Juridisko un Sociālo Zinātņu

BALTIJAS ŽURNĀLS

Baltic Journal of Legal and Social Sciences



Juridisko un Sociālo Zinātņu BALTIJAS ŽURNĀLS

Rīga:
Baltijas Starptautiskā Akadēmija
ISSN 2592-8813

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BALTIJA
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Baltic Journal of Legal and Social Sciences, Special issue.
Riga, Latvia : "Baltija Publishing", 2026, 110 pages.

Baltic International Academy is a co-publisher of this periodical.
Printed and bound in Riga by LLC Publishing House "Baltija Publishing".
Journal is available: www.baltijapublishing.lv/index.php/bjlss
DOI: https://doi.org/10.30525/2592-8813

Type of publication from the application:
Journal-Digital-Online
Issue ISSN 2592-8813

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Baltic Journal of Legal and Social Sciences is included in databases:
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INTRODUCTION



Dear Readers,

We are pleased to present the latest issue of the *Baltic Journal of Legal and Social Sciences*. This volume occupies a special place among our previous publications, reflecting the continuing expansion of the journal's academic scope and its commitment to interdisciplinary research. Alongside the traditional focus on law, social sciences, education, management, and economics, A significant portion of the publications in this issue is devoted to the economic, legal, social, and humanities aspects of architecture, design, digital technologies, and cultural heritage preservation.

The emergence of this thematic focus is closely connected with the development of the study programme "Design of Visual Digitalization" at Baltic International Academy. The programme integrates research in visual communication, digital art, artificial intelligence, computer modelling, and heritage studies, creating a platform where creative practice and technological innovation intersect. Today, design extends far beyond the boundaries of artistic expression, becoming an essential instrument for scientific inquiry, digital transformation, and the preservation of cultural identity.

The articles included in this issue demonstrate the diversity of contemporary approaches to visual culture and its interaction with emerging technologies. Alla Iljina explores the phenomenon of nostalgic marketing through the evolution of packaging design for the Latvian chocolate brand *Laima*, illustrating how visual language can preserve collective memory and strengthen cultural identity.

Oleksandr Harmatenko, Hanna Chemerys, and Olexandr Briantsev examine the integration of front-end development into professional design education, highlighting the growing importance of combining creative and technical competencies in higher education.

Innola Novykova, Irina Kopeikina, and Mihails Kopeikins investigate the educational potential of graphic design, presenting it as a powerful medium of visual communication and an important factor in shaping contemporary aesthetic culture.

Particular attention is devoted to architectural heritage and its reinterpretation in modern contexts. Architect Ludmila Kleshnina addresses the underexplored architectural legacy of the Pomorian Old Believer communities in Latvia, revealing its historical and cultural significance.

Marina Lihušina examines the role of artificial intelligence in interpreting and preserving Riga's Art Nouveau heritage, demonstrating how computer vision, generative design, and immersive technol-

ogies such as virtual and augmented reality create new ways of understanding and experiencing the city's architectural identity.

Jūlija Rastorgujeva and Marija Kožarina explore new approaches to museum accessibility for blind and partially sighted visitors, proposing a three-level model for integrating tactile and audio description practices. Drawing on a 2025 staff-training project in Latvian museums, the authors examine how museum professionals combine different sensory channels and demonstrate how accessibility practices can extend beyond touch and audio to incorporate ambient sound, taste, warmth, and structured consent protocols. Their findings highlight the potential of integrated, multisensory approaches to creating more inclusive museum experiences.

The issue also maintains the journal's long-standing interest in legal scholarship. Jurijs Mašošins analyses conclusive actions in labour law, discussing their legal nature and practical application in employment relations. His research highlights the continuing relevance of this legal concept in the context of contemporary labour market practices and contractual relationships.

Although the topics covered in this issue are diverse, they are united by a common objective: to explore the transformation of contemporary society through technological innovation, cultural development, and the evolution of social institutions. It is precisely at the intersection of different academic disciplines that new perspectives emerge, enabling researchers to address complex challenges and contribute to the advancement of both theory and practice.

We hope that this issue will be of interest to researchers, educators, practitioners, and all readers engaged with contemporary developments in law, design, architecture, education, and digital technologies. We sincerely thank all the authors for their valuable contributions and their commitment to advancing interdisciplinary research.

Marina Lihushina,
Editor of the Special Issue
Social and Humanitarian Aspects of Design

DOI https://doi.org/10.30525/2592-8813-2026-spec-1

NOSTALGIC MARKETING AND PACKAGING DESIGN: VISUALISING MEMORY AND HERITAGE

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Abstract. This study explores how nostalgic marketing is expressed through packaging design, using the Latvian chocolate brand Laima as a case study. The paper examines how visual and emotional design elements – such as colour, typography, material texture, and retro symbolism – create nostalgic experiences that strengthen brand identity, authenticity, and consumer loyalty. Combining a visual-historical analysis of Laima's packaging evolution with theoretical insights from consumer psychology and emotional branding, the study traces how design has reflected different socio-cultural contexts – from interwar national romanticism to Soviet modernism and contemporary retro revival. Findings suggest that nostalgia-based packaging operates on both personal and collective levels: it evokes individual memories and shared cultural identity, reinforcing emotional attachment to the brand and its role as a symbol of Latvian heritage.

Key words: nostalgic marketing; packaging design; emotional branding; consumer perception; visual identity.

Introduction. In today's competitive marketplace, brands increasingly rely on emotional marketing strategies to create meaningful connections with consumers. Among these, nostalgic marketing has emerged as a particularly powerful tool, evoking positive emotions associated with the past to strengthen brand loyalty and trust (Pascal, Sprott & Muehling, 2002). Nostalgia allows brands to tap into consumers' collective and personal memories, offering a sense of continuity and emotional comfort in an era of rapid social and technological change (Holbrook & Schindler, 2003). One of the most effective mediums for conveying nostalgic cues is packaging design, which serves not only a functional purpose but also communicates brand heritage and identity (Underwood, 2003). The visual language of packaging – including typography, colour, imagery, and material texture – can instantly trigger emotional associations with "the good old days," reinforcing a brand's authenticity (Orth & Malkewitz, 2008). As Muehling and Pascal (2011) emphasize, nostalgia-based appeals in marketing can enhance perceived brand warmth and consumer attachment, leading to increased purchase intention and long-term loyalty.

The Laima chocolate brand in Latvia provides an excellent example for studying the intersection of nostalgic marketing and packaging design. Founded in 1870, Laima has become not only a confectionery manufacturer but also a symbol of Latvian national identity and cultural memory. Its packaging evolution–from elegant interwar designs to Soviet-era wrappers and contemporary retro-inspired versions–reflects the brand's ongoing effort to balance modern aesthetics with historical resonance. Through design, Laima communicates both continuity and belonging, appealing to multiple generations of consumers who associate its products with family traditions and childhood memories. While global brands such as Coca-Cola, Hershey's, and Milka have long employed nostalgic design elements to reinforce their heritage (Brown, Kozinets & Sherry, 2003), relatively little research has focused on how regional heritage brands in smaller markets, such as Latvia, use nostalgia to maintain emotional relevance in a globalized economy. This gap highlights the need to explore how local visual codes and national symbols are integrated into packaging design to evoke cultural nostalgia.

Therefore, this study aims to analyse how Laima's packaging design employs nostalgic visual elements to strengthen emotional engagement and consumer loyalty. The research applies a qualitative visual and contextual analysis of historical and contemporary packaging designs, supported by a review of secondary sources on emotional branding, cultural heritage, and consumer perception. By examining the evolution of Laima's chocolate wrappers and visual identity, the study seeks to contribute to a deeper understanding of how nostalgic marketing operates through design, particularly in the context of heritage branding and national cultural identity.

Basic theoretical and practical provision. The concept of nostalgic marketing builds upon theories of emotional branding and consumer psychology but places particular emphasis on temporal emotion – the way memories and cultural references to the past shape consumer attitudes. According to Holbrook and Schindler (2003), unlike general emotional appeals, nostalgia operates as a bridge between personal experience and collective memory, creating a feeling of continuity and belonging. Building on this emotional foundation, scholars have conceptualized nostalgic marketing as a strategic approach that translates such feelings of reminiscence into brand communication. It relies on emotional connections to the past to strengthen consumer–brand relationships and reinforce perceptions of authenticity and trust. Pascal, Sprott and Muehling (2002) describe nostalgia marketing as the use of past-oriented themes in advertising and branding that evoke sentimental longing and positive affect associated with earlier times. This approach highlights the emotional dimension of nostalgia as a tool to elicit warmth, comfort, and familiarity.

Muehling and Sprott (2004) further develop this perspective by showing that nostalgia-based advertising prompts consumers to engage in greater self-reflection about personally meaningful experiences. Such reflective processing can lead to more positive evaluations of the advertised brand and stronger purchase intentions. Thus, nostalgic communication not only evokes emotional responses but also shapes consumer attitudes and decision-making behaviour.

From a more strategic standpoint, Merchant and Rose (2013) introduce the concept of vicarious nostalgia, defined as "a preference toward objects or experiences that were popular before one's lifetime, which are stimulated through indirect experiences such as advertising or storytelling". Their findings show that advertising-evoked nostalgia can enhance perceptions of brand heritage, authenticity, and purchase intentions. This perspective extends the discussion of nostalgic marketing beyond individual sentiment, positioning nostalgia as a strategic tool that links commercial value with cultural identity.

Scholars also distinguish between different types of nostalgia that operate in consumer perception. Personal nostalgia reflects individuals' memories of their own past experiences, whereas historical or collective nostalgia evokes longing for an idealised period that one has not personally lived through (Stern, 1992; Holak & Havlena, 1998). This distinction is particularly relevant in marketing contexts, as brands may appeal either to personal memory or to shared cultural imagery to evoke emotional resonance. For instance, heritage brands often rely on collective nostalgia to connect with national identity and intergenerational memory.

In addition, researchers such as Marchegiani and Phau (2010) differentiate between personal nostalgia, grounded in individuals' own lived experiences, and historical nostalgia, which refers to idealised representations of a past that consumers have not personally experienced. Both forms are effective in branding, enabling companies to engage different generations – those who recall the brand's earlier designs and those who connect to them through collective cultural imagery.

From a psychological standpoint, nostalgia also performs key affective and social functions. According to Sedikides et al. (2008), it enhances self-continuity, increases feelings of social connectedness, and generates positive affect. These mechanisms help explain why nostalgia-based marketing strengthens trust, emotional attachment, and long-term loyalty toward brands.

Taken together, these perspectives illustrate that nostalgic marketing functions on both individual and collective levels: it draws on personal memories to create emotional engagement while simultaneously using shared cultural references to reinforce a brand's heritage and authenticity.

While nostalgic marketing primarily operates on emotional and psychological levels, its success depends on how these emotions are communicated through tangible and visual means. Among the many brand touchpoints, packaging holds a particularly significant role: it is both a marketing instrument and a semiotic medium that embodies the brand's visual and emotional identity. Underwood (2003) describes packaging as having "communicative power," serving as a bridge between the brand and the consumer's sensory experience. Beyond its functional purpose of protection and containment, packaging represents a three-dimensional advertisement that continuously interacts with the consumer at the point of purchase and during product use. In the context of nostalgic marketing, this interaction is not merely visual – it is affective and mnemonic, engaging memory and emotion through design.

Klimchuk and Krasovec (2013) further highlight that packaging design exists at the intersection of strategy, marketing, and design thinking. It must simultaneously attract attention, differentiate the product, and communicate the brand's story. Through its form, colour, texture, typography, and imagery, packaging design creates a multi-sensory impression that shapes brand perception. Within nostalgic marketing, these visual and material elements function as mnemonic triggers, capable of recalling personal memories or collective imagery associated with the past. Packaging thus becomes a storytelling device – one that translates abstract emotional associations into visible and tactile form.

The communicative dimension of packaging design extends beyond mere visual appeal. It functions as a sign system that transmits symbolic meanings to consumers through its design language. According to Underwood (2003), packaging contributes to brand identity through "lived and mediated experience," allowing consumers to develop a relationship with the brand that feels both personal and continuous. Orth and Malkewitz (2008) similarly argue that consumers interpret packaging holistically, integrating multiple sensory and visual cues into a single aesthetic impression. This holistic perception explains why certain packaging designs can evoke strong emotional responses – particularly when they resemble familiar styles from earlier decades.

In nostalgic marketing, packaging operates as a form of visual rhetoric. Colours, shapes, and materials act as semiotic signs that evoke emotional resonance and signal authenticity. For example, muted or sepia tones can suggest age and continuity; script fonts may evoke artisanal craftsmanship; and embossed textures or paper wrappings can replicate the tactile experience of historical packaging. Each design choice thus contributes to constructing a narrative of memory and trust, reinforcing the consumer's emotional bond with the brand.

The emotional impact of nostalgic packaging largely depends on specific design cues that activate memory and sentiment. Orth and Malkewitz (2008) identify five key design dimensions – massiveness, delicacy, naturalness, elaborateness, and harmony – which shape consumers' aesthetic impressions of brands. In nostalgic contexts, these dimensions can be manipulated to recall earlier visual traditions. For instance, elaborate ornamentation and harmonious symmetry may evoke pre-digital design sensibilities, while natural materials such as paper or uncoated cardboard suggest authenticity and craftsmanship.

Research in design psychology supports this connection between visual cues and emotional associations. Bloch (1995) notes that visual design triggers both cognitive and affective responses, and that familiarity increases perceived trust and preference. In nostalgic packaging, this familiarity often derives from retro styles or iconic visual motifs – for example, vintage typography, hand-drawn illustrations, or period-specific colour palettes such as muted reds, creams, and golds. These features do not simply imitate the past; they reconstruct it through contemporary design language, allowing brands to merge heritage with modern relevance.

Klimchuk and Krasovec (2013) describe this process as visual storytelling, in which design elements work collectively to express brand heritage and authenticity. Nostalgic packaging thus appeals to consumers' aesthetic memory – their internalised sense of what feels "classic," "familiar," or "comforting." By carefully reintroducing historical design elements, brands can revive emotional connections with long-term customers while attracting younger generations intrigued by retro aesthetics.

Beyond individual emotion, nostalgic packaging also embodies cultural narratives. Heller (2007) argues that design functions as a "carrier of collective memory," encoding cultural values and historical experiences into visual form. In national or regional brands, this cultural dimension becomes especially salient. Packaging often incorporates symbols, patterns, or colour schemes associated with a particular heritage, thereby transforming the product into a cultural artefact.

In the Latvian policy context, the Design of Latvia 2020 framework explicitly positions design as a strategic instrument for economic development, social well-being, and the formation of cultural identity and the national image. The strategy highlights the importance of coordinated institutions, such as the Latvian Design Council, and the integration of design heritage into nation-branding and identity building (Ministry of Culture of the Republic of Latvia, 2020).

These principles are vividly embodied in the case of Laima, Latvia's oldest and most recognisable chocolate brand. Founded in 1870, Laima has evolved from a confectionery producer into a cultural icon deeply embedded in the nation's collective memory. The name Laima, derived from the Latvian word for "happiness" and the ancient goddess of fate, symbolises good fortune and well-being, values deeply rooted in Latvian culture. Since 2014, Laima has been part of the Norwegian Orkla Group, which also owns several other Baltic confectionery brands. Despite foreign ownership, Laima continues to emphasise its Latvian heritage and design traditions, positioning itself as a symbol of national identity and cultural continuity (Orkla Group, 2015). Today, Laima's product portfolio includes more than 200 confectionery items available both in Latvia and in many foreign markets. The company maintains its traditional recipes and craftsmanship, while integrating modern production technologies and design practices. Over its long history, Laima's packaging has mirrored the socio-political and aesthetic transformations of Latvian society – from the elegant interwar designs to the simplified visual language of the Soviet era, and finally to the contemporary retro-inspired revivals that merge heritage with modernity. The following section presents the results of a visual and contextual analysis of Laima's packaging evolution, examining how nostalgic design elements have been used across different historical periods to shape brand identity and consumer perception.

Evaluation of research results. The evolution of Laima's packaging design demonstrates how nostalgic marketing can be expressed through visual continuity and reinterpretation. Over more than 150 years, Laima has maintained its position as a national symbol of Latvia, reflecting the country's historical and cultural transformations through design.

Table 1. summarises key stages in the evolution of Laima's confectionery packaging, illustrating how the brand has visually balanced heritage and modernity across decades.

This historical overview shows that Laima's packaging design has consistently reflected Latvia's social, cultural, and aesthetic transformations. Each era introduced distinct visual codes – from the refined elegance and national symbolism of the interwar period to the functional realism and industrial aesthetics of the Soviet decades, and later to the revival of heritage motifs after independence. Over time, Laima developed a multilayered visual identity that balanced adaptation to political and economic change with a commitment to preserving continuity and authenticity. Through this evolution, the brand's packaging became more than a marketing tool – it turned into a visual narrative of Latvian collective memory. These accumulated visual and emotional associations now serve as a foundation for Laima's nostalgic appeal, enabling the brand to connect generations of consumers through shared cultural imagery and design heritage.

Table 1

Evolution of Laima's Packaging Design and Visual Identity (1920s–2025)

Period	Design Characteristics and Cultural Context
1920s–early 1930s	Packaging design featured eclectic and illustrative compositions, often inspired by exotic and historical imagery – African, Egyptian, and tropical motifs – alongside naturalistic and zoomorphic themes. This reflected global visual trends of the 1920s, combining romanticized exoticism with early Art Deco geometry. Rich colour palettes and hand-drawn typography emphasised craftsmanship and modern elegance, while ornamental frames and symmetry showed strong German graphic influence.
Late 1930s	Design gradually adopted more distinctly Latvian motifs – folk ornaments and national symbols such as the sun and waves – while moving toward greater simplicity and visual harmony. This evolution marked Laima's transition from cosmopolitan to nationally inspired aesthetics, aligning the brand with the emerging Latvian cultural identity. By the late 1930s, Laima's packaging reached artistic maturity, blending modernist geometry with national symbols. Wrappers frequently featured monuments and architectural landmarks of Riga, integrated with traditional Latvian decorative patterns.
1940s	After World War II, Laima's production continued under Soviet administration. Packaging reflected ideological alignment with Soviet cultural canons – for instance, 1945 wrappers featured reproductions of Russian painter Ivan Shishkin's "Morning in a Pine Forest."
1950s–1980s	The mid-20th-century evolution of Laima's packaging demonstrates how visual design adapted to changing ideological and aesthetic environments. Iconic Latvian confectionery brands emerged, along with artist-designed packaging, including Gunārs Kirke's Rigonda (1960), which became an integral part of Laima's identity and later a nostalgic symbol of everyday life in Soviet Latvia.
1990s–2000s	The post-independence revival period marked a return to pre-war motifs and cursive logotypes, with nostalgic packaging celebrating national identity and heritage.
2010s–2020s	In 2015, Laima released a retro collection in honour of its 145th anniversary. A contemporary reinterpretation by Kid Design (2024) introduced minimalist compositions, natural paper textures, and a revived handwritten logo, achieving retro-modern harmony.
2025 (redesign)	The latest unified redesign across Laima's product range, presented in March 2025, introduced a refreshed visual identity preserving the heritage colour-circle logo, clearer typography, and enhanced shelf visibility.

(Sources: Lanceniece, 2012; Fold.lv.,2024; Laima, 2025; Laima Chocolate Museum, 2025).

Figure 1 provides examples of Laima's packaging from the 1920s and early 1930s, illustrating the eclectic mix of exotic, naturalistic, and geometric motifs characteristic of interwar design. These compositions reflect global visual trends of the era, including a fascination with exotic imagery, ornamental symmetry, and the growing influence of Art Deco aesthetics in Latvia. It should also be noted that some of Laima's early interwar packaging, such as Moderna Afrika ("Modern Africa"), reflected the period's fascination with exotic and colonial imagery. While these designs followed international Art Deco trends and were not intended to carry explicit racial connotations, from today's perspective they can be reinterpreted through a postcolonial lens that questions the Eurocentric visual codes of "exoticism" (Tunstall, 2013; Arya, 2022; Ulz, 2024).

By the late 1930s, Laima's packaging design had become distinctly Latvian in character, marked by richly detailed and visually expressive compositions. Wrappers from this period showcased a wide range of motifs, yet consistently reflected national aesthetics – folk ornaments, traditional costumes, and depictions of Riga's and Latvia's notable architectural landmarks. Designers frequently employed symbolic imagery such as the sun, waves, and agricultural scenes to express vitality, harmony, and connection to the homeland (see Figure 2). These culturally resonant designs embodied the optimism

and self-confidence of late interwar Latvia (Ūdre, (2024). Although this visual language was interrupted during the Soviet period, its key elements – national ornamentation, symbolism, and colour harmony – were later revived in post-independence redesigns, reaffirming Laima's identity as a symbol of Latvian heritage.



Figure 1. Examples of early modernist and exotic imagery in Laima's packaging – designs such as *Moderna Afrika* ("Modern Africa"), *Aduja*, *Ēģiptiešu maisījums* ("Egyptian Mixture"), and *Punšs* ("Punch") reflect the interwar cosmopolitan aesthetics and early Art Deco influence. (Mums patīk, 2017)



Figure 2. Laima candy wrappers from the late 1930s: *Jaunais rīts* ("New Morning"), *Nacionālās karameles* ("National Caramels"), and *Lidotāja* ("Aviator"). Combining national symbolism and optimism, this design marked the transition between interwar modernist aesthetics and the emerging visual language of social realism. (Lanceniece, 2012)

In the immediate post-war years, Laima resumed production under Soviet administration, adapting its product range and packaging design to all-Union visual standards. One of the earliest examples of this integration was the introduction, in 1945, of the Lācītis Ķepainītis ("Bear Cub"). One of the earliest examples of this integration was the introduction, in 1945, of the Lācītis Ķepainītis confectionery – the Latvian equivalent of the well-known Soviet Mishka Kosolapy brand (see Figure 3). The design drew upon a long-established Russian visual tradition: the original Mishka Kosolapy wrapper had first appeared in 1913, created by artist Manuil Andreyev for the Einem confectionery company (later Krasny Oktyabr). Andreyev based the composition on the painting Morning in a Pine Forest (1889) by Ivan Shishkin and Konstantin Savitsky, which became one of the most recognisable images in Soviet and post-Soviet consumer culture. Laima's 1945 version reproduced this classic scene of bear cubs playing among pine trees. While the composition underwent stylistic updates in later years, the central image or its variations were consistently preserved, and in the most recent redesign a subtle ribbon in the colours of the Latvian national flag was added, merging historical continuity with renewed national identity.



Figure 3. Evolution of the "Mishka Kosolapy"/Lācītis Ķepainītis confectionery wrapper. From left to right: the original 1913 design created by artist M. Andreyev for the Einem company (Moscow); the classic Soviet-era version by Krasny Oktyabr chief artist Leonid Chelnokov (1950s–1980s); and several Latvian versions Lācītis Ķepainītis produced by Laima. (Museum of Brands, 2025; Laima, 2025)

During the later Soviet decades, Laima chocolates and candies enjoyed wide popularity across the USSR, recognised not only for their exceptional taste but also for their refined and aesthetically sophisticated packaging design. The factory's visual presentation stood out for its artistic illustrations, rich colour palettes, and high production quality. Premium assortments such as Trifele ("Truffle") and other select varieties were often double-wrapped – first in foil and then in printed paper – enhancing their sense of luxury and exclusivity. Among the most popular confections of that period were Vāverīte ("Squirrel"), Sarkanā magone ("Red Poppy"), and Serenāde, distinguished by their vivid and memorable wrappers. Even today, many consumers recognise familiar visual elements in their packaging, perceiving them as a sign of continuity and tradition (see Figure 4). However, some also note that, despite the nostalgic appearance, the flavour has changed over time, often being described as less authentic than in the past (Barkāns, 2023).

In an economy marked by scarcity and limited consumer choice, Laima products symbolised quality and sophistication. While many people regularly purchased inexpensive caramels, toffees, or soy-based chocolates, Laima's boxed pralines and chocolate assortments were associated with festive occasions, New Year celebrations, gifts for loved ones, and expressions of appreciation or respect. Through both taste and design, these confections became emotional tokens of joy and aspiration in everyday Soviet life.



Figure 4. Evolution of Serenāde candy wrappers: from the original 1937 design featuring a musician on the moon, to the dark-blue version popular in the 1970s–1980s, which became one of the most recognisable Laima packages. The two contemporary wrappers on the right are both inspired by the Soviet-era design, though the latest version, introduced after the rebranding, includes the addition of the red Laima logo. (Laima Chocolate Museum, 2025; HoReCa.lv, 2012)

Following the dissolution of the Soviet Union, Laima faced economic uncertainty and limited access to raw materials, leading to the temporary discontinuation of many long-standing products. Nevertheless, even under these challenging circumstances, the company continued to draw inspiration from Latvian cultural traditions. In the early 1990s, Laima introduced a new chocolate confection Līgo (1990), created in honour of the midsummer solstice celebration – a festival that had been officially suppressed during the Soviet era, yet remained one of the core expressions of Latvian identity and collective memory. The Līgo wrapper featured a vivid green colour symbolising summer grass and renewal, adorned with traditional midsummer flowers from the Jāņu bouquet (see Figure 5). Beyond its flavour of cinnamon and cocoa, the confection resonated emotionally as a cultural statement – a rediscovery of national heritage through taste and design. The revival of Līgo marked a turning point in Laima's branding, as nostalgia for pre-Soviet traditions and collective cultural memory became central to its visual language in the post-independence years. The product not only celebrated the midsummer festival but also symbolised the restoration of Latvian identity and values that had been suppressed during the Soviet



Figure 5. Laima "Līgo" confection (1990). (Latvijas Sabiedriskais medijs, 2017)

The chronological overview shows that Laima's visual identity has accumulated layers of historical and emotional meaning that now serve as a key nostalgic resource. Each redesign has drawn selectively from the brand's visual heritage, transforming familiar motifs into emotionally resonant

touchpoints. By reintroducing traditional ornaments, vintage typography, and colour palettes from earlier decades, Laima evokes both collective memory and a sense of emotional continuity among consumers – precisely the mechanism described by Holbrook and Schindler (2003) as the bridge between personal experience and shared cultural memory.

A clear manifestation of this strategy was the Retro Chocolate Collection, released in 2015 to commemorate Laima's 145th anniversary. Developed as both a marketing initiative and a cultural project, the collection aimed to celebrate the art of chocolate making and highlight the company's historical legacy. According to NP Foods (2015), the company invested approximately EUR 35,000 in the initiative, underscoring its importance not only as a commercial product launch but also as an act of cultural remembrance. The collection consisted of seven premium products featuring two newly developed flavour lines – Dessert and Berries. The Dessert Collection served as a retrospective on Laima's historical packaging, particularly from the 1930s, while the Berries Collection paid tribute to the Japanese aesthetic influences that fascinated Latvian society during the 1940s (see Figure 6). One of the most symbolically charged elements was the inclusion of 90% dark chocolate and Lukss chocolate bars, whose design referenced the Ulmanis era – the interwar period under President Kārlis Ulmanis (1934–1940). For many Latvians, the Ulmanis period remains a powerful symbol of national independence, economic progress, and cultural confidence, often idealised in collective memory as a "golden age" of Latvian statehood (Romanovska, 2020).

By evoking the visual and emotional codes of this historical era, Laima effectively reconnected consumers with a time associated with prosperity, stability, and national pride. Through the Retro Chocolate Collection, Laima positioned itself not merely as a confectionery producer, but as a custodian of Latvian design heritage and cultural nostalgia. The collection exemplified how packaging can serve as both a medium of historical storytelling and a strategic marketing tool, transforming collective memory into a source of brand authenticity and emotional engagement.



Figure 6. Laima Retro Chocolate Collection (2015). (Laima, 2015)

Continuing its engagement with national memory, Laima launched the "Nostalģija" ("Nostalgia") project to mark Latvia's centenary. The campaign invited the public to vote for their favourite historical Laima confections – one representing each decade of the brand's history. Among the ten classic candies featured in the campaign, Talismans and Karakums received the highest number of votes and were reintroduced in 2018 according to their original recipes. (see Figure 7).



Figure 7. Visual materials from Laima's "Nostalģija" centenary project – illustrations of classic confections Talismans (1920s) and Karakums (1950s) used in the public voting campaign, alongside the reissued 2018 wrappers. (NRA.LV., 2017; Laima, 2018)

First introduced in 1925, when Laima became a joint-stock company, Talismans ("Talisman") soon emerged as one of the brand's most beloved confections of the 1920s. Created in the mid-twentieth century and inspired by the Central Asian desert of the same name, Karakums ("Kara-Kum") – a chocolate candy with delicate wafer pieces – became an iconic treat across the Soviet Union and remains one of the most enduring symbols of shared nostalgia among consumers in the post-Soviet region (Cabinet Oxford, 2021).

As Lineta Mikša, Public Relations and Communications Manager at Orkla Confectionery & Snacks Latvija, observed: "Each decade of Latvia's history has had its own character, style, and taste – including a favourite Laima chocolate. We are truly delighted by the public's response and their eagerness to rediscover the history of chocolate in Latvia."

Through this initiative, Laima transformed nostalgic sentiment into active public participation, reinforcing its role as both a cultural symbol and a custodian of Latvia's collective sweet memories.

This nostalgic dialogue with the past continued in the 2023 redesign of Laima's chocolate bars by KID Design, which deliberately revived the tactile and handcrafted qualities of historical packaging (see Figure 8). The design team approached the project as both a modernization and a cultural revival, aiming to strengthen emotional continuity while improving brand clarity.

According to Brand Capital, nostalgic aesthetics appeal not only to long-time consumers who associate Laima with childhood memories, but also to younger audiences who romanticize the aesthetics of eras they never personally experienced. This finding aligns with Merchant and Rose's (2013) notion of vicarious nostalgia – emotional engagement with a collectively imagined past. To bridge these audiences, illustrator Līva Eichmane created delicate watercolour depictions of the chocolate bars' ingredients, visually evoking the taste and texture of the products while preserving the retro mood of the design.

As designer Maija Rozenfelde explains, "the original sketches were drawn by hand, and handmade work has a different aura… We wanted to bring back that naturalness and nostalgic feeling with a human touch. For example, if a name has two a's, each one is deliberately made slightly different.

All the sketches were done by hand, as in the past, and then, of course, transferred into digital graphics" (Fold.lv, 2024). This tactile, imperfect aesthetic reinforces the authenticity associated with handcrafted design, resonating with what Muehling and Sprott (2004) describe as the reflective aspect of nostalgia – prompting consumers to engage emotionally through memories or imagined experiences of the past. Reflecting on the project, Kristīne Mūrniece, Laima's Marketing Manager, emphasized that "the designers have managed to preserve the historical connection and emotional elements of the iconic Laima products, creating a modern version of a classic" (Fold.lv, 2024).



