Facade colors in the historic urban fabric of small former towns in Subcarpathia: the case of market squer in Nowy Żmigród

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Abstract

The colors of the facades of the historic urban interiors of the small cities in Subcarpathia play a crucial role in shaping the local spatial and cultural identity. Their significance goes beyond the aesthetic dimension and becomes an important tool for interpreting heritage and symbolic communication between the past and present. Contemporary design practices are increasingly diverging from historical patterns, leading to the erosion of authenticity and landscape uniformity in historic spaces. There is a lack of coherent legal and conservation regulations that consider regional color specificities and support design processes based on historical and cultural knowledge. The case study of Nowy Żmigród demonstrates that it is possible to develop contemporary color solutions that harmoniously combine respect for tradition with the current aesthetic and functional needs of the local community. The proposed concept of a color palette inspired by historical conditions exemplifies an approach that can be applied to other cities with similar urban characteristics. Interdisciplinary research on the colors of buildings in small cities in Subcarpathia using archaeological and conservation methods is recommended. Comparative studies with other regions of Poland and Europe would allow for the identification of local peculiarities and universal color trends. The influence of climate change on the durability and perception of colors in urban spaces should also be considered when developing sustainable design solutions. The colors of architecture should be treated as one of the fundamental components of urban composition and the cultural narrative of a place, allowing the creation of urban spaces that remain authentic, functional, and responsive to the needs of local communities while preserving their distinctiveness in an increasingly uniform and aesthetic landscape.

Keywords: color identity, historic urban interiors, local heritage, Subcarpathia

1. Introduction

In the context of cultural heritage research, the analysis of the color compositions of public spaces, especially city squares, is particularly important. The market square, as the central element of the urban layout, most often constitutes the best-preserved and legible remnant of the original city layout. In many cases, it is the only material evidence of location times, as historical buildings have been destroyed or transformed by subsequent changes. The color of these spaces plays an important role in shaping their aesthetics, building the perception of historical value, and conveying local cultural identity (Popek, 2012). Moreover, a properly designed and historically based color scheme can convey the atmosphere and character of a city from its earliest stages of development. This issue is particularly relevant in the context of Poland's turbulent history, marked by wars, invasions, and partitions, which led to the destruction of much of its material heritage, especially medieval monuments. Consequently, the well-preserved urban layouts of small cities constitute a unique and valuable research resource. The small city of the Subcarpathian region is of interest, primarily because of its entrenched urban structure and preserved spatial identity, the genesis of which dates back to the Middle Ages. Their development was slow and relatively undisturbed, favoring the consolidation of the original spatial arrangements and preservation of selected architectural elements (Martyka, 2023).

Research on aspects of architecture beyond color has focused mainly on large cities or individual high-profile historic buildings. As a result, small cities, especially those located in the Subcarpathian region, remain largely unexplored in terms of shaping their color potential. There is also a lack of conservation guidelines adapted to regional specificities and practical guidance for architects and urban planners working in these areas. In addition, small cities do not have sufficient source material, especially in the form of iconographic documentation, which makes the reconstruction of the original color solutions difficult to achieve. The results of archaeological research in small cities in the Subcarpathian region are extremely scarce and mainly concern underground foundations and cellular structures. This raises an important design challenge: how do we shape façade colors today to articulate buildings from different eras in a legible and harmonious way without compromising the integrity of the historic urban fabric?

Michael Lancaster emphasizes the need to base color design on comprehensive analyses of the regional context, encompassing both natural and cultural-historical conditions (Lancaster, 1996). Landscape elements, local building materials, craft traditions, and the specific light and climate of a given area are all important factors. Lancaster points out that a properly selected color palette should not be an arbitrary set, but rather stem from research into the visual environment and identity of a place. The Colorscape method is therefore a tool for harmonizing space through color, as well as an instrument for enhancing the local character of architecture. In the context of the market square in Nowy Żmigród, this allows the color scheme to be treated as an element resulting from the analysis of local heritage and landscape, rather than as a random aesthetic decision.

The concept of the geography of color by Lenclos (Lenclos & Lenclos, 2004) can be also an inspiring reference point in the approach to color design in small cities in the Subcarpathia. The colors used in architecture are assumed to be closely related to the local landscape, climate, building materials, and cultural traditions of a place. Therefore, color is not a random aesthetic choice but a component rooted in the space and history of the region. Lenclos postulates that color design should be seen as a process of recognizing and developing a local visual identity. In the Subcarpathian region, where sources of primary color are lacking, adopting a 'color geography' perspective allows for the construction of coherent color palettes based on the observation of

local conditions such as insolation, landscaping, the colors of local materials, or established aesthetic habits. The application of this method can foster harmonious solutions that respect the context of a place and reinforce its visual identity.

