environmental sector, which is the most lagging, to drive further improvement. It would also be beneficial to attract investments in "green" transport and infrastructure without compromising the balance between social and economic aspects.

In Turkey, we can identify the issue of imbalance due to the relatively weak social component. Therefore, it would be advisable to improve working conditions in the logistics sector, including safety, labor protection, and training. Additionally, it is important to implement a policy of corporate social responsibility for logistics companies.

Poland has a relatively high level of sustainability. Therefore, it is recommended to maintain the existing balance of sustainable development through targeted support for all three vectors, as well as to develop infrastructure for sustainable transportation with a focus on innovation, considering that the country is ready for logistics scaling.

In Romania, the main issue is that it has very weak economic and social components, despite having a high environmental component that nearly reaches Germany's level. Therefore, it is recommended to create programs to stimulate economic activity in the logistics sector, such as government investments or subsidies. It is also important to enhance workforce qualifications, improve working conditions, and implement safety standards.

Ukraine faces significant challenges in implementing sustainable development, as it shows the worst economic and social indicators among the countries considered. Therefore, it is recommended to undertake a reform of transport and logistics policies, focusing on economic support for the sector. It is also crucial to invest in social aspects, such as salaries, working conditions, and workforce training. Particularly important is the integration into European logistics networks, thus attracting foreign investments to enhance the sustainability of the country's logistics sector.

#### 4. Conclusions

Thus, the study determined that sustainable development and logistics are interrelated concepts, which led to the emergence of a new concept – sustainable logistics, which involves adapting logistics processes to the requirements of sustainable development. It was found that there is currently no universal indicator for sustainable development in logistics, making comparative analysis between countries and regions and the adoption of effective management decisions in the field of logistics more difficult. During the research, a new integrated sustainability indicator for logistics was proposed, taking into account three main vectors: economic, ecological, and social. Its application allows for the evaluation of the level of sustainable development of the logistics system of any country. Through a comparative analysis of the sustainability of logistics in countries such as Ukraine, Germany, Romania, Poland, Spain, and Turkey, problems

were identified, and certain solutions were proposed to improve the sustainability of logistics in the countries under consideration.

The practical significance of the study lies in the potential use of the obtained indicator for strategic planning at the national level, as well as for scientific research in the field of sustainable logistics and the development of recommendations for improving logistics systems. The chosen approach to evaluation could serve as the basis for creating a unified methodology for monitoring the sustainable development of logistics at both national and international levels.

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## DIGITALISATION OF TECHNOLOGIES AND TECHNOLOGICAL EQUIPMENT IN UKRAINIAN AGRICULTURE: OPPORTUNITIES AND PROSPECTS FOR DEVELOPMENT

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### Summary

The article defines the current level of digitalisation in agriculture in Ukraine and in the world in the context of the global trend towards digital transformation of the agro-industrial complex. The article analyses the indicators of digitalisation of the agricultural sector by regions of the world, highlights the advantages and problems of digital technologies implementation, and identifies prospects for further development of the industry. Detailed information is provided on the need for and economic importance of digitalisation of the agro-industrial complex, in particular in the context of losses and structural transformations caused by a full-scale military invasion. The key technologies of digital transformation, such as artificial intelligence, the Internet of Things, big data, blockchain, robotics, drones and nanotechnology, are considered from the perspective of their practical application in agricultural production, food and processing industries. The author substantiates the impact of digitalisation on the transformation of management functions and decision-making algorithms in digital agricultural production. It is established that the use of digital technologies in the agro-industrial complex is a competitive advantage both in the development of production processes and in improving the efficiency of industry management. The author emphasises that in wartime, digitalisation is gaining strategic importance as a tool for restoring and adapting the industry. Thanks to digital transformation, the agricultural sector is becoming high-tech and competitive not only at the national but also at the international level.

**Key words:** agriculture, artificial intelligence, Internet of Things, blockchain, robotics, drones, nanotechnology, precision agriculture.

DOI <https://doi.org/10.23856/7434>

### 1. Introduction

The modern agro-industrial complex is on the verge of a technological revolution, which experts define as the "fourth industrial revolution" or "digital revolution in agriculture". This transformation is the latest stage in the evolution of the industry, which opens up fundamentally new opportunities to meet the growing food needs of the world's population in the face of limited natural resources. The relevance of the study is driven by the fact that digitalisation is

rapidly changing the fundamentals of the economy, labour and social relations in all sectors, including agricultural production and the food and processing industry.

The Food and Agriculture Organisation of the United Nations (FAO) predicts that the global digital agriculture market will grow by an average of 11.3% between 2022 and 2027, which demonstrates the global nature of the phenomenon under study. Despite the significant potential of Ukraine's agricultural sector, the level of its digitalisation remains insufficient compared to the world's leading countries, which underlines the scientific and practical significance of this study.

The purpose of the study is to comprehensively analyse the current state and prospects of digitalisation of technologies and technological equipment in Ukrainian agriculture, identify the benefits and challenges of this process, and justify the priority areas for the introduction of digital solutions in agricultural production. To achieve this goal, the following research objectives have been set: to characterise the essence of the digitalisation of the agricultural sector and key technological tools; to conduct a comparative analysis of the level of digitalisation of agriculture in different regions of the world; to study the impact of digital technologies on the transformation of production and management processes; to substantiate the prospects for digitalisation of the Ukrainian agro-industrial complex.

The methodological basis of the study is based on the methods of systematic analysis and synthesis, comparative and statistical analysis, generalisation of scientific sources and the regulatory framework in the field of digital technologies and agricultural production. The logic of the material presentation involves the transition from theoretical foundations and conceptual framework to the analysis of world experience, the state of digitalisation in Ukraine and the prospects for the development of the industry.