Figure 8. Laima Chocolate Bar Redesign by KID Design (2023). (Fold.lv., 2024)

The ongoing packaging renewal demonstrates how Laima continues to treat nostalgic design as both an emotional and strategic asset – maintaining cultural continuity while ensuring visual relevance in a competitive market. Through the deliberate revival of historical motifs, typographic styles, and colour palettes, the brand transforms nostalgia into a form of emotional storytelling that bridges generations and reinforces consumer trust. This case illustrates that nostalgic marketing in packaging is not merely an aesthetic exercise, but a multidimensional strategy that strengthens brand authenticity, enhances emotional engagement, and sustains long-term loyalty. In the broader context of heritage branding, Laima's evolution shows how visual nostalgia can function as a cultural connector – linking individual memories with collective identity and positioning the brand as both a commercial and cultural institution.

Conclusion. This study examined how nostalgic marketing operates through packaging design, using the Latvian heritage brand Laima as a case study. The analysis demonstrated that nostalgia in design functions as both an emotional and strategic mechanism: it evokes personal and collective memories while reinforcing perceptions of authenticity and cultural belonging. By reintroducing historical visual codes – such as traditional motifs, retro typography, and handcrafted aesthetics – Laima effectively bridges its past and present, turning brand heritage into a source of emotional value and competitive advantage.

The historical evolution of Laima's packaging closely mirrors the cultural and political transformations of Latvia itself. Each era – from the national romanticism of the 1930s, through the socialist industrial modernism of the Soviet period, to the contemporary revival of retro design – has left its visual imprint on the brand's identity. These successive layers of design memory now function as a nostalgic archive, enabling the brand to resonate emotionally with consumers across generations. Older audiences experience personal nostalgia, recalling the taste, imagery, and emotions of their

own childhood, while younger consumers often engage with collective nostalgia, finding symbolic connection to an idealised vision of Latvia's cultural past. This dual appeal helps Laima maintain emotional relevance in a rapidly changing market.

In this way, nostalgic packaging transcends its commercial function and enters the cultural sphere. It preserves fragments of visual history – fonts, colours, illustrations – that together evoke a sense of belonging and pride. When consumers encounter such packaging, they are not simply reminded of a product; they are reminded of a shared past, a cultural identity, and the emotional comfort of familiarity.

The case of Laima also highlights the broader role of nostalgic design in small-market and national brands. For companies rooted in cultural heritage, nostalgia provides a framework for expressing identity and continuity amid globalisation. It allows brands to speak simultaneously to local sentiment and to universal emotions of warmth, memory, and connection. Thus, nostalgic marketing in packaging design emerges not only as a promotional strategy, but also as a cultural practice that maintains collective memory and aesthetic tradition.

Future research could further explore how consumers from different generations and cultural backgrounds interpret nostalgia-based design cues, as well as how digital media and sustainability trends influence the visual language of heritage branding. Understanding these dynamics will contribute to a deeper appreciation of how design functions as both a medium of emotion and a vehicle of cultural storytelling.

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DOI https://doi.org/10.30525/2592-8813-2026-spec-2

INCREASE OF THE LEVEL OF CRITICAL THINKING TO COUNTERACT DISINFORMATION AND MANIPULATION OF ARTIFICIALLY REPRODUCED MEDIA CONTENT: AN EMPIRICAL STUDY

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Abstract. This research examines the current issue of synthetically reproduced and modified content, including its use through the 'deepfake' technology and its potential threats to society. The authors highlight how this content alters our perception of reality, allowing us to explore the world, reproduce emotions and fill in information gaps. The text analyses the ethical aspects of creating and using synthetic content, the differences between positive and negative intentions, and various forms of its distribution, including video and audio. The study also highlights the new technologies underlying deepfakes and their possible consequences for society, including the increased threat of disinformation and manipulation. The effectiveness was tested using the method of mathematical statistics with the use of Pearson's criterion. The results of the study indicate that the methodology has a positive impact on the development of skills in recognising synthetically reproduced media content and the ability to avoid disinformation and manipulation.

Key words: Empirical Study; Educational Methodology; Deepfakes; Synthetic Media; Critical Thinking; Media Literacy; Disinformation; Fake News.

Introduction. Synthetically recreated and modified content, as well as content that uses deepfake technology, has become a part of our lives. This content allows us to explore the world, immerse ourselves in emotions, and fill in information gaps, supplementing reality depending on the intentions of the author or customer. Content is not a phenomenon in itself, but transmits certain information that is processed by the recipient and causes a response. At the same time, the intentions behind the creation of such fake products vary in their ethical characteristics. They may be positive and neutral (such as art, services, entertainment, etc.) or negative and criminal (such as discrediting individuals, legal entities or even entire states; provoking conflicts; committing offences, etc.).

The main form of deepfake content is a video created using a set of authentic data that «recreates» events that never occurred. The advent of this was aided, in part, by pattern identification systems (like those for pictures and layouts) which found success in facial recognition. Simultaneously, the growing capability of computers enabled the generation of remarkably lifelike visuals using ray tracing methods. Furthermore, the expansion of platforms for audio and visual content, coupled with a broader user base online, significantly boosted individuals' capacity to employ these tools (Chemerys et al., 2021a).

Audio is another form of deepfake content. The advent of voice cloning technology has enabled the creation of audio fakes that are more realistic than ever before. In order to create a sound product that reproduces not only the timbre of the voice, but also a set of unique language structures used by a particular person in his or her speech, the latest generation of natural language processing technologies are employed. These technologies allow for the identification and reproduction of the lexical and semantic thesaurus and manner of communication of the speaker through quantitative (statistical), linguistic and other approaches.

On the one hand, the phenomenon of counterfeiting is not a novel cultural phenomenon. By analysing the forms of its existence and the threats it poses, it can be stated that humanity has encountered similar phenomena for a long time. These include the Letter of Presbyter John, fake paintings and banknotes. The Letter of Presbyter John is considered a forgery created, according to one version, to persuade the participants of the Second Crusade to go to Mesopotamia. Consequently, it is only appropriate to discuss the advent of a new technological stage in the existence of an integral cultural phenomenon – deception. Prior to the advent of this technology, examples of video deception included any propaganda films that attempted to distort or replace reality with the one that the authors or customers desired. The falsification of video evidence is a related phenomenon. Nonetheless, the arrival of contemporary technological advancements has broadened the scope of dangers linked to deepfake methods, alongside the avenues for their beneficial application. Specifically, the deployment of deepfake visual media presents a serious peril for susceptible demographics, notably youngsters and those in their formative years, thereby furthering what is termed the «digital risk society». As generative technologies become increasingly indistinguishable from human input, concerns arise about their persuasive power–especially when «GenAI produced more consistent writing scores than HR did» (Topuz et al., 2025, p. 42), potentially reinforcing trust in content that lacks human oversight. The lack of critical thinking skills and the ready availability of information sources, particularly through the Internet, mean that young people may be exposed to the dangers of this technology in the form of various challenges. Women are also particularly vulnerable to the effects of pornographic deepfakes, which can cause significant damage to their reputation and mental state (Chemerys et al., 2021b).

On the other hand, new technologies facilitate the creation of highly realistic fake media products, which, in turn, makes them more challenging to identify and detect. The potential risks associated with deepfake technology are increasingly being discussed by experts from various fields, as the extent and scale of these risks continue to evolve (Chesney and Citron, 2019).

Lately, the widespread nature of untruths has become a major hazard for how we talk publicly, the good of society, learning, and how our democracies function (Borges et al., 2019, p. 4; Qayyum et al., 2019, 16). Fabricated material, styled like news and deliberately made to trick folk, is what we mean by false information (Aldwairi and Alwahedi, 2018; Jang et al., 2018). This misleading stuff spreads like wildfire across the digital world, leaping over national borders and capable of swaying countless users (Figueira and Oliveira, 2017). With video content becoming ever more common, we absolutely need to devise ways to encourage the public to think more keenly, so they can tell what's real and what's not in the news they see, all the more so because slick new tech makes it simple to manipulate moving pictures in a very convincing way (Anderson, 2018).

We are currently witnessing an explosion in digital falsehoods and information conflict, where deliberate campaigns spreading untruths are mounted with the express purpose of swaying what the populace thinks (Anderson, 2018; Qayyum et al., 2019; Zannettou et al., 2019). The development of advanced digital tools has made it much simpler to produce visual material that is highly engaging, thanks to «deepfake» methods. These allow for the smooth superimposition of one person's facial characteristics onto another's, yielding remarkably authentic images that are almost impossible to tell apart from genuine footage (Chawla, 2019, 4-5; Maras and Alexandrou, 2019, 256). The potential for deepfake tech to generate diverse material is substantial, spanning humorous clips, adult content, and political footage where people seem to utter words without ever having done so, their looks and voices having been modified at will (Day, 2019, 108; Fletcher, 2018, 455-456). Significantly, deepfake technology presents a major hazard because of its ability to create fake visual evidence for numerous aims. These cover undermining political structures, manufacturing bogus recorded proof for court cases, distributing extremist messages, enabling blackmail, swaying stock markets, and propagating untruths (Maras and Alexandrou, 2019).

To aid the fight against the spread of false narratives, the European Commission has opted to concentrate on updating the Code of Practice relating to Disinformation, as part of the broader framework governing the obligations and roles of online platforms. This action aligns perfectly with what is stipulated in the forthcoming Digital Services Act. Broadly speaking, the European Commission aims to roll out mechanisms that place greater accountability on both media operators and those receiving information directed at them, particularly in tackling the dissemination of falsehoods. The pressing nature of this matter is heavily emphasised by the multitude of regulatory texts and proposed laws concerning rules designed to safeguard national information integrity and uphold the entitlement to truthful data. The foundational tenets guiding the adoption and advancement of information, telecoms, and media advancements within Ukraine are clearly laid out in the Strategy for the Growth of Ukraine's Information Society (2013). To confront the difficulties presented by hybrid aggressions and the propagation of disinformation within Ukraine, the country has formally adopted and put into effect the Cybersecurity Strategy for Ukraine spanning 2021 to 2025. This strategy, bearing the title «A Secure Cyberspace – Crucial for the Nation's Prosperous Growth» constitutes a cornerstone in the country's push to bolster its cyber defences. Moreover, the National Security Strategy of Ukraine and the Ukrainian Law titled «Concerning National Security» (2018) hold a crucial position in these endeavours.

It's worth pointing out that on the 15th of July, 2021, various Ukrainian government bodies, alongside international representatives, met up under the auspices of the OSCE to thrash out plans for battling disinformation and bolstering information security. The central theme of these talks revolved around the world's leading methods for shielding our communities from the damaging fall-out of falsehoods and other sorts of hybrid manipulation. To this end, a few significant pieces of foreign legislation were taken into account, most notably the European Union's 2018 Code of Practice on Disinformation, and the European Commission's decision back in 2016 to enact a «Joint Framework on Counter-Hybrid Response» as part of the European Union's response (2016) as part of the EU's broader strategy.

The advent of simulated reality is upon us, and it is evident that this new phenomenon exhibits characteristics of hyper-realism (Chesney and Citron, 2019). The combination of cognitive biases inherent in all humans and the power of social media has created an environment conducive to the use of dipsticks. Given the psychological tendency of people to fall into the grip of cognitive stereotypes and prejudices, as well as the growing influence of social media, which instantly disseminates information, it is becoming increasingly difficult to distinguish between reality and pseudo-reality. That is why critical thinking to counteract disinformation and manipulation of artificially reproduced media content was developed to enhance the ability to recognise synthetically reproduced media content (Chemerys, 2024b; Chemerys, et al., 2022), which results of the implementation will be used to track the dynamics of skills development in detecting and recognising synthetically reproduced and modified media content and its effectiveness. To create a comprehensive base of methodological materials, a thorough review of existing markers of image falsification was carried out. The aim was to identify and catalogue the characteristics that indicate the manipulation of visual content, as well as to develop strategies for recognising synthetic media. This will further strengthen the foundations of critical thinking in our society (Chemerys, 2024a).

Methods. The study tested the effectiveness of critical thinking methodology in counteracting disinformation and the manipulation of artificially reproduced media content. The components and structural elements of this content were substantiated in the study. In the course of the empirical study to test the effectiveness of the proposed methodology, non-parametric methods of mathematical statistics in pedagogical research and methods of mathematical statistics in pedagogy by J. Glass and J. Stanley and others were used (Glass and Stanley, 1970; Fernberger, 1916; Sestir et al., 2023), where the experiment is defined as a complex research method that provides a scientifically objective and evidential verification of the correctness of the hypothesis justified at the beginning of the study. It

enables the assessment of the efficacy of specific innovations in the field of education, the determination of the relative importance of various factors in the structure of the pedagogical process, and the selection of the optimal combination of these factors for specific circumstances.

The primary objective of the empirical study was to substantiate the general and partial hypotheses of the research, to evaluate the methodology of critical thinking to counteract disinformation and manipulation of artificially reproduced media content, which components and structural elements of this methodology were empirically validated in the research.

In order to test the hypothesis that the level of critical thinking can be improved by applying the proposed methodology aimed at developing critical thinking to counteract disinformation and manipulation of artificially reproduced media content, including cognitive, activity, value-motivational and reflective criteria, an experimental study was conducted. In order to conduct an empirical study, we undertook a review of the methodologies and outcomes of research on a number of issues pertaining to the educational process in higher education (Sedelmaier et al., 2022; Gammon and White, 2011; Recepoğlu, 2015)

The empirical study programme was implemented during 2024-2025 to solve the tasks set. At the current stage, we compare statistic information of 251 respondents (from Zaporizhzhia National University; Municipal Institution of Higher Education «Khortytsia National Academy» of Zaporizhzhia Regional Council; Classic Private University; State Institution «Luhansk Taras Shevchenko National University», Interregional Academy of Personnel Management; Ivan Franko Zhytomyr State University; Volodymyr Hnatiuk Ternopil National University; Polissya National University). Our intended demographic comprised undergraduates pursuing degrees in the Pedagogy of Higher Education (given that this course of study encapsulates «lifelong learning,» thereby encompassing a varied age range) alongside those enrolled in visual media programmes (the «Design» speciality).

The empirical study aimed to assess the efficacy of the proposed methodology for critical thinking in countering disinformation and the manipulation of artificially reproduced media content. The investigation unfolded across a trio of phases: initial appraisal, development, and verification. The progress in bolstering critical thinking within the group that received no instruction based on this approach was contrasted with the experimental cohort, whose members actively took part in the methodology's training. During the verification stage, the intention was to scrutinise the experimental group's movement through both the initial appraisal and development stages, all to confirm the trustworthiness of the findings gathered.

The initial diagnostic stage of this teaching trial (running from November 2024 through to December 2024) is set to be executed with the purpose of theoretically examining the current situation regarding the aptitude for critical thought needed to resist false narratives and the tampering of artificially conjured media. This includes pinning down the standards and tiers of this ability. Leveraging the theoretical framework and initial data assembled, the research question, topic, primary aim, specific objectives, scope, focus, and underlying assumption of the study were then established. Furthermore, the foundational principles and techniques for the research were justified; the pressing need to elevate the populace's critical thinking skills was demonstrated; a framework for cultivating critical thought to handle disinformation and manipulated media was devised; the substance, techniques, tools, and structures for refining this framework were created; the metrics, signs, and degrees of its cultivation were specified; and a blueprint for the practical, experimental work aimed at building critical thinking was drawn up.

In conducting the pedagogical experiment, we met the requirements of validity, reliability and fidelity. As per the stipulations for an experiment to be deemed valid, elements such as the makeup of the participants, their proficiency level, and the environment in which the testing took place were kept identical across both the control and experimental groups. The sole point of departure was the introduction of the newly devised curriculum intended to bolster critical thought processes; this dis-

tinction precisely categorises the setup as a single-factor experiment. The requirement of reliability is ensured by leveling the basic conditions of the pedagogical experiment in real conditions. The study was designed to compare the results of the experimental group with those of the control group. The experimental group implemented the developed training programme, while the control group respondents were not involved in the training. As the measurement of the above indicators is carried out using different measurement scales, we considered it appropriate to bring all scales to four levels: critical (intuitive), acceptable (reproductive), sufficient (productive), high (heuristic).

To gauge the degree of critical thought necessary to combat misinformation and manipulation embedded in artificially generated media, assessed via the cognitive criterion, the researcher employed bespoke test questions devised by the author. These questions possessed unambiguous wording and offered a single definitive correct response, specifically targeting the capacity to discern synthetic media. The quantity of accurate responses furnished by the participants, alongside their resultant test score, signified a particular echelon of critical thinking as measured by the cognitive metric. Further, to ascertain the level of critical thinking deployed against disinformation and manipulation in synthetically reproduced media content, assessed under the motivational-activity and analytical-reflective criteria, established psychological self-assessment tools (Ahmed and Samuel, 2017) were utilised. The computation of the mean baseline level of critical thinking among the participants within both the control and experimental groups, recorded at the ascertainment stage of the pedagogical experiment, is detailed comprehensively in Table 1.

Table 1

The initial level of training of the respondents in the control group and in the experimental group at the stage of identification of the pedagogical experiment

Level	Control Group		Experimental Group	
	Persons	%	Persons	%
Level 1: Critical (Intuitive)	16	13,45%	18	13,83%
Level 2: Acceptable (Reproductive)	39	32,98%	38	28,98%
Level 3: Sufficient (Productive)	48	40,13%	59	44,32%
Level 4: High (Heuristic)	16	13,45%	17	12,88%
Total	119	100,00%	132	100,00%
Average score	3,5357		3,5625	

An analysis of the respondents initial level indicated that those in both the control and experimental groups held roughly comparable standings. Statistical appraisal, specifically employing Student's t-test (per Fay and Proschan, 2010), confirmed that the characteristics between the experimental and control sets are indistinguishable at the 0,05 threshold. Consequently, one can deduce that the groups are homogeneous. Referencing Table 1, the mean educational standing across both the control and experimental groups exhibits no statistically meaningful disparity, and their starting levels of critical thought are likewise identical. The majority of respondents in the control group have an intermediate level of knowledge (40,13%); in the experimental group – 44,32%. Thus, the foundational knowledge held by both groups is practically equivalent. In this case, two hypotheses are proposed: the null hypothesis (H_0), according to which the difference in the level of critical thinking between the respondents is not significant enough and therefore the distribution belongs to a general population, i.e. the sampling was carried out correctly; the alternative hypothesis (H_1), according to which the difference in the level of critical thinking between the respondents of the control and experimental groups is significant enough. The null hypothesis can be rejected in favour of an alternative hypothesis if the statistical analysis shows that the probability of finding the difference by chance does not exceed 0,05 or 5%. If this level of confidence is not achieved, the null hypothesis cannot

be rejected. Therefore, it is necessary to prove that the results of the pre-test to determine the initial level of training of the respondents in the control and experimental groups are samples from the same general population, which determines the correctness of the null hypothesis. Let's determine the value of the Student's t-test using formula 1:

$$t = \frac{M_1 - M_2}{\sqrt{\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}}}, \quad (1)$$

where M_1 and M_2 are the means of the control and experimental groups samples; S_1 and S_2 are the variance (standard deviation) for the control and experimental groups samples, respectively; N_1 and N_2 are the number of assessments in the control and experimental groups samples. Let's define the variance using formula 2:

$$S^2 = \frac{\sum_{i=1}^{n} (X_1 - X_2)^2}{N - 1} \quad (2)$$

where, $(x_1 - x_2)^2$ – is the square of the deviations of the individual values of the features from the arithmetic mean; N is the number of features.

Dispersion is an indicator of how blurred the distribution curve is relative to its arithmetic mean. The calculation of the variance of the initial level of education of students is presented in Table 2.:

Table 2

Calculation of the variance of the level of critical thinking of the respondents

Groups	Level		Number of respondents	Arithmetic mean	Deviation from the arithmetic mean x_1-x_2	Square of deviations $(x_1-x_2)^2$	Product of number of scores times square of deviation $n_i(x_1-x_2)^2$	Dispersion
Control	Critical (Intuitive)	2	16	$\frac{421}{119} = 3,54$	-1,54	2,36	37,73	$\frac{93,6}{118} = 0,7932$
	Acceptable (Reproductive)	3	39		-0,54	0,29	11,26	
	Sufficient (Productive)	4	48		0,46	0,22	10,29	
	High (Heuristic)	5	16		1,46	2,14	34,31	
Expere-mental	Critical (Intuitive)	2	18	$\frac{470}{132} = 3,56$	-1,56	2,44	44,56	$\frac{102,9}{131} = 0,7861$
	Acceptable (Reproductive)	3	38		-0,56	0,32	12,10	
	Sufficient (Productive)	4	59		0,44	0,19	11,20	
	High (Heuristic)	5	17		1,44	2,07	35,13	

Having determined the dispersion value, let's calculate the value of t_{calc} using formula 2:

$$t = \frac{(3,5770 - 3,6288)}{\sqrt{\frac{0,7397}{119} + \frac{0,7861}{132}}} = 0,2384$$

After calculating the Student's t-test, let's compare it with the tabulated value. The tabulated value of the t-test is greater than the calculated value ($t_{table.}(1,984) > t_{calc.}(0,2384)$). This indicates that the null hypothesis is not rejected and that the two samples belong to the same general population, that is, they are homogeneous at the 0,05 confidence level. Thus, gathering the outcomes of our calculations, we are able to assert that the control and experimental groups are uniform and notionally equivalent. The findings gleaned from the establishment stage of experiment demonstrated that both sets of par-

ticipants displayed an inadequate grasp of critical thought processes. A summary of the diagnostic appraisal concerning the degree of critical thinking harnessed to resist misinformation and the manipulation embedded within artificially generated media, alongside the corresponding criterion across both the control and experimental groups during the establishment and formative stages of the study, is laid out in Table 3.

Table 3

The results of the pedagogical experiment on the dynamics of the level of critical thinking in the control and experimental groups

Level of formation	Establishment experiment				Formative experiment				Dynamics	
	Control group		Experimental group		Control group		Experimental group		Control group	Experimental group
	Persons	%	Persons	%	Persons	%	Persons	%		
Cognitive Criterion										
Critical (Intuitive)	6	5,04%	10	7,58%	5	4,20%	8	6,06%	-0,84%	-1,52%
Acceptable (Reproductive)	31	26,05%	29	21,97%	30	25,21%	16	12,12%	-0,84%	-9,85%
Sufficient (Productive)	65	54,62%	74	56,06%	67	56,30%	79	59,85%	1,68%	3,79%
High (Heuristic)	17	14,29%	19	14,39%	17	14,29%	29	21,97%	0,00%	7,58%
Motivational-Activity Criterion										
Critical (Intuitive)	17	14,29%	22	16,67%	16	13,45%	12	9,09%	-0,84%	-7,58%
Acceptable (Reproductive)	45	37,82%	39	29,55%	45	37,82%	31	23,48%	0,00%	-6,06%
Sufficient (Productive)	43	36,13%	57	43,18%	43	36,13%	60	45,45%	0,00%	2,27%
High (Heuristic)	14	11,76%	14	10,61%	15	12,61%	29	21,97%	0,84%	11,36%
Analytical-Reflective Criterion										
Critical (Intuitive)	17	14,29%	12	9,09%	15	12,61%	10	7,58%	-1,68%	-1,52%
Acceptable (Reproductive)	42	35,29%	41	31,06%	43	36,13%	30	22,73%	0,84%	-8,33%
Sufficient (Productive)	44	36,97%	62	46,97%	45	37,82%	70	53,03%	0,84%	6,06%
High (Heuristic)	16	13,45%	17	12,88%	16	13,45%	22	16,67%	0,00%	3,79%

The formative stage of the pedagogical experiment was carried out during February 2025 – October 2025. The purpose of this stage was to evaluate the efficacy of the identified pedagogical conditions and the model of professional competence development for future social workers in the context of their internship.

During the formative stage of the pedagogical experiment, the subsequent objectives were pursued: cultivating the capacity for critical thought to resist falsehoods and the manipulation inherent in synthetically generated media by integrating instruction rooted in the methodology we formulated within the group undergoing the trial; simultaneously, establishing the criteria and levels of critical thinking abilities across both the comparison and control and experimental groups, measured against established metrics.

In this formative stage of the pedagogical experiment, those participants in the control group received no specific instruction, whereas the subjects in the experimental group benefited from training explicitly following the procedure we devised. This procedure entailed putting into practice our self-developed approach aimed at fostering critical prowess to effectively challenge misinformation and the deceptive handling of media fabricated by artificial means.

Results gleaned from the formative stage, shaping phase of the trial allowed for a head-to-head comparison concerning the degree of critical thought demonstrably present in those subjects designated as the control and experimental groups.

Mathematical and statistical methods are employed in the field of pedagogy to process data and establish quantitative relationships between the phenomena under study. These methods facilitate the evaluation of experimental outcomes, enhance the reliability of conclusions, and provide a foundation for theoretical generalisations (Obilor and Amadi, 2018).

The primary hypothesis (H_0) posited that the effectiveness of the implementation of the developed methodology of critical thinking in counteracting misinformation and the manipulation of artificially reproduced media content of the control and experimental groups, as evaluated by each criterion, did not exhibit any significant differences.

An alternative hypothesis is H_1: The effectiveness of the implementation of the developed methodology of critical thinking to counteract disinformation and the manipulation of artificially reproduced media content differs significantly between the control and experimental groups with respect to each criterion.

In order to determine which of the hypotheses (main or alternative) should be accepted, the following criterion was employed χ^2 – a statistical criterion (Pearson's test) is suitable for analysing data measured on an ordinal scale. A statistical analysis of the results of the observations (indicators of the experimental and control groups) indicates that the empirical value of criterion χ^2_{emp}, the result was then compared with the known value (which was provided in the table of critical values χ^2_a) the reference number represents the pivotal value of the criterion χ^2_{kr} with a given probability of error (level of significance). In our study, we selected an error probability level of 0.05, which signifies that a 5% possibility of error is permitted. This implies that the result is 95% reliable. The critical value of the statistical criterion χ^2_{kr} for 4 grading levels (L=4) according to the criteria table χ^2_{kr}=7,815. Empirical value χ^2 criterion is calculated by the formula 3:

$$\chi^2_{emp} = N \cdot M \sum_{i=1}^{L} \frac{\left(\frac{n_i}{N} - \frac{m_i}{M}\right)^2}{n_i + m_i}, \quad (3)$$

where N – is the total number of students in the experimental group, M – is the total number of respondents in the control group, n_i is the number of respondents in the experimental group with the corresponding grade level; m_i is the number of respondents in the control group with the corresponding grade level; L – is the number of grade levels.

A comparison of the critical and empirical values of the criterion χ^2 reveals the following conclusions: if the empirical value of the criterion χ^2_{emp}, as determined by the researcher, is less than or equal to the critical χ^2_{kr}, then the null hypothesis is accepted with a probability of 95%. In the event that the empirical value of the criterion χ^2 is greater than the critical χ^2_{kr}, the null hypothesis is rejected and an alternative hypothesis is accepted and the alternative hypothesis is accepted, and it is considered that the qualitative characteristics of students in the experimental and control groups are different with 95% confidence. The indicators of the level of critical thinking formation according to the cognitive, motivational-activity, and analytical-reflective criteria were subjected to statistical processing. This was carried out by calculating the obtained statistical data using the Pearson method. For this purpose, the obtained results and the results of calculations were systematised in Table 4.

The calculated value of χ^2_{emp} for each criterion at the establishment and formative stages is compared χ^2 with the critical value according to the table at an error of 0,05 (χ^2_{kr}=7,815). The results of this comparison are then used to draw a conclusion about the acceptance or rejection of the null or alternative hypotheses at this level of significance.

Discussion. In order to ascertain the efficacy of the methodology of critical thinking developed to counteract disinformation and the manipulation of artificially reproduced media content, a number of criteria were identified. These were categorised into distinct groups: cognitive, motivational-activity and analytical-reflective. The indicators that correspond to each of these groups and the levels of critical thinking were then determined. To determine the effectiveness of the developed methodology of critical thinking to counteract disinformation and manipulation of artificially reproduced media content, the following criteria were identified: cognitive, motivational-activity and analytical-reflective criterion. The indicators that meet each criterion and the levels of critical thinking (critical (intuitive), acceptable (reproductive), sufficient (productive) and high (heuristic)) are identified.

Table 4

Calculation of the level of critical thinking formation according to the defined criteria by the Pearson method

Criterion	Stage	Level of criterion formation	Quantity indicators		$\frac{n_i}{N}$	$\frac{m_i}{M}$	$\left(\frac{n_i}{N}-\frac{m_i}{M}\right)$	$\frac{\left(\frac{n_i}{N}-\frac{m_i}{M}\right)^2}{n_i+m_i}$	χ^2_{emp}
			X_i	Y_i					
Cognitive	The establishment	Critical (Intuitive)	6	10	0,05	0,08	-0,025337	0,000040	1,090129 $\chi^2_{emp} < \chi^2_{kr}$ H_0
		Acceptable (Reproductive)	31	29	0,26	0,22	0,040807	0,000028	
		Sufficient (Productive)	65	74	0,55	0,56	-0,014388	0,000001	
		High (Heuristic)	17	19	0,14	0,14	-0,001082	0,000000	
	The formative	Critical (Intuitive)	5	8	0,04	0,06	-0,018589	0,000027	8,419191 $\chi^2_{emp} > \chi^2_{kr}$ H_1
		Acceptable (Reproductive)	30	16	0,25	0,12	0,130889	0,000372	
		Sufficient (Productive)	67	79	0,56	0,60	-0,035460	0,000009	
		High (Heuristic)	17	29	0,14	0,22	-0,076840	0,000128	
Motivational-Activity	The establishment	Critical (Intuitive)	17	22	0,14	0,17	-0,023810	0,000015	2,362628 $\chi^2_{emp} < \chi^2_{kr}$ H_0
		Acceptable (Reproductive)	45	39	0,38	0,30	0,082697	0,000081	
		Sufficient (Productive)	43	57	0,36	0,43	-0,070474	0,000050	
		High (Heuristic)	14	14	0,12	0,11	0,011586	0,000005	
	The formative	Critical (Intuitive)	16	12	0,13	0,09	0,043545	0,000068	8,379910 $\chi^2_{emp} > \chi^2_{kr}$ H_1
		Acceptable (Reproductive)	45	31	0,38	0,26	0,117647	0,000182	
		Sufficient (Productive)	43	60	0,36	0,45	-0,093201	0,000084	
		High (Heuristic)	15	29	0,13	0,22	-0,093647	0,000199	
Analytical-Reflective	The statement	Critical (Intuitive)	17	12	0,14	0,09	0,051948	0,000093	3,296560 $\chi^2_{emp} < \chi^2_{kr}$ H_0
		Acceptable (Reproductive)	42	41	0,35	0,31	0,042335	0,000022	
		Sufficient (Productive)	44	62	0,37	0,47	-0,099949	0,000094	
		High (Heuristic)	16	17	0,13	0,13	0,005666	0,000001	
	The formative	Critical (Intuitive)	15	10	0,13	0,08	0,050293	0,000101	9,048184 $\chi^2_{emp} > \chi^2_{kr}$ H_1
		Acceptable (Reproductive)	43	30	0,36	0,23	0,134072	0,000246	
		Sufficient (Productive)	45	70	0,38	0,53	-0,152152	0,000201	
		High (Heuristic)	16	22	0,13	0,17	-0,032213	0,000027	

The value of the criterion χ^2 provides sufficient grounds to state the rejection of the null hypothesis.The reliability of the differences in the characteristics of the experimental and control groups after the pedagogical experiment is 95%. This indicates that it can be concluded that the application of the proposed pedagogical impact aimed at improving the level of critical thinking to counteract disinformation and manipulation of artificially reproduced media content leads to statistically significant differences in the results at the level of 95% according to Pearson's χ^2 criterion. This analysis indicates that the experimental group demonstrated positive changes in the formation of professional competence.

