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"Its crystal depths were there no longer": Coal Mining in John Fox's *The Trail of the Lonesome Pine*

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Abstract

This article examines the complex interplay between industrialization and Appalachian society as depicted in John Fox's novel The Trail of the Lonesome Pine (1908). Set in the Appalachian Mountains during the late 19th-century coal boom, the novel explores the effects of industrialization on both the environment and the lives of the local mountaineer communities. By focusing on Fox's portrayal of the region's coal industry, the article discusses the colonial relationship between Appalachia and the rest of the United States, wherein outside investors and corporations extract resources, often at great ecological and social costs. Additionally, the paper highlights Fox's unique attention to environmental themes, as he was one of the first authors to foreshadow the ecological consequences of resource exploitation in Appalachia. Despite the novel's melodramatic tone, Fox's observations may serve as a critique of unsustainable mining practices, including modern mountaintop removal.

Keywords: Appalachia, coal mining, John J. Fox, environment, mountaineers, local color

Introduction

During the 19th century, coal was the chief source of energy. Coal-powered steam boilers drove locomotives, ships, and factory machinery, heated homes, and generated electricity. There would be no iron and steel produced without coal. Coal was the fuel of choice, and as James B. Jones from the Tennessee Historical Commission points out, "industrial America was a coal/coke junkie" (Jones, n. d.). Thanks to its lower costs, it was mostly highly efficient, low-sulfur bituminous coal from Appalachia that supplied the huge demand for this energy source. Due to its geological location, the veins were more accessible, which made mining easier, and coal corporations paid lower wages in Appalachia than in other mining regions. Appalachian coal production increased steadily in the second half of the 19th century until it reached 478 million tons in 1926 (Zipper, Adams & Scousen, 2020, p. 478).

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John Fox's bestselling novel *The Trail of the Lonesome Pine* (1908), though not primarily focused on coal mining as such, is the first work about life in the Appalachian Mountains to show "what happens to mountain people when machine-age civilization is thrust upon their retarded and static social organization" (Williams & Pipes, 1976, p. 219). It is set in the Big Stone Gap area on the border between Virginia and Kentucky during the 1890s, when prospectors and foreign investors began penetrating the region to exploit its coal-mining potential only to disrupt the lives of local communities. This article attempts to examine how Fox's novel reflects the colonial relationship between Appalachia and the United States. More importantly, it concentrates on environmental themes present in the novel since Fox was the first (and for several decades the only) author to describe the impact of modernization on Appalachian ecology. Despite all the devastating effects of lumbering and coal mining, literary discussions of Appalachian ecology as a separate form have "lagged behind other subjects of concern, such as religion, economy, community life, and 'folk arts'" and did not appear until the 1970s (Waage, 2007, p. 146).

The environment and people of Appalachia

The Appalachian industry was primarily extractive in its character—minerals were extracted from the ground, trees were harvested from the forest, and all was sent off to the markets for processing, making the Appalachian resources (lumber and coal in particular) essential in the rapid industrialization and urbanization that took place in the US before and after the turn of the century. Railroads enabled the extraction of the Appalachian resources on a truly massive scale, and one of the most visible changes it brought to Appalachia was the disappearance of the forests. Williams claims that as late as 1870, two-thirds of West Virginia was covered by old-growth forest. By the beginning of the 20th century, this number had been reduced by half, and by 1920, the virgin forest was all but gone, and with it the diversity that so much puzzled naturalists who ventured to the region throughout the 19th century (2002, p. 250). The employment provided by lumber companies in impoverished hollows and coves of Appalachia had a direct impact on local mountaineers' ideas about conservation and the environment. According to a visitor who spent much of the 1920s in Bryson City, North Carolina, "the true mountaineer has no respect for a tree, feeling merely that the timber is there to be exploited... he is glad for the lumber operations that afford employment" (Maher, 2008, p. 134). On the other hand, scholar Henry Canby, writing for Harper's in 1916, wrote that the mountaineers "have an affectionate regard for their forests... They regard with a certain melancholy the invasion of the lumbermen" and generally deplored "slaughter of the forests." A cattle herder he met during his travels is quoted as stating that "it seems as if they just naturally tear up everything. Soon there'll be no more big woods" (Davis, 2020, 174).

Appalachia did not enter public consciousness until the last three decades of the nineteenth century, when newspapers and local color writers began reporting on the peculiar people inhabiting the region. As Harkins points out, "in an age of faith in American, and more generally Western, intellectual, cultural, and social superiority over the other 'races' of the

world, these writings were designed to show not cultural difference so much as cultural hierarchy—to celebrate modernity and 'mainstream' progress and values by emphasizing the inferiority and alien nature of alternative cultures and societies" (2004, p. 29).

Such superiority is evident from the opening lines of Fox's novel when teenage June Tolliver, a bare-footed mountain girl, observes the landscape below her. She sees a trail of smoke in the distance and wonders whether it is coming from a train: "Where was the great glare of yellow light that the 'circuit rider' had told about—and the leaping tongues of fire? Where was the shrieking monster that ran without horses like the wind and tossed back rolling black plumes all streaked with fire? For many days now she had heard stories of the 'furriners' who had come into those hills and were doing strange things down there, and so at last she had climbed up through the dewy morning from the cove on the other side to see the wonders for herself" (Fox, 1912, Chapter 1). Her pre-industrial perspective is clearly that of a stereotypical savage. Thus, thanks to authors such as Will Harney, James Allen, and John Fox, an image of a region "existing in a perpetual past as the opposite of the energized, fast-paced world of urban, industrializing America" (Harkins, 2004, p. 30) emerged. Some observers considered the Southern mountaineers to be an altogether different race, as the following quote from an editorial for the Baltimore Sun from 1912 proves: "There are but two remedies for such a situation as this, and they are education and extermination. With many of the individuals, the latter is the only remedy. Men and races alike, when they defy civilization, must die. The mountaineers of Virginia, Kentucky, and North Carolina, like the red Indians and the South African Boers, must learn this lesson" (Ashworth, 1995, p. 189)

John Fox: Life and Literary Career

John Fox was a native of the bluegrass section of Kentucky. In 1883, he graduated from Harvard and then wrote for the New York Sun and the Times, but this career did not satisfy him, as he later admitted that "as a reporter, I was a failure" (Titus, 1971, p. 22). He returned to Kentucky in the mid-1880s, where he assisted his brothers in their business endeavors in the mountains. This experience gave him the opportunity to get acquainted with the mountainfolk and various aspects of their lives. As he wrote in a letter to a friend, "I am drinking in like a sponge the peculiar life, the peculiar ideas of this peculiar mountain-race and its beautiful natural environment" (Titus, 1971, p. 24). He began to consider a literary career, and in 1892, "A Mountain Europa," his first story to feature the mountain setting, was published in the Century magazine. Appalachian sections of Kentucky and Virginia became the locale of countless sketches, short stories, and novels Fox would write in the twenty years that followed, and he kept the region in the national spotlight after the local color movement began to fade at the turn of the century (Brosi, 2002, p. 45).

In *"A Mountain Europa,"* Fox found a theme he would exploit in almost all of his mountain works—a situation that required the mountainfolk to adjust themselves to contemporary civilization, symbolized by intrusion upon their lives that was being made as a result of the

exploitation of the natural resources in the region (Williams & Pipes, 1976, p. 211). According to Titus, "the usual pattern… is to have an educated, gentlemanly outsider—most often a geologist, engineer, or teacher—come into the mountain community and there meet an unlettered, unmannered, but naturally well-endowed young mountain girl; to have them fall in love with each other; and to record the problems that such a love poses because of their contrasting backgrounds" (1971, p. 29).

The Trail of the Lonesome Pine was published in 1908. Williams and Pipes claim that "it may very well be the best fictional interpretation of mountain life ever achieved. It touches upon almost all the facets of mountain life and comes nearer to epitomizing the total history of mountain people than any other novel on the subject" (1976, p. 219). The contemporary reviewers also hailed the novel, one of them claiming that "in point of descriptive quality this story ranks among the best American novels" (Titus, 1971, p. 94). The novel became an immediate bestseller, and it remains Fox's most popular and best-known novel. It was adapted for stage in 1912 and for the screen four times between 1914 and 1936.

Industrial Boom and Bust in *The Trail of the Lonesome Pine*

The novel begins with the above-mentioned scene in which June Tolliver observes the mountains. Moments after she sees the train smoke, she encounters Jack Hale, the "gentlemanly outsider" of the novel who will eventually civilize and marry her. He is an engineer and speculator; she is the daughter of Devil Judd Tolliver, the infamous head of the Tolliver clan, a feudist and a moonshiner. Jack Hale arrives to the hollow to explore the vein of coal located on Devil Judd's property. After brief hostility and in spite of the fact that Hale is what the mountaineers call "furriner," the old feudist leads him the vein: "An entry had been driven through the rich earth and ten feet within was a shining bed of coal. There was no parting except two inches of mother-of-coal—midway, which would make it but easier to mine…As he drew closer, he saw radiations of some twelve inches, all over the face of the coal, star-shaped, and he almost gasped. It was not only cannel coal—it was "bird's-eye" cannel. Heavens, what a find! Instantly he was the cautious man of business, alert, cold, uncommunicative" (Fox, 1912, Chapter 4). Hale immediately speculates how to mine it, transport it, and where to find markets for it. He feels like a pioneer, "as innocent as Boone," and in the months that follow, he meticulously plans for a gigantic coal mining scheme.

Soon, news about the mineral wealth of the area spread around the country and beyond. People from elsewhere arrive, and a true colonization starts. Capital flows in from the East and from abroad. The Pennsylvanians, Virginians, and helmeted Englishmen establish businesses and prowl the surrounding mountains in search for more coal veins. A town is built in the gap, complete with a lawyer's office, school, bank, and a printing press with a newspaper. A volunteer guard is formed with Jack Hale as its captain because the arrival of civilization to the region does not stop violence from happening, as the mountaineers are not willing to alter their way of life and struggle hard with the changes the development brings to

them. A mining boom starts and spreads to surrounding hills and valleys. More people and capital flow in. Jack Hale finds himself "on the way to ridiculous opulence and, when spring came, he had the world in a sling and, if he wished, he could toss it playfully at the sun and have it drop back into his hand again" (Fox, 1912, Chapter 20). Even the feud that has been going on between the Tolliver and Fallin clans for years comes to a close.

Midway through the novel, June returns to the cove from school and goes for a stroll around familiar places. The mining operation on the property has already begun, and what starts as a very pastoral scene quickly turns into an image of inferno complete with demons:

> The geese cackled before her, the hog-fish darted like submarine arrows from rock to rock and the willows bent in the same wistful way toward their shadows in the little stream, but its crystal depths were there no longer—floating sawdust whirled in eddies on the surface and the water was black as soot. Here and there the white belly of a fish lay upturned to the sun, for the cruel, deadly work of civilization had already begun. Farther up the creek was a buzzing monster that, creaking and snorting, sent a flashing disk, rimmed with sharp teeth, biting a savage way through a log, that screamed with pain as the brutal thing tore through its vitals, and gave up its life each time with a ghost-like cry of agony. Farther on little houses were being built of fresh boards, and farther on the water of the creek got blacker still. June suddenly clutched Bud's arms. Two demons had appeared on a pile of fresh dirt above them—sooty, begrimed, with black faces and black hands, and in the cap of each was a smoking little lamp. (Fox, 1912, Chapter 17)

In a language that is melodramatic but hardly hyperbolic, Fox heralds the ecological disaster that coal mining would bring to the Appalachian Mountains in the 20th century. Interestingly, according to Titus, it was precisely the era Fox discusses in his novel that initiated the damage to the coves and mountains that continues to this day (1971, p. 93).

But for June, a year of school is not enough to civilize her. She is still a half-savage mountain girl struggling to grasp the extent of what is happening to the Appalachian landscape. June is not appalled by the infernal sight. On the contrary, since it is her sweethearts' Jack's doing, it is all wonderful, and moreover, it takes place on just a small plot of land, and "above the opening for the mines, the creek was crystal-clear as ever, the great hills were the same, and the sky and the clouds, and the cabin and the fields of corn. Nothing could happen to them, but if even they were wiped out by Hale's hand she would have made no complaint" (Fox, 1912, Chapter 17).

However, the boom times would not last forever. No more coal lands are sold, logging ceases, and there is no more investment in the area. On the other hand, "factions were idle once more, moonshine stills flourished, quarreling started, and at the county seat, one court day, Devil Judd whipped three Falins with his bare fists. In the early spring a Tolliver was shot from ambush... So that, as the summer came on, matters between the Falins and the Tollivers were worse than they had been for years and everybody knew that...the fight would be fought to the finish" (Fox, 1912, Chapter 20). So, although the feud began before "civilization" in the form of investors, miners and railroads arrived in the mountains, it is precisely these forces that now have a powerful impact on its intensity. Jack's mine does not prosper; the coal vein

near Devil Judd Tolliver's cabin turns out to be a false one, and he loses almost all of his money, just like everybody else in the town. The Tolliver clan, including June, moves to the West.