This study explores the importance of color in the preservation of the cultural heritage of small cities and proposes general guidelines for the selection of color in historic urban spaces, combining respect for local traditions with a response to contemporary aesthetic and social needs. This work is based on studies in the literature, with reflections on the color landscape of cities. The case study of Nowy Żmigród is based on a combination of archival research, field documentation, and analysis of existing and potential color schemes. This research involved photographic documentation, analysis of planning documents, and participatory observation. The selection of colors was based on an analysis of source materials, references to local traditions, and design experience, while considering the aesthetics and visual perception of space.

The study is based on a review of the literature addressing the color landscape of urban environments. The case study of Nowy Żmigród was conducted using archival research methods, field documentation, and an analysis of existing and potential color schemes. The research included photographic documentation, analysis of planning documents, and participant observation. The selection of colors was based on an examination of source materials, references to local traditions, and the design experience of the authors, while simultaneously taking into account aesthetic considerations and the visual perception of space. For the analysis of the color composition of the market buildings, original photographs from 2023 and 2025 were used alongside archival images. The evaluation of vegetation was performed based on in situ studies as well as the analysis of contemporary and historical photographic materials.

In formulating conclusions and recommendations regarding the principles for shaping the color-material composition of Nowy Żmigród, the study drew on the comprehensive regional analysis method proposed by Lancaster in *Colorscape* (Lancaster, 1996). In particular, the following elements of this method were applied:

- ► Perceptual analysis of the color landscape, including the identification of dominant colors in natural and urbanized surroundings and their mutual tonal and saturation relationships,
- ► Categorization of colors according to their function within the spatial structure, distinguishing between background colors (dominant), accent colors (highlighting architectural elements) and complementary colors (details and greenery),
- ► Analysis of color relationships in seasonal and lighting contexts, accounting for variations in color under different lighting conditions and throughout the year;
- ► Principle of color harmonization, involving the creation of coherent color combinations that correspond to the local landscape and cultural context,
- ► Development of color schemes (color mapping) for selected parts of the space, enabling the identification of recommended color palettes for façades and architectural details.

The analysis also took into account the results of the previous research of the authors on color in the built environment. Studies by Tarajko-Kowalska (Tarajko--Kowalska, 2010, 2013; Tarajko-Kowalska & Kowalski, 2024) provided important inspiration for formulating guidelines on color design principles. The color of the façades of selected buildings was determined using the NCS Index 2050 paper fan deck, allowing precise identification of tones and their correspondence with the adopted color schemes.

2. Color as an element of the cityscape and a factor shaping the identity of a place

A city is one of the most important man-made creations, a work of art that does not have a single author but is the result of the creativity of many generations, adapting to the geography, culture, or economy of a place (Rossi, 1984). The city is not only a place of residence and economic activity but also a symbolic space where traditions, memories, and local identity intersect (Benevelo, 1995). Its architectural form, together with its color scheme, which is much less frequently discussed than its form and function, reflects changing aesthetic ideas, cultural values, and historical conditions. Color is an important aspect of the identity of a city.

In the eras before the invention of electricity, everyday life was lived in semi--darkness; the interiors of houses were lit only by hearth fires and the streets of cities and villages were plunged into darkness (Eco, 2009).

The dimensions of the city as a perceptual phenomenon have been explored among others by Gordon Cullen (Cullen, 2011) who initiated an important area of research on the perception of space. He defined the concept of 'cityscape' as the art of giving visual coherence to the ensemble of buildings, streets and spaces that make up the urban environment. A city is not just the sum of its built-up parts and surrounding spaces; the perception of a cityscape captures the relationships that develop between the components of a city and depends on the way we dynamically visualize sequences of urban environments as we move through them. The city is an art of interrelationships that can give visual order to the urban environment and is governed by certain definable but often spontaneous rules. We provide cities with their individual characteristics and dramas. Within a commonly accepted framework, we can manipulate the nuances of scale, color, and style by juxtaposing them for mutual benefit.

Alexander (2022) argued that architecture should express an intimate relationship with nature and reflect an order that supports the balance of the ecosystem. In his view, a sense of well-being is rooted in the orderly structure of the spaces we inhabit. Therefore, the quality of architecture should be viewed through the lens of its ability to create adaptive structures rooted in place, which reinforces the importance of local materials, traditional craftsmanship and building techniques. This approach preserves the integrity of the local environment and fosters unique places with distinct character and atmosphere. In the fourth volume of his essay *The Luminous Ground*, on the nature of order, Alexander extensively explores the importance of color in nature and its perception (Alexander, 2022). He noted that the original symbiosis of architecture and nature, which is the source of the material and chromatic characteristics of individual settlements, is gradually disappearing from modern cities. With its loss, *the genius loci* is also disappearing.