The revealed dynamics permit the assertion that the implementation of the developed methodology contributed to an increase in the level of critical thinking of the participants in the experiment in terms of identifying synthetically created or modified content. Consequently, in the process of analysing the results of the experimental study, the correctness of the hypothesis that the level of critical thinking can be increased by applying the developed methodology was confirmed.

Comparative data on the levels of professional competence of future social workers in the control and experimental groups are presented in the graph (Fig. 1).

The implementation of the training programme and the developed methodology resulted in an increase in the indicators of critical thinking at the high (heuristic) level of over 8% in the experimental group, while the indicators of the critical (intuitive) level exhibited a decrease. The decrease in the acceptable (reproductive) and sufficient (productive) levels was not significant, as the shift in the

increase in the high (heuristic) and critical (intuitive) levels offset this. The analysis of the measurement results using descriptive statistics for each of the criteria demonstrated a positive change in the experimental group. The statistical significance of the difference between the indicators of the control and experimental groups was determined using Pearson's statistical test.

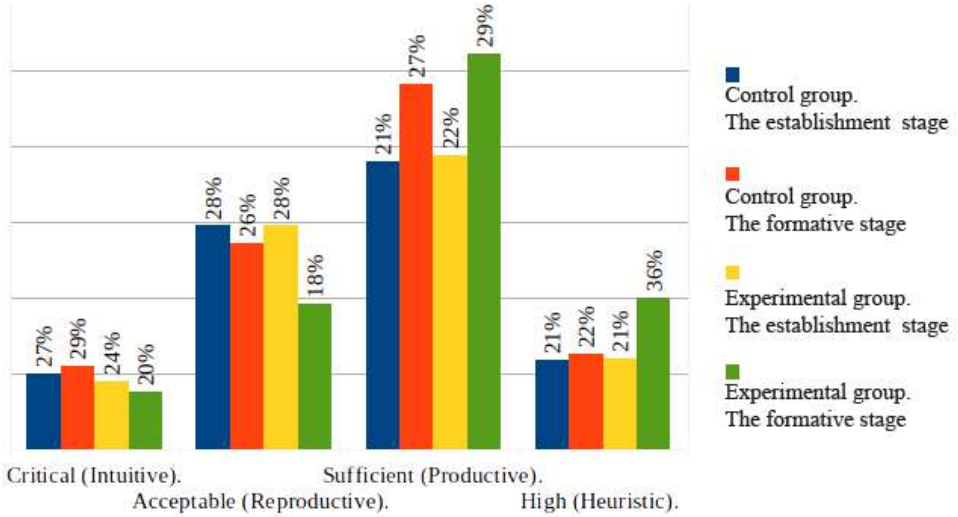

Fig. 1. Comparison of the dynamics of changes in the level of critical thinking of the control and experimental groups

The results of the analysis of experimental data confirmed a statistically significant difference (at the level of significance of 0,05) in the indicators of the criteria of critical thinking formation of the control and experimental groups. The results of the experimental work provide evidence that the methodology of critical thinking to counteract disinformation and manipulation of artificially reproduced media content and its pedagogical support are effective.

Conclusion. During the formative stage of the pedagogical experiment, a system of criteria, indicators, and levels for assessing critical thinking in recognising synthetically generated or altered media content was designed, and the baseline level of these skills was established. At this stage, participants in the experimental group were trained using the newly developed methodology aimed at strengthening their ability to resist disinformation and manipulation associated with artificially produced media content. The training process incorporated several research procedures, including intermediate assessments, questionnaires, and testing.

The control stage focused on determining the final effectiveness of the proposed methodology. This was accomplished by comparing the outcomes of the experimental and control groups, which made it possible to verify or reject the initial hypothesis. Statistical processing further ensured an evaluation of the reliability and validity of the collected data. In addition, the overall effectiveness of the pilot study was examined using final tests, questionnaires, qualitative and quantitative analyses of learning outcomes, and mathematical statistics.

A general overview of the experimental results shows that, at the beginning of the study, the distribution of respondents across the critical (intuitive), acceptable (reproductive), sufficient (productive) and high (heuristic) levels of critical thinking–based on cognitive, motivational-activity, and analytical-reflective criteria–was similar in both the control and experimental groups. However, the post-experiment findings demonstrate a clear improvement among participants in the experimental group. These positive changes confirm the effectiveness of the implemented methodology, as reflected in the increased number of respondents reaching the sufficient (produc-

tive) and high (heuristic) levels of critical thinking in identifying and interpreting synthetically reproduced media content.

Funding: The work is performed within the research CEFRES, UAR 3138 CNRS–MEAE Research topic «Development of Methodology of Critical Thinking and Pedagogical Support to Counteract Disinformation and Manipulation of Artificially Reproduced Media Content».

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DOI https://doi.org/10.30525/2592-8813-2026-spec-3

EDUCATIONAL POTENTIAL OF GRAPHIC DESIGN IN MODERN CONDITIONS AND SYSTEMATIC ANALYSIS/META-ANALYSIS OF DESIGN QUALITY

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Abstract. This article examines the role of graphic design in contemporary post-industrial society, highlighting how it transcends purely applied art to function as an expert medium that shapes the social and cultural status of individuals. It demonstrates that graphic design, when integrated into broader social contexts and responding to challenges posed by socio-decorative phenomena such as fashion, plays a key role in cultivating cultural tastes. This reflects the multiplicity of complex and ambivalent cultural manifestations inherent in graphic design. The study approaches graphic design through the lens of philosophical communication, identifying it as one of the most effective methods of non-verbal communication and information visualization in a post-industrial society.

Special attention is given to the educational potential of graphic design, showing that both the creation of visual imagery and its interpretation by consumers depend significantly on the designer's aesthetic sensibility, ethical convictions, and humanistic orientation. This highlights the responsibility of the designer (visualizer) not only as a creator but also as an educator within the cultural and informational environment.

Key words*:* graphic design, culture of tastes, visual information, education, educational potential, post-industrial society, visualizer.

In the culture of post-industrial society, design plays a leading role, performing functions that extend beyond purely decorative purposes and actively shaping the social status, life priorities, and attitudes of individuals toward their environment and the people around them. In this context, analyzing design through the lens of a "culture of tastes" becomes particularly relevant. Narratives concerning cultural taste emerge at nearly every stage of European history, reflecting societal values and the evolving understanding of aesthetics. Design naturally intersects with socio-decorative phenomena such as fashion, offering expanded avenues for self-expression and human self-realization.

The relationship between fashion and the differentiation of cultural tastes has been acknowledged in philosophical traditions, from German idealism (Immanuel Kant) to the writings of Grigory Skovoroda, for whom fashion was a key term, and Pierre Bourdieu, who highlighted its role in codifying social hierarchies. However, in post-industrial society, the coding of tastes as social markers becomes increasingly complex. On one hand, traditional social education programs of the industrial era emphasized dress codes to reinforce social roles; on the other, contemporary society often challenges or ignores these rules, creating tension between the desire to defy conventions and the need for social recognition. Modern dress codes reflect these contradictions, while protest cultures, such

as hippies, emo, and graffiti subcultures, frequently assert their identity through distinctive design and attire.

Cultural predestination and social conditioning remain defining features of design across all forms–graphic, industrial, or landscape–demonstrating the ambivalence of design manifestations, from elite high-culture paradigms to the pluralization of tastes in mass culture. Focusing on graphic design, we observe that it functions both as a mirror of everyday life and as a tool for individuals to explore personal philosophies of self-realization. Harmonizing the inner and outer worlds requires attention to fashion, interior aesthetics, and social positioning, which together form a personalized sense of comfort. This "comfort" is mediated by each individual's aesthetic taste, education, knowledge, and awareness. A person with a developed culture of taste does not merely consume art aesthetically but interprets and evaluates it with discernment.

While material wealth may provide access to luxury products and high-end graphic design, it does not guarantee refined taste or a deep understanding of visual culture. Monetary resources can compensate externally for a lack of inner aesthetic development, projecting an "individual vector of glamour" (Krylova 2019: 211), but they are not a true indicator of cultural sophistication. Meanwhile, commercialization continues to shape contemporary artistic spaces, amplifying tensions between superficial appeal and authentic cultural value.

Graphic design, as an element of visual culture, intersects deeply with societal tastes, shaping collective trends and fostering social cohesion through non-verbal communication. From the 19th century onward, movements such as the Arts and Crafts Movement in the USA and England promoted socially useful, aesthetically simple design, aiming to create environments conducive to well-being and functional beauty (Smythe 2021: 96–97). This historical perspective underscores that taste is not merely personal preference but a socially and culturally mediated phenomenon, highlighting the educational potential inherent in design practice.

This correlation is often reflected in the taste preferences of individuals who actively engage with graphic manifestations of culture. Several key factors shape this correlation, with the culture of taste playing a central role. History demonstrates that design created solely for its own sake can become superficial and meaningless. As noted by Gavin Ambrose and Nigel Ono-Billson, whose work Graphic Design 01 serves as a propaedeutic of design education, technological progress can sometimes encourage frivolity among designers, leading them to pursue illusory or "empty" design. Designers must be aware that fashion fads, trends, and stylistic preferences are transient, influenced both by technological developments and the prevailing cultural spirit of the time (Ambrose & Ono-Billson 2019). A thoughtful approach to design, therefore, requires not only technical skill but also an understanding of the broader cultural and temporal context in which visual communication operates.

The emergence of graphic design, particularly in the form of infographics, can be superficially understood through Walter Benjamin's concept of the mechanical reproduction of art (Benjamin 2002). However, its significance extends beyond reproduction, marking a shift from a culture dominated by the written word to a culture increasingly centered on images–transitioning from the "Gutenberg galaxy" to the "McLuhan galaxy". Graphic culture is inherently adaptive, able to meet the diverse tastes of its audience, because it functions as a medium of communication between individual aesthetic preferences and the broader need for visual consumption. Graphic design translates ideas, concepts, and messages into visual forms, taking into account the target audience, communicative goals, and contextual circumstances to ensure clarity, comprehension, and engagement.

Designers actively monitor current trends in visual culture–fashion styles, color palettes, typographic conventions–and incorporate these elements into their work to produce contemporary, appealing designs that resonate with public tastes. In essence, graphic design provides visual solutions for the aestheticization of human living spaces, reflecting societal ideas of beauty, desirability, and social ideals. Unlike vernacular or purely artistic activities, graphic design is goal-oriented: whether creat-

ing a logo, packaging, advertisement, or website, it serves a communicative purpose. Yet, these goals are not always neutral or positive; they can include aggressive appeals or even hostile messages.

As a complex visual language, graphic design operates within a structured system of meanings that influence emotions, thought processes, actions, and personal environments. It plays a central role in the information landscape of post-industrial society, where image dominance is evident. Non-verbal communication and information visualization, supported by advanced technologies, demonstrate that written culture alone is no longer sufficient to convey meaning fully. Modern artistic and philosophical discourses increasingly emphasize the power of the image. Following Hryhoriy Skovoroda's terminology, one must consider the "invisible"–the hidden layers beneath what is seen. Non-verbal communication, in this sense, can convey meaning with exceptional clarity, as exemplified by early cave paintings. While such rock art primarily encoded information for insiders of a tribe, its visual power foreshadowed the communicative potential of modern graphic design.

Today, graphic design functions both to encode and decode information in contemporary society. Its omnipresence in daily life shapes preferences and influences decisions: logos, brands, and visual symbols evoke emotional responses and associations that guide consumer behavior. Graphic markers, whether on maps, social media, or advertising, streamline information processing, yet can also mislead, creating reliance on brand recognition rather than critical evaluation. Modern consumers often prioritize widely promoted brands over less visible but potentially higher-quality alternatives, highlighting both the power and ambivalence of graphic culture.

Graphic culture, encompassing all aspects of visual perception, occupies a central position in the modern information space, and its influence is both universal and global. Graphics, as a language of visual symbols, serve as a fundamental means of transmitting information–from diagrams and road signs to brand logos and social media icons. Concurrently, public perception of graphic design is shifting: its value is increasingly seen not as sacralized or elite, but as mass-oriented and popularized. The historical progression from narrative to visual culture reflects the broader civilizational development of humanity. The transmission of information has undergone a remarkable transformation–from oral traditions and storytelling to the culture of images, symbols, and eventually written text. Irene Vallejo's work, The Journey of the Book, compellingly illustrates this evolution, highlighting how the emergence of text enabled precise recording of knowledge, facilitating its accumulation and transmission across generations (Vallejo, 2023). The formation of book culture stands as one of humanity's greatest achievements, yet in contemporary society, there is an increasing preference for images as a primary means of obtaining and processing information. Tracing this trajectory is essential for understanding the nature of human information reality.

In the early stages of human existence, communication was primarily oral, relying on narratives as a means to transmit knowledge, wisdom, and cultural heritage. These narratives not only conveyed practical information about survival but also established a shared understanding of the world, developed through observation and experience. Visual symbols and images played a crucial role in codifying knowledge, preserving history, and shaping complex belief systems. This transition marked the emergence of a "universal language" in primitive societies, laying the foundation for visual culture. While visual culture significantly enhanced oral communication processes, the advent of written textual culture fundamentally transformed information transmission. The ascendancy of image culture over textual culture became pronounced during the great industrial transformations and was further solidified with the advent of photography in the early twentieth century, when experimentation with photographic techniques became widespread in both art and design movements (Smith, 2021).

Image and text have become central components of modern information exchange. The digital information visualization industry saturates everyday human environments, while text continues to underpin business communication, document management, knowledge culture, and academic discourse. The combination of image and text reduces asymmetry in information transmission, allowing

for more effective selection, interpretation, and understanding of meaning, as described by Niklas Luhmann. The key advantage of images lies in their independence from linguistic barriers: on one hand, visual language is accessible and widely comprehensible, yet on the other hand, it requires intercultural and interfaith interpretation. Images can act as bridges for cultural exchange, narrating history and national traditions, but they can also carry threatening or destructive meanings, humiliate non-believers, or create barriers to intercultural communication.

Graphic materials can serve as instruments of propaganda, reinforcing power, destabilizing societies, and generating conflict. Posters, banners, and advertisements sometimes replicate aggressive imagery, transmitting inhumane messages. Political campaigns often depict opponents with hostile gestures or images that negatively influence public perception. Similarly, graphic cartoons, comics, and memes may employ grotesque depictions or negative stereotypes to incite hatred toward specific social groups. In the media, glossy magazines and online platforms often highlight curated images of success and happiness, potentially promoting deviant consumer behavior.

Conversely, graphic culture holds significant potential for fostering dialogue and promoting peace. Using universally recognized symbols, illustrations, posters, and infographics, designers can draw attention to shared civilizational challenges. Visualization of global issues provides an effective mechanism for engaging the international community in dialogue. Design and graphics, empowered by the creativity and technical skill of their creators, employ cutting-edge technologies to render these messages visible in the human living space. Understanding the "invisible"–the layers of meaning beneath the visible image–relies on the guidance of the designer and the perceptive abilities of the observer. Without this guidance, only the surface of the image is perceived. Hence, the educational role of graphic design is crucial, serving as a bridge between visual communication and the development of critical perception.

Graphic designers receive specialized education and possess deep knowledge in design principles, composition, typography, color theory, and other aspects of visual communication. Their professional skills and mastery of tools enable them to create effective, comprehensible, and aesthetically appealing graphic solutions. The creative potential of the designer determines not only the aesthetic and functional quality of a work but also its communicative power. This communicative quality, consciously or intuitively embedded by the designer, ensures the long-term relevance and impact of any graphic project.

It is important to note, following Immanuel Kant, that since graphic design carries significant educational and formative potential, the designer responsible for translating these meanings must be well-educated and culturally literate. If design education is limited or insufficient, the educational potential of design may be compromised. Current trends, such as the reduction of humanities disciplines in art education, are often economically justified but risk dehumanizing design education. The development of future designers should occur throughout their education and adhere to clear humanistic principles. Richard Pring emphasizes a practical approach in education, bridging theoretical knowledge with the common-sense understanding of ordinary individuals. According to Pring, education should not only convey theoretical concepts but also cultivate the ability to interpret and apply knowledge in the context of everyday experience (Pring 2004: 145–162). This integration ensures that students can critically engage with the world and internalize ethical and aesthetic principles.

Applying these principles to domestic design curricula suggests the importance of emphasizing "communication design," which seeks to establish connections between theoretical knowledge, sociocultural needs, common-sense perspectives, and practical demands of consumer culture. Communication design relies on pedagogical, psychological, and philosophical foundations to teach visual communication and cultivate future visualizers (Jia 2018). It enables designers to translate ideas into visible forms, realizing their creative potential while adhering to humanistic values. Consequently, graphic works must be responsible, clear, and socially meaningful. Accuracy, relia-

bility of information sources, cultural sensitivity, and ethical conduct–including respect for human rights, confidentiality, and copyright–are essential components of professional graphic design.

In contemporary design education, digital design practices, particularly UX/UI design, play a significant role. Educational programs increasingly incorporate courses on user experience and interface design, enabling students not only to develop aesthetic sensibilities but also to acquire skills in creating usable, functional, and ethical digital products. Such training helps future designers understand the social and psychological aspects of user interaction with visual objects, fostering responsibility for how visual solutions influence people's behavior and perception.

UX/UI design also exemplifies the educational potential of graphic design, as it encourages students to think holistically, analyzing both aesthetic and functional aspects of a product. Studying digital interfaces develops critical thinking, the ability to anticipate user reactions, and the integration of ethical principles into visual solutions. Thus, learning digital design extends beyond technical proficiency, cultivating conscious and responsible designers capable of creating culturally sensitive and socially meaningful products.

The educational component of UX/UI design naturally aligns with the humanistic orientation of graphic design. Students learn to adapt visual messages for diverse cultural and social contexts, ensure product accessibility and inclusivity, and develop empathy for users. This experience strengthens the role of the designer not only as a technical expert but also as a cultural and educational mediator in the process of communication through contemporary digital media.

Graphic culture and graphic design face challenges in the modern era due to the rapid development of communication technologies. Emerging forms of information transmission are reshaping traditional notions of taste, aesthetics, and education. Conventional publications, such as books, magazines, and newspapers, are increasingly losing relevance as new digital tools and platforms provide faster, more interactive means of disseminating information. At the same time, prejudices and elitist attitudes within intellectual circles can hinder the full utilization of these technologies in educational contexts. This situation presents both opportunities and risks, including the potential misuse of graphic design as a tool for propaganda or the propagation of low-quality, superficial aesthetics.

Nevertheless, graphic design retains the capacity not only to create new meanings but also to cultivate communicative competencies. By leveraging its visual and symbolic power, graphic design can enhance humanistic orientations in contemporary Ukrainian design and art education. The process of creating visual images, as well as the subsequent interpretation of these images by audiences, depends critically on the designer's aesthetic sensibilities, ethical convictions, and humanistic values. Properly guided, graphic design can serve as a method of non-verbal communication that reinforces positive social messages, supports cultural diversity, and fosters ethical engagement in post-industrial societies.

Presenting graphic design as a communicative method allows educators and practitioners to harness its instrumental and functional potential. It strengthens humanistic values through non-verbal communication and information visualization, contributing to the development of informed, culturally sensitive, and socially responsible citizens. In this sense, graphic design is not merely a technical skill but a vital educational tool capable of shaping perception, understanding, and behavior in modern society.

The theoretical comprehension of the educational and communicative potential of graphic design is impossible without a clear methodological apparatus capable of objectively assessing the quality of the created visual products. Therefore, the next part of the article is devoted to the systematic analysis and meta-analysis of design quality.

Research in design includes the study of design processes in all possible areas. Therefore, research in design in the context of metamodernism is associated with a complex of design methodologies or its separate disciplines. In the primary interpretation, research in design focuses on the idea/vision/

concept within the design process. The goal of such research is to better understand, more widely apply, and productively develop the accuracy of the design process and the accuracy of the product predicted by the result.

Research relevance***: why changes are necessary for a specific object, subject or target audience (company, industry, etc.) as well as to what extent the changes affect all aspects of design quality.

Relevance of the research: why changes are necessary for a specific object, subject, or target audience (company, industry, etc.), as well as to what extent the changes affect all aspects of design quality.

Novelty of the research reflects what the author has discovered and proven as a result of meta-analysis and creative synthesis (for example, an impact on a component of the object has been identified and proven, qualitative changes in the structure of the object under study have been discovered and proposals have been made for their elimination or other use, opportunities for developing and modifying a process have been shown, a set of methods has been developed or supplemented, etc.). The novelty is reflected in the comparison: what will be done within the project and why / what has been done in other projects in this area so far (this is searched by comparing analogues or scientific/business information sources without using populist information sources).

1. Characteristics and justification of the target audience – users or customers, mostly non-statistical data: justification of popularity, aesthetic values and priorities;

2. Functional meta-analysis – description of functions, definition of problems, description of means of expression and justification – with what exactly it was planned to achieve the value effect, innovativeness, topicality, description and justification of means of expression used in analogues, aesthetic, psychological, utilitarian comfort/discomfort;

- functional meta-analysis – what functions should be provided in the ideal case, in the context of the topic, all possible functions should be analyzed, as well as what you plan to do so that the target audience has maximum comfort in the project when using style elements and advertising, interior or other spatial object, virtual interface. As a result of functional analysis, in the form of an assumption/hypothesis you can obtain the ideal model (vision, description, understanding) of a product or service, which would fully satisfy the user/target audience. Using this model, you can create a full-fledged concept in which to formulate an element of innovation that will provide a difference in comparison with analogues, will allow you to create a project without repeating the mistakes of competitors.
- meta-analysis of functions in the context of historical development;
- meta-analysis of functions from the point of view of form, structure and functional usability;
- listing and optimization of all possible functions of objects;
- summaries of results with directions for further creative solutions to problems (elements of innovation, determination of a free niche in the professional field);
- using the results of the analysis, tasks for developing a new project;
- evaluation of ideas: time factor, fashion trends, market niche;
- aesthetic priorities;
- proportions and ergonomic factors;
- constructive solutions, plans, schemes;
- flows, compliance with goals;
- manufacturing technologies, labor intensity;
- information capacity, compliance with raw materials;
- health factors, occupational safety;
- layout, problem-solving options;
- emotional perception solutions in form, color, stylistics;
- imagery in the environment, stylistic unity;
- rhythmicity, staticity, dynamics;

- arrangement of information provided in the project or analysis study.

3. Study of analogues (negative, correct, positive – critical analysis, table, appendices);

3.1. mutual correspondence of theme and content, constructivism of analysis and solution;

3.2. purity and professional competence in technical execution, description of means of expression;

3.3. visually justified compositional solution of the project;

3.4. visually justified coloristic and tonal solution of the project;

3.5. visually justified stylistic solution of the project.

Procedure for evaluating the results of methodological and artistic creative work, in which the existing research component is highlighted in particular:

The meta-analysis system is based on a critical analysis of design quality expertise, which is a research basic vision of the structure of a creative task, the sketch stage with the original author's decision on the element of novelty, the vision of the work concept, and the author's decisions in the project part with the corresponding argumentation and evidence of the authenticity of the decisions made and their compliance with the goal. This information, research and artistic creative work decision block and its visual concept are initially prepared as a scheme

Research on the novelty of the work content (research); sources:

1. Functional and aesthetic priorities of the target audience (apathy, questionnaires, identification of the segment or subculture model),

2. Functional meta-analysis and information sources (fashion trends, fundamental books, media, Internet resources, independent applied research) contain the structure of the research: In the context of the topic, all possible potential functions of the object should be analyzed and studied, as well as what you plan to do in order to ensure maximum objective comfort for the target audience in the new project using style elements and advertising, interior or other spatial object, UX/UI virtual interface. As a result of functional analysis and research, students obtain an ideal model of a product or service in the form of an assumption/hypothesis (vision, fantasy, concept, description, understanding), which could fully satisfy the user/target audience. Using this model/forecast, a full-fledged product concept can be created, in which, as a result of the research, it is possible to formulate an element of innovation that will provide a positive difference compared to analogues, which will allow creating a new research-based project more qualitatively and accurately than competitors and analogues.

When conducting analysis and research before designing an interior/product/advertisement or other form of communication, 5 questions should be answered based on research:

Study 1: What functional options could interest the target audience and include a potential element of innovation/novelty in the context of the project theme?

Study 2: What aesthetic qualities could interest and satisfy the target audience and include a potential element of innovation/novelty in the context of the project theme?

Study 3: What ergonomic qualities could interest and satisfy the target audience and include a potential element of innovation/novelty in the context of the project theme?

Study 4: What hierarchy of priorities and stylistic features could interest and satisfy the target audience and include a potential element of innovation/novelty in the context of the project theme?

Study 5: What technical and technological base could ensure maximum satisfaction of the target audience and include a potential element of innovation/novelty in the context of the project theme?

The element of novelty/innovation must be identified in at least one of the 5 studies.

The meta-analysis of these studies is provided by the developed methodology «Analysis and Objective Diagnostics of Typical Problems of Objects of Design» / Analysis of Typical Problems of Objects of Design (ANTIPOD).

The methodology has been tested since 2014 and yields positive and objective results both in practical use and is recommended for use as a basis for assessing the quality of design work in the process of preparing design educational programs (Arts direction).

Conclusions.

In conclusion, the educational potential of graphic design is vast and multifaceted. By integrating technical skill, aesthetic sensibility, and humanistic values, designers can create visual works that communicate effectively, inspire reflection, and foster cultural awareness. Graphic design serves as both a mirror and a tool of society: it reflects prevailing tastes, values, and social dynamics, while also shaping perceptions, guiding behavior, and transmitting knowledge across generations.

To fully realize this potential, design education must combine theoretical knowledge with practical experience, grounded in ethical principles and a deep understanding of cultural contexts. Designers must be equipped not only with technical competence but also with critical thinking, empathy, and an awareness of the social consequences of their work. This holistic approach ensures that graphic design contributes meaningfully to individual development and societal well-being, rather than merely serving commercial or superficial ends.

Ultimately, graphic design is a form of visual communication that transcends language barriers, bridges cultures, and encourages dialogue. By cultivating an ethical, humanistic, and educational approach to design, society can harness the power of images not only to inform and persuade but also to educate, inspire, and unite people in a post-industrial, globalized world.

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DOI https://doi.org/10.30525/2592-8813-2026-spec-4

INTEGRATING FRONT-END DEVELOPMENT INTO PROFESSIONAL TRAINING FOR DESIGNERS: A COMPARATIVE ANALYSIS OF EDUCATIONAL PROGRAMMES

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Abstract. This article examines the specific features of integrating front-end web development into the professional training of future designers at higher education institutions in Ukraine and abroad. The relevance of this research stems from the need to produce competitive professionals capable of working in an environment characterised by digital transformation and interdisciplinary collaboration. The research methodology is based on an analysis of educational programmes, syllabuses and teaching components of the 022 «Design» specialisation, as well as a comparison of Ukrainian and international experience in training designers for front-end development. The key components of such training have been identified: HTML, CSS, JavaScript, UI/UX design, responsive layout, prototyping and team collaboration. It has been established that foreign programmes combine design and technical training in a more systematic manner, focusing on practical activities and work in interdisciplinary teams. The feasibility of introducing the parallel study of the disciplines «UI/UX design» and «Front-end design» in the professional training of future designers has been substantiated.

Key words: Front-end development; UI/UX design; design education; web design; interdisciplinary teams; digital competencies.

Introduction. The current development of the digital society, the rapid spread of web technologies and the transformation of the labour market are driving the need to develop new professional competencies for future designers. One of the key trends in contemporary design education is the integration of front-end web development skills into the professional training of design specialists. In today`s environment, designers are no longer limited to creating the visual concept of a product; increasingly, they are involved in designing the digital environment, developing interfaces and collaborating with web development teams. This requires a basic knowledge of HTML, CSS, JavaScript, the principles of UI/UX design, and an understanding of the processes involved in the implementation of a digital product (Cross, 2006).

At the state level, the relevance of developing digital competences is confirmed by Ukraine`s regulatory and legal documents, in particular the Law of Ukraine «On Higher Education», the Concept for the Development of Digital Competences until 2025, and the Strategy for the Development of Higher Education in Ukraine for 2022–2032 (Verkhovna Rada of Ukraine, 2014; Ministry of Digital Transformation of Ukraine, 2021). These documents emphasise the need to modernise vocational education in line with the needs of the digital economy, to integrate innovative technologies into the learning process, and to develop competitive professionals capable of working in a global digital environment.

The issue takes on particular significance in the field of design education, where the modern labour market requires specialists not only to possess artistic and design competencies, but also the ability to work in interdisciplinary teams and interact with programmers, business analysts and product managers. According to N. Cross, design activity is based on a specific type of thinking – «designerly ways of knowing» – which combines synthesis, modelling and the practical construction of solutions (Cross, 2006). K. Dorst views the design process as the co-evolution of the problem space and the design solution, which is particularly relevant to digital design and the development of web interfaces (Dorst, 2001).

The development of digital literacy and the use of information technology in vocational education have been studied by Ukrainian researchers V. Bykov, N. Morze, O. Spirin, N. Aristova, I. Kostikova, T. Yarmolchuk and others. The researchers emphasise that the digitalisation of society is changing the requirements for the professional training of future specialists, and proficiency in digital technologies is becoming an essential component of modern professional competence (Bykov, 2019; Morze & Spirin, 2020; Yarmolchuk et al., 2021).