In the sentimental ending of the novel, June and Jack are reunited and get married. As they discuss the future of the family cabin in Lonesome Cove, Jack Hale shows he has an ecologist's mind when he promises to June that he will repair all the damage caused by his unsuccessful mining operation: "I'll tear down those mining shacks, float them down the river and sell them as lumber... And I'll stock the river with bass again... And I'll plant young poplars to cover the sight of every bit of uptorn earth along the mountain there. I'll bury every bottle and tin can in the Cove. I'll take away every sign of civilization, every sign of the outside world...So that Lonesome Cove will be just as it was" (Fox, 1912, Chapter 35).

Conclusion

The Trail of the Lonesome Pine is an overly melodramatic novel with a sentimental love story and plot that is too circumstantial, but Fox's treatment of the boom and bust cycle in the mountains is authentic. What makes his novel particularly interesting for present-day readers is his brief consideration of the environmental impact of coal mining on the Appalachian landscape. In this regard, Fox's novel is very unique among Appalachian writings. Nowadays, when a method of strip-mining for coal known as mountaintop removal presents a serious threat to Appalachian nature, are Fox's words truly prophetic.

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Education for the Needs of the Post-Localisation Era:

Transforming the Translation Industry in the AI Age

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Abstract

The translation industry, historically stable even during economic crises, faces the impact of technological advancements and market challenges. This article examines the sector's current state and future trajectory, spanning from classical human translation to fully autonomous translation systems. It discusses how artificial intelligence (AI) and large language models (LLMs) like ChatGPT reshape the translator's profession and how these trends affect language education. Special attention is given to market needs in the post-localization era and the potential for adapting higher education to these new demands. The article concludes with recommendations for preparing language specialists for the future and integrating them with modern technologies.

Keywords: Post-Localisation Era, AI in Translation, Language Education Transformation, Autonomous Translation Systems

Introduction

Recent technological advancements and shifts in the translation market highlight significant changes in what was once one of the most stable industries. Historically, translation and localisation experienced steady growth even during economic crises, such as in 2008. However, 2023 marked a decline after years of consistent growth, except for the COVID-19 downturn in 2020 (Lommel, 2024). In 2023, various translation and localisation firms reported revenue losses: 42.9% for super-agencies, 29.8% for leaders, 25% for challengers, and 45% for boutique firms (Slator, 2024).

Some experts attribute this decline to the impact of artificial intelligence (AI), particularly the rise of large language models (LLMs), which extend beyond translation services to other linguistic domains such as terminology management, research, and more. Others argue that the decline is primarily due to industrial crises, particularly in Europe. We posit that a

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combination of both factors drives this trend. Let us gaze into the "crystal ball" to identify current changes and the future of translation and localization on both global and Central European scales and how these developments might influence language education.

Technological and Industrial Parallels

These changes are not unique to the translation industry; a parallel can be drawn to the automotive sector, which is also undergoing a revolutionary technological transformation. The shift from internal combustion engines to electric motors mirrors the paradigm shift in translation practices. Just as the automotive industry did not emerge fully formed, Karl Benz's Patent-Motorwagen, the first practical automobile powered by an internal combustion engine, bore a striking resemblance to horse-drawn carriages. Similarly, translation has long been a domain dominated by human experts—individuals proficient in foreign languages who could interpret not only the factual content of a foreign text but also its cultural and social nuances, often invisible at first glance.

Automation in Translation: From Early Experiments to Groundbreaking Innovations

Efforts in machine translation (MT) began in the 1950s, but the invention of translation memory systems brought automation into the field in a meaningful way. A breakthrough occurred when Trados company "with the first product in the Trados stable, MultiTerm, hitting the market in 1990" Avila, N. (2012). Multiterm, followed by adding translation memory capabilities to its Translator's Workbench software in 1995. This development marked the beginning of the computer-assisted translation (CAT) era, much like the introduction of the Ford Model T in 1908, which brought automobiles to the masses.

The Impact of Machine Translation and Globalization

The advent of machine translation and globalisation has exponentially increased the volume of translated texts compared to the pre-automation era. Google CEO Sundar Pichai showcased some formidable user stats across technologies powered by Google Translate. Google Translate itself had been used to translate 20 billion web pages globally in April 2021 alone, he said. According to him, live captioning on Google Meet and Android processes 250,000 hours of captions every day, and the Translation function is also available for those live captions. As for Google Lens, the company's Android-embedded, image-recognition technology, it visually translates a billion words each day for its users. Slator. (2021)

Since its public launch in 2006, Google Translate has revolutionised the translation landscape, overshadowing human translators in terms of accessibility and scale. This dominance of MT underscores the transformative power of technology in redefining the translation profession.

Methodology

The analysis presented in this article combines secondary research with qualitative interpretation of data derived from available literature, reports, and industry studies. Data collection involved sourcing information from prominent industry platforms such as Slator (2024) and academic publications. These resources offered insights into quantitative changes within the translation industry, including revenue declines across various segments like super-agencies, leaders, and boutique firms.

A comparative analysis was also employed, drawing parallels between the translation industry's evolution and transformations in other sectors, such as the automotive industry. The shift from internal combustion engines to electric vehicles serves as an illustrative analogy, providing a broader context for understanding technological changes. To further frame the industry's progression, the evolution of translation was categorised into five key phases: the digitisation of translation, computer-assisted translation (CAT), mass translation, human-aided machine translation, and autonomous translation. This phased structure highlights historical developments while offering projections for the future.

The study also dealt with interpreting educational needs arising from these trends. By analysing their impact on the translation profession, specific areas requiring changes in education were identified, leading to recommendations tailored for academic institutions. To enrich the discussion, the article examined the limitations of Slovakia's higher education system in this context and drew lessons from other countries that have undergone similar transformations. These inputs helped shape a comprehensive view of the implications of industry changes on education.

This methodological approach combines theoretical analysis with practical market insights, forming a basis for recommendations relevant to education and professional development for language specialists.

Translation Eras and Automation Phases

The development of translation can be divided into two main eras: classical human translation and the era of translation automation. Translation automation is further divided into the following phases:

Digitisation of Translation (1980s): The introduction of computers, text editors, and electronic dictionaries enabled translators to work more efficiently while retaining complete control over the process.

Computer-Assisted Translation (CAT): Implementing translation memories and terminology databases in the 1990s revolutionised the process, allowing previously translated texts to be reused, accelerating workflows, and reducing costs.

Mass Translation (2006): The launch of Google Translate made translation accessible to the masses, enabling translations for individuals who could not afford traditional services. This phase expanded the availability of translation to previously underserved areas. AI technologies, particularly neural machine translation (NMT), have enhanced translation speed and accuracy, altering the translator's role to that of an editor or proofreader (Łukasik, 2024).

Human-Aided Machine Translation (Post-Localization Era, 2022): The advent of large language models like ChatGPT and their integration into localisation processes shifted the demand for traditional translation services. Firms offering technological solutions and localisation management dominate the market. The rise of generative AI has prompted a need for translators to acquire new skills, including post-editing and machine-reading, to remain relevant in the profession (Wang, 2024).

Autonomous Translation (Projected for 2035): Future technologies are expected to eliminate language barriers, minimising the need for human translators, except in specialised fields such as artistic and certified translations.

Discussion

The discussion explores the multifaceted impact of technological advancements on the translation industry and their implications for language education. One significant shift is the changing role of translators, driven by the transition from manual processes to full automation. Technologies like Google Translate and large language models (LLMs) have democratised access to translation, leading to a decline in demand for traditional translators in certain market segments. Instead, the focus has shifted toward tasks like post-editing machine translations and managing localisation projects. This transformation has also spurred the adoption of hybrid translation models, where humans refine machine-generated outputs. While these models enhance efficiency, they demand new skill sets that differ significantly from traditional translation practices.

The challenges faced by language education systems in keeping pace with these industry changes are notable. Many university programs continue to emphasise classical translation methods, neglecting courses on contemporary technologies such as machine translation, LLMs, localisation project management, or post-editing. This gap leaves graduates ill-prepared for the evolving market demands. Additionally, financial and technical barriers, including insufficient funding for modern technology and inadequate training for specialists, further hinder universities' ability to adapt. Undergraduate programs tend to focus on broad linguistic and cultural education, while graduate programs often fail to provide advanced specialisation in cutting-edge translation technologies, diminishing graduates' competitiveness in the workforce.

Despite these challenges, opportunities exist to reform and modernise education. Introducing courses that develop technological skills, such as using AI tools, managing

localisation processes, and integrating translation technologies into commercial projects, can significantly enhance students' preparedness. Research indicates that AI-assisted learning improves outcomes, underscoring the importance of AI-friendly curricula. Furthermore, universities should prioritise areas less susceptible to automation, such as artistic and certified translation, to equip students with niche expertise. Collaboration with the industry is also essential, as partnerships with translation firms and technology companies can offer practical experience and expose students to real-world conditions. By aligning academic training with the needs of the evolving translation landscape, education systems can better prepare graduates for an AI-driven future.

Conclusion

The translation industry's ongoing transformation presents both challenges and opportunities for individuals and institutions. To thrive in this new landscape, a proactive approach is essential. Educational institutions must not only revise curricula to integrate AI, localisation management, and hybrid translation practices but also foster interdisciplinary collaboration, blending linguistic expertise with technological skills. This integration will ensure that language specialists remain at the forefront of innovation while maintaining the human touch that machines cannot replicate.

Moreover, institutions should emphasise lifelong learning, equipping professionals with the tools and mindset needed to adapt to evolving technologies continuously. Partnerships with industry stakeholders can play a pivotal role in bridging the gap between theoretical knowledge and practical application, enabling students to gain hands-on experience with cutting-edge tools and real-world scenarios. Governments and policymakers should also invest in modernising educational infrastructure, ensuring equitable access to advanced resources and training for all learners.

Ultimately, the future of the translation industry will rely on the ability of professionals to position themselves as indispensable collaborators with AI, leveraging technology to enhance creativity, efficiency, and cultural sensitivity. By embracing these changes and cultivating a culture of innovation, the translation industry and language education cannot only adapt to the AI age but also redefine their roles in a rapidly globalising world.

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Rediscovery of Innu Past in the Contemporary Canadian Literature

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Abstract

Since 2019, we have been observing an interesting phenomenon in contemporary Canadian literature, it is a rediscovery of the indigenous Innu past through literary stories. We cannot claim that this topic was not present before, but nowadays it is acquiring more attention and has also attracted increased interest from readers. The aim of the paper is to look deeper at a social-critical dimension and cultural memory kept in a chosen book Kukum by Michel Jean, and to depict a deeper layer of the Canadian cultural landscape.

Keywords: Canadian literature, Kukum, identity, cultural landscape, literary landscape

Introduction

Contemporary Canadian, more precisely Quebec literature is unknown to many European readers. Until now, it has been on the margins of literary space, but since 2021 we have been observing a renewed interest in indigenous topics, and now it seems opened to a wider global audience. Already in 2011, the book of Naomi Fontaine *Kuessipan* gave a new voice to writers who deal with the Innu past. Today, in addition to her and Michel Jean, it is also authors such as J.D. Kurtness, V.P. Bordeleau or I. Picard, but also many other authors reveal the hidden aspects of cultural memory. However, the breakthrough book that helped to make autochthonous literature more visible outside of Canada is *Kukum*.

Indigenous literature

The most significant aspect of indigenous literature is that it pushes boundaries of the contemporary literature, one could say that it builds on the theme of internal exile and migration, but it is more about discovering the cultural memory of the community, lost identity, and trauma. Some call it "roman de terroir, fr." (Danard, 2023: 81), or *"roman de néoterroir, fr."* (Archibald, 2012: 16). Terroir is more than a territory, it is a land, a landscape composed of many cultural layers (Pecnikova, 2023). At the centre of the story is a *"retour a*

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la terre, fr.*"*, i.e. a return to the land, the landscape as a space for life. It could be said that in literature we observe the discovery of a forgotten cultural landscape, a territory that was here before other cultures began to dominate.

According to Danard (2023), the Quebec indigenous literature is characterised by: the *"démontréalisation*, fr.*"* focused on the periphery which means to look "out of Montréal city" at the periphery; as well as on the telluric lyricism aimed at the return to the land, to specific symbols, associated with a certain form of nostalgia, or melancholy, the rediscovery and revival of the landscape. The third sign is the local (vernacular) language, associated with an emphasis on orality and linguistic variety. It is a language composed of special expressions that carry important cultural manifestations associated with identity while the title *Kukum* means grandmother in the Innu language.