Birren, one of the foremost experts in the psychology of color, points out that modern architecture, with modernist architecture in mind, deliberately eschewed a rich color palette. He noted that '*color is rarely found on the facades of modern buildings in modern cities. In antiquity, color was the rule rather than the exception*' (Birren, 1969, p. 52). Even before the 19th century, the range of colors available depended on raw materials and materials available locally or easily transportable. The development of chemistry made an almost infinite range of colors possible, improving their stability over time. In the 1950s and 1960s, rapid urban growth and the introduction of new building materials, such as plasters, synthetic paints, and industrially produced facade coatings, brought about rapid changes in the appearance of cities. The accelerated process of modernization and standardization has led to the disappearance of building traditions. On the one hand, suburbs devoid of any genius loci were created, while on the other hand, historic city centers were subject to a process of degradation. The built landscape, which used to be characterized by the

color of local materials, has gradually been modified by the use of industrially produced artificial colors that cover and replace the existing colors.

Although contemporary architectural color is often overshadowed by analysis of form and function, in the past, it was indispensable to the shaping of urban spaces. Studies on the evolution of color have revealed fascinating changes in color preferences and availability over time. The color palette has continually expanded, from the natural pigments used in prehistoric art to the intense colors of medieval illuminations to the synthetic colors of the industrial era (Martyka et al., 2025). As a result of this process, the question of natural color in architecture gradually began to lose its importance, resulting in the loss of consistent aesthetic and chromatic values in urban spaces. This different modus operandi has profoundly altered the relationship between humans and nature, as urban centers have gradually become artificial with the loss of architectural and color synergy with their surrounding landscape (Badami, 2022).

Color is one of the most effective and economical means of shaping and transforming an urban environment. Its significance extends beyond its aesthetic function, and the chromatic identity of a space is an essential component of cultural heritage. Proper protection of this value requires conscious integration into the revitalization and renovation processes of the urban fabric (Tarajko--Kowalska, 2010, 2013). The loss or distortion of the historical concept of color can lead to the erosion of the formal coherence of the city, especially in historic areas, where color acts as a carrier of the memory of a place and as an element of visual identification (Alexander, 2022; Alexander et al., 2006). Color composition can serve not only an aesthetic function, but also a social and cultural one, activating emotional impressions of visual pleasure and even a sense of joie de vivre. Color can be a means of communication, capable of initiating processes to rebuild urban identity and strengthen community bonds. This is particularly true for projects in which the local community is involved from the concept stage and actively participates in the implementation of aesthetic concepts. This type of action proves that color is not just a decorative component but a full-fledged element of the spatial narrative, serving to shape a coherent identity of place and support processes of social integration (Boeri, 2017).

Boeri (2017) interprets the concept of *color loci* as an extension of Norberg-Schulz's concept of genius loci, emphasizing its relevance to the socio-aesthetic dimension of color in urban space. The term refers to the chromatic spirit of a place, that is, the distinctive color characteristics that build its identity and influence the way it is perceived. In the process of transforming the urban fabric, the literal preservation of historical color is not as important as its conscious reinterpretation based on local aesthetic and social values. In this way, color loci become a tool for building visual and cultural continuity, allowing elements of the past to be harmoniously combined with the needs of the present. Color can then act as a link between tradition and the new identity of urban spaces (Boeri, 2017).

It is optimistic that with the shift away from the functional paradigm of the city, urban design is beginning to take increasingly more account of the qualitative aspects of urban space, reconsidering color composition as a factor influencing the identity of a place and regulating it with guidelines. In some cases, they are mandatory guidelines, whereas others only recommend non-binding guidelines (Petelenz, 2015, 2017, 2021). Plans may specify colors for certain types of building or indicate a wide chromatic range, giving architects more freedom. Some planning regulations also seek to make the color palette of urban spaces too uniform, which can lead to the atmosphere of the historic landscape being lost, while there are also regulations that prefer to reflect the color scheme of a particular era. Various approaches, ranging from restrictive to more flexible, emphasize the technical aspects of color selection. Some have suggested using the term "color design", which emphasizes the complexity of design decisions in the context of conservation and new interventions (Badami, 2022).