The specific issues of web design and web development in the professional training of specialists are addressed in the works of D. Borodaiev, who considers a website as an object of graphic design and identifies its communicative and visual features (Borodaiev, 2012). The relevance of the web designer profession and the requirements for a modern specialist are analysed by R. Opanasenko and O. Orel, who emphasise the integration of design and technological competencies in professional practice (Opanasenko & Orel, 2020). The issue of using recommendation systems for studying web technologies has been investigated by S. Popereshniak, M. Kutsenko and A. Antonenko, who emphasise the importance of adaptive educational approaches in web development training (Popereshniak et al., 2021).

Foreign researchers have also made a significant contribution to research into web development teaching methods. For instance, K. Tzafilkou, T. Protogeros and A. Chouliara demonstrate the effectiveness of experimental web development teaching based on real-world examples and practice-oriented tasks, which helps to increase student motivation and develop professional skills (Tzafilkou et al., 2022). Research by G. Zhou, J. Li and J. L. Zhong demonstrates the effectiveness of problem decomposition and multiple-solution methods for developing critical thinking in the process of studying web development (Zhou et al., 2021). The researchers also pay particular attention to the psychological and pedagogical aspects of student training. In particular, Z. Liang analyses students» motivation, confidence and attitudes towards studying web development (Liang, 2020), whilst T. P. Lau and I. King investigate the readability of digital text materials in a web-based educational environment (Lau & King, 2009).

Issues of interdisciplinary collaboration in design education are explored in the works of Meredith Davis and S. Melamed, who emphasise the need to develop future designers` skills in teamwork, communication and the integration of design solutions into technological processes (Davis, 2017; Melamed, 2019). In today`s context, front-end development is becoming a vital component of a designer`s professional practice, as it bridges the gap between interface design and its functional implementation.

Of particular relevance to this study are the works of H. Chemerys, which examine the training of future computer science undergraduates in the development of user interfaces (Osadcha & Chemerys,

2018; Chemerys et al., 2019; Chemerys, 2020: Chemerys et al., 2021). These studies are methodologically consistent with the present work, as they justify the need to integrate design, technological and UX competencies into the professional training of specialists in the digital sector; however, the author`s main focus is specifically on the training of computer science undergraduates, rather than designers.

Despite a significant body of research, the issue of integrating front-end web development into the professional training of future designers at higher education institutions in Ukraine remains under-researched. The content of educational programmes, the specifics of developing relevant competencies, and the potential for utilising international experience in domestic design education require further analysis. It is precisely this that determines the relevance of the study and defines its objective: to analyse Ukrainian and international experience in the professional training of future designers for front-end web development.

Methods. The study employed a range of general and specialised research methods aimed at examining the characteristics of the professional training of future designers in front-end web development at higher education institutions in Ukraine and abroad. The main research method was a comparative analysis of educational programmes and syllabuses for specialisation 022 «Design» (B2 «Design») at Ukrainian and foreign higher education institutions. The analysis made it possible to identify the presence within the structure of professional training of components related to front-end development, namely: HTML, CSS, JavaScript, UI/UX design, web technologies, responsive design and prototyping. Particular attention was paid to the content of educational components, the formulated learning outcomes, the practical focus of courses, and the development of digital competences among future designers. The study employed a content analysis method to systematise the content of syllabuses and curricula at Ukrainian higher education institutions: the Lviv National Academy of Arts, Zaporizhzhia National University, Cherkasy State Business College, Western Ukrainian National University and others. This made it possible to identify the level of integration of front-end technologies into the professional training of designers and to determine the main trends in the development of design education.

To study international experience, a method of generalising and systematising information regarding the educational programmes of Parsons School of Design, University of the Arts London, RMIT University, Drexel University, CODE University of Applied Sciences and other institutions that train specialists in the field of web and UX/UI design was employed. The analysis was conducted according to the following criteria: course content, use of front-end technologies, interdisciplinary interaction, practical training, and project-based learning.

Discussion. Current international practices in the professional training of designers show a trend towards integrating design, digital technologies and front-end development into a single interdisciplinary educational system. Leading higher education institutions in the US, the UK, Germany, Australia, the Netherlands and other countries focus their training of designers not only on developing artistic and design skills, but also on fostering technological thinking, teamwork skills and an understanding of the processes involved in creating a digital product.

One of the distinctive features of overseas programmes is the combination of UI/UX design with the study of front-end technologies. For example, Parsons School of Design (The New School, USA) offers Communication Design / Web & App Design programmes, within which students study the creation of digital interfaces, responsive design, prototyping and front-end development. The curriculum focuses on developing practical skills in creating websites and digital products using HTML and CSS, as well as developing their own professional portfolios. A key component is the practical nature of the training, where students undertake individual projects that closely resemble real-world professional tasks.

A similar approach is implemented at the University of the Arts London (UAL, UK), where the Interaction Design Arts programme covers UX/UI design, web interactivity, front-end development,

animation, HTML/CSS and JavaScript. A distinctive feature of the programme is the use of modern digital design tools, notably Figma and Adobe XD, as well as a focus on creating interactive digital environments. The educational process is based on lectures, seminars, workshops and group discussions, whilst assessment is carried out through practical projects, presentations and portfolios of work. This approach helps students develop not only technical skills but also critical thinking and the ability to engage in professional reflection.

The Master`s programme in UX Design at UAL deserves special attention, as it involves active collaboration with the UX industry and leading studios such as ustwo, Made by Many and AKQA. The curriculum focuses on studio practice, teamwork and tackling real-world project challenges. Future designers acquire skills in user research, prototyping, evaluating digital products and developing interactive solutions. This training model demonstrates the close link between education and the professional environment.

The Australian experience is represented by RMIT University`s Web Design and Development programme, which combines creative web design with front-end technologies. A distinctive feature of the programme is its modular approach to updating the curriculum in line with changes in the digital industry. The educational process is aimed at developing the ability to adapt to new technologies, rethink digital media and work with various types of digital content. The programme covers web design, mobile app design, motion graphics, sound design, interactive environments and digital production.

In the US, one example of the integration of front-end technologies into design education is Drexel University. The web design programme focuses on developing skills in HTML, CSS, JavaScript and UX/UI design. At the same time, significant attention is paid to interdisciplinary collaboration and preparation for working with programmers, graphic designers and content managers. The educational process includes creating wireframe mock-ups, responsive design, working with graphic editors and practical programming of web applications. In this way, the designer is viewed not merely as a visual specialist, but as a participant in the comprehensive process of creating a digital product.

A key trend in contemporary design education abroad is the growing emphasis on interdisciplinarity. At Vrije Universiteit Amsterdam (Netherlands), students on the Master`s programme in Web Technologies and Design study web programming, UX and interface design, combining the technical and creative aspects of the profession. A similar approach is implemented at École de design Nantes Atlantique (France), which houses the Human Machine Design laboratory, where students work with interface prototypes, web forms, and issues of usability and adaptability.

Of particular interest is the Digital Design & Innovation programme at CODE University of Applied Sciences (Germany), which combines design, programming and innovative digital technologies. The curriculum includes modules on interface design, animation, composition, UX research, brand design and the use of artificial intelligence in creative processes. Significant attention is paid to working with artificial intelligence tools, critically understanding digital technologies, and developing a human-centred approach to design. As part of the programme, students learn to create digital solutions that not only meet technological requirements but also take into account ethical, social and communicative aspects.

International experience also demonstrates a high level of integration between front-end training and UX/UI design at leading universities worldwide, including the Massachusetts Institute of Technology (MIT), Carnegie Mellon University, the University of Toronto, the University of Helsinki, the University of Michigan and others. The educational programmes at these institutions cover HTML, CSS, JavaScript, React, Figma, Adobe XD, Sketch, as well as UX research methods and the creation of interactive web applications. In many cases, training is delivered through project-based learning, team-based studios and real-world case studies from the digital industry.

Systematised data on the experience of integrating front-end web development into the educational practice of future designers is presented in Table 1.

Table 1

Analysis of foreign experience in training designers for front-end development

Higher education institution	Country	Specialization / direction	Front-end technologies	UI/UX and digital tools	Features of preparation
Parsons School of Design	USA	Communication Design / Web & App Design	HTML, CSS	Figma, Adobe XD, digital prototyping	Responsive web design, digital product creation, personal portfolio
University of the Arts London (UAL)	Great Britain	Interaction Design Arts	HTML, CSS, JavaScript	Figma, Adobe XD	UX/UI design, web interactivity, animation, interactive environments
RMIT University	Australia	Web Design and Development	HTML, CSS, JavaScript	UX/UI, digital media tools	Modular system for updating course content, adapting to digital changes
Drexel University	USA	Web Design	HTML, CSS, JavaScript	Adobe Photoshop, UX/UI tools	Responsive design, wireframes, web applications
Vrije Universiteit Amsterdam	Netherlands	Web Technologies and Design	Web programming	UX/UI design	Combining web programming and interface design
Nantes Atlantic School of Design	France	Interaction Design	Web forms, adaptive systems	Human Machine Design Lab	Usability, adaptability, interface prototyping
CODE University of Applied Sciences	Germany	Digital Design & Innovation	Front-end projects, web technologies	Figma, AI tools, interface systems	Integrating AI into design, a human-centric approach
Carnegie Mellon University	USA	Front-End Engineering and UX Design	HTML, CSS, JavaScript, React	Figma, Adobe XD, Sketch	UX/UI design, front-end engineering
Massachusetts Institute of Technology (MIT)	USA	Front-end & UX Design	HTML, CSS, JavaScript, React	UX research tools	Interactive interfaces, UX research
University of Toronto	Canada	UI/UX Design Specialization	HTML, CSS, JavaScript, Python	Figma, Adobe XD, Sketch	UX/UI design and web development
University of Helsinki	Finland	Full Stack Web Development	HTML, CSS, JavaScript, React	UX research	Modern web frameworks and front-end systems
University of Michigan	USA	UX Concentration	HTML, CSS, JavaScript	Figma, Adobe XD	UX/UI design and interactive applications
University of California, San Diego (UCSD)	USA	Cognitive Science with Design and Interaction	Interactive systems	Data-driven UX, Unity	UX analytics and cognitive design
Baltic International Academy	Latvia	Digital Design / Web Design	Interactive systems	Figma, Adobe XD, UI/UX systems	Integration of web design, digital communications and front-end training
Harvard Extension School	USA	Front End Web Development Graduate Certificate	HTML5, CSS3, JavaScript, jQuery	GitHub, Sublime Text	Accessibility, internationalization of websites
Cornell University (eCornell)	USA	Web Design and Development Certificate	HTML, CSS, JavaScript	UX/UI tools	Basics of front-end and UX/UI design

An analysis of international experience has identified common features of contemporary professional training for designers in front-end web development, namely: most programmes combine interface design with the study of basic front-end technologies such as HTML, CSS and JavaScript; the training is distinctly practical in nature and is based on the creation of digital projects, portfolios and prototypes; an important component is the development of skills in interdisciplinary collaboration and teamwork. Fourthly, significant attention is paid to UX research, responsive design, usability and user-centred design. Thus, international experience demonstrates a comprehensive approach to the professional training of designers, in which front-end development is not a separate technical discipline but an integral part of modern digital design education. This approach ensures the training of competitive professionals capable of working in an interdisciplinary environment and participating in the full cycle of digital product creation.

To investigate the state of Ukrainian experience in integrating front-end web interface development into the professional training of future designers, we will analyse the syllabuses of bachelor`s-level courses in specialisation 022 «Design» (current code B2 «Design»), to identify programmes that cover the front-end development components we have defined in the training of designers (Table 2.).

Table 2

Analysis of Ukrainian experience in training designers for front-end development

Higher education institution	Discipline	HTML	CSS	Java Script	UI/UX	Features of preparation	Practical orientation
Kosiv Institute of Applied Decorative Arts LNAM	«Interface Design»	–	–	–	+	Developing skills in creating clear and intuitive interfaces	User interface design
Lviv National Academy of Arts	«Front-end development»	+	+	+	+	Learning HTML, CSS, responsive layout, component approach and CMS	Working with web pages, team projects
Cherkasy State Business College	«UI/UX-design»	–	–	–	+	Basics of UX design, website and mobile application design	Practical design exercises
Western Ukrainian National University	«Web technologies and web design»	+	+	+	+	HTML, JavaScript, CMS Joomla and Drupal, mobile web applications	Web content creation and web programming
Zaporizhia National University	«UI/UX design»	–	–	–	+	Domain analysis, wireframe, interface prototyping	Working at Figma, UX research
Zaporizhzhia Polytechnic University	«Web technologies and Web design»	+	+	+	+	HTML4/HTML5, CSS3, JavaScript, block layout	Website layout and design
Odessa Technological University «STEP»	«Web Technologies and Design», «Theory and Practice of UI/UX Design»	+	+	+	+	A comprehensive combination of web design and front-end technologies	Practical web development
European University (Kyiv)	«Web design and website development»	+	+	+	+	Combining design and web development	Website creation
Ternopil National Pedagogical University	«Web design», «Design and ergonomics of user interfaces»	+/-	+/-	–	+	Focus on web design and interface ergonomics	Interface design

An analysis of educational programmes at Ukrainian higher education institutions reveals the gradual introduction of front-end training components into the professional education of future designers. At the same time, the level of integration of web technologies into the curriculum remains uneven and largely piecemeal. Most educational programmes focus primarily on developing UI/UX design skills, creating graphic layouts, prototyping, and working in Figma, Adobe XD or other digital interface design environments.

A comparative analysis of academic disciplines shows that some Ukrainian higher education institutions are already integrating front-end components into the professional training of designers. The most comprehensive approach can be seen at the Lviv National Academy of Arts, the Western Ukrainian National University, Zaporizhzhia Polytechnic, the Odesa Technological University «SHAG» and the European University, where students study HTML, CSS, JavaScript, web technologies, responsive layout and web content creation. In these programmes, front-end training is combined with UX/UI design and practical web development, bringing the teaching model closer to the modern needs of the digital industry.

At the same time, a significant proportion of educational programmes remain focused primarily on the graphic aspect of web design without sufficient mastery of the technical component. Thus, in a number of programmes, the emphasis is placed on creating wireframe mock-ups, usability, interface composition and UX research, yet there is no systematic study of HTML, CSS and JavaScript. This creates a situation where a future designer is capable of creating visually appealing interfaces but lacks a sufficient understanding of the principles of their technical implementation in a front-end environment.

A lack of comprehensive training leads to a disconnect between the design phase and the actual web development process. Designers who work exclusively in Figma or Adobe XD without knowledge of the specifics of front-end layout often fail to take into account the technical limitations and principles of web interface construction. In particular, problems arise with adherence to the modular grid, adaptability, content scaling, the logic of the component structure, and the behaviour of elements in a responsive environment. As a result, the final implemented web design may differ significantly from the initial mock-up due to the inability to correctly implement individual blocks or the incompatibility of design decisions with the requirements of front-end development.

Particularly critical is the problem of designers` lack of understanding of the principles of structuring information in a web environment. It is not uncommon for created layouts to contain elements that are difficult or impossible to implement without compromising adaptability or layout logic. This complicates communication between the designer and the front-end developer, increases the number of revisions, slows down the process of creating a digital product, and negatively impacts the quality of the final web resource.

The modern digital industry requires specialists who are capable not only of creating graphic solutions but also of understanding the process of their technical implementation. This is precisely why front-end training should be viewed not as an additional skill, but as an integral part of a modern designer`s professional education. A basic knowledge of HTML, CSS, JavaScript, the principles of responsive layout and the component-based approach enables designers to create realistic, technically sound and functional interfaces suitable for effective integration into the web environment.

An analysis of Ukrainian experience indicates the need to implement a comprehensive model for training designers in front-end web development. Such a model should provide for the integration of UI/UX design and front-end disciplines within a single educational environment, a combination of artistic-design and technical training, as well as the development of interdisciplinary collaboration between designers and programmers. It is advisable to teach the subjects «UI/UX Design» and «Front-end Development» in parallel during the final years of study, which will enable students to develop a holistic understanding of the process of creating a digital product – from concept and prototype to the implementation of the web interface in code.

Conclusions.

The study analysed the current state of professional training for future designers in front-end web development in Ukraine and abroad. It was established that the digitalisation of society, the development of web technologies and the transformation of the digital industry`s structure necessitate the modernisation of design education and the integration of front-end competencies into the professional training of designers.

An analysis of Ukrainian educational programmes revealed that most higher education institutions focus the training of future designers primarily on UI/UX design, the creation of graphic mock-ups, and working in the digital environments of Figma and Adobe XD. At the same time, a comprehensive study of HTML, CSS, JavaScript, responsive layout and the principles of front-end development is only included in a few educational programmes. This indicates an insufficient level of integration of the technological component into the structure of professional design education.

The study revealed that designers` lack of a basic understanding of front-end technologies creates a disconnect between the interface design stage and its practical implementation in a web environment. Designers who work exclusively at the level of graphic layout often fail to take into account the specifics of responsive layout, modular grids, component-based structures and the technical capabilities of front-end implementation. This leads to distortions in the final web design, complications during the layout process and an increase in the number of technical revisions during the development of a digital product.

A comparative analysis of international experience has shown that leading universities in the US, the UK, Germany, Australia, Canada, the Netherlands, Finland and other countries adopt a comprehensive interdisciplinary approach to training designers. International educational programmes integrate UI/UX design, front-end development, web programming, UX research and team-based digital collaboration into a single professional training system. Key features of such programmes include a practical focus, project-based learning, working with real-world case studies, creating digital products and developing interdisciplinary collaboration skills.

It has been established that a modern designer must possess not only artistic and compositional skills, but also a basic understanding of front-end technologies, the principles of responsive web design, information architecture and digital interaction. Front-end training enables designers to create technologically realistic interfaces, interact more effectively with web developers and participate in the full cycle of digital product creation.

Based on the analysis conducted, the feasibility of introducing a comprehensive model for the professional training of designers in front-end web development at higher education institutions in Ukraine has been substantiated. Such a model should provide for the integration of UI/UX design and front-end development disciplines, the combination of artistic-design and technical training, the use of project-based learning, and the development of interdisciplinary collaboration between designers and programmers.

Prospects for further research lie in the development of a structural and functional model for training future designers in front-end web development, the identification of pedagogical conditions for its implementation, and the creation of methodological support for the integrated teaching of UI/UX design and front-end technologies within the higher education system.

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DOI https://doi.org/10.30525/2592-8813-2026-spec-5

CONCLUSIVE ACTIONS IN LABOUR LAW (ISSUES AND PRACTICE)

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Abstract. Cooperation between employers and other labour market participants often depends not only on words, but is sometimes expressed through behaviour or silence. The article examines the types of conclusive actions, their legal basis, and the specific features of their practical application in the organization of labour relations. A conclusive action is the action that is associated with an unspoken willingness to conclude, continue, change or terminate a contract. Conclusive actions are recognized and used in many countries, with their application varying depending on local legal systems, judicial practices, and traditions. They constitute a significant element of labour relations and provide a flexible mechanism for the conclusion, interpretation, and execution of employment contracts.

The use of conclusive actions helps employers manage the work process more effectively; however, misinterpretation of such actions may lead to employer errors, non-compliance with employment contracts, and economic losses.

Key words: conclusive actions; legal basis; non-verbal communication; labour relations; employment contract.

Introduction. The purpose of this article is to examine the impact of conclusive actions on the effectiveness of labour relations and the particularities of their use by subjects of labour law.The interaction between employers, employees, clients, and other participants in the labour market depends on the nature of their behaviour – even their silence can be significant. The vast majority of employers are business entities whose operations are materially based on contracts. Conclusive actions refer to actions that demonstrate a non-verbal willingness to enter into, continue, modify, or terminate a contract.

Such actions are used across a wide range of industries and are an integral part of modern business practices, as they allow for the identification and interpretation of legal relationships even in the absence of a formal agreement [6; 7; 12]. For example, if an employee consistently performs their job duties and receives compensation for them, this is regarded as conclusive actions confirming the continuation of the employment relationship [16]. This form of conduct applies to situations in which the parties act or behave as though a written contract exists between them.

However, the implied form of concluding a contract may sometimes be exploited by unscrupulous business operators [5]. In labour disputes, such actions are of great significance, as they may serve as evidence of the existence of an employment contract. In cases where one of the parties – most often the employer – refuses to fulfil their obligations, the actions performed may serve as proof.

In Ancient Greece and Rome, it was assumed that contracts could be concluded through silent consent or actions. For example, *manu datio* – the transfer of an object – and *stipulatio* – through unilateral acts such as an oath or a handshake – were recognized forms of contract conclusion [1; 21]. In modern times, this tradition continues in the form of implied conduct.

Roman law has also influenced Latvian legislation. For instance, the Labor Law of Latvia provides that employment relations may be terminated not only by written agreement, but also on the basis of the actual conduct of the employee and employer [4, Article 115, Paragraph 5].

The need for a separate examination of conclusive actions in labour law arises from the following reasons:

1) presence of numerous shortcomings in the application of conclusive actions, including psychological and legal factors;

2) specific requirements for the regulatory and legal framework;

3) errors made by legislators and judges regarding conclusive actions;

4) existing difficulties faced by employers and employees in identifying the situational nature of implied behaviour;

5) particular characteristics of implied (conclusive) contracts;

6) errors made by parties to labour relations in the use of conclusive actions;

7) interaction between implied contractual relations and "traditional" forms of contracts.

The Concept and Essence of Conclusive Actions. The concept of conclusive actions has been examined in detail by the author previously [14]. A contract may be concluded or performed without being signed – through actions, inaction, or silence. This means that a contract is considered concluded or performed based on the behaviour of the parties [8; 9; 10; 11; 17; 23; 24], and in certain situations, work may commence prior to the signing of a written agreement.

The external manifestations of conclusive actions include:

1) non-verbal forms of communication: gestures (such as a handshake), facial expressions, body language, eye contact, appearance, and in some cases, even silence [14; 3, Article 1428]

2) specific behaviours of an individual (or individuals) related to particular contractual relationships – for example, the payment of wages or adherence to a work schedule without the conclusion of a written employment contract.

Silence is one of the most complex forms of conclusive actions.The Latvian Cabinet of Ministers has intentionally adopted a resolution to implement the "silence means consent" principle in the administrative practices of public institutions [18]. According to the Civil Law, silence does not, in itself, constitute either agreement or disagreement [3, Article 1430]. As they say in France: *"ça dépend" – "it depends."*

The Nature of Conclusive Actions. Psychologically, these actions are based on principles of trust and expectation, and in essence, conclusive actions in labour law can be viewed as:

- a tacit declaration of intent or an expression of will that leads to an agreement between the parties in an employment relationship;
- a form of concluding an employment contract, where the employee behaves as if they have already agreed to certain terms;
- the conduct of the employer and employee, from which a clear intention to conclude a contract or undertake specific obligations can be inferred;
- a legal tool that ensures the enforcement and protection of the parties' obligations under an employment contract, even without a written agreement;
- a situation in which labour relations are created or modified based on the actions of both parties, who behave as if the agreement were documented in writing. The requirement for a written contract is considered satisfied when a written offer to conclude a contract is accepted in accordance with Articles 39 and 41 of the Labour Law [4];
- the principle of tacit consent, which allows for the recognition of contractual obligations based on the actual conduct of the parties (e.g., receiving wages, wearing a standard work uniform, etc.);
- a legal category which refers to the conclusion of contracts and, therefore, to the creation of obligations between the parties involved;
- a legal concept referring to situations where the actions or silence of an employee may be considered as consent to enter into or modify a contract;
- a legal fact (i.e., the emergence or continuation of an employment relationship).

As a legal concept, conclusive actions are interpreted and applied differently across legal systems, regions, and specific circumstances.

Conclusive actions may be demonstrated not only by individuals (natural persons as employers), but also by legal entities (corporate employers).

Types of Conclusive Actions. The following types of conclusive actions can be identified:

• by form of non-verbal communication: visual and auditory actions such as gestures and signals. A smile, handshake, nod, or respectful behaviour – all of these can play an important role in communication. Gestures are especially significant in the work of stockbrokers. The "thumbs up" gesture is used not only in digital environments but also as a sign of approval in real-life interactions [2].

• by their role in the legal regulation mechanism: for the purposes of concluding, extending, modifying, or terminating a contract.

• by the method of consolidation within the existing legal system:

1) mandatory conclusive actions provided for by legal acts. For example, if an employer allows an employee to continue working after the end of their shift, the employer cannot later claim that they refuse to pay the employee because the worked time exceeded the agreed shift duration [4, Article 68; 3, Article 1969]

2) conclusive actions performed in accordance with legal custom. In particular, the usual commission rate for a broker's work that is "customary" in a given region [14; 13, Article 70, Paragraph 1]. For example, in the Riga region, this is equivalent to two months' rent.

• silence may be considered as consent if the employee's actions indicate that they understand and agree to the proposed working conditions [22], and the employer's actions demonstrate that they accept the work performed.

• conclusive actions may take the form of implied actions, implied behaviour, and even deceptive conduct deception, where a person can be deliberately misled without making any verbal statements. Implied behaviour can be such that it leads to the conclusion of an employment contract or another type of agreement. In the case of deceptive conduct, a person does not lie directly or verbally but through actions and indirect expressions of deceit – for example, by misrepresenting the actual quality of completed work

• conclusive actions are often encountered in mobile and computer applications, where users, by utilizing the functions of an application or platform, perform actions that indicate their consent to the terms set by the developer or operator of the application [19]. The user's subsequent actions – such as logging into the system or regularly using it – further confirm this consent. For example, platforms like Uber and Bolt effectively operate as actual employers, while drivers are not "partners," as the developers of these platforms have claimed, but rather ordinary employees

• employees' adherence to the appropriate dress code demonstrates their attitude toward potential clients. Interestingly, even criminals use a kind of "dress code" in their activities – such as wearing a postal worker's or plumber's uniform – to create a deceptive appearance of legitimacy.

• an employee's failure to fulfil their job duties, along with the employer's inability to restore the employment relationship, may be considered sufficient grounds for terminating the employment contract [3, Article 2193; 4, Article 101, Paragraph 1].

Challenges of Applying Conclusive Actions. Conclusive actions are not applicable in all cases. Like written and oral contracts, implied contracts must meet certain legal requirements, be clear, and be provable. If a contract is concluded through conclusive actions (an implied contract), no issues typically arise as long as all parties fulfil its terms.

However, potential problems may include:

1) different interpretations of conclusive actions due to their frequent ambiguity. For example, gestures or facial expressions that mean one thing in one culture may be interpreted entirely differently in another

2) if conclusive actions are not expressed clearly enough, a court may refuse to recognize the contract as concluded, and it may have no legal force

3) some non-verbal signals may create negative associations for clients. An inappropriate tone of voice, unsuitable facial expressions, or improper attire may lead clients to perceive the employee as unprofessional

4) conclusive actions are inappropriate where the law requires a specific form of expression of intent, such as a written employment contract [4, Article 40]

5) the use of conclusive actions may require additional clarification, which can delay or even cancel the conclusion or performance of a contract

6) conclusive actions can be a source of disputes when questions arise as to whether it is sufficient for concluding, terminating, or amending a contract

7) in the event of a dispute, it can be difficult to assess the legality of work performed under an implied contract. This is especially problematic in cases involving violations of occupational safety rules that result in accidents or even the death of an employee [20]

8) disagreements may arise over whether the actions performed serve as valid evidence, and which situations are appropriate for relying on them

9) if the meaning of the conclusive actions differs from the contents of a written contract, such actions may become grounds for a dispute and require judicial interpretation

10) there is legal uncertainty due to the lack of clear definitions and the presence of so-called "open concepts" regarding what kind of implied behaviour can be considered a basis for concluding, amending, or terminating a contract

Methods for Resolving Problems Associated with the Application of Conclusive Actions. Mutual trust and understanding between employers and employees serve the foundation for the use of conclusive actions in labour law. However, it is important to consider the potential negative consequences of their application. To prevent such issues, various methods can be used in employment practice. They include:

1) clearly defined terms of the employment contract and use of supplementary documentation

2) to qualify conclusive actions as acceptance (offer acceptance), such conduct must occur under the terms specified in the employment contract

3) to ensure safety, both the employer and employees must mutually agree on the use of such actions and share a common understanding of their meaning

4) case law and judicial precedents are essential elements in the legal interpretation of conclusive actions: court rulings and precedents help clarify which situations are recognized as implied contracts and define the criteria for their application

5) employees and employers should be informed about methods of communication to avoid misunderstandings and potential legal disputes

6) courts often rely on the history of the employment relationship. If successful cooperation has continued for a sufficiently long time, the court may determine that an implied contract exists

7) special attention should be given to cultural and cross-cultural factors, as well as regular training of staff in effective non-verbal communication, including professional gestures and communication skills in the work process

8) an objective assessment of specific work situations and circumstances in which conclusive actions occurred is essential. This includes evaluating the context of the parties' behaviour, as well as considering legal norms, customs, and judicial practice

9) the availability of direct and indirect evidence will be used to resolve any disputes about the use of conclusive actions. This may include written agreements, other documents, surveillance footage, and witness testimony

10) there are legal means to protect parties to an employment contract from the potential negative consequences of conclusive actions:

- a preliminary agreement on the use of such actions

- studying and applying existing knowledge on conclusive actions and their consequences
- legal assistance and consultation from lawyers, social psychologists, and cross-cultural experts.
- These measures help ensure informed decisions about which actions may be considered conclusive and the legal consequences and risks associated with them.

11) regular communication between the parties to the employment relationship

12) assessment of factual and legal aspects of the situation in which conclusive actions occurred, and its impact on the work process and labour outcomes

13) using artificial intelligence to analyse and interpret conclusive actions, increasing accuracy and preventing their misuse.

Conclusions.

1) conclusive actions are an essential element of labour relations and provide a flexible mechanism for concluding and interpreting employment contracts

2) the use of conclusive actions helps employers manage the work process effectively

3) conclusive actions are recognized and used in many countries; their application may vary depending on local legal systems, court practice, and traditions

4) it would be appropriate to amend Article 1428 of the Latvian Civil Law ("The will may be expressed both explicitly and implicitly"). The word "implicitly" should be removed from the article and replaced with the words "or through conclusive actions"

5) it is necessary to consider the potential negative consequences of using conclusive actions in employment relations and to apply them lawfully and reasonably to avoid future disputes

6) disputes regarding conclusive actions are typically resolved through the State Labor Inspectorate, courts, trade unions, or other dispute resolution bodies, taking into account available evidence

7) these actions are significant, as they may serve as proof of the conclusion of an employment contract or the acceptance/rejection of changes to its terms

8) to prevent or reduce possible negative consequences of the conclusive actions, various methods and techniques can be applied, e.g. written or technical documentation and enhanced communication between parties to the employment relationship.