> "Innu-aimun is not an easy language to learn. It has only eight consonants, seven vowels, and fifteen distinct sounds, so the inflexion given to a term can change the meaning in a subtle or profound way. There is no written form, no linguist to analyse meaning. No feminine or masculine. There is only animate and inanimate. At first, I stumbled constantly and made no headway no matter how hard I tried. Eventually, I understood that it is not just a different language from French but a different way of communicating." (Michel, 2019: 53)

Even though the story of the *Kukum* is not primarily based on the traumatic past of the indigenous people of Canada, it opens and raises the question of the relationship between memory and culture. It brings a deeper look at the identity roots of the ethnic Canadian minority, made up of the First Nations, Métis and Innu. One of the descendants of the indigenous people of Canada is also the author of the book.

Michel Jean, a Quebec, autochthonous, French-speaking journalist, dedicated *Kukum* story to his great-grandmother. The success of the book may be also linked to his personality since he is one of the popular personalities in the Canadian media space. He is the holder of the *Prix Bibliothèque et Archives Canada* in 2023 for the creation and promotion of the cultural, literary and historical heritage of Canada. His great-grandmother, Almanda Siméon, who is the narrator and the main character of the novel, is a woman who married an Innu. It is her narrative voice that accompanies us through the happiness of her love story to the fatality and tragic future of people who are losing their territory

Néoterroir or neo-territory

The theory of neo-territory can be found in the work of Samuel Archibald from 2012. He claims that this is a phenomenon that we can observe in contemporary Quebec literature and is associated with a return to traditional life, to the landscape as a living space. "Indigenous territories are rehabilitated not as an inert and inanimate landscape, but as a living space,

anthropised and thus capable of hosting a diegesis[4]" (Danard, 2023: 84). It is the fact that the story is told by *"une blanche, fr."*, a white woman Almanda that gives the story a different perspective. The rhythm of life, which is governed by nature, the nomadic way of life associated with hunting in winter, as well as destinations such as Lac Saint-Jean or lac Péribonka create a unique scenery, a dynamic space that is also part of the plot.

> "Every stroke of the paddle distanced me from one life and pulled me deeper into another. As someone who found it easy to talk. I was learning to listen to this world, both new and old, and become one with it. Rivière Péribonka runs almost due north. The red and yellow leaves injected touches of colour into the screen of greenery that boxed the river in. As the temperature dropped, the water took on dark-blue hues." (Michel, 2019: 35)

The landscape has an important place in the story, it is not only the space in which the action takes place, but it itself is an important part of it. The land operates in two axes. The first axis of the plot is the story as such, which adapts to the movement of the heroes; the second axis is equally important, it is the trajectory of the Innu people over the years, marked by changes in the territory they consider their home. The story helps us uncover the heritage of a territory that becomes a literary landscape. This literary space (*espace littéraire*, fr.) is very realistic thanks to the storytelling style. The author uses allofiction (Pecnikova-Rackova, 2023) that supports the telluric lyricism.

The loss of landscape is the key point of the story. *"A cultural landscape can be perceived sensually or spiritually. Connecting a land with art, memory, and identity opens the possibility of a new perception of a certain place as a cultural landscape."* (Pondelikova-Tokolyova, 2023: 75). It is a turning point that disrupts a peaceful flow of the story. The cultural landscape for the Innu does not mean land ownership, as we know it, and it is not important. From their perception, the earth is the place to which they belong, which nourishes them, forms their culture, symbolism, and roots. That is why the loss of Innu identity is associated with uprooting from the territory, which has had tragic and traumatic consequences.

> "My children were born in the woods. My grandchildren grew up on a reserve. The former were educated on the land, the latter in a residential school. When they returned, they spoke French. The white priests forbade them from speaking Innu-aimun and even punished those who did. Another tie had been severed between the generations. They thought that by robbing our children of their language they would make them white. But an Innu who speaks French is still Innu. With yet another wound." (Michel, 2019: 172).

The plot of the story brings an authentic view on the life of the Innu, the poetics of the story is maintained through language and the use of words in the language Innu-aimun, so the reader can see the world of the Innu also through language. Again, it is the land and the territory that dominates the words in this language. The lifestyle of the Innu was filled with danger, hunting, processing of animals, difficult living conditions in a real nature. But their

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[4] Quote in the original version: Les territoires autochtones sont réhabilités non pas en tant que paysage inerte et inanimé, mais en tant qu éspace de vie, anthropisé et ainsi susceptible d áccueillir une diégese.

culture, storytelling, dancing, and eating together helped them maintain community, traditions, and rituals.

> "I loved listening to those epic tales since they helped me understand both nature and the world. The characters could be either funny or frightening, and the stories often changed depending on the person who told them." (Michel, 2019: 113)

When looking at the scientific literary analysis of the work, we observe a lack of methodology or other scientific-critical texts, as the main topic goes beyond postcolonial methods (Smith, 2012). An equally new approach is to define a neo-territory as a return to a certain way of livelihood associated with the cultural landscape. The Innu had an entire culture based on a lifestyle associated with land, but not with its ownership. Their identity was symbolically linked to the space, to which they attributed certain, unknown to us, values.

It is precisely the fact that *Kukum* brings us to territories that no longer have their original form but have been preserved in the memory of the author's hero, that he is able to reinterpret this space associated with the disappeared culture of his ancestors. The power of the work is complemented by the narrative of a woman who observes changes and reacts to them, in the spirit of the culture she has embraced.

Almanda

In the second part of the paper, we focus on the main character of the book, Almanda, and her perception of the literary cultural landscape, which depicts the finding and loss of Innu identity.

Almanda was an orphan who was raised by her uncle and aunt. They lived a very modest peasant life. Almanda went to school, where she had good grades, and she learnt to read. She also attended church and helped with housekeeping and farming. One day, she met Thomas, sailing on the river. After a brief acquaintance, she decided to marry him and accepted his culture. She was only 15 years old; Thomas was 18.

> "Have you gone mad, Almanda?" My aunt was a humble, hard-working woman. I had never before heard her raise her voice as she had just done. "You are not going to marry an Indian. Do you know what it' s like for them? They have a hard go of in the woods. You are not used to that kind of life. It makes no sense, my girl." (Michel, 2019: 19)

Despite the opposition of her foster parents, Almanda married Thomas. They went to live with Thomas's family by the Péribonka River. They lived in a tent from there they went hunting. Apart from the fact that Almanda did not speak the language, she did not know how to hunt with a rifle or clean hunted animals. Nevertheless, the story is written with enthusiasm. The reader has the feeling that Almanda has fallen in love with the new environment and territory.

> "I tried as best as I could to describe the feeling of freedom that had washed over me the minute we set our canoe in the water. My sister-in-law saw the happiness on my face and in her

brother's eyes. Love is something everyone can understand, no matter the language in which it is expressed." (Michel, 2019: 40)

Almanda fully adopted the life of the Innu. Even though it is a hard life that requires a lot of physical and mental resilience, the identity of the Innu is portrayed in detail in the story. It is based on many symbols, and stories that are passed down from generation to generation. Almanda had to deal with Thomas's long hunts when it was not clear whether he would return. She had to reconcile with the loss of a child to later bring another one into the world. Her life was completely determined by the rhythms of nature, sun, snow, and rain.

What she did not expect, was the dramatic arrival of a civilisation that started harvesting trees around their territory. Regardless of the destruction of natural resources, a destruction of a unique culture started. The author does not criticise but describes the tragedy and trauma of the Innu community, whose space was taken away. The story is not again the modernisation, but it is the way and tools that are not appropriate. Suddenly, the Innu were moved to places where they didn't know what to do. Their children were taken away for re-education, and many disappeared forever. No one was able to treat them socially equally. Many Innu began to drink alcohol excessively, and domestic violence increased. People who used to survive in the harsh conditions of nature had lost the meaning of being.

Almanda could not stay non-active, and as an old lady took the bold step of going directly to the Prime Minister to tell him how they live. It was a cry into the dark, from a woman who was not born as an Innu but became Innu. Many of her children were already accepting a new life, but she fought resolutely for the world that was disappearing.

> "Many sought refuge in alcohol. Can you blame them for wanting to numb the pain? Some tried to farm the surrounding fields. They made for strange farmers. Some worked as guides for outfitters. Like Thomas, Daniel, and my sons on a luxurious property in Parc des Laurentides. Helping rich strangers bring hunting trophies back to Chicago, New York, or somewhere in Michigan was humiliating work, but at least they were out in the woods. Others got hired onto lumber camps, where they were given small, poorly paid jobs that boiled down to helping the very loggers who had dispossessed them. Those men came back broken." (Michel, 2019: 158)

Almanda could not change the course of the world, but she helped to pay attention to issues related to the status of the Indigenous population of Canada.

Allofiction

As we reported in our study in 2023, where we focused on literary creation with elements of autobiography in the novel written by Amélie Nothomb, the concepts of autofiction and allofiction are quite new in contemporary literary studies. Autofiction as a term has appeared in contemporary literary studies since the late 1970s and is seen as a universal literary phenomenon.

Autobiographical traits in novels are often an important part of stories (Javorčíková-Zelenková, 2020). If the story is written by another author, who is related to the main

character, and tells the story, we speak of allofiction. *Kukum* is a retrospective novel, the narrator is a great-grandmother of the author. He gave the voice to her story. It may contain fictional features, but for the reader, the task of distinguishing reality from fiction is not important and remains a mystery.

The allofiction in the novel goes beyond conventions with very authentic language, and the book also contains photographs that support the factual character. A story of family, which has been marked by the transformation of society, may sound like a memento or rather a reminder of the importance of preserving diversity. Especially nowadays, when many societies tend to stereotype and prejudice. The allofiction style can also highlight the missing memory of the place and people.

Kukum means grandmother in the Innu language. She was a woman of importance with her experience. She was the one that told stories about a world that no longer exists. The one that became Innu. Unlike the others, she was one of the few who could read and wanted her children to be able to read as well. She was not against progress, but she was against the way in which and how insensitively that progress was made.

The author wrote a tribute to a woman from his family but also looks at broader social problems. Progress caught Innu unprepared, and took in the land, the meaning of life. He draws attention to discrimination, to the fact that many found themselves completely at the bottom of society, violence was spreading, children were transported for re-education, and the life of the Innu was worthless. However, the story was also full of enthusiasm, leading to the understanding that the land is much more than just "space". And despite life circumstances that they cannot influence, it is up to them how they create their own identities.

Conclusion

Literature that deals with the indigenous population and returns to the landscape is something that pushes the boundaries of current literary trends. The relationship between memory and landscape is presented in the identity of descendants and is a topic that goes beyond the borders of Canada. Although it is a novel whose primary goal is not to criticise society, it is rather a side effect of reading the story. The authenticity of the story is guaranteed by the narrative voice of a woman who writes through her great-grandson, her story full of fatality, love and tragedy. She could survive in the wilderness, the cold in a tent, or the death of his loved ones, but she could not watch the end of the Innu culture, connected to the landscape.

It is a return to the land, the neo-territory that is therefore one of the very valuable images that the story brings. A land that has more than physical meaning, a land that no one must own. And how it turns into a source of finance and wood before her eyes. It is also a deep insight into a kind of cultural landscape that is taking on a literary form.

However, it is also an allofictional book, we do not want to add factual or documentary value to it. The language, the style and the content make it very realistic, and its relevance lies in the fact that it brings a dignified place for the identity of those who faced prejudice and discrimination.

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Machine Translation and its Limits

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Abstract

The given paper explains the role of machine translation (MT) as a modern communication tool and focuses on its limits. While MT is widely used by general language users for quick translations, it has also become an essential aid for professional translators in their CAT tools. The paper examines key factors influencing MT quality, including the machine translation system, language pair and direction of translation, source text (domain and style), and pre-editing and post-editing in improving MT output. The study highlights the role of MT in providing cost-effective solutions for translation agencies while maintaining adequate quality. However, it emphasizes the necessity of human intervention in MT output revisions, especially in high-quality or specialized content. The findings suggest that while MT is a valuable tool, human intervention remains crucial for optimal translation results.

Keywords: machine translation, machine translation output, factors, quality

Introduction

Translation – essentially defined as a form of bilingual communication – has been continually developing since its origins many centuries ago. The first recorded translation, depicted on the Rosetta Stone in 196 B.C., differs significantly from modern human translations in aspects such as form, content, type of style, way of delivery, and purpose. Over time, various attitudes toward translation have been applied, reflecting different theoretical approaches: linguistic (Nida, 1964; Catford, 1967), descriptive (Toury, 1980, 1995), functional (Reiss and Vermeer, 1989, 2000), cultural (Bassnett and Lefevere, 1990), and interdisciplinary (Snell-Hornby, 1988). These approaches aim to identify and address translation challenges by analysing the factors influencing translation and proposing effective strategies and solutions (Kvetko, 2021).