Issues related to color perception and its role in shaping urban space have long been the subject of theoretical reflection. Gibson (2014) emphasizes the importance of light and the way the human eye perceives its surroundings, color perception is closely dependent on lighting conditions and the dynamics of the space in which the observer operates (Gibson, 2014). Color, therefore, does not exist in isolation but always in relation to light, shadow, and perspective. Serra (2019) also draws attention to these interdependencies, pointing out that architectural color changes with the time of day and the angle of sunlight, and its role lies not only in creating contrasts, but also in fostering harmony (Serra, 2019). The local context holds a special place, materials, traditions, history, climate, and nature determine which colors will be perceived as 'appropriate' and positively resonant with the surroundings. As Tarajko-Kowalska (2013) emphasizes, color planning is not about mechanically replicating ancient colors, but about harmonizing brightness and saturation with the regional landscape and identity (Tarajko-Kowalska, 2013). In this approach, color becomes not only an aesthetic element but also a tool that fits into the broader process of shaping spatial order.

Petelenz emphasizes this aspect, pointing out that color harmonization, including facades, roofs, and details, has a real impact on the perception of space, its aesthetics, and its perceived orderliness. Lack of color harmony leads to spatial disharmony and visual chaos (Petelenz, 2015). Therefore, it is not only a matter of aesthetics, but also of building a local identity and influencing the perception of a place's friendliness and attractiveness. The best results in this regard are achieved when new developments and their color schemes interact with the local context, the historical color palette, the landscape, and the natural tones of the region. The uniformity of materials and colors in historic urban complexes or in areas that consciously protect these values is often cited as a positive model to emulate (Petelenz, 2017).

Popek (2012) complements this perspective by focusing on the psychological dimension of color (Popek, 2012). He emphasizes that color influences mood, a sense of security, social relationships, and the perception of space as friendly or hostile. Color also acts as a visual code, organizing the environment and building a sense of identification with a place, becoming a factor in aesthetic order and spatial cohesion. As Tarajko-Kowalska (2013) notes, color can be the cheapest and most effective means of neutralizing low-quality architecture, particularly in rural and small-town developments (Tarajko-Kowalska, 2013; Tarajko-Kowalska & Kowalski, 2024).

Lancaster (1996) proposed a holistic approach, whose 'Colorscape' method is based on comprehensive regional analyses, from natural landscape features, through cultural traditions, to the way space is used (Lancaster, 1996). This understanding of architectural color selection allows for the creation of a coherent, multi-layered visual structure that not only recreates the history of the place but also enhances its contemporary attractiveness and identity.Unlike architecture, which is often realized by a single artist and is confined to a specific time period, urban composition has developed over centuries as a result of the actions of many builders, designers, and users. Each intervention, new construction, and maintenance of the renovation brings new color palettes, modifying the perception of space. In the case of historic small cities, this process requires special attention and sensitivity to the local context. It is important to take an aesthetic approach not only to individual buildings but also to the entire urban composition, including consideration of their relationship with their surroundings (Pallasmaa, 2012).

Shaping the color of historic buildings must be aware of past materials, painting technologies, and the changing ways in which modern users perceive colors. Color is a record of the past, a testament to the technology, aesthetic styles, and social values of an era. Contemporary research confirms that well--chosen color palettes enhance the aesthetic appeal of cities and build their

cultural coherence and identity (Yang et al., 2024). In historic cities, color has become a communication tool to tell the story of a place, influence the emotions of the viewer, and maintain cultural heritage.

3. Case study: former city Nowy Żmigród in Subcarpathia

The Subcarpathia region has a complex history that has significantly impacted local architecture, particularly its colors. Over the centuries, various factors have influenced the forms and colors of buildings. Local traditions were the dominant factor in shaping the color composition, which was the result of available materials such as wood, stone, and brick, which translated into a harmonious color palette, including shades of brown, gray, and red. Simultaneously, Subcarpathia's location on the border of different cultures meant that the region was subject to external influences, especially during the Galician partition, when Austrian architecture introduced a more varied, pastel-colored façade. However, political and economic changes in the 20th century, both in the interwar period and after World War II, contributed to the evolution of architectural styles and colors used in construction, which was a consequence of both new aesthetic trends and changing availability of building materials.