## **2. Conceptual framework of digital agricultural production**

The digital economy is a system of economic activity based on digital technologies and associated with e-commerce, digital goods and services, and the distribution of products through digital channels. Digital agriculture is an industry that uses digital technologies and proprietary methods of automated production. These concepts are closely interrelated, as the development of the digital economy creates demand for technological solutions for the agricultural sector, and the agricultural sector is one of the key markets for digital economy products.

It is important to distinguish between the concepts of mechanisation, automation and digitalisation. Mechanisation is the re-equipment of industry to replace manual labour with machine labour. Automation is a method of performing production tasks using technology, which allows processes to be implemented faster and cheaper while reducing errors. Whereas automation improves existing production methods, digitalisation transforms the product itself, the relationships between customers and suppliers, and the positioning of the enterprise as a whole. The digitalisation of business processes can include automation as one of its tools, as well as artificial intelligence and other modern technological solutions, replacing humans in routine and dangerous functions.

The following areas are among the key digital technologies that determine the modern face of agricultural production.

Table 1

**Key digital technologies in agricultural production**

Technology	Definition	Application in agriculture	Expected effect
<b>Artificial intelligence (AI)</b>	Software systems that reproduce human cognitive abilities based on machine learning and analysis of large data sets	Agricultural operations management, plant disease detection, yield forecasting	Fast decision-making, reduction of crop losses
<b>Internet of Things (IoT)</b>	A network of physical objects with embedded devices to interact with each other and the external environment	"Smart sensors for monitoring soil, climate and plant health	Eliminating human involvement in routine operations, restructuring production processes
<b>Big Data</b>	An ever-increasing flow of diverse data from numerous sources that requires specialised processing methods	Analytics of production processes, forecasting, market and government support assessment	Access to previously inaccessible information, improving management efficiency
<b>Blockchain</b>	A distributed ledger that stores information about participants' transactions in the form of a "blockchain"	Traceability of food supply chains, protection of property rights, secure payments	Transparency and security of operations, increasing consumer confidence
<b>Robotics</b>	Applied science to create automated technical systems.	Sowing, harvesting, spraying, crop monitoring	Significant reduction in the need for manual labour, increased accuracy of operations
<b>UAV / Drone</b>	Remotely controlled or autonomous unmanned aerial vehicles of various designs and purposes	Aerial photography of fields, precise application of fertilisers and plant protection products, real-time monitoring of crops	Reducing the cost of agrochemicals, prompt identification of problem areas
<b>Nano</b>	Methods of research and synthesis of substances by manipulating individual atoms and molecules	New packaging materials, nanofertilisers, targeted delivery systems for agrochemicals	Increasing the efficiency of fertilisers, reducing the environmental impact

**3. Global experience of digitalisation of the agricultural sector**

An analysis of global experience in the digitalisation of agriculture shows significant regional differences in the pace and scale of technology adoption. The general trend is towards digital agri-food systems where resource management is optimised, personalised and based on real-time data (*Bezpartochnyi et al., 2022*).

In North America (USA and Canada), the use of satellite imagery for crop monitoring has become widespread. American and Canadian farmers use data from satellites, unmanned aerial vehicles, and analytical platforms to optimise crop conditions (*McFadden et al., 2023*). The level of digital technology adoption in these countries is 30-50%, while the level of precision farming methods application reaches 60-80% (*CABI, 2025*).

In Europe, about 70% of fertiliser applicators and sprayers, as well as a significant share of sowing equipment, are equipped with precision farming technologies (*Fountas et al., 2020*), with the highest adoption rates in Western Europe - the Netherlands, Germany, Switzerland and the UK (*Petrović et al., 2024*).

In the Asia-Pacific region, Australia, New Zealand, and Japan have made significant progress. In particular, in China, the level of mechanisation (automation) of planting and harvesting in China has increased from about 30% in the early 2000s to about 70% today (*Yang et al., 2023: 17*). In contrast, Southeast Asian countries have limited access to technology and infrastructure (*Kozono et al., 2025*).

In Latin America, primarily in Brazil and Argentina, the technological transformation of the agricultural sector has received active government support (Monsalve et al.) Precision farming, genetic improvement of crops, and robotics are being actively implemented here (*Segretin et al., 2025*).

In Africa, the level of agricultural digitalisation remains lower than in other regions, mainly due to financial constraints (*FAO and ITU, 2022*). At the same time, there is a growing interest in mobile technologies: digital mobile platforms are operating in Burkina Faso, Cameroon, Ethiopia, Ghana, Kenya, Nigeria, Kenya, Ethiopia, and Zambia, among other countries (*Gakuru, 2009*).

#### 4. Digital transformation of the Ukrainian agro-industrial complex

Agribusiness is the economic engine of Ukraine: it not only contributes to the development of the national economy, but also traditionally forms the basis of the country's gross domestic product (*Stepenko, 2021*). However, the full-scale military invasion of the Russian Federation has caused unprecedented losses to the agricultural sector: the occupation of farmland, destruction of production infrastructure, destruction of machinery and processing facilities, disruption of supply chains, and rising operating costs have significantly reduced the industry's production potential. In such circumstances, the digitalisation of the agricultural sector is gaining strategic importance not only as a tool for increasing competitiveness in international markets, but also as a mechanism for restoring and adapting the industry to new realities.

Despite the objective difficulties of wartime, the level of digitalisation of the agricultural sector in Ukraine is still inferior to leading countries that fully exploit the benefits of digital technologies. It should also be borne in mind that the hostilities have exacerbated the existing territorial disparities: the level of development of digital technologies in the land use sector among different business entities differs depending on the region, the scale of the enterprise, and the proximity to the war zone.