Hatim and Munday (2004) identify two perspectives from which translation can be analysed: as a process, referring to the activity of converting a source text (ST, the original) into a target text (TT, the translation), and as a product (the translated text). They define translation as an act of communication which attempts to relay – across cultural and linguistic

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boundaries – another act of communication (which may have been intended for different purposes and different readers). These perspectives are also central to translation quality evaluation, which focuses on the transfer of meaning (comprehension), adequacy, and fluency. To achieve these, the translator must consider linguistic, pragmatic, and socio-cultural differences between source and target texts. During their work, translators frequently encounter unfamiliar concepts, forms, and linguistic structures, challenging them to convey these elements within a different cultural context (Pondelíková, 2022). Hurajová et al. (2024) argue that AI-powered tools are pivotal in improving bilingual communication by supporting translation tasks. These tools, while not a substitute for human translators, provide a dynamic resource also for teaching and learning languages in a personalized and effective manner.

Machine translation

When considering machine translation (MT), the situation differs. The primary aim of MT – a system that automatically translates text from a source language (SL) into a target language (TL) – is to efficiently produce high-quality output without human intervention (Munková, 2017). In recent years, significant progress has been made in integrating MT into computer-assisted translation (CAT) tools (software applications used by human translators during the translation process). These advancements have shifted the focus from human-assisted machine translation (HAMT) to machine-assisted human translation (MAHT). Unlike the early MT research paradigm, machine-assisted human translation emphasizes the central role of humans in the translation process (Vieira, 2019).

The most compelling arguments for the use of modern technologies – such as MT and CAT tools – are productivity, cost savings, and quality (Lagoudaki, 2006; O'Hagan, 2009; Wheatley, 2003). However, when evaluating these factors, it becomes evident that they are not well-balanced, particularly in terms of translation output quality. Thus, we agree with Chan (2018) that despite rapid advances in modern translation technologies, human intervention in machine translation remains indispensable. The human role primarily involves post-editing (revision of machine translation output after machine translation process) or pre-editing (revision of the text before machine translation process).

Machine translation approaches

There are several approaches to machine translation. The most well-known are:

Rule-Based Machine Translation (RBMT) is based on linguistic analysis. It requires a wide range of grammatical rules, further analysis and representation of the meaning of the source text (ST), and the synthesis (generation) of its equivalent in the target text (TT). The representation must be lexically and structurally unambiguous.

Corpus-Based Machine Translation (CBMT) is not based on grammatical rules but on aligned bilingual corpora. These corpora, stored in machine-readable form, consist of written

texts. CBMT includes two main approaches: Example-Based Machine Translation (EBMT) and Statistical Machine Translation (SMT).

Example-Based Machine Translation (EBMT) uses existing translations to create new ones based on previously translated examples or sentences, making bilingual corpora essential. These corpora contain repeated translations of sentences that can either be reused in their full form or automatically segmented by the system, combined, and applied in various ways. EBMT systems are trained by using examples.

Statistical Machine Translation (SMT) approach is generally similar to the Example-Based Machine Translation (EBMT) approach, as both rely on statistical principles. These systems:

1. acquire a translation model and a target text model,

2. decode the source segment (usually a sentence) and identify the most probable equivalent (target sentence).

The disadvantages of SMT lie in the training process, which requires a large database of aligned source and target texts. Additionally, issues may arise when a single word corresponds to multiple words, or vice versa, and in cases where idioms or words in the source text (ST) have no direct equivalents in the target text. While SMT performs well at the phrase level, its fluency is often insufficient.

Neural Machine Translation (NMT) is based on a large neural network. It is conceptually straightforward but requires adaptation to a specific domain (field of knowledge). NMT considers a sentence as a unit, finding associations between phrases and sentences rather than translating word by word. Instead, it processes and translates the entire sentence as a whole unit. NMT has demonstrated positive results in translation tasks, particularly from English to French and English to German (Munková, 2017).
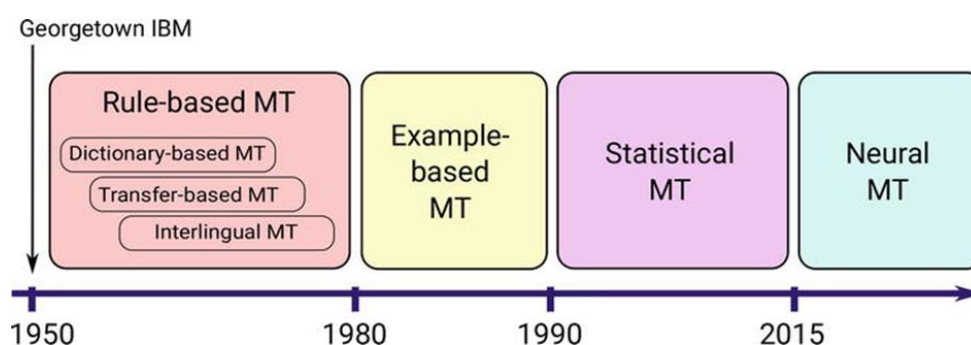

Figure 1: Different approaches to machine translation.

Factors affecting machine translation quality

In general, the quality of machine translation depends on the following factors:

1. machine translation system (the approach used and the extent of its training)

2. language combination and translation direction

3.   source text (domain and style)

4.   pre-editing and post-editing

Machine translation system

In addition to modern generative machine translators, several freely available machine translation systems are currently in use, such as Google Translate, Systran, Yandex Translate, and Bing. Additionally, some machine translation systems have been specifically "trained" by companies for their own purposes, such as eTranslation (the MT system developed for the European Union). In many cases, the quality of machine translation output depends on the system chosen for a particular translation purpose.

Google Translate (GT), launched in 2006, is a multilingual machine translation system operated by neural networks and developed by Google. It is used to translate texts, documents, and web pages between languages. When translating, GT searches for patterns in millions of documents that were originally translated by human translators. In November 2016, Google shifted its approach from Statistical Machine Translation (SMT) to Neural Machine Translation (NMT), significantly improving the fluency and accuracy of its translations. Initially, NMT was available for only a few languages, but by March 2021 it supported translations to and from 109 languages and translates over 100 billion words per day.

Systran (launched in 1968) was developed by one of the oldest companies specializing in automatic translation tools. Today, Systran provides translation technology for platforms such as Yahoo!, AltaVista (Babel Fish), and most language combinations used in Google's tools. Commercial versions of Systran are supported on MS Windows, Linux, and Solaris operating systems. The system delivers effective translations between analytic and synthetic languages and is available for 55 languages (Mačura, 2007). Systran now also operates on neural network technology.

Yandex Translate (launched in 2011) was developed by the Russian company Yandex. It currently supports the automatic translation of texts, web pages, documents, and images into 98 languages, including languages not available in Google Translate (e.g. languages spoken by Russian minorities). In September 2017, Yandex Translate adopted a hybrid approach that combines statistical and neural machine translation models. The platform allows users to input up to 10,000 characters at a time (equivalent to more than five standard pages). It also features a quality assessment tool that suggests revisions for incorrect translations. In addition to written translations, it can translate voice messages.

When testing the quality of machine translation outputs on publicistic texts by Google Translate, Systran and Yandex Translate, we come to the following conclusions:
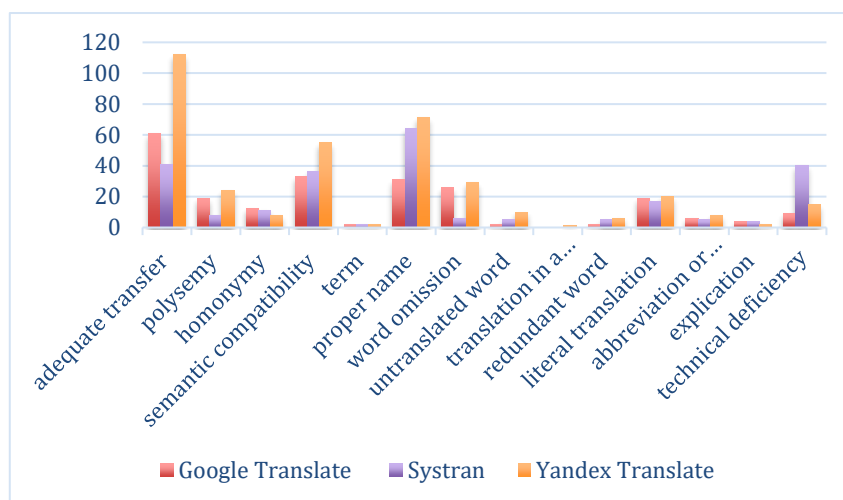
Figure 2: Number of errors in lexical semantics category by Google Translate, Yandex and Systran.

Based on the results, we can conclude that the most successful machine translator among the three evaluated systems was Google Translate (GT), which had the fewest errors. The number of mistakes in each category is displayed in brackets in the following order: Google Translate (GT), Yandex, and Systran: *adequate transfer* (61/41/112); *polysemy* (19/8/24); *homonymy* (12/11/8); *semantic compatibility* (33/36/55); *term* (2/2/2); *proper name* (31/64/71); *word omission* (26/6/29); *untranslated word* (2/5/10); *translation in a different language* (0/0/1); *redundant word* (2/5/6); *literal translation* (19/17/20); *abbreviation or symbol* (6/5/8); *explication* (4/4/2); *technical deficiency* (9/40/15). GT was successful in translating *proper names* and in the category of *semantic compatibility*. It showed minimal or no errors in categories such as *technical deficiency*, *untranslated word*, *redundant word*, and *translation in a different language*. However, its main weakness was in the category of *homonymy*.

The research indicates that Yandex Translate has achieved average results compared to the other systems. It performs relatively well in the categories of *adequate transfer* and polysemy but has the highest number of errors in the *technical deficiency* category.

The least successful machine translator was Systran, which demonstrated deficiencies in nearly all categories, with the exception of *homonymy* and *technical deficiency*. Notably, the only occurrence of *translation in a different language* was observed in the MT output of Systran.

Language combination and direction of translation

The second major factor affecting the quality of machine translation output is the language pair — the source text language (SL) and the target text language (TL). Clearly, not all machine translation systems are equally effective for every language combination. Since the implementation of the neural machine translation (NMT) approach, researchers have reported significant success in language combinations such as English–French and English–German, especially in these translation directions (Luong et al., 2015; Jean et al., 2015). In

terms of language typology, these translations were carried out between two analytic languages.

In our research, we found that the main challenge lies in translating from English to Slovak, i.e., the transfer from an analytic language (English) to a synthetic language (Slovak). The following examples illustrate the issues:

Slovak (SVK): **English (ENG)**:

chodím (chod-ím) *I go*
študenta (študent-a) *of the student*
nepôjdu (ne-pôjd-u) *they will not go*

The analytic form *I go* (2 words in English) is expressed by the synthetic form *chodím* (1 word in Slovak), just as the structure *of the student* (3 words in English) has the equivalent *študenta* (1 word in Slovak) (Dolník, 2013). The four-word structure *they will not go* (4 words in English) is translated as *nepôjdu* (1 word in Slovak). It is evident that grammatical categories are expressed in a different way: they are reflected in different morphemes (as highlighted in the examples), structures, and the number of words.

Another significant factor influencing the quality of machine translation output in the English–Slovak language pair is the number of verb tenses in each grammar system. Slovak has three verb tenses, while English has six simple temporal verb forms, which can also be combined with progressive forms (e.g. *I work*, *I am working*; see Dušková, 2012).

According to Ondruš and Sabol (1984), Slovak is characterized by numerous forms and morphemes, including derivational affixes that modify word bases, as well as word modifications that express different grammatical categories (e.g. gender, number, case), often using a single formal feature. For example, the morpheme -u in the form *žen-u* (the form woman in the accusative case) reflects feminine gender, singular number, and the accusative case. In synthetic languages, common phenomena such as synonymy and homonymy of case affixes are typical.

Slovak: **English**:
present *hliadk- u-jú* present simple *they patrol*
past *hliadk-oval-i* past simple *they patroll-ed*
future *budú hliadk-ova-ť* simple future *they will patrol*
present perfect *they have patroll-ed*
past perfect *they had patroll-ed*
future perfect *they will have patroll-ed*

It is not only the language combination but also the direction of translation that affects the success rate of machine translation (MT). This is closely related to the previously mentioned gaps between English and Slovak – two typologically different languages.

For example, when using a Slovak source sentence *Deti sa už spolu hrali* for MT, the resulting English target sentence is *The children were already playing together*, which

represents an incorrect transfer. However, when using the English source sentence *The children have already played together*, the Slovak MT output is *Deti sa už spolu hrali*, which represents a correct transfer (as accessed on Google Translate, 7/11/2024).