In the Middle Ages, color and spatial composition were not accidental. The form of the city was in accordance with local traditions stemming from cultural patterns rather than rigid architectural regulations (Krasnowolski, 2004b). The foundation acts, which had more literary characteristics than planning, did not precisely define the spatial structure of the city. Instead, they left wide room for interpretation, allowing the creative adaptation of buildings and colors to local conditions, both geographical and social ones. A mixture of law and literary narrative, these documents only introduced general principles for the organization of space, enabling the development of diverse urban layouts and colorful cityscapes (Berdecka, 1974). The result was the creation of cities with individualized visual characters, in which color was a carrier of identity, memory, and local values. This flexibility allows architecture to be creatively adapted to the terrain, culture, and economy of a particular region, resulting in unique urban layouts and color compositions.

In medieval cities, the colors of buildings were shaped primarily by the natural qualities of building materials: wood, stone, and lime plaster. These colors, derived directly from local resources, constitute the dominant palette of the urban landscape. Only in later periods, with the spread of pigments and paints, did more varied and distinctive color compositions become possible. It can be assumed that brick buildings, such as town halls and churches, were painted in light colors, similar to the natural color of lime mortar. This solution not only emphasized their monumentality but also visually separated them from modest wooden houses (Kuśnierz-Krupa, 2014). In medieval cities, the colors of the buildings also had functional significance. For example, whitewashed houses contrast with darker shades of the façades of public buildings, which facilitates spatial orientation (Kantarek, 2013).

The color in the architecture of historic cities has not only a decorative function but also a symbolic and practical one. Harmonious color combinations reflect local aesthetic canons and are simultaneously directly linked to the availability of building materials. A good example are the small cities of the subcarpathia, where buildings are mainly based on wood, the cheapest and most readily available raw material. Both residential and religious buildings were built with local wood on stone foundations, and the exterior walls were washed with lime. This treatment protected the wood from the weather while giving the entire architecture a consistent and subdued appearance (Kuśnierz-Krupa, 2014). In addition, the first defensive fortification systems before more advanced technologies were made of earth and wood, further confirming the dominance of natural materials and their influence on the distinctive colors of urban spaces

during this period (Berdecka, 1982). Stones quarried from the earth, pebbles and sand were the most common materials in traditional buildings, and their color dictated the dominant color of the built-up areas. The analysis method, defined as the ‚geography of color', showed that the color palettes of different human settlements were determined by the geology, climate and light that characterized a particular place (Lenclos & Lenclos, 2004).

Nowy Żmigród, which lost its town rights in 1934 as part of an administrative reform, is located in the southern part of the Subcarpathian Voivodeship, within Jasło County in the transitional zone between the Carpathian Foothills and Beskid Niski. The city was founded in the mid-14th century under the Magdeburg Law by Casimir the Great on land, separated from the estates of the Bogoria family, in connection with the development of the route to Ruthenia (Berdecka, 1982; Krasnowolski, 2004a). The city was laid out next to an earlier settlement on a hill at the forks of the Wisłoka River and the Niegłoszcz stream, creating an orthogonal urban layout with a rectangular market square with proportions of 2 : 3 and a 9-field module based on a large string (43.95 m) (Martyka, 2023). As a former ecclesiastical, administrative and commercial center, the village has a distinctly shaped market ensemble surrounded by a compact frontage, which deserves special attention in the façade color planning process. The history of the built environment in Nowy Żmigród reflects a cycle of repeated destruction and reconstruction that shaped its spatial and architectural structure. The first significant devastation occurred in 1474 during the invasion of Hungarian troops under Matthias Corvinus. After a two-year occupation, the town was abandoned and destroyed by the Hungarians, necessitating almost complete reconstruction. Another fire in 1522 again ruined the buildings, and by the decree of King Sigismund the Old, residents were exempted from taxes for twelve years, which accelerated the town's rebuilding. In the 16th century, despite recurring disasters, Nowy Żmigród developed dynamically. Masonry townhouses were constructed, particularly on the eastern side of the market square, exhibiting Renaissance stylistic features. The market square, featuring the town hall, parish church, monastery, and hospital, served as the center of urban life, surrounded by commercial and craft-related buildings. The town had two gates: Hungarian and Lowerm which defined its communication and trade routes.

The 17th century brought wars and natural disasters that led to the town's decline. Destruction caused by the Swedish Deluge, fires and cholera epidemics resulted in significant depopulation and degradation of the built environment. Consequently, the town lost its former status as a regional trade center. In the 18th century, partial recovery occurred, with the development of guild crafts and Jewish settlements contributing to economic and cultural growth. During this period, wooden buildings still predominated, interspersed with occasional masonry public structures. The 19th century saw further fires, which destroyed the eastern frontage of the market square; the reconstruction that followed was modest in form. Despite repeated damage, the town gradually developed, with urban life remaining concentrated around the market square, where new houses, workshops, and shops emerged. However, the bypassing of Nowy Żmigród by the railway line in the latter half of the 19th century hindered its dynamic growth. The 20th century brought the greatest losses. By 1945, the town's built environment had suffered extensive destruction, including the characteristic arcades of the eastern market square frontage Post-war reconstruction, conducted under limited economic conditions, restored the former town's functionality but not necessarily the character of its former architectural landscape. Nevertheless, Nowy Żmigród retained the historical layout of the market square, serving as the town's sole enduring element of urban identity (Dębiec & Bogarczyk, 2006; Krasnowolski, 2004a, 2004b; Sulimierski et al., 1880).