In the context of post-war recovery, digitalisation is becoming a key factor in the sector's restructuring (*Stegney, 2022*). "Digital transformation can stimulate dynamic efficiency and support both gradual and radical disruptive innovations in the production and sale of goods, services, processes, strategies and organisation of all economic processes" (*Panchenko, 2023*). Reducing production costs and improving the quality and competitiveness of products through the efficient use of limited resources in wartime is of particular relevance and defines the main goal of digitalisation of Ukraine's agricultural sector at the present stage (*Mandysh et al., 2022*).

Digitalisation in agriculture involves the collection of large amounts of data from numerous sensors installed in fields and on farms, from agricultural machinery, meteorological stations, and satellites (*Huang et al., 2018*). The analytical processing of these data sets allows

to obtain previously unavailable information, increase the efficiency of agricultural production management, identify patterns that improve economic performance, and optimise communication with consumers and external partners (Horváth *et al.*, 2019).

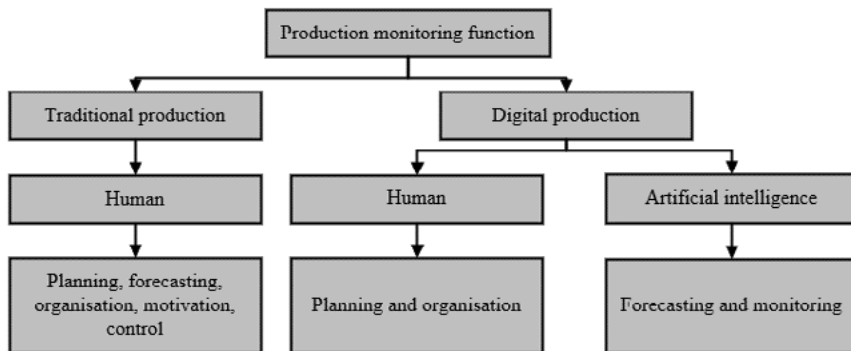
Digital technologies make it possible to perform many production tasks remotely, while significantly improving work in the field. The key benefits of implementing digital solutions in agricultural production include: increased speed of data collection and processing; improved accuracy of all technological processes; increased production efficiency and reduction of waste; reduced need for manual labour and reduced risks for agricultural machinery operators; simplified risk forecasting and optimised accountability; and support for sustainable development principles.

The implementation of a digital quality and traceability monitoring system for agricultural products involves all authorised bodies involved in the production process and provides quantitative and qualitative records along the entire chain - from field to consumer. Full monitoring within the traceability system paves the way for higher quality standards for agricultural products and directly affects both the range and geography of processed food supply. The introduction of such a system will also help attract investment in the sector and expand export potential.

The seasonality of agricultural production remains a constraint on the industry's development, but digitalisation can partially mitigate this factor through predictive modelling, automation of production processes and rapid response to changing conditions.

## 5. Transformation of management functions in digital agricultural production

In the context of digitalisation, organisational management functions are undergoing fundamental changes. Forecast scenarios for the development of production, implemented with the help of artificial intelligence, are beginning to play a key role. The function of monitoring production processes is also being transferred to automated control systems based on artificial intelligence (Fig. 1).

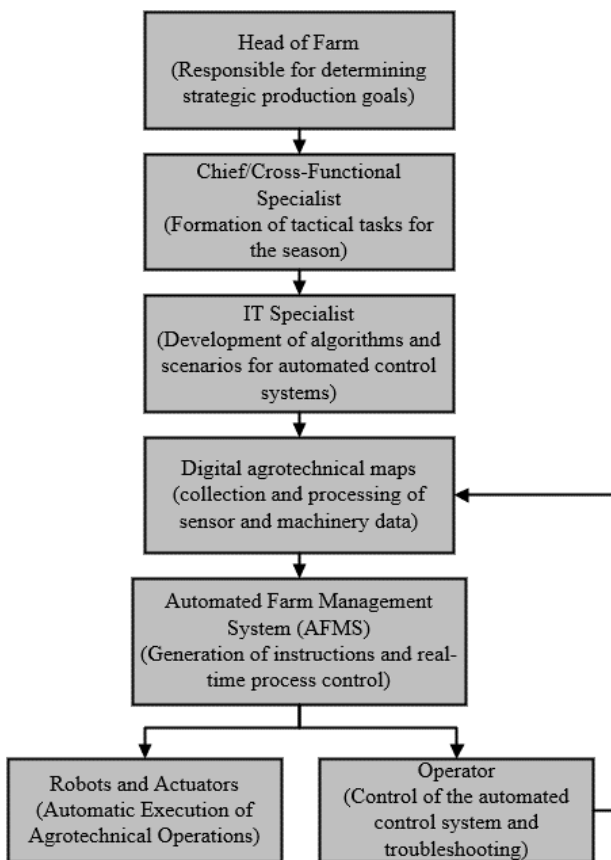


**Fig. 1. Production monitoring function**

Thanks to industrial robotics and digitalisation, the function of directly motivating employees in terms of routine tasks is losing its importance, as the automated control system is designed from the outset to achieve the best possible result. Measures aimed at automating the monitoring of agricultural products allow for the control of the entire life cycle of production and sales of agricultural products.

In the digital environment, the new management paradigm leads to a reduction and modification of the management decision-making algorithm. Whereas earlier decision-making in agricultural production was based mainly on the subjective experience of an agronomist or manager, now the precise use of huge amounts of data from sensors and analytical systems allows decisions to be made with mathematical precision. The information network is analysed and processed in real time, and the manager or specialist receives the results of the analysis, recommendations and possible options for further action.

The transformed algorithm for making management decisions at a business entity is shown in Figure 2.