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DOI https://doi.org/10.30525/2592-8813-2026-spec-6

THE CULTURAL CODE OF THE CITY IN THE AGE OF ARTIFICIAL INTELLIGENCE

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Abstract. The article explores the role of artificial intelligence (AI) as a mediator in the interpretation and preservation of Riga's Art Nouveau architecture. It examines how digital technologies such as computer vision, generative design, and immersive media (VR/AR) contribute to recognizing, systematizing, and reimagining the city's architectural and cultural identity. The study emphasizes that AI is not only a technical instrument but also a cultural agent capable of translating visual and symbolic aspects of urban heritage into a new digital language. Special attention is given to the ethical dimensions of using AI in the context of authenticity, authorship, and the balance between heritage preservation and creative reinterpretation.

Key words: artificial intelligence; cultural heritage; Art Nouveau; digital humanities; generative design; computer vision; immersive technologies; digital reconstruction.

Introduction. In recent decades, the rapid advancement of digital technologies has transformed how cultural heritage is preserved, analyzed, and interpreted. Artificial intelligence (AI) has gradually moved beyond traditional engineering tasks to become a significant tool in the humanities, the arts, and architecture. One emergent line of inquiry is the use of AI to study the cultural code of cities – that is, the constellation of visual, symbolic, and historical elements that shape their unique identities.

Riga occupies a special place in European cultural heritage due to the richness of its architectural environment [1, 2]. The city's cultural code is most vividly expressed through Art Nouveau (Jugendstil), which is represented in more than a third of the buildings in the historic center. Decorative facades, sculpted mascarons, vegetal ornaments, and symbolic compositions form a complex visual language in which early-twentieth-century artistic tendencies intertwine with national motifs. However, this language is not always readily accessible to contemporary audiences, especially in a digital age in which engagement with the urban environment is increasingly mediated by technology.

AI opens new possibilities for dialogue between a city's cultural code and digital art. Computational methods make it possible to identify and systematize characteristic features of Art Nouveau, while generative models enable artistic interpretations that bring to light latent regularities of the style. Augmented and virtual reality, powered by AI, transform the perception of urban space by turning architecture into an interactive experience. In this sense, AI acts as a mediator between past and present, between heritage and innovation.

The aim of this article is to explore how AI can facilitate the detection, analysis, and re-interpretation of Riga's cultural code through digital practices. The focus is on Art Nouveau architecture as a central component of the city's visual identity. To this end, the article examines:

- the features of Riga's cultural code and its manifestation in Art Nouveau;
- contemporary AI methods for analyzing architectural forms and ornaments;
- digital design and artistic practices grounded in Riga's Art Nouveau;
- the role of AI as a mediator of cultural experience.

Taken together, the article seeks to show not only how AI can aid in the preservation and dissemination of architectural heritage, but also how it can open new artistic horizons for its interpretation.

The Cultural Code of Riga: Art Nouveau Architecture as the Language of the City

Riga's architectural heritage is not only a crucial part of Latvia's national identity but also one of the key components of its cultural code. Architecture functions not merely as a functional envelope of urban space but also as a medium for expressing societal values, identity, and historical memory. In Riga, this symbolic role is particularly pronounced: the city's rich Art Nouveau (Jugendstil) heritage reflects the social and cultural processes of the early twentieth century, a period marked by both economic and cultural flourishing. Each facade and decorative element constitutes part of a visual language through which the city's cultural code is transmitted – a system of symbols, styles, and motifs that shape its unique identity. Among the various architectural styles present in the city, Art Nouveau occupies a special place, and it is thanks to this style that Riga has gained international recognition as one of the largest centers of Art Nouveau in Europe. More than one-third of the buildings in the historic city center (approximately 800) are designed in this style, creating a unique visual environment (Krastiņš, 1988).

Art Nouveau in Riga can be conditionally divided into several strands:

- Decorative Art Nouveau: richly adorned facades with abundant sculptural details, mythological and symbolic figures;
- National Romanticism: a fusion of Art Nouveau with Latvian ethnocultural motifs, ornaments, and natural symbols;
- Functional Art Nouveau: more restrained forms emphasizing utilitarianism and rhythmic organization of facades.

These buildings carry multilayered symbolic meanings. Ornaments, mythological figures, and geometric patterns act as a kind of "subtext," which can be interpreted as a manifestation of the city's cultural code. For instance, natural motifs (vegetal and floral ornaments) symbolize the city's connection with the living environment; mythological figures (mascarons, winged creatures, atlantes, sphinxes, etc.) reflect the search for harmony between material and spiritual realms; and geometric forms and rhythmic lines underscore the modernist pursuit of order and balance.

The visual richness of Art Nouveau provides fertile ground for analysis using **artificial intelligence** methods. Computer vision and pattern recognition algorithms allow for the identification of recurring elements (e.g., ornaments or mascarons) and the detection of compositional regularities. Moreover, modern generative models are capable of "reconstructing" Art Nouveau architectural motifs, producing new artistic interpretations that do not undermine the cultural code but rather reveal its latent potential. Together, these elements form a symbolic layer of architecture, transforming buildings into "texts" that can be interpreted as expressions of Riga's cultural code.

In this way, Art Nouveau can be regarded not only as an architectural phenomenon but also as an algorithmically readable one, where the interaction of humans, urban space, and technology opens new horizons for digital design and artistic exploration.

Artificial Intelligence in the Analysis and Interpretation of Architecture

Contemporary methods of artificial intelligence offer new opportunities for the study and representation of architectural heritage. In the context of Riga's Art Nouveau, this is particularly significant, as the style is characterized by high decorative richness and a multiplicity of symbols and ornaments, making it an ideal material for algorithmic analysis.

Computer Vision and the Recognition of Architectural Elements. One of the most promising applications of AI in architectural analysis is so-called **computer vision**. This technology employs deep learning and neural networks to recognize objects, people, patterns, and more. Convolutional neural networks (CNNs) – a specific type of neural network designed to work with spatially structured data such as images and video, enable the automatic identification and classification of individual façade elements, including mascarons, sculptural figures, and vegetal ornaments. These technologies make it possible not only to recognize individual elements but also to systematize

them in digital databases, contributing to the creation of comprehensive collections of Riga's architectural motives.

Machine learning algorithms allow for the detection of stable visual patterns characteristic of different Art Nouveau strands, from highly decorative facades to more restrained functional designs. This approach not only structures the architectural heritage but also deepens understanding of the artistic principles underlying Riga's cultural code.

Generative Models. Generative models, such as Generative Adversarial Networks (GANs) and diffusion models, open new possibilities for the artistic interpretation of Art Nouveau architecture. By training on digital images of buildings (provided a sufficiently rich dataset), these algorithms creating new variations of facades that preserve the distinctive features of the style while presenting them in original combinations. This approach enables the visualization of potential reconstructions of lost architectural details and the creation of digital artworks inspired by Riga's architecture. Generative design allows for the recreation of missing facade elements, such as sculptural ornaments or mascarons, that have deteriorated over time. Importantly, the algorithm does not copy existing examples literally but combines motifs based on identified patterns. This makes it suitable not only for restoration purposes but also for use in digital art and interactive exhibitions. As a result, generative models become tools not only for preservation but also for the reinterpretation of architectural heritage: they "revive" Art Nouveau, revealing its cultural code through new artistic forms.

Analysis of Patterns and Hidden Connections. Beyond recognizing individual elements and generating new images, AI can reveal hidden regularities in Art Nouveau architectural forms. By comparing thousands of façade images, algorithms can identify recurring motifs (mascarons, vegetal ornaments, mythological figures) and determine their frequency, variation, and local characteristics. This approach allows architecture to be understood not merely as a collection of individual buildings but as a system governed by specific artistic principles. AI-based visual analytics enables the comparison of buildings across different areas of Riga and the identification of artistic "clusters" – zones where particular ornamental motifs or substyles of Art Nouveau predominate. This opens the path toward creating a kind of "Art Nouveau genome," documenting key stylistic regularities. In this way, AI serves as a research tool that reveals deep connections between architectural forms and the city's cultural code, making this code accessible for analysis and interpretation in a digital environment.

New Forms of Representation through Art and Digital Design. AI is not limited to the analysis and reconstruction of architectural forms; it is also actively employed in the creation of new artistic practices based on Art Nouveau heritage. Generative algorithms can transform façade motifs into digital art objects, which are used in interactive exhibitions, media art projects, and visual installations. These artworks do not replicate historical architecture but offer a contemporary interpretation within the modern cultural context. Examples of such applications can be seen, for instance, in the Riga Art Nouveau Museum. A key direction is the use of augmented and virtual reality technologies, where AI overlays digital layers onto real buildings. Visitors can see facades as they appeared a century ago. This approach not only revitalizes architectural heritage but also turns engagement with it into a personal and emotionally immersive experience. These AI-driven digital practices create new ways of representing Art Nouveau, expanding the perception of architecture and opening a dialogue between history and contemporary art. Overall, AI becomes a mediator between historical architecture and modern artistic expression, providing tools for both scholarly analysis and creative reinterpretation of the Art Nouveau style.

Digital Practices and Art Based on Riga's Architecture

Generative Design. Contemporary generative design methods, based on machine learning algorithms, allow the creation of artistic interpretations of Riga's architecture while preserving its stylistic features. Ornaments, mascarons, and decorative façade elements become "visual seeds" from which AI generates new images. These images are not literal copies of buildings but represent original

combinations of elements inspired by the aesthetics of Art Nouveau. Such practices find applications in graphic design, media art, and even architectural experiments from developing virtual facades to creating interior objects stylized according to Art Nouveau motifs. As a result, they form not only an aesthetic experiment but also a way to revitalize architectural heritage, integrating it into the contemporary visual language.

Virtual and Augmented Reality for Cultural Heritage. Virtual reality (VR) and augmented reality (AR) open new avenues for representing Riga's Art Nouveau architecture. Augmented reality (AR) allows viewers to see the original appearance of buildings, for example, by visualizing lost decorative elements on facades or restoring ornaments that have been damaged over time. AR applications enable the overlay of digital layers onto real buildings, visualizing their historical appearance or presenting artistic variations created based on the analysis of facade motifs. Virtual reality (VR), in turn, offers the opportunity to immerse oneself in the urban environment of the early 20th century, experiencing the spatial and aesthetic context as it might have been more than a century ago, and allows users to navigate a virtual "Riga gallery" where architectural objects become part of an artistic narrative. These solutions not only promote educational and aesthetic engagement but also strengthen the connection between residents and the city's cultural identity. VR and AR help viewers perceive architecture not as a static object but as a dynamic cultural narrative unfolding through digital technologies. Thus, digital technologies expand the boundaries of the museum experience: architecture ceases to be a fixed object, transforming into a dynamic and accessible form of art (Bailenson et al., 2023).

Examples of Projects Implemented in Latvia. In Latvia, such initiatives are still developing selectively, but several notable examples can already be highlighted. Digital art exhibitions in Riga have incorporated Art Nouveau architectural motifs into multimedia projections. Heritage preservation projects have also employed laser-based 3D scanning technologies to create the foundation for subsequent VR reconstructions. Some key projects include:

- **Virtual Art Nouveau Museum**. The project "Riga Art Nouveau Centre: Digitisation of Cultural Heritage and Development of a Virtual Museum" (EEA Grants) ran from 2013–2016 and resulted in a digital database of approximately 1,000 items (photos and descriptions in LV/EN/DE) and a virtual museum exhibition, available since September 30, 2016. The project aimed to ensure broad accessibility and professional presentation of Riga's Art Nouveau heritage. It continued under international EEA Grants, including knowledge exchange with Norway, enhancing the quality of virtual exhibitions. Within Latvia's national cultural policy, the creation of a digital Art Nouveau database was planned, including documentation of 1,000 items, photography of 700 objects, digital copying of 300 objects, and development of exhibition materials, all ensuring preservation and accessibility (EEA Grants, Riga City Council, n.d.).
- **AR Photo Album "Pastaiga pa skaisto Rīgu".** A significant example of integrating cultural heritage and digital technologies in Latvia. The project was implemented in collaboration with the Latvian National Archives and the Museum of the History of Riga and Navigation. The publication is an illustrated album containing over 200 historical photographs, most digitally restored. A key innovation is the use of augmented reality technology. Through the mobile application Old Riga, readers can compare historical images with current views of 75 city locations and explore twenty archival video materials. The AR photo album combines historical photography with augmented reality technologies, creating an interactive experience of Riga's cultural heritage (see Fig.1, 2).This combination of traditional print with interactive digital content provides a multilayered perception of Riga's cultural and historical space, serving as a model practice in the digitalization of cultural heritage (SIA Pastaigas, 2024). In 2025, virtual books with similar content were also released about Jūrmala and Jelgava, allowing users to take a virtual walk through these cities using a dedicated smartphone application.



Figure 1. The AR photo album *Pastaiga pa skaisto Rīgu*

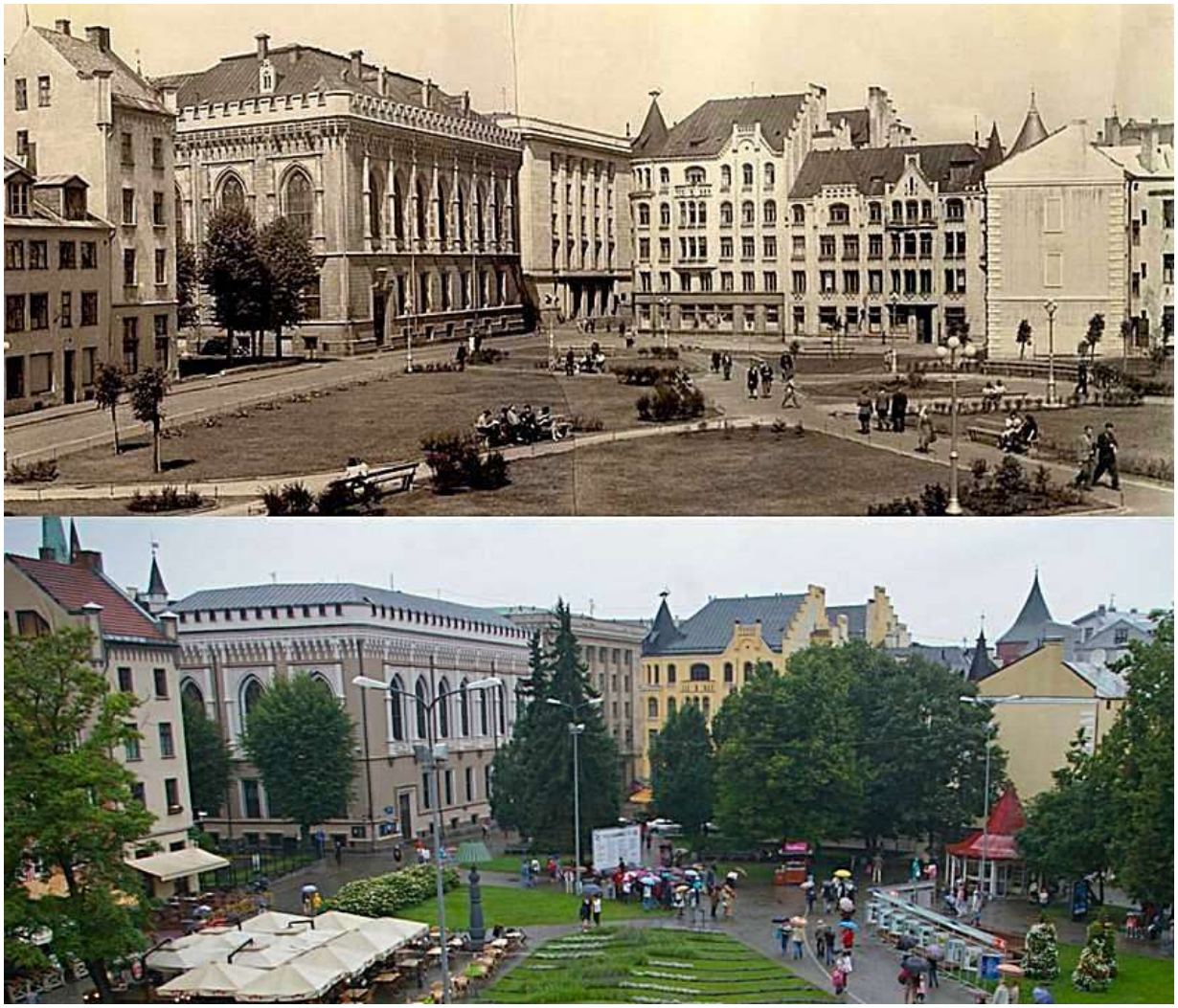

Figure 2. Historical and contemporary views of Riga from the AR photo album *Pastaiga pa skaisto Rīgu*

- **Riga NouveauLens.** Launched in July 2025 by Spectra Labs in collaboration with the Riga Art Nouveau Centre, this mobile application overlays historical visualizations, animations, symbolic information, color reconstructions, and archival quotes from architects onto building facades via AR. Supported languages include Latvian, English, and German. Features include a "Symbolism Explorer" (explaining symbols), a "Time-Lapse" comparison with the building's state in 1905, text annotations from archives, and geolocation of lesser-known architectural gems, a prime example of how technology revitalizes Art Nouveau in public spaces (Baltic Review, n.d.).
- **Riga's Art Nouveau Quest Experience.** A mobile quest application launched in August 2025, allowing users to explore the city's Art Nouveau landmarks through tasks, puzzles, and augmented content. Participants learn the history of buildings via an interactive gamified format (Eventbrite, n.d.).
- **RIXC Art and Science Festival 2025.** The festival featured the program "Resonances of Nature," combining AR installations and immersive practices, intersecting art, nature, and technology. Latvian and international media artists created interactive projects using AR/VR. The festival demonstrates how digital art can resonate with Riga's Art Nouveau visual aesthetics. Plant motifs and organic Art Nouveau forms are interpreted through VR, AR, and generative design, producing interactive "animated" images. Just as Art Nouveau facades form the city's cultural code through patterns and symbolism, digital installations visualize natural forms while maintaining attention to detail and engaging viewers emotionally in a contemporary media context (Eventbrite, n.d.).

AI as a Mediator of Cultural Experience

Artificial intelligence is increasingly used as a tool that allows contemporary audiences to interpret cultural heritage. Computer vision algorithms and data analysis identify ornamental patterns, symbols, and compositional features of Art Nouveau architecture. As a result, buildings are perceived not only as physical objects but also as "texts" encoding the values and aesthetics of the past. For the viewer, this provides the opportunity to perceive deeper cultural meanings in the familiar urban environment, which become accessible through digital technologies.

Ethical Aspects of AI Use. The use of AI in working with cultural heritage raises questions about the ethical boundaries between the original and its digital interpretation. Generative algorithms can create new variations of façade elements or reconstruct lost fragments, but there is always a risk of substituting historical authenticity with the algorithm's creative interpretation. This raises the dilemma: where is the line between preserving heritage and creating its "virtual twin"? Concerns include:

- **Authenticity:** Digital interpretation may distort the architect's original intent or the historical context of the era.
- **Commercialization of heritage:** Cultural code may be turned into a decorative resource used for marketing, without respect for its historical value.
- **Responsibility for interpretation:** Algorithms trained on limited datasets may simplify or stereotype complex cultural symbols.

It should be noted that the ethical issues of digital reconstruction of cultural heritage are actively discussed in other European cities as well. In Vienna, projects on the digitization of modernist architecture are accompanied by strict methodological guidelines: digital copies are always labeled as reconstructions in order to avoid confusion with the original. In Barcelona, where the legacy of Antoni Gaudí is extensively studied and preserved, the principle of "careful interpretation" is applied–algorithms may supplement lost details, but the degree of authenticity of each element must be indicated. In Prague, when digitizing historical districts, emphasis is placed on the educational mission: digital models are primarily developed for schools and universities rather than for commercial purposes.

These examples demonstrate that the use of AI in working with architectural heritage requires not only technical solutions but also an ethical framework. International experience confirms the

necessity of transparency and of indicating the distinction between authentic objects and their digital interpretations, which helps to preserve public trust in digital projects (UNESCO, 2016, 2021).

Thus, it can be concluded that the ethics of working with digital heritage demand balance: technologies should support the preservation and interpretation of architecture, but not replace its real historical context. Therefore, the key task of researchers and curators in the contemporary environment is to establish transparent methodologies that make it possible to distinguish authentic heritage from its digital interpretations and to explicitly indicate this difference to the viewer. For a sustainable approach, it is essential to combine scholarly accuracy with respect for cultural authenticity, so that digital technologies complement rather than displace the historical context.

Formation of a New Urban Identity. AI performs not only an analytical function, helping "read" Riga's cultural code, but also becomes an active instrument in constructing a new urban identity. Contemporary digital projects, from virtual museums to interactive installations, create new experiences for residents and tourists. Architecture ceases to be a static monument and becomes a dynamic element of urban culture, interactable via digital media. AI thus mediates between past and present, linking historical heritage with contemporary forms of cultural expression.

If Art Nouveau in the early 20th century shaped the city's visual identity and reflected its aspiration for modernization and aesthetic cohesion, in the 21st century a similar role is played by digital technologies.

Firstly, AI facilitates the representation of cultural heritage. Through computer vision, 3D modeling, and generative design, Art Nouveau architecture becomes accessible in digital space: in virtual museums, interactive applications, and educational platforms. This changes the very perception of the city, it ceases to be merely a geographical location and becomes a network of cultural images available globally.

Secondly, it enables direct participation of residents and tourists in the cultural experience. Interactive AR and VR projects based on architectural data allow city dwellers to literally "try on" cultural heritage in their everyday experience. AI simplifies navigation through the symbolism and style of buildings, making the city's cultural code more comprehensible and engaging. This strengthens local identity and fosters a sense of participation in preserving and developing the cultural space.

Finally, a new image of Riga is formed in global cultural communication. Combining architectural traditions with digital interpretations allows Riga to position itself not only as a center of Art Nouveau but also as a laboratory for rethinking historical architecture through new media.

Thus, AI's role extends beyond an analytical tool: it becomes a factor influencing the collective perception of the city. Riga's new identity is built through a dialogue between historical heritage and digital practices, where artificial intelligence acts as a connecting link, uniting cultural past and contemporary aspirations for innovation.

Conclusion. The study of artificial intelligence applications in the analysis and interpretation of Riga's architecture demonstrates that digital technologies have become an essential tool not only for systematizing cultural heritage but also for rethinking it in a contemporary context. Computer vision and generative algorithms enable the identification of characteristic Art Nouveau motifs, the documentation of their repetition and variation, as well as the creation of new visual forms based on historical aesthetics.

At the same time, AI functions as a mediator of cultural experience: it makes the symbolic language of architecture accessible to a broad audience, expands the boundaries of urban perception, and fosters new forms of interaction with heritage through VR, AR, and digital artistic practices. Ethical considerations, distinguishing the authentic from the interpreted, and addressing the risks of distortion or commercialization, are essential for responsible use of these technologies, providing a framework for both scholarly and cultural work.

As a result, artificial intelligence not only aids in preserving and understanding Art Nouveau architecture but also becomes an active participant in shaping Riga's new urban identity. The combination of historical code and digital interpretations opens opportunities for reimagining the city as a cultural phenomenon where past and present converge in a unified space. Thus, AI acts not only as an analytical tool but also as a cultural intermediary, integrating heritage and innovation in the process of constructing the city's future image.

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DOI https://doi.org/10.30525/2592-8813-2026-spec-7

UNIVERSAL DESIGN IN MUSEUMS: INTEGRATING TACTILE AND AUDIO DESCRIPTION STRATEGIES

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Abstract. Museum accessibility for blind and partially sighted visitors is usually built as two separate provisions: tactile objects designed by one team, audio description written by another. This article develops a three-level model, cognitive-semantic, technological and procedural, for integrating them, developed from practice and examined against participant-produced material: a SOCINTEGRA staff-training project in Latvian museums during 2025, a pre-course questionnaire completed by 69 staff, an audio description script written before the model existed, and eighteen excursion-route assignments, seventeen analysed as independent cases and one flagged for a prior consultation link to the authors. Half the questionnaire respondents had already planned to combine both channels without any framework for doing so. Every independent submission extended the model beyond its two channels, adding ambient sound, smell, taste, warmth, scripted consent or embodied activity it does not formalise. The model gives that instinct a method; the data complicate it more than they confirm it.

Key words: universal design, museum accessibility, audio description, tactile accessibility, synesthetic translation, inclusive museum.

1. Introduction

Universal design in museum space is not reducible to a set of compensatory measures: tactile floor markings, Braille signage, an audio guide offered as an optional extra. What is at stake, rather, is a systemic approach to designing exhibitions and accompanying services, one that makes the space legible, comfortable and informative for every visitor, including blind and partially sighted people, from the outset rather than through later adaptation of an already finished solution. The museum experience itself needs rethinking on this basis. Perception of an exhibition does not reduce to the visual channel; it unfolds as a multisensory process, where tactile and auditory information do not merely supplement sight but constitute independent, fully adequate means of accessing content.

Despite growing normative recognition of universal design principles in museum practice, empirical evidence points to a persistent gap between stated principles and their systemic implementation (Fortuna et al., 2023). The gap shows up mainly in how the literature and institutional practice treat the tactile and audio description components of accessibility: as a rule, these are described and implemented as separate, parallel strands of work. Tactile graphics and relief replicas are designed by designers and conservators; audio description is developed by translation scholars and linguists. The functional relationship between the two rarely becomes an object of study in its own right.

Set two research traditions side by side, one serving the tactile modality, the other audio description, and the gap becomes especially visible. The design and engineering tradition develops largely within HCI (human-computer interaction) and cultural heritage studies, concerned with technical solutions such as relief printing, tactile interfaces, multisensory installations. The translation studies tradition treats audio description as intersemiotic translation (Jakobson, 1959), and has established itself as

a distinct field of training and research within translation and interpreting studies. Interestingly, the need to move beyond a purely verbal channel is acknowledged within the translation tradition itself: live-guided audio description tours are sometimes enriched with scent, music, or tactile exploration of objects and diagrams. Tactility is recognised as an adjacent modality already at the level of genre definition, yet it rarely receives systematic analysis within translation studies scholarship.

A systematic review of research at the intersection of museum accessibility, multisensory interaction and digital technology is telling in this respect (Hou & Riccò, 2025). It finds that multisensory experience improves comprehension of cultural artefacts among people with visual impairments, with particular weight given to translating information across visual, auditory and tactile modalities. The phrase 'translating information between modalities' is worth pausing on. It effectively describes a translational operation without naming it as such, which points to an unrealised potential for bringing the design and translation frameworks closer together. Tellingly, one of the review's own authors is already moving in this direction from the design side: Riccò's (2016) earlier framework of synesthetic translation accounts for media accessibility through cross-modal correspondences rather than through isolated adaptation for each sensory channel on its own.

At the intersection of these two traditions, the engineering practice of accessible design and the translational practice of audio description, lies the theoretical gap this article addresses. Tactile and audio-descriptive components are each analysed within the boundaries of their own discipline. A model of their systemic, rather than additive, integration (the principle by which tactile and verbal channels jointly, rather than in parallel, construct an accessible museum experience) has yet to be worked out in either the design or the translation studies literature. Without it, moving from a compensatory model of accessibility toward the systemic universal design adopted here as the theoretical frame remains difficult.

This framing needs one clarification: tactile replicas and audio description for blind visitors could themselves be described as targeted accommodations for a specific group, closer to what universal design was originally meant to move away from. What justifies the label here is not the individual components but the level at which integration is pursued. A tactile replica commissioned as an add-on, evaluated on its own, is a targeted accommodation regardless of how well it is made. The claim this article makes is narrower: building tactile and verbal access into an exhibition's core design process, rather than procuring each modality separately afterward, is what moves a museum from compensation toward universal design, even where the resulting components primarily serve one group of visitors.

Research question:

How can the tactile and audio description components of museum accessibility be conceptually and methodologically integrated within a systemic, universal-design-based approach to designing exhibitions and educational services?

1. Where do tactile and audio description strategies for representing a museum object to a blind audience functionally intersect and complement one another?

2. How can museum staff training operationalise this integration, translating the theoretical principle of systemicity into a practical toolkit?

The article's contribution can be located on three levels. First, it offers an integrative conceptualisation of the tactile and audio description components of museum accessibility, not as independent services but as elements of a single perceptual system, drawing on the concept of synesthetic translation (Riccò, 2016) as a bridge between the design and translation studies traditions. Second, this framework is grounded empirically in a practical case: joint museum accessibility projects and the staff training course developed on their basis, which allows the discussion to move from declared principles to concrete methodological solutions. Third, the article sets out practical recommendations for museum institutions in the Baltic region, where empirical evidence on the implementation of universal design in museum practice remains fragmentary.

The article proceeds as follows. Section 2 reviews the literature across the two traditions, design and engineering (HCI, cultural heritage studies) and translation studies (audio description as intersemiotic translation), and argues for bringing them closer together. Section 3 sets out the methodology: a practice-oriented case study. Sections 4 and 5 examine, respectively, the tactile and audio description components on the material of the projects under discussion. Section 6 proposes an integrative model linking both modalities, together with the staff training course built on it. Section 7 discusses the findings in light of the universal design framework and formulates recommendations for museum practice.

2. Literature Review

2.1. The Design and Engineering Tradition: Technical Solutions and Their Conceptual Limits

Museum accessibility research within HCI and cultural heritage studies has grown quickly alongside the falling cost of 3D scanning and printing. Museums now routinely produce touch replicas of paintings, sculptures and archaeological objects, sometimes embedding sensors or NFC tags that trigger audio content when a visitor's hand reaches a particular point on the surface. Interactive multimodal tangible interfaces, evaluated with blind and low-vision visitors, have shown a clear preference for simple, predictable controls such as pushbuttons over more elaborate gesture-based systems (Avni, Danial-Saad, & Sheidin, 2025). Gesture-tracked tactile reliefs, by contrast, allow finer exploration of two-dimensional works such as paintings and photographs, enriching the relief with contextual audio as the visitor's fingers move across it, an approach consistent with the broader case for multisensory museum design (Levent & Pascual-Leone, 2014).

The scale of this research is considerable, but its focus is narrower than the volume suggests. A recent systematic review of the literature on technologies for blind and low-vision museum visitors found that touchable objects feature in the overwhelming majority of studies, with roughly half examining full 3D replicas and a further large share working with 2.5D relief formats (Avni, Danial-Saad, & Kuflik, 2026). Concrete, transferable guidelines, however, were far rarer: only about one in ten of the reviewed papers offered anything resembling a practical framework that could travel from one museum to the next. The tradition, in other words, is rich in artefacts and thin on generalisable principles. Audio content, when it appears in these studies at all, tends to be treated as a technical parameter to be optimised, something to test and refine alongside button placement or print resolution, rather than as a linguistic object with its own compositional logic. Tactility, in this literature, is the subject; the words that accompany it are an implementation detail.

