



## Adaptation of the principle of architectural design code for the coloristic organization of facades of residential areas on the example of Almaty

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**Abstract.** Active urbanization processes are increasingly influencing the architectural appearance of cities. The need to develop a comprehensive strategy for improving comfortable urban spaces arises from the low quality of life of the population and the unfavorable architectural appearance of cities. This highlights the importance of adopting one of the key strategic tasks at the present stage – the development of an architectural design code for all regions of Kazakhstan.

Modern cities face numerous challenges in ensuring sustainable development, preserving cultural heritage, and creating a comfortable urban environment. Elements such as facades, recreational areas, small architectural forms, and advertising play a crucial role in shaping a cohesive city image. Thus, it is important to note that the architectural design code – a set of regulations governing the construction and development of the urban environment based on specific rules and standards – will become one of the key approaches to addressing these issues.

This article will analyze the facades of residential areas in Almaty, providing an accurate basis for identifying further directions for urban development.

**Keywords:** urban environment, architectural design code, Color, facades, coloristic.

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## **Introduction**

In the context of analyzing modern urban development within a historically established environment, one can observe a trend of active construction of contemporary buildings in the central part of Almaty. In most cases, the insufficiently justified introduction of new architectural elements into a historical context leads to the fragmentation of the existing spatial structure and disrupts its integrity.

An analysis of color use in Almaty's architecture shows that until the 20th century, the color schemes of buildings were determined by the stylistic features of the architecture and the functional purpose of the structures. A study of the city's architectural objects revealed a consistent pattern in the choice of color schemes depending on the typology of buildings. For example, dark shades were commonly used for administrative buildings, while residential buildings were predominantly painted in light pastel shades of yellow. A notable example is the development along Seifullin Street, where ochre-yellow and pink hues dominate the facades of residential buildings. In contrast, houses on Kabanbay Street feature predominantly gray tones.

The architectural design of the opera house incorporates a beige color scheme, with individual structural and decorative elements highlighted in white. A typical example of this approach to color can be seen in the development along Tole Bi Street, where soft yellow shades predominate, contributing to a cohesive visual identity of the urban environment.

The color palette of cities is constantly evolving, and this process cannot be halted. However, these changes should be informed by historical experience and modern trends in color application. This is especially crucial in historically developed cities, where the urban color palette is largely shaped by numerous facades, billboards, signs, advertisements, and posters, often creating a visually aggressive environment [1]. This disrupts the cohesive visual identity of the streetscape.

Thus, there is a clear need to establish an architectural design code to ensure a harmonious color palette within the historical environment, based on defined principles for color application.

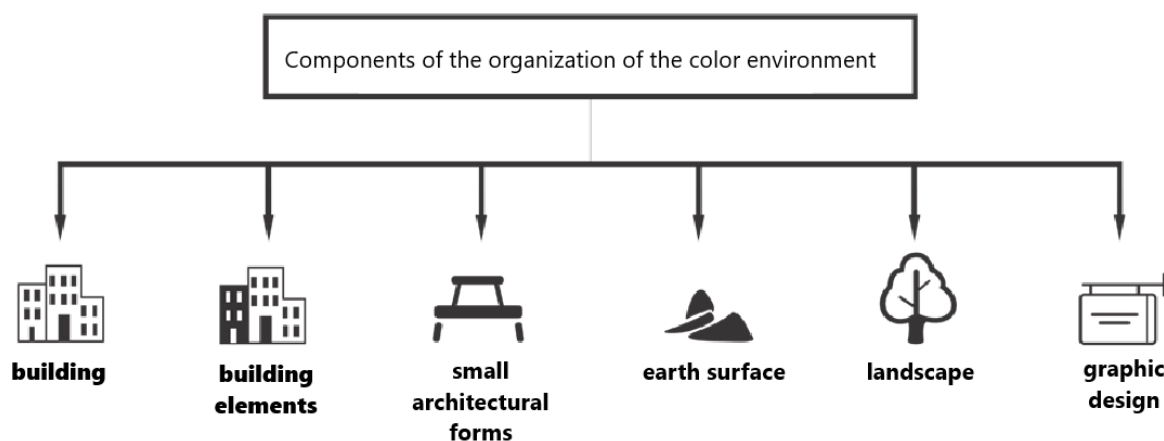
## **The methodology**

The color condition of residential facades in Almaty is at an unsatisfactory level, necessitating the application of an environmental approach to their design. This approach should consider not only standard functional requirements but also the complex interaction of all elements of the urban environment, ensuring their harmonious perception and the creation of a cohesive color image. To achieve this, it is important to identify the key components of residential courtyards, as they form the foundation of the urban environment, serve functional purposes, and contribute to the development of spatial characteristics. These components include buildings and structures, along with their architectural elements, small architectural forms, as well as elements of landscape design and greenery systems [2].

Landscaping serves not only a utilitarian function related to environmental and recreational aspects but also plays a crucial role in shaping the color composition of the urban environment, contributing to its visual identity and compositional integrity.

In general, state regulations on urban design and planning provide guidelines for shaping the city's color identity. However, these recommendations do not always effectively preserve the distinctive color characteristics of the urban environment [3].