The analysis of the color composition based on early 20th-century black--and-white archival photographs allows for an assessment of the chromatic solutions of the urban market square in Nowy Żmigród and its individual

architectural elements. The visual perception of the color scheme depends not only on the combination of hues but also on their assignment to specific parts of the architectural structure, which are distinguished by their form, function, size, and location. Key elements influencing the perception of a building include the roof, walls, plinth, architectural details and decorative elements, as well as door and window joinery, railings, shutters, gutters, and downpipes. A comparison of the archival photographs of the market square from the early 20th century with contemporary images of the same frontages reveals significant changes in terms of color schemes, finishing materials, and details of façades and roofing (Figs. 2, 4, 6). In the archival photographs, light shades and white plaster on walls and plinths predominated. Entrance gates and window joinery were typically made of dark wood, while roofs were covered with muted-toned metal sheets, black roofing felt, or dark shingles. Selected archival images also show an unplastered tower, revealing the natural color of the brick and the texture of the masonry; in later images, the tower appears plastered. The overall color composition exhibits a calm and harmonious aesthetic. Architectural details, such as cornices and window surrounds, maintained colors consistent with the wall surfaces and were not emphasized with darker tones, thus reinforcing the visual uniformity of the façades.

The current color scheme of the market square frontages in Nowy Żmigród is characterized by considerable diversity in both hues and materials, in stark contrast to the harmonious arrangement evident in archival photographs. Roofs now display a wide range of shades, from the vivid red typical of contemporary metal roofing sheets, through muted brick tones, to greys and graphite associated with more recent constructions or renovations (Fig. 1). Dark grey roofs are also present, alongside occasional light roofs in beige-grey or steel tones, likely resulting from the use of galvanized metal or modern materials with increased reflectivity. The contemporary appearance of the market façades is equally varied, weakening the historical character of this heritage interior (Figs. 3, 5, 7). Within a single frontage, one can observe both light, neutral plaster in beige and grey tones, as well as more intense colors such as yellows, browns, and cooler shades of grey with varying saturation. The lack of a coherent color palette, coupled with the heterogeneity of textures and materials, produces a visual impression of disorder and randomness. The former rhythm of the frontages, characterized by restrained and harmonious coloration, has been disrupted by uncoordinated interventions by building owners. Some
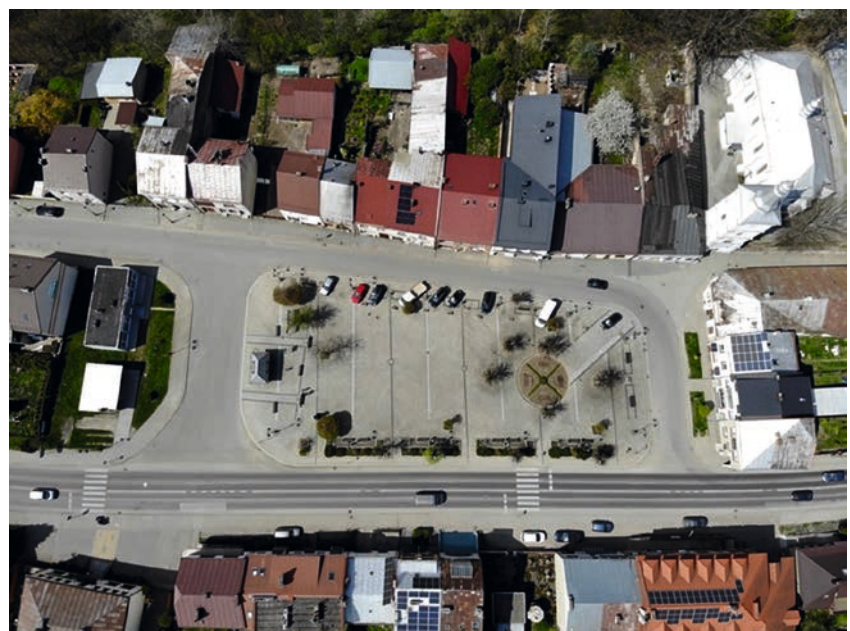