It should be noted that machine translator systems do not understand the source text and cannot analyse its meaning. The transfer is performed automatically based on a set of algorithms. Our research has shown that additional issues arise when dealing with various linguistic phenomena that reflect different language typologies (e.g. extended verb phrases, word order, morphemes, etc.).

The results of widespread research on machine translation in Slovakia indicate that the quality of MT output is strongly influenced by the language combination. MT tends to perform better in combinations involving analytic languages (e.g. English–German) than in combinations involving analytic and synthetic languages (e.g. English–Slovak). The direction of translation (English–Slovak vs. Slovak–English) also impacts the results, as demonstrated in the examples above.

In MT, human intervention, represented by pre-editing and post-editing, is irreplaceable. The human editor, revisor, or translator is the only factor who can reliably identify and eliminate errors, thereby improving the quality of MT output. For more details, see Welnitzová (2020, 2021a, 2021b, 2023) or Welnitzová and Munková (2021a, 2021b).

Source text (domain and style)

According to Munková (2017), the character and quality of the source text – considering its syntax, domain, and terminology – significantly affect the post-editor's performance, and MT output correlates with MT input.

When discussing machine translation, it is important to highlight the fact that not all styles and texts are suitable for machine translation transfer. Munková and Munk (2016) argue that using an MT system that was not designed for a particular style or type of text often results in meaningless or even absurd translations. Transfer can fail in the following components: correctness of facts, syntactic structure, or adequate expression. Other authors (Ive et al., 2018; Way, 2018; Knowles et al., 2019) acknowledge that MT systems can be applicable for translating legal documents or texts intended for publication, but in both cases, human intervention (post-editing) is crucial when checking and revising MT outputs for accuracy (Lesznyáková, 2019).

ST: He knows, he knows what he must do, and he is too old, too broken and his innocence far too lost to feel regret for it.

NMT: *Vie, vie, čo musí urobiť, a je príliš starý, príliš zlomený a jeho nevinnosť príliš stratila, aby sa cítila ľútosťou.* (NMT output retrieved on 10/2020)

Vie, vie, čo musí urobiť, a je príliš starý, príliš zlomený a jeho nevinnosť príliš stratená na to, aby to ľutoval. (NMT output retrieved on 6/2022)

Vie, vie, čo musí urobiť, a je príliš starý, príliš zlomený a jeho nevinnosť príliš stratená na to, aby to ľutoval. (NMT output retrieved on 11/2024)

HT: *Vie, čo musí spraviť. Je už taký starý a príliš zlomený, jeho nevinnosť dávno stratená na to, aby cítil nejakú ľútosť.*

Note: the given segments are marked as follows: ST – source text, NMT – neural machine translation, and HT – human translation (Source: Silver Pard, Eternal Return, www.fanfiction.net)

ST: The purpose of the present Act is to regulate foundations of criminal liability, types and imposition of punishments and protective measures, and bodies of criminal offences.

NMT: *Účelom tohto zákona je upraviť základy trestnej zodpovednosti, druhy a ukladanie trestov a ochranných opatrenia a orgány trestných činov.* (NMT output retrieved on 10/2020)

Účelom tohto zákona je upraviť základy trestnej zodpovednosti, druhy a výmeru trestov a ochranných opatrení a orgány trestných činov. (NMT output retrieved on 6/2022)

Účelom tohto zákona je upraviť základy trestnej zodpovednosti, druhy a výmeru trestov a ochranných opatrení a orgány trestných činov. (NMT output retrieved on 11/2024)

HT: *Tento zákon upravuje základy trestnej zodpovednosti, druhy trestov, druhy ochranných opatrení, ich ukladanie a skutkové podstaty trestných činov.*

Note: the given segments are marked as follows: ST – source text, NMT – neural machine translation, and HT – human translation. (Source: Act 300/2005 Coll. of 20 May 2005 Criminal Code)

When choosing an appropriate text for machine translation transfer, it is necessary to consider the following aspects: the specifics of the text (such as unambiguity, subjectivity vs. objectivity, the length and structure of segments – shorter and syntactically simple segments are transferred more successfully), the aim of the translation, the MT output's intended reader, and the post-editor (including how much time is needed to post-edit the MT output). Other important considerations include the quality of the MT output – if it is intended for publishing, post-editing is inevitable.

Many translation agencies offer the best price-quality ratio by using advanced translation technology combined with post-editing (revision of MT output by an experienced native speaker), meaning that the MT output does not need to meet the quality standards of human translation.

The specifics of the text are closely tied to the aim of the translation. Absolon (2018) distinguishes between high-visibility texts (those with significant potential financial impact, such as legal texts or product descriptions) and low-visibility texts (those that are of "good-enough" quality, such as emails or chats). While the latter may require little or no post-editing, high-visibility texts demand a higher quality of translation and full post-editing. He further argues that MT is suitable for non-perishable texts (texts for everyday use) that do not need extensive post-editing.

Pre-editing and post-editing

To increase translation productivity, translation agencies have been considering pre-editing and post-editing – completely new procedures that have not been widely applied in the translation industry until now.

According to Arnold (1994), pre-editing involves the adjustment or editing of the source text before machine translation transfer. Sentences should be: a) simplified and short, b) free of extra words, c) grammatically correct, d) logically arranged, e) with minimal ambiguity, and f) with minimal substandard expressions. Pre-editing ensures that source texts are more suitable for machine translation, leading to more adequate machine translation output, which in turn increases the productivity and efficiency of post-editing (Somers, 2003).

Table 1: Example of pre-editing (Quah, 2006).

Source text in English:	Pre-edited source text in English:
Let the water run hot at the sink and then pull the connector from the recess in the back of the dishwasher. Upon the completion of the above task, lift the connector to the faucet by pressing down the thumb release.	1 Turn on the faucet at the sink until the water runs hot. 2 Pull the connector from the recess in the back of the dishwasher. 3 Press down on the thumb release and lift the connector onto the faucet.

Allen (2003) defines post-editing as the correction or revision of machine translation output. In fact, post-editing is a specialized skill in which the post-editor attempts to preserve as much of the MT system output as possible, preferring editing over rewriting (or translating from scratch).

Table 2: Example of post-editing from the author´s own research.

Statistical machine translation output	Post-edited statistical machine translation output
Južné tichomorských ostrovov zákaz západnej nezdravé jedlo a ísť organické.	*Južné tichomorské ostrovy zakázali západné nezdravé jedlo a prechádzajú na organické.*
Lídri provincii Vanuatu chcú obrátiť na miestne ľudí a turistov od nezdravých dovozu v prospech lokálne pestovaných plodín a morské plody.	*Lídri provincii Vanuatu chcú odvrátiť miestnych ľudí a turistov od nezdravého dovozu v prospech lokálne pestovaných plodín a morských plodov.*

In post-editing, two main types are distinguished: full post-editing and light post-editing. Full post-editing is applied when the machine translation output requires "publishable" quality. The final content meets the quality of human translation, terminology is made consistent, and all grammar and style issues are corrected (according to RWS Moravia guidelines, retrieved on Nov 17, 2024). Light post-editing is used when the quality of MT output is lower and needs to be comprehensible. With light post-editing, the final content is comprehensible, but not optimized for style or fluency. Only the most significant grammar issues are corrected, and content is revised only when it is not understandable (according to RWS Moravia guidelines, retrieved on Nov 17, 2024).

The difference between human and machine translation is also reflected in the types of mistakes: in machine translation, the occurrence of spelling and typing mistakes is low. In contrast, human translation typically lacks mistakes in syntax and lexis (Nitzke, 2019).

Conclusion

Currently, machine translation is considered a successful aid in bilingual communication. It is mainly used by general language users, but it has also become a useful tool for human translators. The aim of MT is not to replace human translators (so far), but to contribute to a successful transfer between two languages. Many translation agencies are tasked with delivering translations that are cheaper, yet still comprehensible and of sufficient quality. For such cases, machine translation is an optimal choice. However, MT users and translation agencies should be aware of its advantages and disadvantages and consider the factors that primarily influence the quality of machine translation, namely the MT system, the languages used and the direction of translation, the text to be translated (domain, style), and finally the pre-editing and post-editing of the MT output.

Acknowledgement:

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Colors in Wim Wenders' Paris, Texas

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Abstract

The paper delves into the multifaceted function of colors in literature and film, with a special focus on Wim Wenders' 1984 film "Paris, Texas." The aim is to explore the significance of color beyond its aesthetic appeal, examining its role in conveying mood, character, and narrative. The methodology employed involves a semiotic analysis of color in literary texts from the Anglophone tradition and a filmic analysis of Wenders' visual language. Through a comparative approach, the article demonstrates that color operates both as a thematic device and a narrative tool in these media.

Keywords: colors, film, literature, comparative analysis, visual language, narrative

Introduction

Color plays a crucial role in the realms of literature and film, transcending its descriptive purpose to serve as a symbolic, metaphorical, and emotional device. The paper embarks on a comprehensive exploration of the multifaceted functions of color within these art forms, beginning with a theoretical foundation in the study of color in literature. Then it delves into specific examples of color symbolism in Virginia Woolf's "To the Lighthouse," Toni Morrison's "The Bluest Eye," and F. Scott Fitzgerald's "The Great Gatsby." Subsequently, the paper expands the discussion to the cinematic realm, highlighting the profound influence of color on narrative, mood, and thematic expression. It concludes with a detailed analysis of the color symbolism in Wim Wenders' film "Paris, Texas," illustrating the transformative power of color in visual storytelling. Through examining the interplay between color and various literary and filmic elements, we gain insight into the complex cognitive and emotional responses produced by color and its significant contribution to the interpretive process.

The first chapter provides a theoretical overview of the study of color in literature, emphasizing its role in symbolism, metaphor, characterization, and narrative structure. It demonstrates how color can encapsulate abstract concepts and manipulate mood, thereby enriching the meaning of literary works. Chapter two offers specific examples from the literary canon, showcasing the nuanced use of color in "To the Lighthouse" and "The Bluest Eye." By

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examining how blue and green are employed in these texts, the chapter elucidates the emotional and thematic depth that color symbolism can confer. In chapter three the focus shifts to the cinematic world, where color operates on psychological and perceptual levels, influencing viewer engagement and interpretation. It explores how directors manipulate color to create mood, signify temporal and spatial shifts, and draw attention to key elements of the narrative. Chapter four presents an in-depth analysis of the film "Paris, Texas," revealing the narrative and emotional functions of the color red, blue, and yellow within the film. This case study emphasizes the transformative power of color in visual storytelling and its ability to enhance thematic depth. All in all, the paper clarifies the profound significance of color across literary and filmic media, demonstrating that color is not merely an aesthetic choice but an integral component of narrative and thematic expression. Through the interdisciplinary lenses of linguistics, psychology, and semiotics, the article provides a rich understanding of the human experience as shaped by color.

Material and methods

The methodology used in the paper is primarily analytical and interpretive, drawing from various theoretical frameworks such as semiotics, psychology, linguistics, and film theory to explore the multifaceted functions of color in literary and cinematic narratives. The paper employs a comparative approach, examining color symbolism in specific literary works ("To the Lighthouse," "The Bluest Eye," "The Great Gatsby") and a film ("Paris, Texas"), to clarify the ways in which color serves as a narrative device, symbol, and metaphor. The analysis is grounded in several methodological steps:

The paper commences by laying the groundwork in the theoretical frameworks that underpin the exploration of chromatic representation within the realms of literary and cinematic discourse. It cites seminal works by Umberto Eco, Johannes Itten, George Lakoff and Mark Johnson, and Faber Birren to explain how color transcends descriptive functions and influences interpretation and emotional response. Furthermore, the paper conducts a detailed examination of the use of color in the chosen literary texts, focusing on how authors such as Virginia Woolf, Toni Morrison, and F. Scott Fitzgerald manipulate color to represent abstract concepts, enhance characterization, and shape the mood and atmosphere of their stories. Building upon the literary analysis, the paper extends the discussion to the cinematic realm by analyzing Wim Wenders' 1984 film "Paris, Texas." It examines how the film's color palette, particularly the use of red, blue, and yellow, serves as a narrative device to convey the emotional journeys of the characters and underscore the film's thematic elements of alienation, longing, and redemption.

The study integrates insights from different disciplines such as semiotics, psychology, and linguistics to provide a comprehensive understanding of the role of color in both literary and filmic storytelling. This synthesis allows for a nuanced exploration of how color functions across mediums, contributing to the interpretation of meaning and emotional engagement.

The paper also delves into the emotional and thematic implications of color in the chosen works, discussing how color schemes can influence mood, create symbolic connections, and reflect the psychological views of characters and their environments. Additionally, the research scrutinizes how color operates as a visual metaphor in both literature and film, contributing to the structural coherence of the narratives and guiding the audience's comprehension of key themes and motifs.