Two recent contributions push against this pattern. Ciaccheri (2022) offers the fullest articulation to date, arguing that museum accessibility should be consolidated as a systematic discipline rather than a set of technical or legal provisions bolted onto an otherwise finished institution. Laws and regulations, she argues, can paradoxically block institutional thinking, since compliance becomes the ceiling rather than the floor; her alternative, a "culture of accessibility" running through curation, design, mediation and policy alike, treats the museum as "an interconnected organism capable of responding to different human needs." She also names a structural cause for the parallel-tracks problem this article addresses: fragmentation between departments, which keeps accessibility siloed as a specialist responsibility rather than a shared commitment, exactly the pattern that emerges whenever tactile and audio-descriptive work are commissioned separately. Her own second half turns to staff training and co-design as the mechanism for closing that gap, anticipating the role Section 6 assigns to the joint training course. A study of universal design in historic museum buildings makes a related point at the architectural scale, distinguishing physical accessibility from perceptual accessibility through the case of the Graz Museum Schlossberg (Filová, Rollová, & Čerešňová, 2022), though without extending its framing to the verbal channel. A third, earlier contribution approaches the same shift from the training side: Saluti (2019), drawing on Universal Design for Learning, argues that museum accessibility should be redefined around how visitors learn and engage, not only how they move through space, a pedagogical framing this article returns to in Section 6.

2.2. The Translation Studies Tradition: Audio Description as Intersemiotic Translation

Where the design tradition treats the verbal channel as secondary, translation studies treats it as the primary object of analysis. Audio description entered this field through Braun's (2007) definition of AD as intersemiotic, intermodal or crossmodal translation, and has since accumulated a substantial literature on how a describer converts visual composition into a parallel verbal text. Museum AD, within this literature, is usually read against its older sibling, screen AD, and found to differ in ways that matter for method: a museum object carries no built-in timeline, so the describer's constraints are spatial and interpretive rather than temporal.

The disagreement over objectivity, introduced in Section 1, is not merely anecdotal. A survey of forty-two museum describers across twelve countries found that European respondents agreed significantly more often than their American counterparts that AD should explore meaning rather than restrict itself to visual description, and were likewise more willing to treat emotional engagement as part of the describer's task (Hutchinson & Eardley, 2020). The American tradition is often summarised through the maxim "what you see is what you say" (WYSIWYS), which leaves little room for interpretive framing. Hutchinson and Eardley conclude that the field needs a clearer account of how objectivity itself gets contextualised in practice; this article treats that conclusion as a starting point rather than a settled matter.

Corpus-based work within this tradition remains comparatively rare but is directly relevant to the present study. Jiménez Hurtado and Soler Gallego's (2015) corpus study of pictorial audio description frames the practice explicitly as translation, tracing how museum guides render composition, colour and gesture into parallel verbal text. Soler Gallego's (2018) later semantic analysis of a corpus of audio description guides from UK and US art museums extends this line of work, mapping recurring lexico-semantic patterns used to describe an artwork's visual features. Taken together, these studies suggest that a corpus of museum AD is not simply a collection of individual scripts but a body of text with recoverable regularities, the kind of regularity a comparable analysis of the present case's material could test against a different linguistic and institutional context.

2.3. Where the Two Traditions Fail to Meet

Read side by side, the two bodies of literature are strikingly asymmetrical. The design and engineering tradition documents an enormous range of tactile artefacts and interaction techniques but rarely asks what makes an accompanying description work as language. The translation studies tradition has developed a fine-grained understanding of how museum AD constructs meaning verbally but treats tactile exploration, when it appears at all, as an occasional sensory enrichment rather than a component with its own design logic. Neither literature, on its own terms, is equipped to answer the question this article asks: not how a tactile object or an AD script performs in isolation, but how the two are meant to work together. That gap, already outlined in Section 1, is the point from which the remainder of this article proceeds.

One recent project comes close to bridging this gap directly and is worth addressing on its own terms. Reviers and Hanoulle's (2023) participatory action research project, "A Touch of Museum to Scale," co-develops tactile objects and an inclusive audio guide for five artworks with stakeholders of varying visual ability, treating the tactile translation as an artistic contribution in its own right rather than a support add-on. Their focus, however, falls on the collaborative process of creation and its aesthetic and ethical stakes, not on formalising how the tactile and verbal channels function together once created. Their project raises the integration question this article answers; it does not itself propose a model of how the two channels are meant to work together, which is the gap the present article addresses.

The clearest evidence for this gap comes, perhaps unexpectedly, from within the AD guidelines themselves. Hutchinson and Eardley (2020) note that every major international guideline for museum AD they reviewed, European and American alike, recommends touch as a complement to verbal description wherever the object allows it. The recommendation is telling in what it stops short of.

None of the guidelines offer any account of how touch and verbal description are meant to function as a single, coordinated experience; touch is added alongside the description, not built into its structure. Their interview data point the same way: describers who raised the subject, across both European and American groups, tended to talk about touch as something that makes an object "come alive" rather than as an information channel that could take over part of the work the verbal text would otherwise have to do. The guidelines converge on the value of combining modalities without ever specifying how that combination is meant to work. That is exactly the gap the present study sets out to close.

3. Methodology

Given the nature of the material, a practical case at the intersection of accessible design and translation studies, this study is conducted as a qualitative embedded case study (Yin, 2018). Case study design is appropriate where the research question is framed in terms of how and why, which matches the research question set out above.

3.1. Research Design

The case is the SOCINTEGRA project "Attīstības vektors" (Development Vector), launched in March 2025 with the aim of introducing modern, inclusive approaches to Latvian museums so that blind and partially sighted visitors can have a full cultural experience. Between May and October 2025, SOCINTEGRA ran both in-person and online training courses for museum staff wishing to acquire practical skills in building accessible environments and delivering quality visitor service. Seventy museums took part, including the Riga Porcelain Museum, the Latvian National Museum of Literature and Music, the Latvian National Museum of Art, the Latvian Railway History Museum, and the Latvian Museum of Natural History. The project was funded under the Riga City Council's Social Integration Programme. The embedded units of analysis are: (1) the tactile accessibility component, (2) the audio description component, (3) the methodology of their integration within the training course.

The course team itself was not exclusively sighted. Vlada Khmelevska, an accessibility specialist who is herself blind, took part in developing and delivering the training. Her involvement is worth stating plainly rather than folding into a general claim about inclusive process: it means the course that produced the three-level model in Section 6 was not designed for a blind audience by sighted practitioners alone, but shaped in part by someone with direct, first-hand experience of the museum access problem the course addresses. This is the concrete form the co-design principle discussed in Section 2.1 (Ciaccheri, 2022) takes in the present case, rather than a claim asserted only at the level of theory.

3.2. Data Sources

Drawing on multiple sources of evidence, in keeping with case-study methodology, the following sources are used, structured around the training course's four thematic areas: audio description and commentary; tactile models; communication etiquette; and hands-on practical sessions in small groups, where participants developed and tested audio materials, evaluated recording clarity, and drafted tour scenarios adapted to the accessibility of the museum environment.

• Three graded participant assignments (10 points each). The first (set 17 May 2025, due 26 May) asked participants to produce an audio description of their museum building's exterior, following the basic AD principles set out in Section 5, with a sample script and a required photograph. The second, the typhlo-tour route assignment (same dates), asked for a step-by-step accessible route from the nearest public transport stop or car park to the museum entrance, specifying the starting landmark, turns and distances, sound and tactile landmarks en route, and the perceptual cues signalling arrival, submitted with a map or sketch. The third (set 4 June, due 20 June) is the one most directly relevant to the model in Section 6: participants planned a full excursion route through their own museum for blind and partially sighted visitors, using the museum's floor plan, marking a starting point (ideally a tactile map) and five to eight content stops combining existing or proposed tactile objects and audio description, with an explicit account of what physical materials each stop would require. These briefs, and the submissions they produced, exist for a substantial share of the 69 participating museums.

Eighteen excursion-route-type submissions have been analysed for this article and are discussed in Section 6.6 (seventeen as independent cases, one flagged separately).

• The authors' own audio description scripts, produced independently of the course: Jūlija Rastorgujeva's pre-course script for the Bauska Museum permanent exhibition, analysed in Section 5.2, and a post-course set of paintings-focused AD scripts by the same author.

• Project documentation, including training briefs and tactile object mock-ups produced for the course.

• Course materials documenting the four thematic areas above and the session format described in Section 6. No separate written syllabus was retained as a standalone document.

• A pre-course application questionnaire completed by 69 museum staff before training, spanning museums across Latvia (32 respondents in Riga, 37 outside it).

• No contemporaneous field observation notes from the practical sessions were kept. The case draws instead on the authors' own recollection as the sessions' designers and facilitators, folded into the reflexive notes below.

• Reflexive notes by the authors as practitioner-researchers (practice-based research).

The questionnaire data merit closer attention, since they establish a clear baseline for why the course was built around an integrated model rather than a single-modality one. Just over half of respondents (55.1%) reported that their museum had no tactile object and no experience serving blind visitors at all; a further 24.6% had some tactile exhibits but no coherent programme; only 2.9% had both exhibits and a programme in place. Stated motivation was high (mean readiness 8.84 out of 10, SD 1.21), but the free-text responses show that motivation outpacing know-how, not indifference, was the starting condition the course had to address. Most tellingly for the argument advanced in this article, when asked what they planned to add to their exhibitions, 69.6% named audio descriptions and 56.5% named tactile 2D/3D objects; 50.7% of respondents named both. This does not show that half the cohort already understood tactile and audio description as functionally integrated modalities; wanting both provisions in the same museum is not the same as conceiving of them as one coordinated system. What it does show is substantial pre-existing interest in implementing both modalities together, with no guidance in either the design or the translation studies literature (see Section 2.3) on how that combination should actually work. Closing that guidance gap, not manufacturing the interest, is what the course, and the integrative model in Section 6, set out to do.

The respondents' job titles speak to a related point raised in Section 2.1. Just over half (52.2%) held department- or unit-head positions, but the remaining cohort was spread across directors and deputy directors (11.6%), project managers (11.6%), communications specialists (11.6%), museum educators (8.7%), curators (5.8%), researchers and collections staff: sixty distinct job titles among sixty-nine respondents. Accessibility, in other words, was not something only education staff signed up to think about; participation cut across departmental lines, which is itself a small piece of evidence against the very fragmentation Ciaccheri (2022) identifies as a structural barrier to systemic accessibility work.

The free-text responses also show how differently "starting point" could mean from one museum to the next within the same cohort. A respondent from the Pharmacy Museum, housed in a protected historic building in Riga's Old Town, described renovation options as severely limited and asked for help finding the balance between visitor need and what the building would allow, the exact tension Filová, Rollová and Čerešňová (2022) describe for historic museum buildings more generally. A respondent from the Latvian National Museum of Art, by contrast, was already mid-way through developing a "multisensory tour" for visitors with visual impairments and saw the course as a way to deepen an initiative already underway. The course had to serve, within a single cohort, museums starting from architectural constraint and museums already iterating on a multisensory concept of their own.

3.3. Analytical Procedure

Three analytical procedures correspond to the three embedded units in 3.1. The pre-course questionnaire (Section 3.2) is analysed thematically, grouping free-text responses by starting point, motivation and planned modality. The audio description material (Section 5) is examined qualitatively for factual versus evaluative language and explicit tactile cross-references, following the objectivity/interpretation distinction in Section 2.2. The tactile and audio components of the model (Section 6) are analysed comparatively, examining where the two channels address the same descriptive problem and where each does work the other cannot.

The three-level model in Section 6 was not coded inductively from a dataset, nor assembled deductively from the literature reviewed in Section 2 before the course began. It was developed retrospectively, after the training, through the authors' own reflection as its designers and facilitators on what the course had actually required them to teach: a cognitive-semantic account of what AD needs to do while hands are on an object, a technological account of what keeps touch and audio synchronised, and a description of the session sequence itself. Reviewed against the literature only after this reconstruction, the model turned out to name distinctions that literature already gestured toward piecemeal, such as the general-to-specific structure Hutchinson and Eardley (2020) find across international AD guidelines, without assembling them into a single framework. This origin means the model should be read as a structured articulation of practice-based knowledge developed by two practitioner-researchers, not as a framework independently validated against data collected for that purpose.

3.4. Author Contribution

Marija Kožarina (Socintegra) was responsible for developing and analysing the tactile component; Jūlija Rastorgujeva was responsible for developing and linguistically analysing the audio description component. The integrative model and the training course methodology were developed jointly.

3.5. Limitations

A single case limits external validity (generalisability). The article is best read as a foundation for subsequent comparative studies across several museum sites. A further limitation concerns the course evaluation itself: a questionnaire was administered before training to establish participants' baseline knowledge, but no equivalent instrument was run afterward. The case can therefore document the course's design, content and the three-level model underlying it, but it cannot support claims about measured learning gains, changed staff practice, or downstream effects on visitor experience. Where Section 6 discusses outcomes, this should be read as a description of what the course set out to do rather than as evidence that it succeeded; the article flags that gap explicitly as a direction for future, outcome-focused research. A related limitation applies to the AD corpus material analysed in Section 5: both scripts discussed there were written by one of the present authors, not by course participants. Any contrast between them documents the reflexive development of a practitioner-researcher's own practice, a legitimate source of insight in practice-based research, but it is not evidence of how the course shaped participants' own practice. Participant-produced material of exactly this kind does exist: audio description scripts, typhlo-tour route descriptions, and, most directly relevant to the model in Section 6, full excursion-route plans in which participants combined tactile stops and audio description across their own museums (Section 3.2). Seventeen independent excursion-route submissions have been analysed (Section 6.6) and suggest the model is narrower in scope than what participants actually produced, but seventeen cases, however consistent, cannot establish how general that pattern is across the full population of participating museums. Extending the analysis across the full set of submissions is the most direct way to close this limitation.

4. Tactile Component

Converting visual museum content into tactile form has to reckon with the psychophysiology of haptic perception, which unfolds sequentially rather than all at once: where a visual image can be taken in largely at a glance, a tactile one is built up detail by detail, over time, through the mov-

ing hand (Millar, 1994). Several established principles follow from this difference and structure the design of tactile exhibits and relief graphics used in the projects discussed here.

The first is a principle of filtering, or reasonable simplification. Copying every fine detail of a visual original onto a 3D model or relief overloads the hand with information it cannot process sequentially, a concern central to tactile graphics standards more generally (Braille Authority of North America, 2010). Closely related is a principle of textural and height contrast: legibility comes not from fine linework but from a pronounced difference in height and from contrasting textures, such as smooth against rough or matte against glossy. The specific figures used in the projects discussed here, a height differential in the 0.5–3 mm range and a panel tilt of roughly 15–30 degrees from horizontal, reflect Kožarina's own professional practice as an accessibility specialist rather than a single universally codified standard, and are reported here as the parameters this case worked to, not as fixed thresholds established in the literature. A third principle concerns proportionality and scale: a model has to be sized to the reach of a hand. Objects that are too large force repeated repositioning of the whole body and disorient the visitor; objects that are too small lose their detail. The workable scale is the one where the key form can be explored with both hands at once. Finally, safety and ergonomics set a hard constraint: no sharp edges, no toxic polymers, no easily broken parts.

Barriers

Bringing tactile objects into museum space runs into institutional, psychophysiological and practical barriers that are worth naming separately, since each calls for a different kind of solution. The most deeply rooted is institutional and cultural: museums have long operated on a strict no-touch principle as a means of conservation, and that convention produces a kind of reflexive caution on both sides: staff worried about damage to the object, and visitors with visual impairments who, in many cases, have never had the chance to build a habit of confident tactile exploration in a public institution.

A second barrier is physiological. Prolonged contact with a uniform surface can reduce the sensitivity of the fingertip receptors, an effect sometimes called tactile fatigue, which means timing and the intensity of interaction need to be actively managed rather than left open-ended. A third, more mundane barrier is upkeep: tactile surfaces wear quickly under repeated contact and require regular cleaning that does not erode the microrelief and texture the design depends on.

The final barrier is the one this article treats as central rather than incidental: the epistemic limits of tactile experience taken on its own. A tactile object, however well designed, cannot on its own convey colour, light and shadow, the object's scale relative to its surroundings, its original material, or its historical and cultural significance. It is precisely this limit that makes synthesis with audio description not an optional enhancement but a structural necessity, the argument taken up directly in Section 6.

5. Audio Description Component

5.1. Between Objectivity and Interpretation: The Generic Specificity of Museum AD

Screen and museum audio description are related but not identical. Screen AD deals above all with questions of timing and narrative coherence (Braun, 2011): the describer's task is constrained by tight windows between dialogue and sound effects. A museum object, unlike a film frame, is static. There is no editing constraint, but there is the object's space and materiality, which still need to be rendered in words. AD emerged as a practice in the United States and the United Kingdom in the 1980s, first for theatre and film; description for the visual arts in the UK took shape by the 1990s (Fryer, 2016). Dedicated guidelines for museum AD specifically remain scarce, and it is within this methodological gap that the present section operates.

The central debate in the field concerns objectivity. The classic recommendation is to maintain neutral, factual description and avoid evaluative judgement; this stance dominates much US training material. The European tradition, reflected in the ADLAB project, frames the task differently: describers are encouraged to "deconstruct" the artwork and reconstruct it through suggestive language, sound effects and music, treating interpretation, contextualisation and selection as an inevitable part of the

process (Remael, Reviers, & Vercauteren, 2014). A growing number of researchers now argue that absolute objectivity in AD is barely attainable: the describer remains a viewer, and the story they tell inevitably carries the imprint of their own interpretation of what is depicted, a concern closely related to what Hutchinson and Eardley (2018) call the problem of textual fidelity in museum AD.

Section 2.2 already reported the scale of the objectivity disagreement across the same forty-two-describer survey (Hutchinson & Eardley, 2020). A further finding from that survey bears directly on the framing set out in Section 1: describers across regions largely agreed that AD aims to help the listener form a mental picture of the object, but Hutchinson and Eardley argue against reading that "picture" as narrowly visual. Mental imagery, they note, is available in every sensory modality, including touch and hearing, and people who have never had sight can form it without ever having had visual experience to draw on. Grass, in their example, has a tactile form and a spatial form as well as a visual one. If the imagery AD is meant to construct is multisensory by nature, then treating the verbal channel as a stand-in for sight, a translation of the visual into words, undersells what audio description is actually doing, and understates how naturally it could be built together with a tactile channel rather than alongside it.

An audio description script written by one of the present authors (Jūlija Rastorgujeva) for the Bauska Museum's permanent historical exhibition, produced before the training course discussed in Section 3, offers a way to test this framing against actual practice rather than only against guidelines. The script does not sit at either extreme. Individual objects (a mechanical wall clock, a pair of blacksmith's tongs, a horseshoe) are built almost entirely from verifiable detail: material, colour, surface condition, position relative to neighbouring objects. Each period room, however, opens with a short evocative frame that no strict WYSIWYS approach would sanction: the museum's façade is described as carrying an atmosphere of quiet contemplation and history, and the photography studio's lighting is said to create a cozy atmosphere. The script, in other words, already occupies the position Section 2.2 associates with the European tradition: factual at the level of the individual object, interpretively framed at the level of the room or scene, without having been written against any explicit guideline to that effect.

5.2. AD as Intersemiotic Translation: Terminology and Composition

Over the past few decades, audio description has established itself not only as an accessibility practice but as an object of translation studies in its own right. Sabine Braun (2007) defines it as intersemiotic, intermodal or crossmodal translation. Applied to the museum context, this definition gains an additional layer of complexity: a museum object is translated not in isolation, but together with information about its historical and artistic context, and sometimes together with a description of the space it occupies.

Corpus-based approaches to museum AD texts remain scarce, but two studies bear directly on the present case. Jiménez Hurtado and Soler Gallego's (2015) corpus study of pictorial audio description frames the practice explicitly as an act of translation, tracing how museum guides render composition, colour and gesture into a parallel verbal text. Soler Gallego's (2018) later semantic analysis of a corpus of audio description guides from UK and US art museums extends this line of work, identifying recurring lexico-semantic patterns used to describe an artwork's visual features. Read together, the two studies suggest that a corpus of museum AD is not merely a set of individual scripts but a body of text with recoverable regularities, the same kind of regularity a comparable analysis of the present case's Latvian-language material could test against a different institutional and linguistic setting.

A methodologically related study of subjectivity in AD for art museums combines interviews with describers and corpus analysis (Olalla Luque & Soler Gallego, 2019). Applying a similar combination of methods to the material of the present case could itself become one of this section's practical contributions.

Structurally, the Bauska script is organised around consistent spatial anchoring. Each room is introduced as a whole: its shape, its number of walls, the fact that a missing fourth wall leaves visitors feeling as though they are looking into an open box, before the description narrows to individual

objects positioned relative to one another through a small, repeated vocabulary of orientation: to the right of, to the left of, behind, in front of, along the wall. This general-to-specific movement matches the structural principle Hutchinson and Eardley (2020) identify across international AD guidelines, arrived at here independently of any guideline consultation.

More striking for the argument of this article is a feature the script was never asked to include. Several passages explicitly flag which described objects are also available to touch: a set of old keys and, later, a row of horseshoes in the blacksmith's workshop are each followed by a short note that they may be touched. The script was written before the integrative model in Section 6 existed, yet it already contains the seed of that model's central move: marking, within the verbal description itself, which details the visitor's hands should expect to verify. What the script lacks is not the impulse toward integration but a systematic principle for which objects to flag this way, how consistently, and how to phrase the cue itself, exactly the gap Section 6 sets out to close in more general terms.

6. Integrative Model and Training Course

The gap identified in Sections 2 and 3, tactile and audio-descriptive work commissioned separately, with no shared account of how the two are meant to function together, calls for a model that specifies the connection rather than simply asserting its value. Drawing on the projects underlying this case, integration can be described on three levels: what AD is doing cognitively while a visitor's hands are on the object, what technology has to do to make the two channels arrive together, and what sequence of steps the visit itself follows.

6.1. The Cognitive-Semantic Level: Audio Description as Tactile Guide

At this level, AD performs two functions a tactile object cannot perform for itself. The first is navigational: description walks the visitor's hands across the object in a deliberate sequence rather than leaving exploration unguided. A typical instruction might run: "Place your palms at the lower edge of the model. Find the raised smooth frame – that is the base of the building. Now move your fingers slowly upward to the first rough line…" The second function is to fill what might be called sensory gaps: the object's true scale and proportions relative to the original, colour, light and shadow, the texture and material of the original where the model itself is cast in a different substance such as resin or plastic, and the historical, cultural or narrative context that no amount of touching would otherwise convey.

Beyond navigation and gap-filling, AD carries out a third, more synthetic function: building the gestalt. Touch proceeds piece by piece, one raised edge and one texture change at a time. Left alone, that sequence stays fragmentary. AD's role is to assemble the pieces into a single mental structure as they accumulate: "you are touching a three-nave basilica; the element under your fingers now is the central nave." The result is a sequential haptic process that resolves into a unified image rather than a list of local sensations.

6.2. The Technological Level: Engineering the Synchronisation

The cognitive functions above depend on a technical infrastructure that keeps touch and audio moving together in real time. The three configurations below are presented as options the model is compatible with, not as a report of which specific system each participating museum implemented; the case material does not permit a confident claim about which configuration, if any, was deployed at scale, and this is a gap the present article does not resolve. Interactive audio-tactile panels combine a touch-sensitive surface with a tactile relief, so that a finger placed on a specific detail (a column, a dome, a figure's face) triggers the corresponding fragment of description automatically. NFC tags or Bluetooth Low Energy beacons embedded in a tactile stand, or in individual sectors of a larger scale model, achieve a looser but more flexible version of the same coupling: a visitor's smartphone or a dedicated audio guide picks up the nearest tag and plays the relevant track as the hand moves across that zone. A third configuration keeps the coupling under the visitor's own control: an audio guide with track-by-track navigation, where the visitor advances, replays or skips segments, using physical buttons or voice commands, as their own hands, rather than a sensor, dictate the pace.

6.3. The Procedural Level: A Three-Stage Exploration Sequence

The model proposes that a session follow the same broad arc regardless of which technical configuration delivers it, though this sequencing has not itself been tested against alternatives. A macro-level opening establishes the object's real dimensions, its original material, the model's scale relative to that original, and any orientation or safety information the visitor needs before touching anything; the visitor's hands then sweep the model as a whole, both hands together where the object allows it, to register overall shape and boundary before any detail work begins. A micro-level stage follows, in which description proceeds detail by detail while the visitor's fingers trace relief, texture and edge in the sequence the audio sets out. A closing, summarising stage moves past physical description entirely: AD accounts for the object's artistic intention, the history of its making, and its significance, while the visitor, now holding a complete tactile impression, is free to consolidate that impression into a considered, rather than merely sensory, understanding of what they have explored.

6.4. Design Constraints Carried Over from the Case

Three practical constraints recur across the material and are worth stating explicitly, since they follow directly from the cognitive and technological levels above rather than being separate design advice. Terminology in the AD script has to match tactile fact exactly: a script that calls a surface "rough" is unusable if the model under the visitor's fingers is smooth. Pacing has to build in tactile pauses, since haptic exploration is slower than listening, and description that runs at spoken-word speed will consistently outrun the hand. And control over the pace has to sit with the visitor rather than the system: the ability to pause, stop, or return to the description of a detail already passed is not a convenience feature but a precondition for the sequential, self-paced nature of tactile perception described in Section 4.

6.5. A Worked Example from the Case

The model is easiest to evaluate against a concrete instance rather than in the abstract. The table below sets out two objects from the Bauska Museum script discussed in Section 5, alongside a third, illustrative row that extends the same object toward the fuller navigational and gestalt-building functions described in Section 6.1. The first two rows report what the script actually does; the third is not drawn from the case and is marked as such.

Museum object	Tactile information	AD information	AD tactile cue	Function
Old keys (blacksmith's workshop wall)	Varied sizes, metal, hung in a row at hand height	Historical function and hanging arrangement described in the surrounding text	"These may be touched"	Touch verification (case evidence, Section 5.2)
Horseshoes (blacksmith's workshop)	Varied sizes, worn and rusted metal surface	Condition and historical use described in the surrounding text	"The horseshoes may be touched"	Touch verification (case evidence, Section 5.2)
Building façade model (illustrative, not from the case)	Raised outline, textured base indicating the building's footprint	Real dimensions, material, historical period	"Place your palms at the lower edge. Find the raised smooth frame, that is the base of the building."	Navigation and gestalt-building (proposed by the model, Section 6.1; not case-tested)

The contrast between the first two rows and the third is informative. What the case demonstrates is touch verification: a describer flagging, after the fact, that an object may also be touched. What the model proposes, beyond that, is a shift from an after-the-fact flag to touch instructions woven into the description's own syntax. That gap, between current practice and the model's fuller claim, is one this article has not closed with evidence.

One piece of the case bears on that gap more directly than the questionnaire or the authors' own scripts do. A third course assignment, set after the audio description and typhlo-route tasks discussed in Section 3.2, asked each participant to plan a full excursion route through their own museum for blind and partially sighted visitors: a starting point, five to eight content stops combining tactile objects and audio description as the participant saw fit, and an explicit account of what physical materials each stop would require. This is, in effect, participants building their own version of the procedural level described in Section 6.3, independently and before they had read any statement of the three-level model as such, since the model itself was only articulated by the authors after the course (Section 3.3). Whether participants' route plans converge on something resembling the model's structure, or diverge from it in informative ways, is the most direct available test of how far the training operationalised the kind of integration this article proposes. Eighteen of these submissions are analysed in Section 6.6 below, seventeen as independent cases and one flagged separately for a prior consultation link to the authors.

6.6. Cross-Case Analysis of Participant Submissions

Eighteen submissions in total were available for this article; seventeen are treated as independent cases, and one, discussed separately below, is flagged for a prior consultation link to the authors. The seventeen span the Varakļānu Novada muzejs route already discussed, a live-guide script for the Valmieras muzejs, a brief accessibility-planning note for the Mencendorfa nams (Mentzendorff House), a diagnostic report for the Jaunpils muzejs (Jaunpils Museum), a two-part route for the Āraišu ezerpils archaeological park, a guided-tour script for the Railway History Museum, a room-by-room plan for the Talsu novada muzejs (Talsi Regional Museum), a memorial-house route for the Franča Trasuna muzejs "Kolnasāta," a manor-house route for Lužnavas muiža, and eight further submissions introduced below. The genre variation across all of them is itself informative: participants produced first-person tour scripts, sensory inventories, diagnostic reports, phased development plans, self-audits and fixed guided sequences, depending on how far their own museum had already progressed. One point applies across nearly all of them: the tactile objects, audio content and typhlo-routes described are proposals the participants drew up after the course's explanations, not features already installed in their museums. Most submissions state this explicitly, marking content as "vēlams" (desirable) or "nepieciešams" (needed); where a submission instead describes something that already exists, such as a pre-installed sensory table or a tactile model already on display, this is noted as such below.

The Varakļāni finding, that participants add channels the two-channel model does not name, replicates rather than stands alone. The Valmiera script has visitors touch a bronze relief map and assemble a wooden coat-of-arms puzzle and a castle built from marked blocks, while a soundtrack of "castle sounds" plays to build "a sense of mood" (noskaņu sajūta). The Jaunpils report proposes battle and metal-clash effects alongside a sword and shield replica. Ambient sound now appears in four of seventeen cases.

The Mencendorfa note extends the pattern with a formal legend coding stops by touch, sound, taste, smell and warmth, and describes offering visitors tea, coffee or pancakes to taste near the kitchen hearth; Āraiši independently adds smell again, inviting visitors to smell beeswax beside a replica beekeeping tool. Smell now appears in three of seventeen cases; taste and warmth remain confined to Mencendorfa.

Valmiera adds a dimension with no analogue in the tactile or technological literature reviewed in Section 2: the guide's script repeatedly asks permission before touch ("I will ask permission to place

your hand…") and opens with a physical self-description, age, height, hair, glasses, before the tour begins. This is the course's "communication etiquette" strand (Section 6.4) written directly into the same document as the tactile and audio content, not delivered as a separate register.

Āraiši adds a dimension none of the cases discussed so far anticipate: guided visitors are invited to try grinding grain by a reconstructed Bronze Age dwelling, attempt fire-starting by a Stone Age one, and put on a reconstructed Latgalian costume at the lake fortress itself. This goes beyond touch-verification (Section 6.5) and the constructive puzzle-building seen in Valmiera: it is participation in a physical activity historically tied to the site, using the whole body rather than the hands alone. Āraiši also proposes pairing Braille signage with tactile floor plans at two stops, and QR codes linking lakeside markers to audio narration, the technological configuration Section 6.2 lists as literature-derived rather than case-tested; it now has at least one instance of participant-level support.