**Fig. 2. Algorithm for making management decisions at a business entity**

The head of the farm sets strategic goals. On their basis, the chief specialist or cross-functional specialist determines tactical tasks for the season, for the implementation of which the IT specialist develops algorithms or scenarios for the automated farm management system. As sensors, actuators and the control unit are connected to a single network, the system becomes "intelligent" and can automatically generate instructions for robots. IT specialists create digital agrotechnical maps for crops based on the collected data. In this case, the operator's function is not to manage the production process itself, but to monitor the operation of the automated system in order to quickly eliminate faults.

Of particular importance is the introduction of technologies that replace manual labour with machines and automated systems in production processes. Over time, in order to protect human health and minimise the human factor, the level of labour involvement in physically demanding and hazardous operations will decrease. At the same time, digitalisation does not displace people from agricultural production, but frees them from daily, monotonous and dangerous processes, redirecting their efforts to managerial, analytical and creative tasks. The effect of these processes is also to reduce emissions and optimise the use of material resources, which is in line with the goals of sustainable development.

## 6. Conclusions

Based on the results of this study, the following generalisable conclusions can be drawn.

First, digitalisation is the main direction of agricultural development in the 21st century. From harvesting to sowing, from mechanical tools to automated systems, revolutionary innovations are taking the agricultural sector to a whole new level. Digital technologies are transforming every segment of the agri-food supply chain, transforming traditional agriculture into a high-tech sector.

Secondly, robotic systems, sensors, field controllers and data processing systems form the basis of digital agricultural production. Monitoring and surveillance systems, neural networks and machine learning algorithms remotely control production processes, significantly reducing the need for manual labour and changing management approaches.

Third, the digitalisation of the agricultural sector is of strategic importance for Ukraine's economy. Thanks to the implementation of digitalisation programmes, the domestic agricultural sector has sufficient potential to rise to a new quality level and become a driver of the national economy. The main goals of this process are to increase yields and labour productivity, reduce production costs, ensure food security, stabilise climatic conditions for production and prevent soil degradation.

Fourth, digitalisation requires not only the introduction of new production technologies but also a complete overhaul of the management system. The managerial hierarchy is being inverted: an automated management system becomes the subject of tactical decision-making, and the main goal of management is transformed into preventing crises and ensuring the continuity of production processes.

Fifth, an important condition for the success of digital transformation is overcoming existing barriers: the high cost of technology implementation, the lack of qualified IT specialists in the agricultural sector, and the need to adapt the education and training system to the needs of digital agricultural production. In the context of the military invasion, these challenges take on an additional dimension: the destruction of production infrastructure and the outflow of skilled personnel due to mobilisation and forced migration significantly complicate the implementation of digitalisation programmes. At the same time, digital technologies can partially compensate for the shortage of human and material resources through remote control of production processes, precision agriculture in the de-occupied territories, and the attraction of international technical and financial assistance as part of agricultural sector recovery programmes.

Further research in this area could focus on developing methodological foundations for assessing the economic efficiency of digital technologies in Ukrainian agribusinesses, analysing the regulatory environment for the digitalisation of the agricultural sector, and studying the pedagogical aspects of training digital agricultural production specialists within the higher

education system. Particular attention should be given to studying the impact of digital technologies on agricultural processing and food production technologies, as this is a promising area for further research.

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## COMPARATIVE LCA STUDY OF THERMAL INSULATION MATERIALS FOR INDUSTRIAL AND CONSTRUCTION APPLICATIONS

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### Summary

The purpose of the study is a systematic comparative life cycle analysis (LCA) of the most common thermal insulation materials in the context of residential and industrial construction in Ukraine and the EU countries. The LCA methodology was applied in accordance with ISO 14040/44 standards (including a "cradle-to-grave" assessment with a functional unit, for example, 1 m<sup>2</sup> of wall with a certain heat transfer resistance). The materials considered were: mineral wool (stone, glass), expanded polystyrene (EPS, XPS), polyurethane foam (PUR/PIR), cellulose insulation, aerogels and other bio- or recycled insulation materials (wood fibers, flax, etc.). The methodology involves comparing environmental indicators (in particular, GWP - global warming potential, ADP - mineral depletion potential, ODP - ozone depletion potential) based on data from literary sources and EPD. The results show that natural and recycled insulation materials (cellulose, wood or hemp fibers) usually have the lowest GWP and CED values due to the use of renewable resources and carbon sequestration, although additives (boron compounds) can increase ADP. Plastic foams (EPS, XPS, PUR) demonstrate the highest environmental impacts (especially GWP and energy consumption) due to petroleum raw materials and energy-intensive production. Mineral wool is an intermediate option: among all insulation materials, it consumes the least primary energy for production, and its emissions are moderate. Aerogels, despite their unique thermal insulation properties, require significant energy resources and chemical precursors during production, which leads to very high GWP and ADP values. The scientific novelty lies in the comprehensive generalization of current LCA studies of insulation materials, including promising materials and the specifics of Ukrainian conditions. Theoretical significance – combining engineering analysis with environmental criteria, forming systematic recommendations for the selection of insulation materials. Practical significance – helping engineers and politicians assess the joint energy and environmental consequences of using different insulation solutions in construction, in particular during reconstruction and reconstruction in Ukraine (taking into account recycling and circular economy).

**Key words:** Thermal insulation; life cycle assessment (LCA); energy efficiency; global warming potential (GWP); building materials; sustainable development.