Drawing from color theory, the study considers the physiological and psychological effects of color on perception and emotion, explaining how filmmakers and authors use these effects to craft their narratives and manipulate audience response. The paper contextualizes the use of color within the historical and cultural settings of the analyzed works, such as the 1940s America in "The Bluest Eye" and the 1980s in "Paris, Texas," to understand how color symbolism is informed by and contributes to the representation of specific times and places.

Throughout the analysis, the paper engages with existing scholarly works on color symbolism, such as Laura M. Rigney's interpretation of blue in "To the Lighthouse" and Patricia J. McGee's study of blue in "The Bluest Eye," to provide a sufficient and informed discussion of color's significance. The paper concludes by synthesizing the findings from the literary and film analyses to underscore the importance of color in creating meaning and emotional depth in both mediums. It emphasizes the universal yet nuanced nature of color's communicative power and its ability to transcend linguistic and cultural barriers. The methodology is characterized by a close reading of texts and visual materials, a synthesis of various theoretical perspectives, and an interdisciplinary approach that bridges the gap between different fields of study. This methodological rigor provides a comprehensive analysis of color's role in literature and film, offering insights into the cognitive processes involved in interpreting narratives and the profound impact of visual language on the interpretive experience.

Color in Literature

The multifaceted role of color in literature has long been recognized and studied within the academic sphere. Far beyond serving as a mere descriptive element, color fills the intricate tapestry of human cognition and cultural symbolism, thereby transcending the confines of linguistic expression (Eco, 1976). Within the realm of literary analysis, the study of color has evolved into a nuanced field that examines its various functions in enriching narrative and thematic complexity. It is not only a vehicle for setting the scene or depicting physical attributes but it also serves as a powerful tool for symbolism, metaphor, and characterization.

Scholars have meticulously dissected the ways in which color operates within literary texts, revealing its profound influence on the interpretation and emotional resonance of a given work (Itten, 1970). As a symbolic agent, color can encapsulate abstract concepts, such as purity, passion, or decay, thus providing readers with immediate and universal markers to navigate the thematic landscape. For instance, white is often associated with innocence and

purity, as seen in the character of Snow White, while red symbolizes love, anger, or violence in a myriad of contexts.

Furthermore, color acts as a metaphor, allowing authors to imbue their prose with layers of meaning that extend beyond the literal (Lakoff & Johnson, 1980). In "The Great Gatsby," F. Scott Fitzgerald employs green as a metaphor for the intangible American Dream, visible across the water from Jay Gatsby's mansion, yet continuously out of reach. This vivid symbolism invites readers to engage with the text on a deeper level, exploring the complex interplay between hope, desire, and the realities of the human condition.

In the realm of characterization, color can be used to reflect mood of an individual, personality, or social status. Consider the iconic emerald dress of Gone with the Wind's Scarlett O'Hara, which not only evokes her fiery spirit but also signifies her position within the Southern aristocracy and her tumultuous romantic pursuits (Mitchell, 2022). Similarly, the white wardrobe of Herman Melville's Moby Dick's Captain Ahab symbolizes his relentless pursuit of the white whale, mirroring his own obsession and descent into madness (Melville, 2003).

Color also functions as a narrative device, guiding readers through the temporal and spatial dimensions of a story. For example, the shifting hues of the sky can indicate the passage of time or the changing seasons, while the consistent presence of a specific color can serve as a motif, weaving together different episodes and reinforcing the novel's overarching themes. In James Joyce's "Ulysses," the recurring motifs of colors, including blue, represent different episodes and moods, contributing to the novel's structural coherence and thematic depth (Joyce, 2025).

The emotional impact of color is another significant aspect of its use in literature, capable of evoking a spectrum of feelings from serenity to foreboding. It is often employed to manipulate mood and atmosphere, thereby immersing readers in the psychological state of characters and the environments they inhabit (Goethe, 1970). In "The Yellow Wall-paper," Charlotte Perkins Gilman uses the oppressive yellow color of the protagonist's room to mirror her descent into madness, creating a vivid and palpable sense of unease and entrapment (Gilman, 1981).

The study of color in literature reveals a complex interplay between the visual, the symbolic, and the emotional, demonstrating that color is an essential component in the creation of meaning and the evocation of response. By examining the multifaceted functions of color across different literary works and contexts, we can gain a deeper understanding of the cognitive processes involved in interpreting and evaluating narratives, as well as the cultural constructs that inform our associations with specific hues. This interdisciplinary approach bridges the fields of linguistics, psychology, and semiotics, offering a rich tapestry of insights into the human experience.

Examples of Color in Literature

The complex tapestry of color symbolism in literature serves as a profound tool for authors to convey the nuanced emotions and psychological landscapes of their characters. In Virginia Woolf's seminal work, "To the Lighthouse," color is masterfully employed to delineate the emotional undercurrents that flow beneath the surface of the narrative, particularly the hue of blue, which often emerges as a symbol of tranquility and introspection. This chromatic motif is not merely ornamental but rather an integral element of the text's thematic structure, contributing considerably to the reader's interpretive experience. Woolf's skillful use of blue, in particular, has been the subject of extensive scholarly analysis. As the critic Laura M. Rigney posits in her article "The Color of Time in To the Lighthouse" (PMLA, 2001), "Woolf's palette in this novel is rich and complex, and blue is the dominant color, which suggests a quest for knowledge, a yearning for the ideal, and the presence of the eternal" (Rigney, 2001, p. 287). This is evident in the way the color blue is intertwined with the contemplative moments of the characters and their longing for connection with the absolute and the infinite, such as the sea and the lighthouse that looms large in the novel's backdrop.

Toni Morrison's "The Bluest Eye," on the other hand, invests the color blue with a poignant metaphorical weight, capturing the protagonist Pecola Breedlove's desperate yearning for acceptance and beauty in a society that dehumanizes her. Morrison's narrative unfolds against the backdrop of 1940s America, where the destructive power of racial hierarchies and internalized oppression are starkly illuminated. In this context, blue becomes a potent symbol for Pecola's desire to possess the conventional standards of beauty, which she associates with the possession of blue eyes—a trait she perceives as a key to the elusive world of happiness and belonging. Critic Patricia J. McGee, in her study "The Color Blue in Toni Morrison's The Bluest Eye: A Symbol of Hope, Beauty, and Wholeness" (The Journal of Aesthetics and Art Criticism, 1984), argues that "the color blue, as a signifier of beauty and goodness, is ultimately linked to the characters' sense of self-worth and their capacity to overcome their oppressive environment" (McGee, 1984, p. 35). Through the color blue, Morrison dissects the complexities of race, beauty, and the pursuit of the unattainable, offering a searing commentary on the societal forces that shape individual identities.

F. Scott Fitzgerald's "The Great Gatsby" is another example of power of color symbolism to summarize abstract concepts, with the color green acting as a multifaceted emblem of the American Dream. In the novel, the green light at the end of Daisy Buchanan's dock represents the enigmatic and elusive nature of the Dream itself, forever out of Jay Gatsby's reach despite his obsessive pursuit. This symbol has been scrutinized by numerous scholars, with one noteworthy interpretation provided by Thomas A. Vogler in "The Great Gatsby as a Tragedy of Failure of Communication" (Vogler, 1968). Vogler argues that "the green light is the focal point of the novel, and the color green is the key to understanding the failure of the American Dream" (Vogler, 1968, p. 153). The persistent presence of green throughout the text underscores the pervasive theme of disillusionment and the futility of chasing after an ideal that is inherently unachievable.

Together, these literary instances emphasize the profound impact of color symbolism in shaping our comprehension of characters and their respective worlds. They serve as a testament to the interplay between visual representation and narrative, illustrating how color can transcend mere descriptive functions to embody deeper, more abstract concepts that resonate with readers on a profound emotional and intellectual level. Through the strategic use of color, Woolf, Morrison, and Fitzgerald not only enhance the aesthetic appeal of their works but also imbue them with a rich tapestry of meaning that enriches the interpretive process and invites readers to engage with the complexities of human experience.

Color in Film

The use of color in the cinematic realm is a profound and complex tool that extends beyond mere aesthetic enhancement, serving instead as a vital narrative component that can significantly influence viewer engagement and interpretation. In film, color operates on various levels, transcending its primary function of mimetic representation to assume a symbolic and expressive role that is intricately woven into the fabric of the narrative. Directors and cinematographers skillfully manipulate color palettes to construct visual motifs that resonate with audiences on a subliminal level, thereby reinforcing the thematic and emotional undercurrents of the story.

The significance of color in film is rooted in the psychological and physiological effects it has on the human perception, which has been extensively studied within the field of color theory. Researchers such as Faber Birren have posited that color can evoke specific emotional responses, which filmmakers often exploit to create mood and atmosphere (Birren, 1978). For instance, blue is frequently associated with calmness and tranquility, while red can signify passion, anger, or danger. This emotive potential is not lost on filmmakers, who deliberately employ such color schemes to obtain the desired emotional responses from viewers.

Furthermore, color serves as a signifier of temporal and spatial shifts in a film. Directors often use color grading to differentiate between past and present, fantasy and reality, or to highlight transitions in the narrative structure. This technique is exemplified in films such as "The Grand Budapest Hotel" (2014), where the director Wes Anderson employs a vibrant palette to distinguish the past from the more muted tones of the present, thereby emphasizing the nostalgic quality of the story (McDonald, 2015). Additionally, color can be used to define different settings or moods within a scene, as seen in the stark contrast between the bleak, desaturated landscapes of the dystopian society in the film "The Road" (2009) and the warm, inviting interiors that symbolize hope and refuge (McCarthy, 2006).

In terms of highlighting key elements, film theorists such as Kress and Van Leeuwen have argued that color can be used to direct viewer attention through visual framing and emphasis, thereby guiding the narrative flow and emphasizing specific themes (Kress & Van Leeuwen, 2006). This is evident in the strategic use of color in films like "Schindler's List" (1993), where the director Steven Spielberg utilizes a predominantly black and white palette, only to

introduce a girl in a red coat, thus humanizing the horrors of the Holocaust and making a permanent impact on the audience.

The language of color in film is indeed subtle but profound. It is a universal yet nuanced means of communication that transcends linguistic and cultural barriers, allowing for a more visceral and immediate connection with the viewer. As the renowned director Alejandro González Iñárritu eloquently states, *"Color is a powerful tool to manipulate the viewer's emotions and perception of the world you are creating"* (Iñárritu, 2014). Through the careful orchestration of color, filmmakers are able to craft a visual symphony that not only complements the story but also serves to amplify its emotional and thematic depth, thus contributing to the overall aesthetic and narrative power of a motion picture.

In summary, the academic discourse surrounding the role of color in film underscores its significance as a communicative tool that can be used to convey narrative, mood, and theme. By leveraging the psychological and perceptual aspects of color, directors and cinematographers create a visual lexicon that operates on a subconscious level to shape the viewer's experience and understanding of the film. The artful use of color palettes, contrasts, and motifs serves to enhance the storytelling process, making it an indispensable element in the cinematic art form.

The Function of Color in "Paris, Texas"

In Wim Wenders' seminal film "Paris, Texas" (1984), the strategic implementation of color serves as a powerful narrative device, meticulously crafted to convey the emotional landscapes of its characters and underscore the thematic elements of the film. Drawing upon the theoretical framework of chromatic semiotics and the psychological impact of color, this analysis will elucidate the multifaceted function of color in the film, particularly the significant roles of red, blue, and yellow.

The film's desaturated color palette, characterized by a predominance of red, blue, and yellow, is emblematic of the emotional aridity and existential weariness that pervade the lives of its characters. This visual aesthetic aligns with the concept of the "desert of the real," a term coined by philosopher Slavoj Žižek, which summarizes the desolate and disorienting nature of the American landscape. The muted hues are a visual manifestation of the emotional desolation experienced by the protagonist Travis (Harry Dean Stanton), a man grappling with the fragmentation of his identity and the disintegration of his family.

Travis's red jacket, a vivid splash of color against the bleak desert backdrop, is a salient example of the film's color symbolism. According to the psychology of color theory, red is often associated with intensity, passion, and vitality (Evans & Treisman, 2010). In the context of "Paris, Texas," the red jacket symbolizes the remnants of Travis's former life, a stark reminder of the vibrancy he has lost and the potential for redemption that still burns within

him. This crimson hue is a visual metaphor for the emotional turmoil he carries as he navigates through the barren terrain of his past and present.