The Railway Museum script adds a direct institutional response to the no-touch barrier discussed in Section 4: several stops propose a visible symbol marking that only blind and low-vision visitors may touch that particular exhibit, addressing the convention head-on rather than working around it. The same script also distinguishes, unprompted, a prepared "guide description" of what an object looks like from a separate "guide narration" of its history and use, a split that independently tracks the sensory-gap-filling and context-filling functions Section 6.1 assigns to AD.

Talsu novada muzejs adds a physical-endurance dimension the model omits: a bench is planned for the room with the longest audio track. The same submission proposes an ancient Livonian necklace replica, weighing four kilograms, for visitors to wear rather than only touch, and a broken pot reconstructed from shards with magnets, a second independent instance of constructive tactile engagement after Valmiera (Lužnava and Madona add a third and fourth, below). It also draws its own boundary: rotating art exhibitions will not receive tactile objects, only permanent displays, a resourcing decision the participant states herself.

The Franča Trasuna muzejs "Kolnasāta" route adds two things with no precedent elsewhere. Audio content is planned in three languages, Latgalian, Latvian and English, the first regional language in this corpus and a direct link to Section 2.2. It also treats modality choice as a privacy matter: where a blind visitor is accompanied, the guide offers a recorded track instead of speaking aloud, explicitly to protect privacy rather than for any content reason.

Lužnavas muiža contributes the richest case, mixing existing and proposed features. Its tactile bat model, already on display, comes in two postures, wings spread and hanging asleep, so one touch does not stand in for the whole animal, and the object is named, Mūzis, personifying it. A bridge-building task with magnetic pieces, also already in place, confirms the constructive-engagement pattern from Valmiera and Talsi. Most strikingly, the submission proposes a themed "quest in the dark" as a new option, an experience designed for sighted and blind visitors alike, not for blind visitors specifically: the clearest instance in the corpus of the universal-design argument made in Section 1, where a choice serving one group turns, with little extra effort, into one that benefits everyone.

Eight further submissions extend the picture without introducing radically new categories, but each sharpens one already identified. The Balvu Novada muzejs route pairs a touchable church-wood door with a stand demonstrating the axe-and-plane surface treatment used to make it, and bundles wax, sauna herbs and bobbin lace into a single "smell and touch box," a compact multi-item format for what elsewhere appears as isolated smells. The Madonas Novadpētniecības un Mākslas muzejs (Madona Museum of Local History and Art) route adds a wooden-block building activity, a fourth independent instance of constructive tactile engagement (after Valmiera, Talsi and Lužnava). A route for a Latvian National Museum of Art site maps its own gaps floor by floor, "already in the museum" against "not yet," and flags that one exhibition's audio exists only in English, a language-availability gap none of the other cases raise. The Rīgas Porcelāna muzejs route builds around an already-existing sensory table and proposes carrying a portable "tactile album" across every stop rather than installing

separate objects at each one, a distinct modular solution to the technological level in Section 6.2. The Latvijas Kino muzejs (Latvian Museum of Cinema) route ties a rain sound effect to a model of a film set, sound used to illustrate production technique itself rather than to set mood. The Nacionālais dabas muzejs (Latvian Museum of Natural History) zoology route treats birdsong and antler-clash recordings as the primary informational content rather than atmosphere, and separately criticises its own QR stickers for not being raised or tactile, echoing a limitation Āraiši's proposal shares. A second Bauska Museum exhibition, "Bauska laikā," formalises smell, touch and hearing as an explicit per-stop category, a simpler echo of Mencendorfa's five-channel legend.

One further submission, for the Rīgas Geto muzejs (Riga Ghetto Museum), is reported separately. It proposes a raised, threshold-free floor marking at the entrance, QR-linked survivor testimonies, a tactile Hebrew alphabet, a mechanism for visitors to leave audio feedback, and explicitly recommends testing the route with blind experts before implementation. That recommendation converges with the limitation this article states in Sections 3.5 and 7. It is not treated as independent convergence, however: the authors had a prior consultation relationship with this museum, so its planning may have been shaped by that contact rather than arrived at independently, and it is excluded from the frequency observations above for that reason.

Seventeen cases still cannot support a formal frequency claim, and the genres remain too different for a like-for-like count. But every independent case analysed extends beyond touch and audio in some way, adding ambient or content-carrying sound, smell, taste, warmth, scripted consent, wearable or constructive engagement, physical endurance needs, privacy-driven modality choice, regional-language content, or explicit self-audit of accessibility gaps the model does not name. That is enough to treat the model's two-channel scope as provisional rather than settled.

The three-level model maps onto the course's own structure with one addition. Two of the four thematic areas SOCINTEGRA's training covered correspond directly to the levels above: audio description and commentary to the cognitive-semantic level, and tactile models to the material substrate that level operates on. A third area, hands-on practical sessions, corresponds to the procedural level, since it was here that participants built and tested audio materials, judged recording clarity, and drafted tour scenarios adapted to each museum's own accessibility constraints. The course's fourth area, communication etiquette (covering how staff address and guide visitors with visual impairments, and how to avoid discriminatory language), sits outside the three-level model as described so far. It points to a dimension the model does not yet formalise: the interpersonal register in which a describer or guide delivers the AD and tactile experience, as distinct from the content and timing of the description itself.

The training itself followed a fixed three-part format, stated to applicants before enrolment: one introductory webinar, a period of remote consultations with SOCINTEGRA specialists, and one full day of in-person practical training in Riga, held at a general training venue rather than inside any of the participating museums. The webinar and consultations carried the course's more theoretical content, the two thematic areas of audio description principles and tactile-model standards; the in-person day was reserved for the hands-on practical sessions in which participants built and tested audio materials, judged recording clarity, and drafted tour scenarios for their own museums' exhibits, working from documentation and photographs rather than on site. No post-course evaluation was conducted (Section 3.5), so this section describes the course's design and its pre-course baseline rather than claiming measured outcomes. Whether any of the 70 participating museums went on to launch documented adaptation programmes beyond the course itself is not something the present case can establish.

7. Discussion and Recommendations

The findings assembled across Sections 4 through 6 speak most directly to the distinction set out in Section 1 between a compensatory and a systemic model of museum accessibility. A compensatory model treats tactile objects and audio description as separate line items, commissioned separately, evaluated separately, and bolted onto an exhibition once its core design is already fixed. Nothing in

the case examined here required that separation, and the baseline questionnaire data in Section 3.2 suggests museum staff do not think in those terms either: half of respondents wanted both provisions in their museum before the course gave them any account of how the two might work together. That is evidence of demand for both modalities, not evidence that staff already understood them as one coordinated system; the gap the course addressed was the missing account of coordination, not a missing desire for accessibility. What Section 6 supplies is that account: the cognitive-semantic, technological and procedural structure that turns unconnected demand for two provisions into a workable design method for one.

The cross-case analysis in Section 6.6 complicates that account in a way worth stating plainly here rather than leaving implicit. The model was built to integrate two channels, touch and audio description, and the case material used to develop it (Sections 4 and 5) stays within those two channels. But every one of the seventeen independent participant submissions analysed in Section 6.6 exceeded them, independently adding ambient sound, smell, taste, warmth, scripted interpersonal protocols or embodied activity that the model does not name. The most defensible reading of this is not that the model is wrong, but that it may be smaller than the phenomenon it describes: a tactile–audio core that museum professionals, left to their own judgement, routinely extend into a broader multisensory and interpersonal practice. This article does not attempt that larger model, since seventeen cases, though consistent, remain too heterogeneous to support one, but it names the extension as the concrete next step rather than treating the two-channel scope as a finished boundary.

The cohort's own diversity is itself a finding worth taking seriously. The Pharmacy Museum and the Latvian National Museum of Art, both discussed in Section 3.2, sat at opposite ends of the same course: one constrained by a historic building with almost no room for physical adaptation, the other already mid-way through its own multisensory tour concept. A model serving only museums starting from zero, or only those with an existing programme to extend, would have left roughly half the cohort unaddressed. The three-level model is deliberately agnostic about starting point: the cognitive-semantic level (6.1) applies to a purpose-built relief or an improvised adaptation alike, and the technological level (6.2) ranges from full audio-tactile panels to a simple audio guide, so a museum like the Pharmacy Museum is not asked to solve an architectural problem before an accessibility one.

For museum institutions in the Baltic region more broadly, three recommendations follow. First, accessibility planning for blind and partially sighted visitors should be commissioned as a single integrated brief, covering both tactile and audio components together, rather than as two procurements handled by different departments on different timelines. The fragmentation Ciaccheri (2022) identifies as a structural barrier is not abstract here; it is the default condition this course's own participant pool started from. Second, staff training should draw on the full range of institutional roles rather than routing accessibility exclusively through education departments: the course's own participant profile, spread across sixty distinct job titles, suggests this cross-departmental model is already achievable within existing staff structures, not a distant aspiration. Third, museums operating under architectural or budget constraints comparable to the Pharmacy Museum's should not be advised to wait for a comprehensive renovation before beginning tactile and audio integration; the technological options surveyed in Section 6.2 include configurations, such as a simple synchronised audio guide without embedded sensors, that require no structural intervention at all.

These recommendations are offered with the limitation already flagged in Section 3.5 firmly in view. Because no post-course evaluation was conducted, the case can show that the model was coherent enough to be incorporated into training delivered to a genuinely diverse cohort representing 70 museums; it cannot show that participating museums went on to produce more effective accessible exhibitions than they would have otherwise. Establishing that link, ideally through a follow-up survey of the same cohort or a comparative study measuring visitor outcomes at museums that did and did not receive this training, is the most immediate direction for future research the present case makes visible.

8. Conclusion

The case examined here does not prove that tactile and audio description components function better when designed together than when designed apart. No comparison of that kind was built into the project, and the absence of post-course data (Section 3.5) rules it out retrospectively. What the case shows is narrower, and for a first article on this material, probably more useful: a three-level model connecting the cognitive, technological and procedural aspects of tactile-audio integration was incorporated into training delivered to a genuinely heterogeneous group of museum professionals, from a protected historic building with almost no room to manoeuvre to an institution already developing its own multisensory concept. The intuition behind the model was not imported from outside. Half of the course's own applicants had already reached for both channels before anyone offered them a reason why.

That coincidence is worth taking seriously without overstating it. Museum staff sensing that tactile and verbal channels belong together is not the same as knowing how to build that connection, and the gap between the two is where Section 6's model does its work. The Bauska script analysed in Section 5 shows the same pattern on a smaller scale: a describer flagging which objects can be touched, years before any formal integration model existed, with no system for deciding which objects deserve the flag or how consistently to apply it. The convergence suggests that instinct may be outpacing method in current museum accessibility practice, although the present case cannot establish how widespread that pattern is.

Two limitations bear repeating, because they define what would need to change before the claims made here could travel further. The corpus evidence in Section 5 comes from one author's own practice, not from participants trained under the model; whether the model reshapes how other describers write remains largely untested by this article. Seventeen independent excursion-route submissions have been analysed (Section 6.6), and they complicate the model rather than simply confirming it: participants independently added ambient sound, smell, taste, warmth, scripted consent, embodied activity and self-audited accessibility gaps the model does not formalise. The remaining participant-produced excursion routes noted in Section 3.2 make a fuller test possible without a new round of data collection. The three-level model itself was built from a single set of related projects rather than validated against a second, independent case. Analysing the participant material already in hand, and eventually comparing it against a second, independent case, are the natural next steps; the first is within reach of the present data, the second is not.

Funding

The training course discussed in this article was carried out under the SOCINTEGRA project "Attīstības vektors" (Development Vector), funded by the Riga City Council's Social Integration Programme.

Acknowledgments

The authors thank Vlada Hmeļevska, accessibility specialist, for her contribution to developing and delivering the training course discussed in this article.

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DOI https://doi.org/10.30525/2592-8813-2026-spec-8

EDUCATIONAL POTENTIAL OF GRAPHIC DESIGN IN MODERN CONDITIONS

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Abstract. This article examines the role of graphic design in contemporary post-industrial society, highlighting how it transcends purely applied art to function as an expert medium that shapes the social and cultural status of individuals. It demonstrates that graphic design, when integrated into broader social contexts and responding to challenges posed by socio-decorative phenomena such as fashion, plays a key role in cultivating cultural tastes. This reflects the multiplicity of complex and ambivalent cultural manifestations inherent in graphic design. The study approaches graphic design through the lens of philosophical communication, identifying it as one of the most effective methods of non-verbal communication and information visualization in a post-industrial society.

Special attention is given to the educational potential of graphic design, showing that both the creation of visual imagery and its interpretation by consumers depend significantly on the designer's aesthetic sensibility, ethical convictions, and humanistic orientation. This highlights the responsibility of the designer (visualizer) not only as a creator but also as an educator within the cultural and informational environment.

Key words: graphic design, culture of tastes, visual information, education, educational potential, post-industrial society, visualizer.

In the culture of post-industrial society, design plays a leading role, performing functions that extend beyond purely decorative purposes and actively shaping the social status, life priorities, and attitudes of individuals toward their environment and the people around them. In this context, analyzing design through the lens of a "culture of tastes" becomes particularly relevant. Narratives concerning cultural taste emerge at nearly every stage of European history, reflecting societal values and the evolving understanding of aesthetics. Design naturally intersects with socio-decorative phenomena such as fashion, offering expanded avenues for self-expression and human self-realization.

The relationship between fashion and the differentiation of cultural tastes has been acknowledged in philosophical traditions, from German idealism (Immanuel Kant) to the writings of Grigory Skovoroda, for whom fashion was a key term, and Pierre Bourdieu, who highlighted its role in codifying social hierarchies. However, in post-industrial society, the coding of tastes as social markers becomes increasingly complex. On one hand, traditional social education programs of the industrial era emphasized dress codes to reinforce social roles; on the other, contemporary society often challenges or ignores these rules, creating tension between the desire to defy conventions and the need for social recognition. Modern dress codes reflect these contradictions, while protest cultures, such as hippies, emo, and graffiti subcultures, frequently assert their identity through distinctive design and attire.

Cultural predestination and social conditioning remain defining features of design across all forms–graphic, industrial, or landscape–demonstrating the ambivalence of design manifestations, from elite high-culture paradigms to the pluralization of tastes in mass culture. Focusing on graphic design, we observe that it functions both as a mirror of everyday life and as a tool for individuals to explore personal philosophies of self-realization. Harmonizing the inner and outer worlds requires attention to fashion, interior aesthetics, and social positioning, which together form a personalized sense of comfort. This "comfort" is mediated by each individual's aesthetic taste, education, knowledge, and awareness. A person with a developed culture of taste does not merely consume art aesthetically but interprets and evaluates it with discernment.

While material wealth may provide access to luxury products and high-end graphic design, it does not guarantee refined taste or a deep understanding of visual culture. Monetary resources can compensate externally for a lack of inner aesthetic development, projecting an "individual vector of glamour" (Krylova 2019: 211), but they are not a true indicator of cultural sophistication. Meanwhile, commercialization continues to shape contemporary artistic spaces, amplifying tensions between superficial appeal and authentic cultural value.

Graphic design, as an element of visual culture, intersects deeply with societal tastes, shaping collective trends and fostering social cohesion through non-verbal communication. From the 19th century onward, movements such as the Arts and Crafts Movement in the USA and England promoted socially useful, aesthetically simple design, aiming to create environments conducive to well-being and functional beauty (Smythe 2021: 96–97). This historical perspective underscores that taste is not merely personal preference but a socially and culturally mediated phenomenon, highlighting the educational potential inherent in design practice.

This correlation is often reflected in the taste preferences of individuals who actively engage with graphic manifestations of culture. Several key factors shape this correlation, with the culture of taste playing a central role. History demonstrates that design created solely for its own sake can become superficial and meaningless. As noted by Gavin Ambrose and Nigel Ono-Billson, whose work Graphic Design 01 serves as a propaedeutic of design education, technological progress can sometimes encourage frivolity among designers, leading them to pursue illusory or "empty" design. Designers must be aware that fashion fads, trends, and stylistic preferences are transient, influenced both by technological developments and the prevailing cultural spirit of the time (Ambrose & Ono-Billson 2019). A thoughtful approach to design, therefore, requires not only technical skill but also an understanding of the broader cultural and temporal context in which visual communication operates.

The emergence of graphic design, particularly in the form of infographics, can be superficially understood through Walter Benjamin's concept of the mechanical reproduction of art (Benjamin 2002). However, its significance extends beyond reproduction, marking a shift from a culture dominated by the written word to a culture increasingly centered on images–transitioning from the "Gutenberg galaxy" to the "McLuhan galaxy". Graphic culture is inherently adaptive, able to meet the diverse tastes of its audience, because it functions as a medium of communication between individual aesthetic preferences and the broader need for visual consumption. Graphic design translates ideas, concepts, and messages into visual forms, taking into account the target audience, communicative goals, and contextual circumstances to ensure clarity, comprehension, and engagement.

Designers actively monitor current trends in visual culture–fashion styles, color palettes, typographic conventions–and incorporate these elements into their work to produce contemporary, appealing designs that resonate with public tastes. In essence, graphic design provides visual solutions for the aestheticization of human living spaces, reflecting societal ideas of beauty, desirability, and social ideals. Unlike vernacular or purely artistic activities, graphic design is goal-oriented: whether creating a logo, packaging, advertisement, or website, it serves a communicative purpose. Yet, these goals are not always neutral or positive; they can include aggressive appeals or even hostile messages.

As a complex visual language, graphic design operates within a structured system of meanings that influence emotions, thought processes, actions, and personal environments. It plays a central role in the information landscape of post-industrial society, where image dominance is evident. Non-verbal communication and information visualization, supported by advanced technologies, demonstrate that written culture alone is no longer sufficient to convey meaning fully. Modern artistic and philosophical discourses increasingly emphasize the power of the image. Following Hryhoriy Skovoroda's terminology, one must consider the "invisible"–the hidden layers beneath what is seen. Non-verbal communication, in this sense, can convey meaning with exceptional clarity, as exemplified by early cave paintings. While such rock art primarily encoded information for insiders of a tribe, its visual power foreshadowed the communicative potential of modern graphic design.

Today, graphic design functions both to encode and decode information in contemporary society. Its omnipresence in daily life shapes preferences and influences decisions: logos, brands, and visual symbols evoke emotional responses and associations that guide consumer behavior. Graphic markers, whether on maps, social media, or advertising, streamline information processing, yet can also mislead, creating reliance on brand recognition rather than critical evaluation. Modern consumers often prioritize widely promoted brands over less visible but potentially higher-quality alternatives, highlighting both the power and ambivalence of graphic culture.

Graphic culture, encompassing all aspects of visual perception, occupies a central position in the modern information space, and its influence is both universal and global. Graphics, as a language of visual symbols, serve as a fundamental means of transmitting information–from diagrams and road signs to brand logos and social media icons. Concurrently, public perception of graphic design is shifting: its value is increasingly seen not as sacralized or elite, but as mass-oriented and popularized. The historical progression from narrative to visual culture reflects the broader civilizational development of humanity. The transmission of information has undergone a remarkable transformation–from oral traditions and storytelling to the culture of images, symbols, and eventually written text. Irene Vallejo's work, The Journey of the Book, compellingly illustrates this evolution, highlighting how the emergence of text enabled precise recording of knowledge, facilitating its accumulation and transmission across generations (Vallejo, 2023). The formation of book culture stands as one of humanity's greatest achievements, yet in contemporary society, there is an increasing preference for images as a primary means of obtaining and processing information. Tracing this trajectory is essential for understanding the nature of human information reality.

In the early stages of human existence, communication was primarily oral, relying on narratives as a means to transmit knowledge, wisdom, and cultural heritage. These narratives not only conveyed practical information about survival but also established a shared understanding of the world, developed through observation and experience. Visual symbols and images played a crucial role in codifying knowledge, preserving history, and shaping complex belief systems. This transition marked the emergence of a "universal language" in primitive societies, laying the foundation for visual culture. While visual culture significantly enhanced oral communication processes, the advent of written textual culture fundamentally transformed information transmission. The ascendancy of image culture over textual culture became pronounced during the great industrial transformations and was further solidified with the advent of photography in the early twentieth century, when experimentation with photographic techniques became widespread in both art and design movements (Smith, 2021).

Image and text have become central components of modern information exchange. The digital information visualization industry saturates everyday human environments, while text continues to underpin business communication, document management, knowledge culture, and academic discourse. The combination of image and text reduces asymmetry in information transmission, allowing for more effective selection, interpretation, and understanding of meaning, as described by Niklas Luhmann. The key advantage of images lies in their independence from linguistic barriers: on one

hand, visual language is accessible and widely comprehensible, yet on the other hand, it requires intercultural and interfaith interpretation. Images can act as bridges for cultural exchange, narrating history and national traditions, but they can also carry threatening or destructive meanings, humiliate non-believers, or create barriers to intercultural communication.

Graphic materials can serve as instruments of propaganda, reinforcing power, destabilizing societies, and generating conflict. Posters, banners, and advertisements sometimes replicate aggressive imagery, transmitting inhumane messages. Political campaigns often depict opponents with hostile gestures or images that negatively influence public perception. Similarly, graphic cartoons, comics, and memes may employ grotesque depictions or negative stereotypes to incite hatred toward specific social groups. In the media, glossy magazines and online platforms often highlight curated images of success and happiness, potentially promoting deviant consumer behavior.

Conversely, graphic culture holds significant potential for fostering dialogue and promoting peace. Using universally recognized symbols, illustrations, posters, and infographics, designers can draw attention to shared civilizational challenges. Visualization of global issues provides an effective mechanism for engaging the international community in dialogue. Design and graphics, empowered by the creativity and technical skill of their creators, employ cutting-edge technologies to render these messages visible in the human living space. Understanding the "invisible"–the layers of meaning beneath the visible image–relies on the guidance of the designer and the perceptive abilities of the observer. Without this guidance, only the surface of the image is perceived. Hence, the educational role of graphic design is crucial, serving as a bridge between visual communication and the development of critical perception.

Graphic designers receive specialized education and possess deep knowledge in design principles, composition, typography, color theory, and other aspects of visual communication. Their professional skills and mastery of tools enable them to create effective, comprehensible, and aesthetically appealing graphic solutions. The creative potential of the designer determines not only the aesthetic and functional quality of a work but also its communicative power. This communicative quality, consciously or intuitively embedded by the designer, ensures the long-term relevance and impact of any graphic project.

It is important to note, following Immanuel Kant, that since graphic design carries significant educational and formative potential, the designer responsible for translating these meanings must be well-educated and culturally literate. If design education is limited or insufficient, the educational potential of design may be compromised. Current trends, such as the reduction of humanities disciplines in art education, are often economically justified but risk dehumanizing design education. The development of future designers should occur throughout their education and adhere to clear humanistic principles. Richard Pring emphasizes a practical approach in education, bridging theoretical knowledge with the common-sense understanding of ordinary individuals. According to Pring, education should not only convey theoretical concepts but also cultivate the ability to interpret and apply knowledge in the context of everyday experience (Pring 2004: 145–162). This integration ensures that students can critically engage with the world and internalize ethical and aesthetic principles.

Applying these principles to domestic design curricula suggests the importance of emphasizing "communication design," which seeks to establish connections between theoretical knowledge, sociocultural needs, common-sense perspectives, and practical demands of consumer culture. Communication design relies on pedagogical, psychological, and philosophical foundations to teach visual communication and cultivate future visualizers (Jia 2018). It enables designers to translate ideas into visible forms, realizing their creative potential while adhering to humanistic values. Consequently, graphic works must be responsible, clear, and socially meaningful. Accuracy, reliability of information sources, cultural sensitivity, and ethical conduct–including respect for human rights, confidentiality, and copyright–are essential components of professional graphic design.

In contemporary design education, digital design practices, particularly UX/UI design, play a significant role. Educational programs increasingly incorporate courses on user experience and interface design, enabling students not only to develop aesthetic sensibilities but also to acquire skills in creating usable, functional, and ethical digital products. Such training helps future designers understand the social and psychological aspects of user interaction with visual objects, fostering responsibility for how visual solutions influence people's behavior and perception.

UX/UI design also exemplifies the educational potential of graphic design, as it encourages students to think holistically, analyzing both aesthetic and functional aspects of a product. Studying digital interfaces develops critical thinking, the ability to anticipate user reactions, and the integration of ethical principles into visual solutions. Thus, learning digital design extends beyond technical proficiency, cultivating conscious and responsible designers capable of creating culturally sensitive and socially meaningful products.

The educational component of UX/UI design naturally aligns with the humanistic orientation of graphic design. Students learn to adapt visual messages for diverse cultural and social contexts, ensure product accessibility and inclusivity, and develop empathy for users. This experience strengthens the role of the designer not only as a technical expert but also as a cultural and educational mediator in the process of communication through contemporary digital media.

Graphic culture and graphic design face challenges in the modern era due to the rapid development of communication technologies. Emerging forms of information transmission are reshaping traditional notions of taste, aesthetics, and education. Conventional publications, such as books, magazines, and newspapers, are increasingly losing relevance as new digital tools and platforms provide faster, more interactive means of disseminating information. At the same time, prejudices and elitist attitudes within intellectual circles can hinder the full utilization of these technologies in educational contexts. This situation presents both opportunities and risks, including the potential misuse of graphic design as a tool for propaganda or the propagation of low-quality, superficial aesthetics.

Nevertheless, graphic design retains the capacity not only to create new meanings but also to cultivate communicative competencies. By leveraging its visual and symbolic power, graphic design can enhance humanistic orientations in contemporary Ukrainian design and art education. The process of creating visual images, as well as the subsequent interpretation of these images by audiences, depends critically on the designer's aesthetic sensibilities, ethical convictions, and humanistic values. Properly guided, graphic design can serve as a method of non-verbal communication that reinforces positive social messages, supports cultural diversity, and fosters ethical engagement in post-industrial societies.

Presenting graphic design as a communicative method allows educators and practitioners to harness its instrumental and functional potential. It strengthens humanistic values through non-verbal communication and information visualization, contributing to the development of informed, culturally sensitive, and socially responsible citizens. In this sense, graphic design is not merely a technical skill but a vital educational tool capable of shaping perception, understanding, and behavior in modern society.

In conclusion, the educational potential of graphic design is vast and multifaceted. By integrating technical skill, aesthetic sensibility, and humanistic values, designers can create visual works that communicate effectively, inspire reflection, and foster cultural awareness. Graphic design serves as both a mirror and a tool of society: it reflects prevailing tastes, values, and social dynamics, while also shaping perceptions, guiding behavior, and transmitting knowledge across generations.

To fully realize this potential, design education must combine theoretical knowledge with practical experience, grounded in ethical principles and a deep understanding of cultural contexts. Designers must be equipped not only with technical competence but also with critical thinking, empathy, and an awareness of the social consequences of their work. This holistic approach ensures that graphic design

contributes meaningfully to individual development and societal well-being, rather than merely serving commercial or superficial ends.

Ultimately, graphic design is a form of visual communication that transcends language barriers, bridges cultures, and encourages dialogue. By cultivating an ethical, humanistic, and educational approach to design, society can harness the power of images not only to inform and persuade but also to educate, inspire, and unite people in a post-industrial, globalized world.

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DOI https://doi.org/10.30525/2592-8813-2026-spec-9

VANISHING BEAUTY

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Abstract. The author examines the architectural context as a formative factor in the cultural environment. This article focuses on the architectural heritage of the Pomorian Old Believers (bespopovtsy) of Latvia. This topic has not yet received adequate coverage in the scholarly literature. The Old Believers do not celebrate liturgy, so the Bespopovtsy prayer houses are typologically chapels; they have an iconostasis but no altar. In this article, the prayer houses are conventionally referred to as churches, as they are monumental buildings, and the Pomorian Old Believers themselves often refer to their prayer houses as such.

Key words: Pomorian Old Believer, heritage, church, architectural context, iconographic traditions.

The architectural context is a formative factor in the cultural environment. When architectural form is damaged, the cultural space degrades. Today, the danger comes from the bearers of culture themselves. We are unaware of the values we possess, and we don't know what to preserve and how to preserve it, so the study of regional cultural expressions has become a topical issue. Old Believer writing and singing traditions have been studied since the late 19th century. Thanks to the efforts of I. N. Zavoloko and the Riga Circle of Antiquarians in the 20th century, a lot was done to identify the cultural treasures of the Old Believers – manuscripts, spiritual poems, iconographic traditions, wood carvings, handicrafts, and folk embroidery. The attention of modern researchers is drawn to cemeteries and burial rites, oral folklore.

The interesting architectural heritage of the Old Believers in Latvia has yet to receive due recognition. Old Believer cultural monuments have not been scientifically described. The Daugavpils region was somewhat "lucky" – the first inventory of this region's sacred cultural monuments was completed in a book by Ruta Kaminska and Anita Bistere, published in 2006. This book, for the first time, offers a comprehensive overview of the region's sacred architecture, seamlessly integrating the Old Believer heritage. The authors undertook a significant effort to identify the sites, but that was all they did; the book offers no analysis of architectural features. Brochures about the churches, published by communities, provide details of parish life, but they do not address the technical or architectural features of the buildings.

The secularization of society continues, and new churches are a reflection of these processes. Several new religious buildings have been constructed in Latgale, including the Old Believer Church in Voitishki, Skrudaliena parish, built on the site of a church destroyed by fire.

Unfortunately, both the gate and the building bear little resemblance to the former church or other old chapels. Very close to Voitishki stands the chapel in Vilkeli, abandoned by its parishioners. The laconicism of forms, good proportions of volume, and a naive yet lively interpretation of canonical details combine to form a holistic image that excites the soul. The prayer house fits perfectly into the peaceful landscape. It is hard to leave this quiet place, it feels as though prayers are still silently echoing here. However, the discreet beauty of the wooden church has gone unnoticed; in Voitishki, sand-lime brick has been preferred. Another forgotten gem of folk art hides behind the crowns of old trees in Bondarishki. Why haven't these churches served as models for modern builders? The question remains unanswered. Another question we often hear is: "What is the beauty of old prayer houses?" Even the Old Believers themselves find it difficult to answer. To find the answer, we must understand the architectural heritage, study its characteristics, and to do this, we must first preserve authentic

examples of architecture that have not yet been destroyed or rebuilt. Only two such examples remain in the Daugavpils district: in Bondarishki and in Vilkeli.



Figure 1. Prayer house in Vilkeli, 1925.