DOI <https://doi.org/10.23856/7435>

### 1. Introduction

Thermal insulation of buildings is a key factor in energy saving and reducing CO<sub>2</sub> emissions in the construction sector, since it is through the enclosing structures (walls, roofs, floors) that a significant share of heat loss is formed, which directly affects the amount of fuel and electricity consumption during the operation of buildings. At the level of the European Union,

this issue is systemic: buildings account for about 40% of energy consumption in the EU, and therefore increasing the energy efficiency of the existing stock is considered one of the basic tools for achieving climate goals and reducing dependence on fossil fuels (*European Commission, nd*). In addition, the European Commission emphasizes that buildings are also associated with significant greenhouse gas emissions, which are formed not only during use, but also during the construction, reconstruction and dismantling stages (*European Commission, 2020*). Accordingly, the traditional logic of “energy conservation at any cost” is no longer sufficient: increasing thermal insulation must be accompanied by evaluating materials according to environmental and resource criteria in order to avoid a situation where reducing operating energy costs is achieved at the expense of excessive “built-in” environmental load in materials.

That is why modern studies increasingly mention the life cycle assessment (LCA) of thermal insulation materials, which allows you to cover the full chain (from raw material extraction to disposal) and compare alternatives according to a set of standardized impact categories. Unlike indicators of thermal conductivity, layer thickness, price, etc., LCA allows you to assess system effects. These include: carbon footprint of production, energy intensity of technologies, environmental consequences of transportation, installation losses, as well as end-of-life scenarios, etc. The studies that were considered for writing the work show that the results of LCA for different types of thermal insulation materials can differ significantly - primarily due to different methodological assumptions. Despite this, common trends can be traced in many publications. For example, polymer foams (EPS/XPS, PUR/PIR) often exhibit higher environmental impacts at the production stage, while bio-based and recycled materials often have lower GWP values and more favorable profiles across a number of impact categories (*Füchsl et al., 2022*). This shows that it is necessary not to simply choose any insulation material, but to formulate clear criteria for its selection, which simultaneously take into account its thermal efficiency, environmental feasibility and rational use of resources.

For Ukraine, this problem is of particular importance in the context of war and the constant need to rebuild and restore destroyed buildings. And with constant reconstruction, the question of finding high-quality materials and effective solutions for the successful completion of such a long process also arises. On the one hand, energy-efficient solutions are a tool for increasing the resilience of the housing and business sectors to energy risks, and on the other hand, this type of construction creates significant costs due to large volumes of construction materials and waste. That is why in this context, integrated approaches are becoming particularly relevant, within which energy policy, natural resource management and financial security are considered as interrelated components of sustainable development and key guidelines for decisions in the construction sector (*Petrukha et al., 2025*). Accordingly, it is advisable to choose thermal insulation materials not only based on thermal conductivity or technological convenience, but also taking into account their life cycle, circularity potential, availability of recycling, logistical constraints and environmental risks.

This review focuses on a comparative analysis of the most common insulation materials in the context of residential and commercial buildings in Ukraine and the EU. Mineral wool (stone and glass), expanded polystyrene (EPS, XPS), polyurethane foams (PUR/PIR), cellulose insulation, modern biomaterials (wood, flax, hemp fibers) and aerogels are considered. The methodological basis for the assessment is the requirements of ISO 14040/44, which regulate the sequence of LCA performance and the approach to comparative comparisons. Given the different physical and technical characteristics of insulation materials, the principle of comparison by equivalent thermal insulation function (for example, a unit of area of the structure that provides a given heat transfer resistance) was adopted as the functional basis for comparison,

since it is this approach that allows us to translate different materials into a common "applied dimension" and form correct conclusions for design practice and thermal modernization policy (Füchsl, 2022).

## 2. Literature Review

The literature shows that LCA results for different insulation materials are mixed. A comprehensive review by Füchsl et al. (2022) analyzed 47 LCA studies of insulation materials and found patterns: EPS, rock wool and glass wool have similar lifetime impacts, while XPS and PUR/PIR have generally higher impacts than most. At the same time, materials based on renewable raw materials (cellulose, wool, wood, etc.) usually show a reduction in impacts (primarily GWP), although this does not guarantee better results for all indicators. (Füchsl et al., 2022)

Comparative LCAs from European studies support these findings. Schmidt et al. (2004) compared stone wool, flax and recycled cellulose paper wool for roof insulation. In their analyses, they found that cellulose paper wool had the lowest global and regional impacts, while flax had the highest, with stone wool occupying an intermediate position. In particular, based on the LCA, the authors indicated that stone wool required the lowest total energy to produce, while flax had the highest energy costs. Similar patterns have been observed in more recent studies. Schulte et al. (2021) evaluated "bio" and traditional insulation materials in Germany. They confirmed that wood and grass fibers (e.g., wood fiber, miscanthus) are generally the "greenest", outperforming EPS and rock wool in most categories (11 out of 18). This is due to lower CO<sub>2</sub> emissions during production and the retention of biogenic carbon. (Schmidt et al., 2004; Schulte et al., 2021)

On the other hand, LCA studies of plastic insulations show significantly higher emissions. For example, for EPS, it was found that almost 99.7% of the global warming potential (GWP) is formed precisely at the production stage - through raw materials and energy consumption (Lim et al., 2021). Taking into account recycling can significantly reduce the total impact of EPS, but widespread implementation of recycling requires developed infrastructure and economically justified technologies (Lim et al., 2021). At the same time, XPS and PUR/PIR usually have an even higher environmental impact, since their production is associated with energy-intensive synthesis from petrochemical raw materials and the use of blowing agents, which can increase ODP and other indicators (Füchsl et al., 2022; Lim et al., 2021).

New materials are of particular interest. Aerogels, due to their extremely low thermal conductivity, are promising as ultrathin insulation materials, but their "solvo-genic" and supercritical drying technology is energy-intensive. Analysis by Jiang et al. (2023) showed that the GWP of aerogels can range from a few units to several thousand kg CO<sub>2</sub> eq/unit. The main driver is the energy consumption for drying and chemical precursors (e.g. sodium silicate, which significantly increases ADP). Thus, LCAs of aerogels indicate their high environmental "dark bill" in the production phase, which currently limits their widespread use (Jiang et al., 2023; De Marco et al. 2019).