The recurring motif of blue in the film, particularly in the form of the swimming pool, is equally significant. In visual semiotics, blue is frequently linked to depth, longing, and introspection. The deep azure of the pool mirrors the profound emotional chasms that separate the characters, notably Travis from his estranged wife, Jane (Nastassja Kinski), and son, Hunter (Hunter Carson). It acts as a reflective surface, both literally and metaphorically, encouraging contemplation and introspection. The pool becomes a liminal space, a visual representation of the submerged desires of the characters and subconscious thoughts.

Equally, the persistent yellow tint of the gas stations and the desert sun encapsulates the sense of weariness and isolation of the characters. Yellow, often associated with warmth and light, is here inverted to evoke a sense of desolation and fatigue. The harsh, bleached-out quality of the desert's yellow light emphasizes the stark reality of the characters' lives and their search for meaning in an unforgiving environment.

The narrative function of color in "Paris, Texas" is further illuminated by its evolution throughout the film. The gradual introduction of more saturated hues as the story progresses can be interpreted as a visual metaphor for the characters' emotional growth and movement towards reconciliation. The film's finale, suffused with vibrant reds, suggests a burgeoning sense of hope and renewal amidst the previously oppressive bleakness. This chromatic shift mirrors the emotional arcs of the characters, particularly Travis, as they confront their pasts and forge new connections.

The final scene, which unfolds against a backdrop of vivid red, is particularly evocative. Here, color is employed to signify a departure from the muted tones that have dominated the narrative, symbolizing a break from the cycle of despair and the potential for a new beginning. This culmination resonates with Goethe's color theory, where red is posited as a color of dynamism and transformation (Goethe, 1970). The stark contrast between the initial desaturation and the vivid reds in the film's closing moments encapsulates the transformative power of human connection and the possibility of healing.

In conclusion, the function of color in "Paris, Texas" transcends mere aesthetics, serving as a profound narrative and emotional tool. Through a careful orchestration of chromatic elements, Wenders constructs a visual language that complements and enhances the film's themes of alienation, longing, and the quest for redemption. The film's color palette is not merely a backdrop but an active participant in the narrative, revealing the inner lives of the characters and guiding the audience through their emotional journey. This masterful use of color exemplifies the significance of visual storytelling in cinema, underscoring the profound impact that aesthetic choices can have on the viewer's interpretive experience

Conclusion

To conclude the paper, the study of color in literature and film reveals an intricate and multilayered interplay between visual representation and narrative construction. Through meticulous examination of the symbolic and emotional resonance of color in seminal works such as "To the Lighthouse," "The Bluest Eye," and "The Great Gatsby," we have established profound role of color in shaping characters, conveying abstract concepts, and influencing the reader's or viewer's interpretive experience. Drawing upon the theoretical frameworks of semiotics, psychology, and linguistics, we have explored how color operates as a narrative device, symbol, and metaphor, transcending descriptive functions to embody deeper thematic and emotional layers. This interdisciplinary approach underscores the importance of color in creating meaning, evoking response, and bridging the gap between the visual, the symbolic, and the emotional.

In film, particularly in "Paris, Texas," color serves as a powerful tool for directors and cinematographers to manipulate viewer emotions and perceptions, thereby enhancing storytelling and thematic depth. The strategic use of color palettes, contrasts, and motifs in this film exemplifies the narrative and emotional power of visual language, contributing significantly to the viewer's engagement with the story. The analysis of color in "Paris, Texas" demonstrates how Wim Wenders employs a desaturated palette to reflect the characters' existential weariness, with red, blue, and yellow serving as visual cues for the emotional and thematic progression of the film.

The methodology of this research involves a synthesis of theoretical perspectives with detailed textual and filmic analysis, illustrating the significance of color as a communicative and interpretive device. The findings highlight the ability of color to transcend linguistic and cultural boundaries, thus enriching our understanding of the human experience and the complex cognitive processes involved in interpreting narratives. This study underscores the need for a nuanced appreciation of the role of color in literature and film, acknowledging its capacity to both reflect and construct our reality, and to profoundly shape the artistic and emotional dimensions of literary and cinematic works

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Women in Science and Technology

Bridging the Gap Between Recognition and Knowledge

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Abstract

Women have played crucial roles in advancing science and technology throughout history, yet their contributions have often been overlooked or marginalised. This research examines historical examples of outstanding yet unacknowledged women in science and technology and explores contemporary awareness of their achievements among students of humanities. The study was conducted at the Faculty of Arts, University of Ss. Cyril and Methodius in Trnava, Slovakia, with a research sample comprising 200 undergraduate and graduate students from various humanities disciplines, including Slovak language, philosophy, history, ethnology, psychology, and foreign languages. By analysing survey data collected from this diverse cohort, the paper assesses gender differences in recognition and knowledge of gender equality in STEM (science, technology, engineering, and mathematics) fields. The findings reveal persistent gaps in awareness, with notable gender-based differences in recognition and understanding of historical inequities. The study highlights the importance of integrating gender-sensitive education into academic curricula to foster greater recognition of women's contributions to science and technology while emphasising the cultural and educational contexts specific to the Slovak academic environment.

Keywords: Women, Science, Technology, Gender awareness, STEM, Education, Gender disparities

Introduction

For centuries, women have played instrumental yet often unacknowledged roles in the advancement of science and technology. Historical narratives have predominantly centred on male figures, overshadowing the contributions of women who defied societal norms to make groundbreaking discoveries. For instance, Ada Lovelace, regarded as the first computer programmer, devised an algorithm for Charles Babbage's Analytical Engine, a feat often misattributed to Babbage himself (Abbate, 2012). Similarly, Rosalind Franklin's pioneering work with X-ray crystallography was crucial to elucidating DNA's double-helix structure, yet

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credit was primarily given to Watson and Crick (Schiebinger, 2001). This pattern of marginalisation is not merely a relic of the past but continues to influence the underrepresentation of women in STEM fields today (Nobel, 2018).

The historical erasure of women's contributions has significant implications for contemporary gender equity in STEM. Studies suggest that systemic biases not only obscure the achievements of women but also perpetuate stereotypes that discourage young women from pursuing careers in these fields (Thompson, 2020). According to Schiebinger (2001), the integration of feminist perspectives in science education can challenge these biases and foster a more inclusive understanding of scientific history and practice.

Recognising these challenges, the curriculum of the master's degree study programme "English and Culture in Professional Communication" at the Faculty of Arts of the University of Ss. Cyril and Methodius in Trnava, Slovakia, introduced a course *Professional Communication in Science and Technology*. This course includes a gender studies module that examines the socio-cultural and historical contributions of women in STEM. To assess the effectiveness of this inclusion, a survey was conducted among students of various humanities disciplines, including Slovak language, philosophy, history, ethnology, psychology, and foreign languages.

This study explores two interconnected dimensions: a historical overview of notable but underrecognised women in science and technology, and an analysis of current levels of recognition and awareness of gender equality among humanities students. The research addresses two central questions: "*How well do students of humanities recognise the historical contributions of women to science and technology?*" and "*Are there gender-based differences in students' awareness and knowledge of gender equality in STEM fields?*" The study hypothesises that exposure to gender studies correlates positively with higher recognition of women's contributions to STEM and that female students are more likely than their male counterparts to acknowledge gender inequities in STEM. By addressing these questions, the research aims to highlight the importance of integrating gender-sensitive education into academic curricula and its potential to foster greater awareness and inclusivity in STEM fields.

Theoretical framework

The gender gap in science, technology, engineering, and mathematics (STEM) remains a critical focus of scholarly research, with numerous studies examining its causes, impacts, and potential remedies. Scholars (Díaz-Santos, 2024, Akney, 2022, Gallusat et al., 2020, and others) have highlighted both systemic barriers and strategic interventions aimed at fostering inclusivity and equity in these fields.

Gallus and Heikensten (2020a,b) underscore the significance of institutional recognition in addressing gender disparities in STEM. Their work demonstrates how awards and formal acknowledgement can empower women by mitigating self-stereotyping and amplifying their

professional visibility. This form of recognition not only aids in individual career advancement but also enriches the collective diversity of perspectives and innovations in STEM disciplines. According to Storck (2022), there is an interplay between gender and the communication of scientific knowledge. Through an analysis of gendered narratives and portrayals, Storck reveals how such depictions influence public perceptions of science and technology, often perpetuating stereotypes and limiting engagement from underrepresented groups. This work underscores the necessity of more inclusive representations to foster equitable participation. Díaz-Santos (2024) emphasises the persistent underrepresentation of women in computer science, framing it as a global issue with far-reaching implications for both academia and industry. As the author notes, "The prevalent underrepresentation of women in computer science remains a global challenge with profound implications for academic institutions and industries" (Díaz-Santos, 2024, p. 1). This statement encapsulates the urgency of addressing structural inequalities to ensure sustainable progress in the field.

Additional contributions enrich the discourse by addressing intersecting challenges and proposing solutions. Blickenstaff (2005) examines the "leaky pipeline" phenomenon, highlighting the disproportionate attrition of women at various stages of STEM careers. Cheryan et al. (2017) investigate environmental and cultural factors that dissuade women from entering or remaining in STEM, such as the absence of relatable role models and pervasive stereotypes about gendered abilities.

A global perspective is offered by UNESCO (2017), which emphasises the role of education policies in promoting gender equity in STEM. Their report advocates for collaborative international initiatives to dismantle barriers and create supportive environments for women and girls in these fields.

Methodology

The research employed a mixed-methods approach, combining historical analysis with a quantitative survey. The historical analysis examined secondary sources to identify notable women whose contributions to science and technology were undervalued or unacknowledged. The quantitative survey focused on the perceptions and awareness of gender equality among humanities students.

Research sample

The survey involved 123 undergraduate and graduate students enrolled in humanities programs at the Faculty of Arts of the University of Ss. Cyril and Methodius in Trnava, Slovakia. Of these, 59% were female, and 41% were male, with ages ranging from 19 to 26 years. Participants were selected using stratified random sampling to ensure gender balance.

Survey instrument

The survey consisted of three sections. The first section measured students' knowledge of historical female figures in STEM through multiple-choice and short-answer questions. The second section assessed perceptions of gender equality in STEM using Likert-scale items. The final section collected demographic data and information about participants' prior exposure to gender studies or related coursework.

Variables

The independent variable was prior exposure to gender studies or related subjects. The dependent variables were students' knowledge of historical female contributions to STEM and their perceptions of gender equality. The survey also allowed for the comparison of responses by gender.

Data collection and analysis

Data were collected through an online questionnaire distributed via the university's learning management system. Responses were anonymised and analysed using statistical software. Descriptive statistics summarised the data, while inferential tests such as t-tests and chi-square analyses examined gender-based differences and correlations between exposure to gender studies and awareness of gender equity.

Research results

The study employed a mixed-methods approach to investigate the historical underrepresentation of women in STEM fields and contemporary awareness of gender equality among humanities students. The methodological framework integrated historical analysis and a quantitative survey. The historical analysis reviewed secondary sources to highlight significant women whose contributions to science and technology were marginalized or overlooked. This aspect of the research sought to contextualize systemic biases that historically relegated women's achievements to the periphery, despite their pivotal contributions to scientific advancements. Notable examples, including Ada Lovelace's algorithmic work on Charles Babbage's Analytical Engine and Rosalind Franklin's indispensable X-ray crystallography in the discovery of DNA's double-helix structure, serve as paradigmatic cases. The historical analysis formed the basis for understanding the enduring patterns of gender inequities and informed the contemporary examination of awareness levels among students. The quantitative survey was conducted among 123 undergraduate and graduate students enrolled in humanities programs at the Faculty of Arts of the University of Ss. Cyril and Methodius in Trnava, Slovakia. Participants were selected through stratified random sampling to ensure gender balance, with the cohort comprising 59% female and 41% male students aged 19 to 26 years. The survey aimed to explore students' knowledge of historical female figures in STEM, assess their perceptions of gender equality in these fields, and

evaluate the influence of prior exposure to gender studies on their awareness levels. The survey instrument included three sections: the first tested familiarity with historical figures in STEM using multiple-choice and short-answer questions; the second gauged perceptions of gender equality through a Likert scale; the third collected demographic data and assessed prior academic exposure to gender studies. Key variables included prior exposure to gender studies as the independent variable and students' knowledge and perceptions as the dependent variables. Data collection occurred via an online questionnaire distributed through the university's learning management system. Descriptive statistics summarised response patterns, while inferential analyses, including t-tests and chi-square tests, identified gender-based differences and correlations between exposure to gender studies and gender equity awareness. The historical analysis underscored the systemic neglect of women's contributions in STEM. For instance, Ada Lovelace's visionary programming work was overshadowed by Charles Babbage's broader association with the Analytical Engine. Similarly, Rosalind Franklin's X-ray crystallography laid the foundation for understanding DNA's structure, yet her role was relegated in favour of James Watson and Francis Crick in public and academic discourse. Katherine Johnson, whose mathematical calculations were critical to NASA's space missions, received belated recognition, highlighting the protracted timeline for acknowledging women's contributions in STEM. These historical cases exemplify the entrenched gender biases that have historically shaped the narrative of scientific progress, often erasing or marginalising women's roles.