The fundamental components that define the spatial organization of residential areas serve as the structural foundation for developing a differentiated typology of urban elements. These components include facades, advertising and informational structures, small architectural objects, and urban navigation. Since the primary focus of color organization is on buildings and their architectural elements, other urban components are often overlooked (Scheme 1). This imbalance results in a visual dissonance in the city's color composition, including in Almaty.



Scheme 1. Components of the color environment

(Source: <https://www.dvfu.ru/upload/medialibrary/f0f/2016-3-11.pdf>).

In modern urban planning, facades play a major role in shaping the appearance of buildings. However, general design aspects, such as the organization of navigation elements, small architectural forms, and graphic design elements, are often overlooked. This highlights the need for a regulatory document in the form of an architectural design code, which would standardize these aspects [5].

A generally accepted architectural design code for Almaty, specifically for residential areas, is essential for creating and implementing a well-structured urban planning solution, including the development of a coherent color plan for the city [6]. The application of an architectural design code will help shape attraction zones by using color compositions on facades as focal points within the urban structure (Fig. 1a).

In the design of residential complexes in Almaty, a common approach involves selecting a calm, neutral color palette as a base, with a dominant accent color that stands out compositionally in the spatial environment, thereby reducing the monotony of the cityscape (Fig. 1b, c). As urbanization also affects the historical parts of the city, such compositional accents bring vibrancy to otherwise uniform residential areas [7].

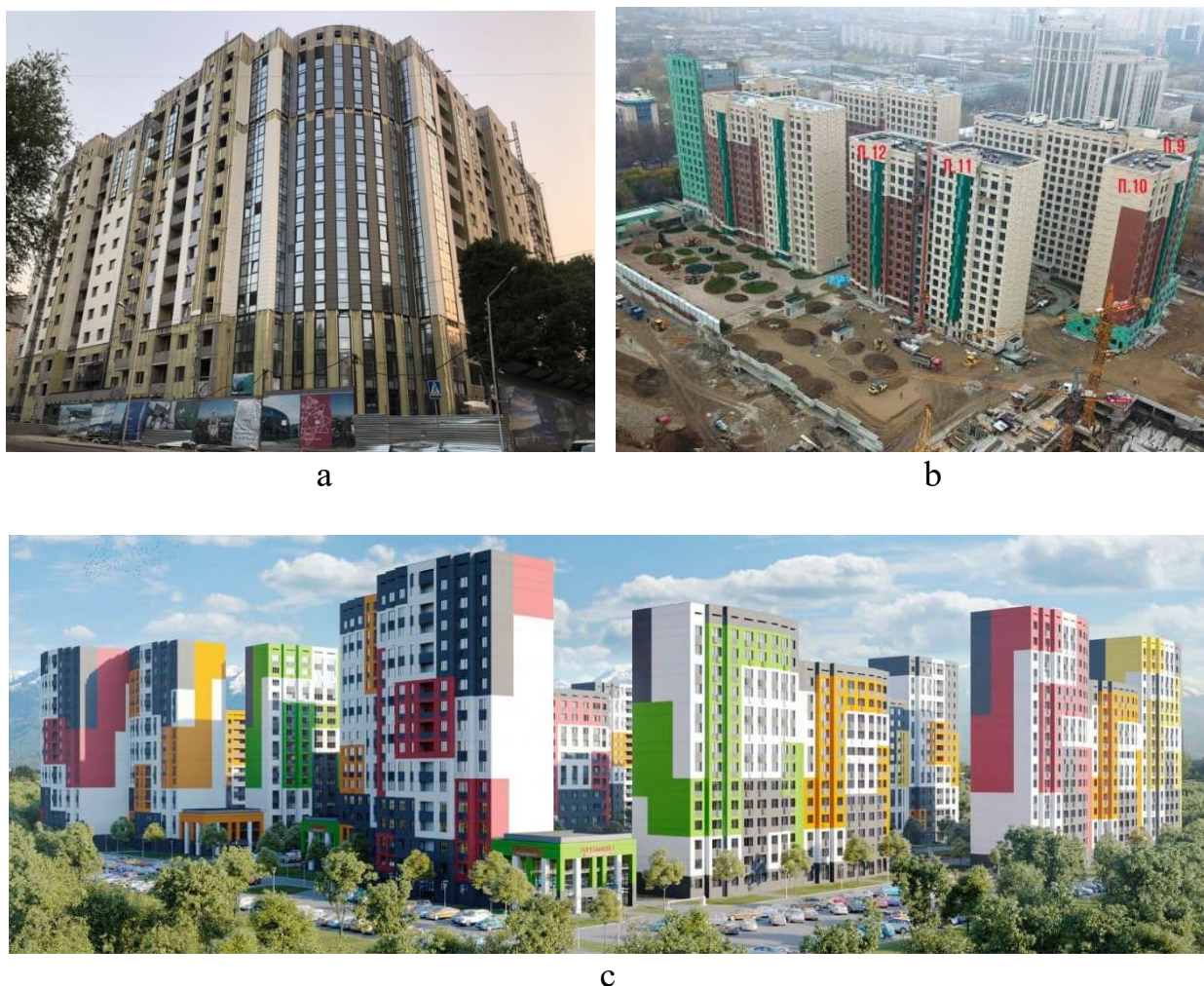


Figure 1. Colour organisation of facades in urban environments: a – Novella residential complex, 225 Bayzakova; b – Legenda residential complex, Abay Ave., corner of Manas St.; c – Gulder residential complex, 542 Raimbek Ave. (Source: <https://bi.group/ru>).