In July 2008, the first expedition to the churches of the Daugavpils region was undertaken as part of a research project by the University of Latvia. Over the course of two days, only a brief examination of each site was possible, so this article does not attempt an in-depth study. The trip left a lasting impression: distinctive architecture with distinct regional characteristics unfolded before us. Purity of form, deliberate austerity and asceticism of expression, spontaneity and naivety in detail – these are the main hallmarks of the distinctive lapidary style inherent in all the old houses of worship. Within the boundaries of the Daugavpils region, there are 20 houses of worship, including seven stone churches and 13 wooden ones. Although most of them were built virtually simultaneously (in the late 19th and first half of the 20th centuries), these two heritage groups should be considered separately.

Stone prayer houses are concentrated primarily in the city, they are recognizable and well-known, have monument status, and are in good condition. They were built by professional architects or engineers, so project documentation for the objects is readily available, facilitating the work of researchers. As a phenomenon of urban culture, the appearance of old stone churches inevitably reflects the style and "architectural fashion" of their time. Tradition is creatively interpreted and embodied in them by professional architects in a contemporary interpretation. However, the names of the architects who designed the most beautiful city churches are still unknown.

It should be noted that, under the difficult construction circumstances of 1907-1928, the Church of the Nativity of the Virgin Mary of the Novostroyenskaya community was built without any deviations from the project [1]. Therefore, the architect's majestic vision, driven by the desire to embody in stone the creative potential of the Old Believers, which had been forcibly banned until the early 20th century, was fully realized. The church's volumetric composition was conceived as strictly canoni-

cal. The cubic main volume, covered by a hipped roof and crowned by a large head with a cross, is clearly defined. The refectory section of the church is lowered to visually emphasize the verticality of the bell tower, which is designed as a rectangular tower "growing" from the roof of the two-story western extension. The laconic form of the bell tower, influenced by regional traditions, was brought from the wooden architecture of the Old Believers of the Daugavpils region. This solution is often found in rural prayer houses. The church facades are designed in the Russian style with elements of Art Nouveau. Influence of Art Nouveau style is clearly seen in the form of three tall portals (h = 16 m) adorning the western, northern and southern facades. A small head and a gently sloping tent are erected above the bell tower. Old photographs show that the original shape of the heads was very graceful and well-proportioned. The drum of the large head opened onto the interior of the church, illuminating it through six windows [1]. The roof and heads of the church burned during the war. We now see the top, restored under the difficult conditions of the Soviet era. Since then, light has not penetrated the interior, and the proportions of the heads are heavy, far from perfect. Unfortunately, the image of a church dedicated to the Mother of God with such heads has partially lost its former soaring skyward and graceful proportions.



Figure 2. The newly built prayer house in Dvinsk, built according to a 1908 project, architect Alexander Shpakovsky (?).



Figure 3. The newly built prayer house in Dvinsk (Daugavpils), modern appearance.

The beautiful Gaikovsky Annunciation Church in Dvinsk was built over a long period of time, in several stages [2]. In 1886, the solid and elegant one-story stone building with a gable roof, a narthex, and a square hall was consecrated. The eastern and western portions of the building were defined by avant-corps with pediments on the southern and northern facades. The walls were crowned with an arched frieze in the Romanesque style. The building bore no signs of a religious sanctuary. This part of the chapel has survived without modification to this day. Twenty years later, in 1906, after the proclamation of the Decree "On Strengthening the Principles of Religious Tolerance," a temporary

wooden bell tower with five bells was added to the church, and a small head was installed on the roof. By Easter 1907, a new brick bell tower was erected – two octagonal bells on a high rectangular structure, a large head, and kokoshnik-like decoration. The bell tower's architecture was masterfully integrated with the form of the previous chapel. Romanesque and Russian styles merged into a single whole. The modest decoration of the church's facades is emphatically symbolic – drops of grace under the cornices, arches of the heavenly vault, kokoshniks flaming with prayer. These details display a particular precision in the embodiment of symbolic meanings, characteristic of the aesthetics of Russian Art Nouveau. The church became one of one of the most beautiful religious buildings in Daugavpils, whose architectural forms clearly reveal the hand of a professional. The prototype for the stone Gaikovskaya bell tower, built in 1907, as well as the tall bell tower of the Riga Grebenshchikov Church, can be seen in the famous Ivan the Great of the Moscow Kremlin. The Riga bell tower was built a year earlier, in 1906, according to the design of the architect Alexander Schmeling. The Gaikovskaya bell tower is smaller in scale, but the shapes of both bell towers are very similar, as if "made in the same handwriting," suggesting that the renowned Riga architect was the architect here as well. In 1941, during the German invasion, the church burned down. In 1947, despite the difficulties of the post-war period, the chapel was restored and remains in its original form to this day.



Figure 4. Bell tower of the Gaikovskaya prayer house in Dvinsk (Daugavpils), 1907.



Figure 5. Bell tower of the Holy Dormition Chapel in Riga, 1906, architect Alexander

Schmeling. Other city prayer houses are also interesting in their own way. Of the stone churches, the most complete technical information has been preserved for the Griva Intercession Church [3] in Daugavpils. The difficulties with which the Assumption Church of the Malyutkinsko-Yudovskaya Community of Dvinsk was restored after the flood of 1922 have not been forgotten. Archival documentation is available for the stone bell tower of the Old Forstadt Intercession Church in Dvinsk, the dominant feature of the entire community church complex. These three churches were built in the 1930s, almost simultaneously. This likely explains the similarity of their volumetric compositions: the bell towers of all three are attached to the main volume of the building, covered with a gable roof. This technique, typical of Protestant churches, was probably borrowed in the 20th century, under the forced conditions of the integration of Old Believers into the cultural environment of the Republic of Latvia. Previously, until the early 20th century, Old Believer churches consistently retained a different volumetric composition–with a bell tower "growing" from the roof. Unfortunately, it was this attached bell tower that was chosen as a model for imitation in our own day – in the construction of the prayer house in Voitishki. But while in the Griva prayer house, through decoration, this borrowed form was able to imbue it with the recognizable features of an Old Believer church, and in the Old Forstadt bell tower, through a naive interpretation, a striking canonical image was created, today in Voitishki, a creative transformation of form has failed, as the builders failed to "penetrate the spirit of tradition," and the nuances of the symbolic meanings of form and decoration were forgotten. The prayer room turned out to be a mechanical copy of a Protestant church. Unfortunately, a similar

primitivism also distinguishes the new baptistery of the Old Forstadt community, built next to the old church. The placement and structure of the small heads crowning the roof of the new building does not correspond to the canon: the spherical shape is not developed according to symbolic meanings (the base of the head is missing), but is tightly covered with metal along with the drum-neck, like a roof. The eastern head stands directly on the end wall, copying the shape of the chimney. These unfortunate errors indicate that the construction of the baptistery's top forgot the primary canonical meaning inherent in the head of the church – the symbol of Christ, the Head of the Universal Church. This determines not only the shape of the head but also its placement precisely above the center of the main prayer space of the church.



Figure 6. The bell tower of the Griva Chapel in Daugavpils, 1936, Engineer Ya. Sinyavsky.

A hundred years ago, there were no such mistakes. The Annunciation Church of the Niederkun congregation in Dvinsk, built in 1907, is noteworthy for its faithful adherence to tradition, replicating the forms of wooden prayer houses in brick. A large head rises above a rectangular gable roof, its structural design expertly executed. The designer of this church not only replicated but also emphasized the most characteristic forms of the Daugavpils region, discarding any incidental details. The church's single volume with four windows, cantilevered canopy, and "growing" bell tower are recognizable from village prayer houses. If the traditional three-part fence with stone arched gates could be reproduced with equal precision, this church could be considered a model for the Daugavpils region.



Figure 7. Bell tower of the Old Forstadt Chapel in Daugavpils, 1930.



Figure 8. Niederkun Chapel in Daugavpils, 1907.

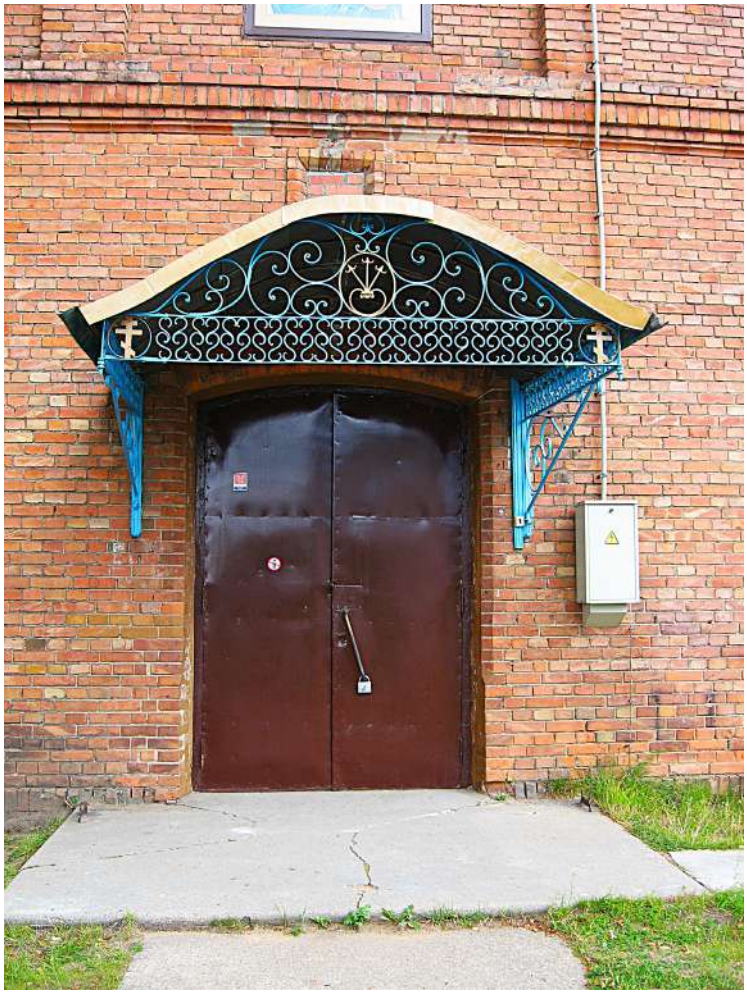

Figure 9. Niederkun Chapel in Daugavpils, cantilevered canopy at the entrance, 1907.

The interiors of stone churches strictly adhere to tradition. Typically, the ceiling of the main room is a wooden vault, integrated into the rafter structure of the roof. The availability of documentation and the durability of the materials inspire hope that the stone churches will be preserved in their authentic form.

Wooden rural churches can disappear without a trace; they are usually built without a plan, by communities with permission from the authorities. They are examples of folk art. All the wooden prayer houses we examined, built at the turn of the 19th and 20th centuries, share very similar technical methods, decorative motifs, and three-dimensional compositions. It's likely that a team of Old Believer carpenters worked in the vicinity of Dvinsk and built almost all of these churches. Back then, 100 to 80 years ago, sacred culture was an integral part of community life, the canonical forms of churches were not questioned, and well-built prayer houses were accepted as workmanship, so communities made little effort to remember the builders. The names of the contractors remain to be determined by future researchers. It is known that in the 1870s, Ivan Kondratyevich Molchanov, the son of a second-guild merchant from Dinaburg, was involved in the construction of Orthodox churches in the Northwestern Territory [1, pp. 73–81]. He *was an Old Believer* by birth, and the son of Kondraty Molchanov, who donated part of his land in 1884 for the construction of a prayer house in Gayka, along with funds for icons and church furnishings. Ivan Molchanov simultaneously peti-

tioned Vitebsk and St. Petersburg to obtain permission to build a prayer house in Gayka [1]. It is logical to assume that 30 years later, when the official ban on the construction of specifically Old Believer prayer houses was lifted, Ivan Molchanov's contracting business could have been continued by subsequent generations of the family.

Stylistically, the wooden prayer houses of the early 20th century were influenced by Art Nouveau, and historically, the choice of form was also influenced by the administrative subordination to the secular authorities of the Vitebsk province. The prototypes of these churches can be found in the lands located upstream of the Western Dvina. In this region, the river served as a natural migration route from the Polotsk lands to Latgale. According to the chronicle "Degutsky Chronicler," the first Old Believers appeared near the city of Dinaburg in 1659, having gone down to these parts down the Western Dvina from Polotsk. It can be assumed that the Latgalian wooden prayer houses embodied the ancient architectural prototypes of cell churches, preserved in the people's memory and carried through three hundred years of persecution by peasant settlers. Looking at the chapels, one can imagine the typical rural religious buildings of the pre-Nikon era, the first half of the 17th century. During the 15th – 18th centuries, fugitive peasants from Pskov and Novgorod settled in the lands of the Vitebsk Governorate, bringing with them the traditional type of cell church. By tracing the cultural monuments of Belarus in the Western Dvina River basin, one can find characteristic architectural solutions that have much in common with the chapels of the Daugavpils region, for example, the oldest Orthodox church in the Vitebsk region – the Church of the Archangel Michael in Chereya, Chashniki District (1601–1604). The similarity of architectural forms confirms the historical information contained in the chronicle "The Degutsky Chronicler".

In 1666, at the Great Moscow Council, defenders of the Old Faith challenged Patriarch Nikon for the New Jerusalem, viewing the monastery's construction as evidence of the coming of the Antichrist. The Solovetsky Monastery, a "stone pillar" of the true faith, became a stronghold of piety for the Old Believers. The Solovetsky Fathers condemned the attempt to build a New Jerusalem, formally copying the holy city as an architectural model on Russian soil. They interpreted the idea of similitude to the Heavenly City as a sacred space for true believers, a land of spiritually renewed community, rather than new buildings. This fundamental opposition expressed different understandings of piety and different attitudes toward the symbols and images of church art [4]. These differences led to the Old Believers' rejection of the new architectural style and their rejection of the external decoration of churches – the ornamentation that had developed in Russian Orthodox church construction since the second half of the 17th century. From this time on, the formation of a unique, severe aesthetic of the Old Believers began, oriented towards ancient architectural models, which was reflected in rural development.

The peasant worldview of the "simple" settlers was not characterized by intricate searches for theological justifications for architectural forms. This is also evidenced by the dedication of churches: as a rule, chapels were consecrated in honor of the Holy Trinity, the Most Holy Theotokos (the feasts of the Theotokos vary), and the beloved patron saint of the peasants, St. Nicholas. Similarly, "without further ado," religious buildings were erected in the villages – simple, in traditional forms, using proven technical methods. Everyday contact with "outsiders" was discouraged in the Old Believer community, which also contributed to the preservation of the ancient building tradition in its undistorted form. In Latgale, right up until the 1920s and 1930s, a kind of sanctuary of ancient national culture existed, as noted by many representatives of the Russian diaspora who visited Latvia in those years. Andrei Sedykh "discovered pre-Petrine Russia" in Latgale, and the scenes of Old Believer life he saw reminded Ivan Shmelev of "dormant unconscious memories of the ancient, of the past [5]." In relation to prayer houses, it should be noted that for technical reasons, it is the construction tradition

that is most characteristic conservatism against the background of other manifestations of the cultural phenomenon.

Having grown from ancient Russian roots, the Old Believer building tradition retained its key affinities with Russian urban culture. The sparse population of the Russian state after the Tatar-Mongol invasion persisted until the 15th century, when settlements began to expand. In the 16th and 17th centuries, manorial land ownership developed in Russian lands (except in the north), stimulating the development of villages. Villages remained relatively small – a few peasant households – while in villages, the number of households began to number in the dozens. Village development evolved spontaneously according to the ancient tradition of circular planning. The village served as the center of a group of villages, with ordinary buildings clustered around a wooden cell church. Settlements were like "nuclei," in which village churches served as landmarks not only within the village but also within the populated landscape of the surrounding area. This spatial organization of the building corresponded to the traditional perception of architecture, characteristic of Russian culture, in which the main role was played *by volume surrounded by space* [6]. The architectural mass, visible from afar, required a distinctive silhouette and monumental proportions. Such features are also characteristic of the houses of worship in the Daugavpils region.

Unlike Protestant architecture, where minimalism arose as *a voluntary rejection* of the opulence of Catholic liturgical trappings, the asceticism and simplicity of Old Believer architectural forms were partly conditioned by prohibitions and political pressure from the authorities. Regional influences also cannot be denied. Some similarities between the architecture of Old Believer and Protestant churches indicate cultural interactions and stylistic borrowings by the Old Believers during their integration into the local cultural environment. Overall, these circumstances contributed to the development of distinctive forms, by which one can recognize an Old Believer church at first glance among the religious buildings of other faiths, and guess at its Latgalian origins. Our churches differ from their Belarusian prototypes in their distinctive regularity and carefully considered volumetric composition. Even today, these extremely simple structures impress with the monumentality of their design and the precise selection of details. All excesses were discarded, leaving only pure forms and the most important elements, filled with sacred meaning: the entrance gate, porch, roof, domed heads, windows.

All wooden prayer houses have a similar layout and design structure: a spacious rectangular log building with a flat beam ceiling, an attic, and a gabled rafter roof. Typically, the prayer house is built with three windows in the main volume of the church, and the narthex is marked on the facade by a single window, sometimes smaller. The design is frankly truthful, not concealed by decoration. The canonical enfilade of rooms is usually not expressed in the volumes. Among the Daugavpils prayer houses, only Danisheva and Rubenisheva have slightly narrowed eastern parts, but they also have a single roof. It is amazing how, working with such a simple form, masterfully controlling the proportions and the roof angle, the carpenters were able to create a multifaceted, oriental canonical image. The dynamic form makes the prayer room resemble the ship of Salvation, rushing along the waves of the sea of life. Above it, a single, unified being floats easily (not oppressive!) a roof that seems to protect, overshadow and encompass the cathedral Body of Christ, including the community worshipers in the temple. Wooden prayer houses do not have a domed vault, but we see the interpretation of the main idea of an Orthodox church, which the canonical cross-headed structure of the interior is intended to express – the descent from heaven of a merciful God, paternally overshadowing the faithful gathered in the church – in the exterior volume, overshadowed by the roof. This image was best embodied in the prayer houses of Danishevka, Korolevshchina, Bondarishki.



Figure 10. Danishevskaya prayer house, after 1925.



Figure 11. Bondarish prayer house, 1925.

The sacred significance of the eastern part of the church is usually emphasized by the domed cupola, while the bell tower rises on the western side, dominating the spatial composition. The surviving heritage allows us to trace the evolution of this form. The original version was a small bell tower, seemingly "growing" through the roof, as in the Krivanskaya and Bondarishskaya chapels. This spatial solution is traditional for the wooden architecture of the Slavic peoples; similar prototypes can be found among the rural churches of the Polotsk region, Pskov and Novgorod regions. Old photographs of the Korolevschina chapel show it was originally adorned with a small bell tower, constructed exactly like the first version [7], and later increased in height. Over time, this form acquired a different, more monumental scale, greater height, and a clear aspiration to the sky – such as the impressive bell tower in Pantelishki, no longer "growing" from the roof, but attached to the chapel. Tall, western-facing bell towers are common in Catholic and Lutheran churches in Latgale. Surviving intermediate designs in Krivosheyevo and Korolshchina clearly illustrate the process of adopting this architectural form. Interestingly, the bell tower shape was not mechanically copied, but rather reworked and adapted to the Orthodox worldview. The tall attached bell towers do not have the sharp spire that reaches into the sky, characteristic of Western Christianity.

The tall attached bell towers lack the sharp spire reaching toward the sky, characteristic of Western Christianity. They are capped with gently sloping, multifaceted, tent-like roofs, as is common in the Orthodox tradition, where the "floating" form expresses the idea of God's merciful condescension toward the faithful.



Figure 12. Korolevshinskaya prayer house with the original bell tower, 1918.

The large cantilevered porch canopies, typical of the Daugavpils region, impress with their laconicism. The term "porch" shares a common root with the word "wing." The builders of the prayer houses were familiar with this symbolic meaning of the structure. The awnings are inspired: they are not a canopy protecting the door from rain, but a divine canopy. A powerful, yet lightly "floating," seemingly weightless form is the first to overshadow those entering the church, directly expressing trust in God's mercy: "…in the shelter of Your wings You will cover me." (Psalm 17:8) Such awnings have been preserved in Vilkeli and in Subat, less impressive ones – in Pantelishki, Krivany, and Korolevshchina. The canopy brackets are usually lovingly decorated with modest ornamentation.

Unfortunately, the symbolic meaning of this beautiful form has now been forgotten. In other prayer houses, the canopy is supported by supports, or built over, turning it into a banal vestibule at the entrance.



Figure 13. Korolevshinskaya prayer house, modern appearance.

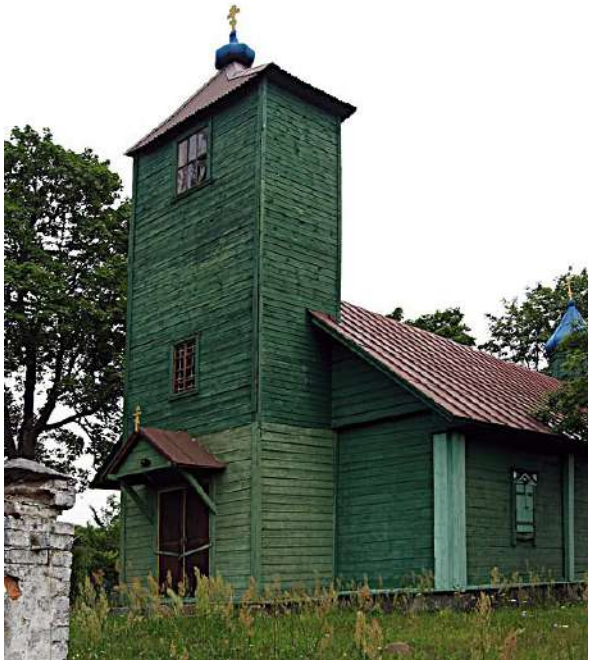

Figure 14. Pantelishskaya prayer house, 1907.



Figure 15. Canopy at the entrance to the Subat prayer house, 1906.



Figure 16. Canopy at the entrance to the Krivanskaya prayer house, 1908.

Heads and window frames adorn all churches, and the canonical meaning of these details is of paramount importance. The head of a church is a symbol of Christ, the Head of the Universal Church, and so the head was always crafted with particular care. Well-proportioned heads adorn churches in Korolevshchina, Krivosheyevo, and Pantelishki. The head of the prayer house in Bondarishki is of particular interest. It is not bulbous, but rather rounded, like a small head – a "forehead." A naive interpretation of the canonical idea can be seen above the bell tower in the Krivan Chapel, where the symbolic meaning of the head is directly depicted as a circular shape. Done naively, but sincerely and reverently.

At first glance, the window frames of Old Believer prayer houses differ greatly from the window decorations of wooden residential buildings, whose compositions bear archaic symbols of the sun and water, protecting the house from evil spirits. The walls of prayer houses lack such decoration, and the frames are simpler. Church art adapted the protective meaning of the frames, replacing the archaic meanings with symbols of the Angelic Powers in the form of flames, crosses, circles, and diamonds. Elegant decor appeared on the walls of Russian churches in the second half of the 17th century, during the process of secularization of church architecture, while the Old Believer tradition remained faithful to medieval simplicity and austerity even at the beginning of the 20th century. The unique decoration of the window frames has been preserved in the prayer houses of the Krivanskaya, Krivosheyevskaya and Pantelishskaya communities, and has been updated in the Medumsky Church.

The window is the "eye" of the temple, giving it sunlight, symbolizing the Divine Light, bringing Divine illumination. An interesting detail is placed on the western facade of the Ashuki prayer house: a small "rose window," a round window with radial mullions, depicting the structure of an eye. A similar window, but diamond-shaped, can be seen in the Danishevskaya prayer house. The diamond motif is often found in church ornamentation; it is one of the symbols of the Heavenly Powers. However, windows of this shape are more often found in Protestant churches than in Orthodox or Old

Believer churches. These details were likely borrowed by Old Believers from projects of professional architects or churches of Western Christians in the process of integration.



Figure 17. Chapter of the Pantelishi prayer house, 1907.



Figure 18. Chapter of the Bondarish prayer house, 1925.



Figure 19. Prayer house in Krivany, 1908.



Figure 20. Window of the Pantelishskaya prayer house, 1907.



Figure 21. Small rose window on the western facade of the Aschuk prayer house, 1909.

In Subate, after a thorough renovation, double-glazed windows have been installed in place of the old windows, the old window frames are gone, and the appearance of the church has taken on features reminiscent of Western Christian churches. Modest but distinctive window frames adorned the windows of the Church of the Intercession of St. Nicholas in the Old Forstadt Community in Daugavpils. The log structure was recently demolished, making way for a new aerated concrete building. Chronologically, the wooden portion of this church was the oldest structure among the existing houses of worship, consecrated in 1890. From a cultural perspective, the church was interesting because, by looking at it, one could trace the entire construction process. It is known that initially, a log structure without any signs of worship was erected. Then, in 1905, after official policy was relaxed, a free-standing wooden bell tower was added. In 1930, a stone bell tower was added to the log structure. The church remained in this form until 2005. The community maintains an old reconstruction plan for the church, which was not fully implemented in 1930. A major renovation would have allowed not only the rotten log structure to be replaced but also the original plan to install an interesting wooden vault in the prayer room. Unfortunately, this monument of pre-reform culture has already been lost.

A similar copy of the demolished log house can be seen in the Medum community, where the prayer house and the free-standing bell tower were built later, but probably based on the model of the Old Forstadt Church. The Medum Church is smaller, but the general appearance and proportions of the volume, the finishing of the roof cornice and the corners of the log house are the same. The prayer house was recently renovated, with the original forms carefully preserved, resulting in a very beautiful result. If the cantilevered porch canopy is also restored, the Medum Church will become the only building in the region where a typical pre-reform Old Believer prayer house can be seen.

Scientific study of heritage requires documenting all changes to the object. This means that before removing any part for repair, it must be photographed, and it would also be a good idea to measure and sketch it. This is usually not done even when demolishing structures. What did the authentic window frames in Medumi look like? It would be interesting to compare them with those of the Old Forstadt Church.



Figure 22 The Medumskaya prayer house after renovation.



Figure 23. Window of the Medum Chapel.

The old gates surrounding the prayer houses are also noteworthy. The fence is designed to separate the sacred space from the bustle of everyday life; it is the first sign of Christian faith for those entering the church. These structures do not always have a physically perfect shape, but they express the idea quite canonically. Typically, the gates were three-part in honor of the Holy Trinity, with an arch, the middle section higher than the side sections – a sign of a hierarchical worldview. The gates were usually decorated with a niche for an icon of the Savior and crosses – the main sacred symbols. Overall, the appearance of the gates reminded those entering them of the composition of an interior iconostasis. Such gates have survived only in Pantelishki, Krivosheyevo, and Vilkelya.

So what is the beauty of modest wooden churches?

In the integrity and organicity of the architectural image, in which the austere spirit of the old faith, the symbolism of forms, and the art of carpentry are "inseparably" united. According to the Orthodox worldview, integrity is the main attribute of beauty. This must always be remembered when undertaking the renovation of a prayer house or the construction of a new church. Damage to any of these components destroys beauty. The prayer houses in Bondarishki and Vilkeli can be called examples of organic simplicity. In these modest buildings, the skilled work of carpenters, their subtle "sense of material" and the clear expression of the main symbolic meanings of architectural forms are organically intertwined; they seem to have been built "in one breath," form and content are unified here. Frank Lloyd Wright (1869 – 1959) wrote: "…organic architecture is an 'inside-out' architecture, in which integrity is the ideal. We do not use the word 'organic' in the sense of 'belonging to the plant or animal kingdom.' …I soon became convinced that organic simplicity possesses the potential for genuine relationship, and the beauty I felt corresponded to the expression of this relationship. Squalor is not simplicity…" [8].



Figure 24. Gates of the Pantelishskaya prayer house, 1907.



Figure 25. Gates of the Vilkelskaya prayer house, 1925.

The thoughtless use of new building materials can undermine the integrity inherent in the traditional appearance of a church. Embarrassing inconsistencies occur even in buildings where renovations have been carried out with the highest quality. Originally, prayer houses had roofs covered with shingles or wood chips, later with sheet metal with standing seams. During the Soviet era, some roofs were covered with corrugated slate; today, they are covered with corrugated steel. Wooden roofing is the most organically suited to log construction, and the calm, grand rhythm of standing seam joints also does not contradict the monumental nature of the image. The fine rhythm of the covering, as on the new roofs in Rubenishki and Medumi, introduces excessive fragmentation, nervousness, and a reduction in scale.

In the future, the prayer house in Volodino will have to be rebuilt on the foundations of the burned-down church. What will it be made of? Sand-lime brick or aerated concrete? Is there any hope that its architectural appearance will be fully restored?

Conclusions. Sixteen years have passed, and it's time to take stock. Some Old Believer communities, such as the Grebenshchikov Community in Riga, the Novostroenskaya Community in Daugavpils, and the Liepaja Community, strictly adhere to scientific principles of heritage preservation, and there is hope that Old Believer architectural monuments will be preserved. In other communities, unfortunately, European style repairs continue. The traditional design of the heads of the houses of prayer is in danger of destruction and oblivion. All heads were erected over Old Believer houses of prayer approximately 120 years ago; their wooden structure now requires major repairs, so a widespread replacement of the heads has begun. The construction of the church head was developed by folk genius over the course of 1,000 years, comprehending the profound symbolic meaning of this architectural form, unique to Orthodox churches. The church head is not decoration or an exotic external accent, but a symbol of the Head of the Universal Church. Symbolic meanings permeate not only the form but also all the elements of the internal structure, even the popular terms our ancestors used to describe them.

In the center of the head is usually a powerful supporting post, resting on the vault, garret construction, or base of the head. This firmly anchored post place the cross that crowns the church – the Banner of Christ. The structure of the head itself is a framework of an even number of curved rafters, called "zhuravtsy" (from Russian: crane bird – zhuravl') mounted on the "neck" of the head and abutting the post at their upper ends. The heads surface is formed by continuous or sparse planking along the outer surface of the rafters, which is then covered with a roof (wood, metal, etc.). This traditional design is beautiful in form thanks to its content, imbued with theological meaning. Information on the structure of church heads is now available in many sources.

However, in reality, the sacred meanings have been forgotten, are of no interest to anyone, and the heads construction is being "modernized". Builders are now erecting polymer "bottles" or lightweight titanium nitride "tin cans" on churches, or replacing traditional wooden structures on cuttings with water pipes and overlay mounts.

And all this is being done with the consent of the communities.

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Baltic Journal of Legal and Social Sciences, Special issue (2026).
Publicētie materiāli ne vienmēr atbilst redakcijas viedoklim.
Par skaitļu, faktu pareizību un sludinājumiem atbild autori.

Izdevniecība “Baltija Publishing”
Valdeku iela 62-156, Riga, LV-1058
Iespiests tipogrāfijā SIA “Izdevniecība “Baltija Publishing”