Fig. 1. Nowy Żmigród – Market square and surrounding buildings, drone view (2023). The market square in Nowy Żmigród, together with its surrounding buildings, forms an urban layout of high spatial value. The vertical dominance is provided by the bell and clock tower from the 18th century and the Parish Church of Saints Peter and Paul, constructed at the end of the 15th century, located at the corner of the square (photo by authors)

Fig. 2. Nowy Żmigród – North-western corner of the market square with the bell and clock tower and surrounding market buildings (1918–1938) (source: National Digital Archives, ref. 3/1/0/9/8267/1)

Fig. 3. Nowy Żmigród – View of the north-western market frontage with the bell and clock tower (July 2025). (photo by A. Mikrut-Kusy)

Fig. 4. Nowy Żmigród – View of the market square corner facing south-west, interwar period (source: Center for Documentation and History of the Żmigród Land)

Fig. 5. Nowy Żmigród – Market-front buildings facing south-west. The visible buildings exhibit no contemporary renovations, and the façade colors reflect materials and construction technologies typical of the 1970s and 1980s (2023) (photo by A. Martyka)

Fig. 6. New Żmigród – View of the eastern market square frontage with characteristic arcades (1918–1935) (source: National Digital Archives, ref. 3/1/0/9/8268/1)

Fig. 7. New Żmigród – View of the eastern market square frontage with characteristic arcades (2025) (photo by A. Mikrut-Kusy)

façades have been renovated using bright or unnaturally warm tones that contrast sharply with cooler neighboring surfaces, while door and window joinery and architectural details introduce further disharmony. Additional elements, including glossy photovoltaic panels and vividly colored plasters and roofing, distance the contemporary market square from its formerly harmonized palette. An important factor exacerbating visual disorder is the presence of numerous advertisements, signs, and banners of diverse graphic forms and colors, often placed arbitrarily and on an overly large scale. Rather than serving an informative function, these elements generate visual chaos and disrupt the perception of the architecture, obscuring historical details.

4. Conclusions

The design of the colors of street fronts and markets should consider not only aesthetic aspects but also social ones, creating user-friendly spaces while educating the local community about the value of high-quality aesthetics. These actions are particularly important in view of the increasing tendency to use haphazard, disharmonious, and sometimes even kitsch color solutions that blur the historical character and reduce the aesthetic quality of the space. In small cities in the subcarpathian region, where there is often a lack of direct iconographic sources or archival material, a practical approach to the design of color schemes for facades and public spaces is needed. This approach should simultaneously consider the historical conditions of a place and respond to contemporary aesthetic and functional needs. Such solutions can provide a starting point for the development of simple, locally embedded standards to support the protection of cultural heritage, improve the quality of spaces, and improve residents' awareness.

The focus is not on a faithful reconstruction of historical colors, but on an analysis of the aesthetics of colors and their role in revitalization processes. Although the architecture of small cities in the Subcarpathian region is characterized by a wealth of historical color solutions, this topic is still underrepresented in planning documents and conservation guidelines. This often results in haphazard aesthetic decisions that lead to the blurring of local identity and the disappearance of historical continuity. The example of Nowy Żmigród, a city with a well-preserved urban layout, shows that an appropriately chosen color scheme can support the preservation of local heritage and build the aesthetic coherence of a space. Understanding the colors used in the past and their contextualized use can reinforce the authenticity of a place and a more conscious approach to space design.

The color scheme of buildings in New Żmigród should remain in dialogue with the natural surroundings: the gentle landscape of the foothills, the changing seasons, and historical construction materials such as wood, brick, and lime plaster. The expressive play of light supports a palette that is soft, warm, and well integrated into the local landscape. Analysis of the historic market square buildings indicates that the original harmony stemmed from a restrained, uniform palette of façade and roof colors, combined with consistent use of materials. Consequently, the current highly varied colors of roofs, façades, and doors, as well as the random placement of advertisements and banners, introduce disharmony, disrupt spatial perception, and weaken the historic character of the market square.

The study suggests the need to restore color consistency in the market square frontages through:
- ▶ limiting intense, contrasting shades on façades and roofs to harmonize with historical materials and the natural landscape;
- ▶ maintaining uniformity in architectural details such as cornices, window and door trims, and joinery within a cohesive color palette;

- minimizing visual chaos from advertisements, signs, and banners by standardizing their color, scale, and placement;
- considering seasonal context and natural light in the selection of hues so that building colors enhance the sense of harmony and continuity with the historic environment.