Discussion

The survey findings revealed significant gaps in the recognition of women's contributions to science and technology among humanities students. Among participants, 42% demonstrated familiarity with at least one historical female figure in STEM without prompts, with Rosalind Franklin being the most recognised (18%), followed by Ada Lovelace (8%) and Katherine Johnson (5%). Recognition rates improved when participants were provided with additional contextual information. Gender-based disparities emerged prominently: female students exhibited higher levels of awareness, with 32% identifying at least one historical figure without prompts compared to 16% of male students. Female students were also more likely to perceive gender inequality in STEM as a persistent issue, with 76% agreeing or strongly agreeing that systemic barriers remain compared to 44% of male students.

Prior exposure to gender studies significantly influenced participants' responses. Among students who had completed gender studies courses, 68% demonstrated familiarity with historical female figures in STEM, compared to 31% of those without such coursework. Similarly, 68% of students exposed to gender studies acknowledged systemic gender inequities in STEM, versus 38% of those without exposure. This correlation underscores the transformative potential of integrating gender-sensitive curricula in higher education to address knowledge gaps and foster greater inclusivity.

The discussion centred on the implications of these findings for education and gender equity in STEM. The limited recognition of women's contributions to science and technology reflects broader societal and institutional biases that shape historical narratives and influence contemporary awareness. The survey's gender-based disparities in awareness suggest that female students are more attuned to issues of gender inequality, possibly due to lived experiences and educational exposure that highlight these dynamics. This disparity aligns with broader literature indicating that gendered experiences significantly impact perceptions of equity and representation in professional fields, including STEM.

The positive correlation between exposure to gender studies and awareness of historical female contributions underscores the critical role of education in challenging traditional narratives that prioritise male achievements. Integrating case studies of underrecognised women in STEM into academic curricula can disrupt entrenched biases and provide students with a more nuanced understanding of scientific history. Such integration also fosters an environment that values diverse contributions, paving the way for greater representation and participation of women in STEM fields. The historical cases analysed in this study illustrate the systemic challenges that have shaped the attribution of scientific credit. Addressing these biases requires concerted efforts to revise educational content, promote diverse role models, and cultivate a culture of inclusivity in academic and professional settings.

The study highlights the enduring impact of historical erasure on contemporary gender equity in STEM and underscores the need for systemic interventions to address these gaps. Academic institutions must prioritise inclusive curricula that integrate the stories of historically marginalised figures and emphasise the value of diverse contributions to scientific progress. Promoting awareness of women's contributions not only enriches the educational experience but also inspires future generations to challenge systemic barriers and pursue careers in science and technology.

The study's findings underscore the importance of revisiting and revising historical narratives to acknowledge and celebrate the achievements of women in science and technology. By addressing these historical biases and fostering a culture of inclusivity, educators and researchers can ensure that the contributions of women in STEM are recognized and valued, providing a foundation for inspiring progress and challenging systemic barriers. The integration of gender-sensitive education into academic curricula is a critical step toward achieving greater equity and representation in STEM, ultimately contributing to a more inclusive and innovative scientific community. Academic institutions, policymakers, and educators must collaborate to implement these recommendations and create an environment where all contributions to science and technology are acknowledged and celebrated, paving the way for a more equitable and inclusive future.

Recommendations

The recommendations for addressing these challenges include incorporating gender-sensitive content into both STEM and humanities curricula, emphasizing the historical

contributions of women and other marginalized groups. Academic institutions should foster greater collaboration between STEM and humanities programs to promote interdisciplinary approaches to understanding and addressing gender inequities. Supporting initiatives that raise awareness of gender disparities in STEM, such as workshops, guest lectures, and public campaigns, can further bridge the gap in recognition and knowledge. These efforts are essential for building a more equitable and inclusive future in STEM fields.

Academic institutions should incorporate gender-sensitive content into both STEM and humanities curricula, emphasising the historical contributions of women and other marginalised groups. Greater collaboration between STEM and humanities programs can foster interdisciplinary approaches to addressing gender inequities. Institutions should also support initiatives that promote awareness of gender disparities in STEM, such as workshops, guest lectures, and public campaigns. Efforts to bridge the gap in recognition and knowledge of women's contributions to science and technology are essential for building a more equitable and inclusive future in STEM. By revisiting and revising historical narratives, educators and researchers can ensure that the achievements of women in science and technology are acknowledged, celebrated, and used as a foundation for inspiring progress.

Conclusion

The historical contributions of women to science and technology have been undervalued for centuries, reflecting broader patterns of systemic gender bias. This research highlights both the achievements of underacknowledged women in STEM and the persistent gaps in contemporary awareness of their contributions among humanities students. Female students and those with exposure to gender studies courses demonstrated higher levels of awareness and recognition, suggesting that education plays a crucial role in addressing these gaps. To foster greater gender equity in STEM, academic institutions must prioritise inclusive curricula that integrate the stories of historically marginalised figures. Promoting awareness of women's contributions not only enriches the educational experience but also inspires future generations to challenge systemic barriers and pursue careers in science and technology.

Looking forward, the research offers valuable opportunities for expansion and comparative analysis. Future studies could extend the scope to include students from technical and scientific fields to evaluate whether awareness of historical gender inequities in STEM and recognition of women's contributions differ across academic disciplines. A comparative analysis between humanities and STEM students would provide a deeper understanding of how academic environments influence perceptions of gender equity and whether STEM-focused students exhibit greater, lesser, or comparable levels of awareness. Additionally, exploring the role of institutional culture and pedagogical approaches in shaping these perceptions across different faculties could inform strategies for fostering cross-disciplinary gender awareness initiatives. By incorporating perspectives from a broader demographic of students, such research could yield insights into the intersectionality of education, gender,

and cultural contexts, thereby contributing to the development of targeted, interdisciplinary interventions to promote inclusivity in science and technology education

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En Passant

Book Review

En Passant by Milan Tomić. 2022. 26 pp. Banská Bystrica: Koprint. ISBN 978-80-974268-0-4
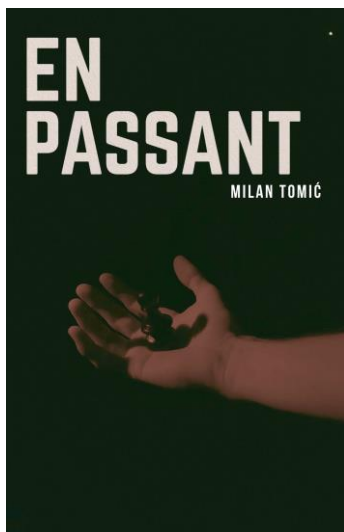
En Passant (2022) is a poetry collection by Milan Tomić, a graduate of English Language and Culture in Specialized Communication at the Faculty of Arts, University of Ss. Cyril and Methodius in Trnava, Slovakia. The author define himself as "a Serbian-Slovak poet and writer, primarily writing in English. His collections attempt to blend traditional and modern styles of poetry while exploring contemporary themes and experiences."[8] The collection is accompanied by illustrations from Maria Šimonová, who also holds the same degree from the same university. *En Passant* brings together a series of poems exploring existential contemplation, personal reflection, and the human condition. With an introspective tone and enigmatic style, Tomić's writing bridges traditional poetic structures with modern sensibilities, offering a deeply personal and universal meditation on life, time, and meaning.

The title *En Passant*, a term from chess that refers to a fleeting, almost incidental move, sets the thematic tone of the collection. This idea of transience pervades the poems, as Tomić consistently touches, as Tomić consistently touches on fleeting moments in both the external world and the inner landscape of the mind. Themes of impermanence, loss, longing, and the passage of time surface repeatedly, creating a cohesive thread throughout the work.

In poems like *Ephemeral Witness*, this preoccupation with time and fleeting moments is directly articulated: *"When he takes notice of moments past. Like winters then, like summer last. […] In passing."* The poet's repeated use of the phrase "In passing" in this poem accentuates the ephemeral nature of human experience, hinting at the inevitability of change and the futility of resisting it. This theme continues in various forms throughout the collection, capturing the often-fragile balance between holding onto memories and accepting their transience.

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[8] https://payhip.com/MTBarren

Many poems delve into the poet's struggle with his own identity and existence, often oscillating between moments of self-awareness and moments of disorientation. Passenger is a notable example where Tomić explores a fragmented sense of self and questions the existence of multiple versions of the self: *"Are you? The I who flickers the light. When I sit down to weep."* In this poem, the poet reflects on the nature of identity, recognizing the different "selves" that coexist within him – each defined by various emotional, physical, and situational responses. This exploration of fractured identity becomes a powerful motif, presenting the reader with a deep, introspective meditation on what it means to be oneself in an ever-shifting world.

The poem *The Phantom* also continues this existential exploration, as it introduces the figure of the "ghastly phantom" who seems to embody the poet's fears, doubts, and existential uncertainties. Here, the "phantom" represents the weight of mortality and the inevitability of death. The poem's conclusion provides a stark image of how these existential anxieties slowly but surely erode one's sense of peace and stability.

Throughout *En Passant*, Tomić blends personal experiences with universal themes of life, death, and what lies beyond. Poems like *The Phantom* and *The Omniscient Bee* confront these issues head-on. In *The Omniscient Bee*, the bee serves as a metaphor for life's cyclical nature, pollinating flowers and bringing them back to life, a process that mirrors human efforts to find meaning in a seemingly indifferent universe:

> *The bee and her swarm fly over the river*
> *We sit in silence cheerfully*
> *And the flowers and trees*
> *In unison breathe*
> *What more could we need?*

This passage, with its focus on renewal and unity, contrasts with the darker themes of death and decay present in other parts of the collection. Here, the poet finds solace in the natural world, in its ability to regenerate and continue, offering a hopeful counterpoint to the deeper reflection on mortality.

One of the striking aspects of *En Passant* is Tomić's ability to blend traditional forms with modernist tendencies. The collection is not bound by strict rhyme schemes or formal constraints, but rather, it weaves fluidly between structured verses and freeform poetry, allowing for a greater range of emotional expression. His lines often shift in length and cadence, mirroring the irregular flow of thought and feeling that defines the human experience.

His language, while often symbolic and abstract, remains grounded in evocative depictions. Poems such as *Old Habits* and *The Liar and Grief* are filled with rich, evocative images that paint a vivid picture of emotional landscapes. In *The Liar and Grief*, for instance, Tomić's imagery is both haunting and melancholic:

> *When the crimson rain*
> *Fell on the exhibition*

Like a reckless child, I danced
To its twisted rhythm

Here, the "crimson rain" evokes a sense of foreboding, while the image of a child dancing with "splintered ankles" suggests a tension between innocence and pain, joy and suffering. This juxtaposition of light and dark, pleasure and pain, runs throughout many of the poems, adding depth to the emotional tone of the collection.

Moreover, one of the central themes in *En Passant* is the exploration of interpersonal relationships, often through the lens of longing and separation. In poems such as *Letters from a Room Inside My Mind*, Tomić writes about love, distance, and the deep emotional connection that can persist even across time and space. The second part of this poem addressed to an unnamed [ ], expresses both physical desire and a yearning for emotional closeness:

Your words light a thousand fires to my thighs.
You're the wind that reminds my soul that it's alive.

The physicality of desire is intertwined with emotional and spiritual aspects of connection, creating a nuanced portrayal of love that transcends mere physicality. The use of metaphor – the lover as "wind," and the body as something that must be "awakened" to life – suggests a deeper, almost philosophical reflection on the nature of love and existence. At times, these interpersonal reflections take on a melancholic tone, as in Island by the Sea, which is inspired by Edgar Allan Poe's *Annabel Lee*. This poem reminisces on a lost freedom, evoking feelings of nostalgia and sorrow. The island represents a place of comfort and peace, a sanctuary that the speaker longs to return to, but cannot. The poem echoes the universal human experience of longing for a place or time that is now out of reach, symbolizing both a personal and collective yearning for a sense of belonging and home.

In *En Passant*, Milan Tomić has crafted a collection that is deeply introspective and reflective, grappling with questions of identity, existence, and the human experience. His use of vivid imagery, fluid structure, and a balance between personal and universal themes makes this collection both accessible and thought-provoking. The collection invites the reader to pause and reflect, to consider their own "*en passant*" moments in life, and to find meaning in the delicate interplay between light and dark, joy and sorrow. For those who enjoy poetry that is both emotionally resonant and intellectually stimulating, *En Passant* is a rewarding and contemplative read available online at: https://payhip.com/b/WlzG1.

Ivana Pondelíková