For the Ukrainian context, one study highlights the problem of accumulation of insulation materials in construction waste. They note that among the most common materials – EPS, XPS, PUR, mineral wool, glass foam, etc. – a significant part of the complex secondary raw materials can be reused or recycled. In their comparison of products, glass foam turned out to be the most acceptable from an ecological point of view: its processing requires little energy and creates the least pollution. Therefore, in Ukraine and nearby climatic regions, it is worth

taking into account not only the thermal, but also the environmental performance of materials (Khalieiev et al., 2025).

According to the ISO 14040/44 analysis, the following main impact categories are used to compare insulation materials: global warming potential (GWP), mineral depletion potential (ADP), ozone depletion potential (ODP), photochemical ozone creation potential (POCP), and energy consumption (CED). The data from the literature LCA studies vary in detail, but generally confirm the fact that biomaterials have the lowest GWP, foams have the highest, and mineral wools have intermediate values with low energy consumption. (Valentini et al., 2025; Turhan et al., 2024; Fuchsl et al., 2022; Schmidt et al., 2004).

### 3. Problem Statement

The main problems of comparative LCA analysis of thermal insulation materials are the lack of a consistent, representative and comparable dataset for Ukrainian and EU conditions, as well as the high variability of results between sources. In practice, different studies use different functional units (FUs), system boundaries (cradle-to-gate, cradle-to-site, cradle-to-grave), transportation scenarios, installation losses, end-of-life modeling approaches and different sets of impact categories. This creates methodological “noise” when materials are compared not by the same function (same thermal resistance/thermal performance), but by mass or thickness, which leads to incorrect conclusions. An additional difficulty is the uneven quality of inventory data (LCI): some works rely on general or outdated databases, do not take into account specific formulations (for example, the type of foaming agent in XPS or the composition of binders in mineral wool), and also use different allocation methods for recycling, incineration and reuse. As a result, even for the same materials, GWP/ADP/ODP indicators can differ significantly, which makes it difficult to form unambiguous rating conclusions and practical recommendations.

For Ukraine, the comparability problem is exacerbated by the lack of localized data. A significant part of insulation is imported or produced from imported raw materials, and the life cycles of such products depend on the technological profile of the country of origin, logistics and customs and warehousing operations. At the same time, the national specifics of the energy mix (including emergency modes of the power system) and differences in heat supply structures and tariff policies can change the “relative profitability” of different materials, taking into account the operational phase and energy saving potential. A separate challenge is the lack of open environmental product declarations (EPDs) made according to the same product category rules (PCR), which limits the ability to form an evidence base for the selection of materials in public procurement and reconstruction projects. Because of this, in practice, decisions are often made on the basis of cost and availability, rather than overall environmental efficiency.

A specific and also very significant factor for Ukraine is the impact of destruction caused by military actions and strikes on construction waste flows and the quality of secondary raw materials. The destruction of buildings increases the volume of mixed waste, in which thermal insulation materials are often contaminated with plasters, adhesives, structural fragments and combustion products. This significantly complicates sorting, reduces the share of material suitable for recycling, and increases the cost of recovery - because additional energy is required for cleaning, transportation and further processing. Under such conditions, landfilling or incineration of mixed waste streams is most often used. The reason for this is that it can negate the potential benefits of materials that, in theory, have high recyclability. Therefore, for Ukraine, the assessment of the final stage of the life cycle should be based on separate scenarios that

reflect real waste management practices and the actual capabilities of the recycling infrastructure (Khalieiev et al., 2025).

An additional problem is the integration of changes in energy infrastructure into LCA assessments. In the EU, there is a gradual decarbonization of the electricity sector and an increase in the share of renewable sources, which over time reduces the “carbon footprint” of the production phase of many materials, especially energy-intensive ones (for example, aerogels, mineral wool or polymer insulation). For Ukraine, the energy mix is more unstable, and future trajectories of energy system reconstruction can significantly change the results of the comparison. This emphasizes the need for prospective and scenario LCAs, where the comparison is not “frozen” in one year, but takes into account possible decarbonization trajectories and changes in production technologies. Without such an approach, there is a risk of receiving recommendations that quickly lose relevance or do not reflect the strategic priorities of climate policy.

No less important is the block of issues related to durability, operational characteristics and degradation risks of insulation materials. In many LCA works, the same service life is assumed for different materials, while in practice the resource of the insulation system depends on installation, humidity, freeze-thaw cycles, fire risks and maintainability. If a material requires early replacement or shows a loss of thermal insulation properties, its total impact on the life cycle increases, and a comparison based only on the “built-in” production footprint becomes simplified. In addition, safety and health aspects are important: dust fractions, volatile compound emissions, toxicity of combustion products, which are rarely equally well integrated into typical LCIA kits, but are important for residential and commercial buildings.

#### 4. Methods and Materials

The study was conducted as a review and analytical comparison of existing LCA studies of thermal insulation materials using the ISO 14040 and ISO 14044 standards, which define the general principles, requirements and sequence of LCA implementation (ISO, 2006a; ISO, 2006b). The LCA methodology within this review is structured in four basic phases:

- 1) formulation of the goal and scope, including the definition of the functional unit and system boundaries;
- 2) life cycle inventory analysis (LCI) – accounting for material and energy flows, as well as initial emissions;
- 3) impact assessment (LCIA) – conversion of LCI data into impact category indicators;
- 4) interpretation – matching the results with the purpose of the study, checking sensitivity and drawing conclusions (ISO, 2006a; ISO, 2006b).