Adopting such a color strategy will not only enhance the aesthetic quality of the market square but also protect its historic character, preserving its genius loci and ensuring better integration of architecture with the surrounding landscape.

The highly inspirational NCS palette (Fig. 8) offers a balanced mix of colors intended as a creative reference for designing the façades of market square buildings and street frontages, categorized into dominant, complementary, and accent colors (Fig. 9), rather than as strict guidelines:

Fig. 8. New Żmigród – conceptual color palette for unifying the color composition of New Żmigród (by A. Martyka)

Fig. 9. Proposed composition of tangent corridors for the eastern market square frontage in New Żmigród (by A. Mikrut-Kusy)

Dominant colors (front elevations and large planes):
- S 3060-Y30R: an intense and warm ochre ideal for accentuating the oldest buildings;
- S 4550-Y40R: a deep brick-red orangish, corresponding to a traditional burnt brick;
- S 4030-Y10R: a saturated, warm beige with a golden undertone;
- S 8010-Y30R: dark brown with a slightly warm, brick-red hue.

Complementary colors (plinth parts, outbuildings, and side elevations):
- S 3502-Y50R: gray set on a scale of earthy tones.
- S 2020-Y: light yellow as a slight counterpoint to the deeper tones of the facade.
- S 4030-Y70R: quenched red with high utility in brick detailing.

Accent colors (joinery details, shutters, and balustrades):
- S 7010-B30G and S 5010-B30G: cool, dusty greens ideal for cast iron details and joinery.
- S 1005-G80Y and S 1015-Y: pastel tones for use in window detailing
- S 0502-Y50R: delicate broken white stucco and window frames.
- S 8502-Y: dark neutral shade for plinths and technical components (e.g., gutters and ventilation grilles).

Roofs visible from public spaces should be kept in a dark gray color scheme (e.g., natural slate, burnt brick, graphite tiles) in the color climate of S 7010-B30G. The use of color should consider the textures of the materials; different colors will be received on smooth render, others on porous stone, or boarding. Each cityhouse should have its own individual color character, but in accordance with the palette guidelines. This avoids monotony and simultaneously protects the space from visual chaos. It is recommended that a 'Nowy Żmigród Color Catalogue' be developed as a document to support conservation efforts, revitalization, and new developments, taking into account the colors chosen, as well as texture patterns, woodwork types, and examples of use.

5. Summary

The façade colors in the historic urban layouts of small cities in Subcarpathia, such as Nowy Żmigród, play an important role in shaping local spatial and cultural identity. Its significance goes beyond the aesthetic dimension, becoming an important tool for interpreting heritage and symbolic communication between the past and present. Contemporary design practices increasingly diverge from historic patterns, leading to the erosion of the authenticity of historic spaces and landscape homogeneity. There is a lack of consistent legal and conservation regulations that consider regional color specificities and support design processes based on historical and cultural knowledge of color.

In many cases, the colors of monuments are reconstructed based on limited iconographic sources, which raises the danger of overinterpretation or design discretion. This problem is gaining importance, especially in the context of increasing aesthetic globalization, which leads to the homogenization of public spaces. Uniform, synthetic colors inspired by global design trends are increasingly displacing local color solutions, depriving spaces of their unique identities. Therefore, there is a need to preserve color diversity as a carrier of cultural distinctiveness and of place identity.

The discussion on the color of buildings should consider not only the conservation dimension of authenticity, but also psychological, social, and economic aspects, such as the inhabitants' perception of color and its impact on tourist attractiveness and aesthetic sustainability in the context of climate change. The revitalization of historic urban spaces requires an integrated and multifaceted approach that combines knowledge of architectural history, sociology, color engineering, and urban planning.

In the age of globalization, local color identity is vulnerable to external influences and aesthetic homogenization. Examples of global retail chains or corporate brands show that bright synthetic colors and unified architectural patterns can disrupt the local cultural landscape and weaken a place's identity. Therefore, in small cities in Subcarpathia, it is particularly important to maintain color consistency and protect local architectural traditions from the undue influence of global aesthetic trends. A color scheme that refers to local architectural traditions allows the preservation of the coherence of the cultural landscape, which contributes to building an authentic image of the locality (Pallasmaa, 2012). Using the example of former small cities in the Subcarpathia, which werew in the past characterized by traditional wooden buildings in subdued earth colors, it can be seen that maintaining a consistent color scheme

increases their tourist attractiveness. Harmonious color combinations, inspired by local architectural traditions, can become not only an element of cultural identity but also an attractive feature on the region's tourist map.

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