Given the comparative nature of the review, a key methodological principle was to bring the data to a comparable basis by function: in most cases, a unit of insulated surface area providing a given heat transfer resistance (e.g. 1 m<sup>2</sup> of enclosing structure with equivalent R-value/U-value) was taken as the functional unit. This approach reduces methodological distortions typical of comparisons “per kg of material” or “per m<sup>3</sup>” and allows the results to be interpreted from the perspective of the real building function (Füchsl et al., 2022). The system boundaries were mainly considered in a cradle-to-grave logic, i.e. they included extraction/production of raw materials, material manufacturing, packaging, transportation, installation (including installation losses), the operational phase as a context (without direct mixing with the comparison results if the initial data were incompatible), and the end of life cycle – dismantling, sorting, recycling, incineration with energy recovery or landfill (ISO, 2006b; Khalieiev et al., 2025).

It was separately recorded whether the primary source presented reuse/recycling scenarios as “credits” or as alternative system boundaries, and whether a “cut-off”, “allocation at point of substitution” or other impact allocation rules were applied, as this is what often explains the discrepancies between publications with formally identical materials.

The impact assessment in the selected works was most often carried out according to a set of categories relevant to building materials and consistent with current LCIA practice: global warming potential (GWP), resource depletion potential (ADP), ozone depletion potential (ODP), photochemical ozone creation (POCP), acidity (AP), eutrophication (EP), as well as energy consumption indicators (e.g. CED or gross primary energy). When reconciling materials between sources, particular attention was paid to whether the time horizon for GWP was specified (most often 100 years), which characterisation methods were applied (e.g. CML or ReCiPe), and whether biogenic carbon for bio-based insulation was included in a way that was comparable to other works (*Schulte et al., 2021; Cascione et al., 2025*). And in order to increase comparability, the results from different sources were brought to a common basis - a single functional unit and agreed assumptions. In particular, the same level of thermal function was assumed, a typical material thickness to achieve a given heat transfer resistance was assumed, and, where possible, the transportation and end-of-life scenarios were agreed. Such a recalculation was only performed when the original sources contained sufficient data and this did not affect the correctness of the comparison. If recalculation was not possible (for example, due to the lack of LCI data, an unknown energy mix or unclear rules for the distribution of impacts during recycling), the results were considered only as qualitative or comparative within the author's assumptions, separately marking such cases at the interpretation stage (*Füchsl et al., 2022*).

The selection of sources was carried out as a systematic literature review with an emphasis on publications indexed in Scopus/Web of Science and those with an active DOI. The search was performed using combinations of keywords relevant to LCA and insulation (for example: “life cycle assessment”, “thermal insulation”, “mineral wool”, “EPS”, “XPS”, “PUR”, “PIR”, “cellulose insulation”, “bio-based insulation”, “aerogel”), with further selection according to the inclusion criteria: the presence of a clearly defined functional unit or the possibility of its recovery; transparently described system boundaries; the presence of data for at least one key impact category; described end-of-life scenarios or assumptions about them; the presence of a DOI and the suitability for reproducing the conclusions. The exclusion criteria included works without methodological transparency (lack of FO/system boundaries), purely technical and economic articles without an LCA component, as well as sources in which the results cannot be compared due to critically incomplete input data. For each selected study, metadata (country/region, building or structure type, insulation, thickness/density, energy mix, transport shoulders, EoL scenario, LCIA method) and key numerical indicators were extracted. The harmonization of the Ukrainian and European contexts in the methodological part was implemented by fixing the regional parameters that are most sensitive for insulation: the structure of electricity and heat supply, logistics of material supply, as well as realistic scenarios for construction and demolition waste management, including limited recycling capacity and a high share of mixed waste streams (*Khalieiev et al., 2025*). Where necessary, operational effects related to energy savings during the use of the building were taken into account as a context and possible “credit” at the interpretation stage. At the same time, the main comparison was focused on the materials themselves, so as not to confuse “built-in” impacts (related to production and supply) with “operational” impacts (related to operation), especially when the primary sources used different and incompatible assumptions regarding climatic conditions, heating regimes and service life of building solutions. The biogenic carbon sequestration by biomaterials and the contribution

of energy savings to the total balance were considered mainly qualitatively and through scenarios, since these components are the most sensitive to accounting approaches (in particular to dynamic biogenic carbon accounting methods) and often explain the differences between the results of different authors (*Cascione et al., 2025; Schulte et al., 2021*).

## 5. Results and Discussion

The results of comparative LCA studies show that the environmental profile of thermal insulation materials is largely determined by their origin (mineral, polymer or bio-based), the energy intensity of the technologies, the type of raw material and the chosen end-of-life scenario. Review works covering dozens of LCA analyses demonstrate a fairly stable pattern: insulation materials of petrochemical origin and materials requiring energy-intensive synthesis (EPS/XPS and PUR/PIR) are more often characterized by higher values of global warming potential (GWP) and cumulative energy consumption. In contrast, secondary insulation materials or insulation materials based on bio-materials, in particular cellulose and wood fiber, usually have lower GWP values and a more favorable impact index. However, their advantages may be less pronounced according to individual indicators (for example, ADP). The reason for this is the use of functional additives and the characteristics of production chains (*Füchsl et al., 2022; Schulte et al., 2021; Cascione et al., 2025*).

For mineral wool (rock and glass wool), the results are more “average” compared to other material groups. In a number of works, this material is considered as a compromise between environmental impact and practical advantages (fire safety, dimensional stability, durability). Comparative assessments on a functional basis (e.g. 1 m<sup>2</sup> of a structure with a given thermal resistance) show that mineral wool often has a moderate GWP and relatively controlled energy consumption in the production phase. A classic comparison of stone wool, cellulose (paper) wool and flax shows that stone wool can be competitive in terms of energy costs of production, while cellulose wool often has an advantage precisely in the climatic aspect due to the origin of the raw material and the potential “storage” of biogenic carbon in the material (*Schmidt et al., 2004*). At the same time, mineral wool has limitations in terms of end-of-life scenarios: it is difficult to “energy recycle”, and mechanical recycling and reuse in practice depend on the purity of the waste, logistics and the availability of appropriate infrastructure.

Expanded polystyrene (EPS) and extruded polystyrene (XPS) are assessed in many LCAs as materials with a relatively high share of impact precisely at the production stage, which is associated with petroleum raw materials and process energy. It is significant that for EPS in detailed assessments almost the entire contribution to GWP is formed by the production stage, i.e. the chain “raw material–polymerization–product formation”, while transportation and installation remain secondary in most scenarios (*Lim et al., 2021*).

This indicates that the main opportunities for reducing the environmental burden for EPS/XPS are primarily related to the decarbonization of electricity, increasing the efficiency of production processes, increasing the share of secondary raw materials and the real development of recycling infrastructure. If in practice there are no sustainable and scalable collection and processing flows capable of accepting significant volumes of insulation waste, then the claimed benefits of circular scenarios are mostly not realized and remain rather calculated.

Polyurethane insulation (PUR/PIR) is often considered to have a higher total environmental impact in comparative reviews, especially in the categories of fossil fuel use, energy intensity of production and chemical input. Despite existing regulations that regulate and

limit the use of harmful blowing agents, the production technology of polyurethanes remains resource-intensive, and the dependence on petrochemical supply chains and the difficulty of reprocessing usually lead to higher integrated impact indicators compared to a number of alternatives. However, this does not mean that PUR/PIR should be discarded immediately: these materials can provide high thermal insulation characteristics with a lower layer thickness. However, they should be evaluated through a correct functional comparison and with the obligatory consideration of end-of-life scenarios (Füchsl *et al.*, 2022).

Bio-based insulation and materials with a high proportion of secondary raw materials, in particular cellulose, wood fiber and some fiber composites, in most works show more favorable results in terms of GWP and often in terms of energy consumption. An important explanation is the lower intensity of production processes and the possibility of fixing biogenic carbon in the material. Current comparisons emphasize that biomaterials are able to outperform traditional insulation in most impact categories, but this advantage is not universal: for example, flame retardant and biocidal additives can increase individual indicators, and raw material logistics and quality stability affect the reproducibility of results (Schulte *et al.*, 2021; Cascione *et al.*, 2025).

A separate group are high-tech insulation materials, in particular aerogels. Although they provide uniquely low thermal conductivity and can be effective where layer thickness is critical, LCA data often indicate a significant environmental burden at the production stage due to energy-intensive drying stages and the use of chemical precursors. Aerogels are characterized by a wide spread of GWP values and resource indicators depending on the technological route, production scale and composition, which makes generalizations cautious: in the current state of technology, the environmental “price” for high performance properties may be too high if optimized processes and “clean” energy mixes are not used (Jiang *et al.*, 2023).

In the context of Ukraine, the issues of construction waste management and the real possibilities of recycling thermal insulation materials are becoming more important, which is becoming an increasingly important issue against the background of large-scale destruction and subsequent restoration work. Assessment of the prospects for the further recycling process shows that a significant part of the common insulation materials (EPS/XPS, PUR, mineral wool) form technologically complex waste streams, which are often mixed and contaminated and therefore require specialized solutions for sorting and processing. It is for this reason that interest in glass-based materials, in particular glass foam, is growing - under certain conditions, during reuse or recycling, it can provide more favorable eco-indicators (Khaliev *et al.*, 2025). For Ukraine, this means that it is worth implementing the principles of the circular economy: if collection and recycling are established, even materials with a high “embedded” impact can be generally more environmentally friendly, because the need for primary raw materials is reduced.

Overall, the results confirm that the comparison of insulation materials should be functional (due to the same thermal resistance, durability and usage scenario), and the conclusions should be sensitive to assumptions about the energy mix and end-of-life cycle. The prospective assessments show that the decarbonization of electricity and the increase in the share of recycling can significantly change the ranking of materials and reduce production impacts. This means that for the EU and Ukraine it is important not only “which material to choose”, but also “under what systemic conditions” (energy, logistics, recycling) this choice will provide the best environmental outcome (Valentini *et al.*, 2025).

## 6. Conclusions

A comparative LCA study showed that natural and recycled insulation materials (cellulose, wood fibers, hemp, etc.) have the lowest environmental impact, while synthetic materials (EPS, XPS, PUR/PIR) turned out to be the most “heavy” in terms of GWP and energy consumption. Mineral wool occupies an intermediate position: it is inert and durable, with a relatively low specific energy consumption during production. Aerogels, although promising in terms of thermal insulation, currently have high life emissions due to the complex manufacturing process.

In practice, this means that when choosing a heater, one should evaluate not only thermal performance, but also environmental indicators. State policy should encourage the use of materials with a lower carbon footprint (for example, wood fibers or components from secondary raw materials) and support closed cycles of use, in particular the recycling of EPS and mineral wool. For Ukraine, this is especially important in conditions of war destruction: national strategies should provide for effective management of construction waste from heaters - through recycling and, where appropriate, energy recovery.

The proposed systemic approach allows for a more consistent consideration of environmental criteria when choosing building materials. The results obtained confirm that energy and construction issues should be considered comprehensively, and LCA serves as a key basis for assessing sustainability indicators. In further studies, it is worth considering changes in the energy system and detailing scenarios for the use and final disposal of insulation materials.

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