The color design of buildings serves multiple functions [8]. Color is not only a tool for designating functional purposes but also a means of expressing the cultural and traditional identity of an area. Additionally, it can be an effective architectural solution [9]. Through the strategic use of color, buildings can be visually distinguished from the surrounding mass of standardized structures. Techniques such as highlighting specific architectural elements – balconies, entrance areas, and attics – help achieve this effect (Fig. 2a, b).

The dominant colors used in urban compositions are typically pastel shades, while bright colors serve as accents. This approach helps break up the city's predominantly gray color scheme (Fig. 2c).



Figure 2. Coloristic compositions on facades: a – residential complex “Remizovka” 5th lane, 16; b – residential complex “Parasite”, micro-district Kairat, plot 157/1; c – residential complex “Element”, Tazhibaeva 157 (Source: <https://dom.kz/listing/333997> ).



## Findings/Discussion


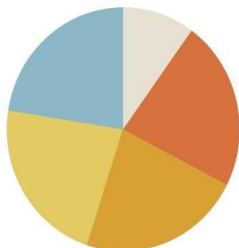
Creating a color-dominant feature independent of its location within the city structure allows for the formation of compositional centers, which can eventually become visual landmarks for districts or micro-districts [10].

In addition to developing a unified color plan that encompasses all scale levels of the urban environment, it is crucial to carefully design transit spaces [11]. As people move through residential areas or courtyards, they sequentially encounter various zones with unique characteristics. To enhance the quality of the urban environment, it is essential to create a dynamic visual experience while ensuring each space has a distinct identity, regardless of its scale [12].

Modern design approaches prioritize defining the primary scenario of each urban mise-en-scène. Based on this concept, a subject-spatial composition is developed with an intentional distribution of focal elements (Table 1).

Table 1. Coloristic organization of the color scheme using the example of facades in Almaty (Source: Author).

№	Image	Color Ratio Chart	Color plan	Conclusions on coloristic composition
1	 <p data-bbox="252 1061 509 1227">Residential complex "Fantasy" micro-district Samal-2, 105 Mendikulova Boulevard</p>		<p data-bbox="826 465 1086 600">Dominant brown color combined with beige and green inserts</p>	<p data-bbox="1118 465 1425 913">The shades of green are cold, and brown is warm, which causes dissonance. The warm shade of beige gives a harmonisation of the colour scheme, but since there are two shades of green, one of them is warm and the other is cold, the composition of the facade looks dark and unattractive.</p>
2	 <p data-bbox="252 1778 509 1908">Residential complex "Shugyla", Shugyla micro district, 341 Nauryzbay district</p>		<p data-bbox="826 1245 1086 1487">The facade uses bright and aggressive shades such as bright purple (lilac), yellow, blue and bright green. The base is gray.</p>	<p data-bbox="1118 1245 1425 1592">The environment is aggressive, as the architecture is not integrated into the general environment. Colour solutions rarely found in the natural environment are characterized by high saturation and contrast.</p>

<p>3</p>	 <p>Residential complex "Aquarelle", Satpaeva 90a</p>		<p>The main shade is blue. As an accent element, stripes of orange, green and yellow colors were used.</p>	<p>The imbalance of the color scheme does not allow visual focus and determination of the compositional center, thus creating visual chaos.</p>
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Current color organization analyses of residential areas often overlook factors such as building height and density. Over the past few decades, aggressive urban development has contributed to increased visual noise. As demonstrated in Table 1, there is a growing trend of using bright and dark shades that clash with the city's overall visual identity. This underscores the necessity of regulatory documents to guide the color organization of urban spaces [13].

### Findings/Discussion

The study has led to conclusions that can be incorporated into the architectural design code for Almaty's residential areas:

1. If the base color is a light pastel shade, there should be only one accent color (Fig. 3, 4, 5).
2. In cases where the building has an elongated shape (Fig. 6), it is recommended to emphasize its geometry and use a warm color palette with similar material textures. [14]
3. Dark dominant colors can be softened by increasing the glazing area and incorporating compositional techniques, such as adding structural facade elements (Fig. 7).
4. When a group of buildings shares a similar color scheme, accent colors should be introduced for specific architectural elements (Fig. 8).



Figure 3. Residential complex “MEDEU PARK” Begalina 7 - Tole bi (Source: Author).



Figure 4. Residential complex “Altyn Bulak” Brusilovsky St., Building 163 (Source: Author).



Figure 5. Residential complex “Niko”, st. Tole bi-Momysuly (Source: Author).



Figure 6. Residential complex “Ile De France”, Kazhymuqan Street, 59 (Source: Author).

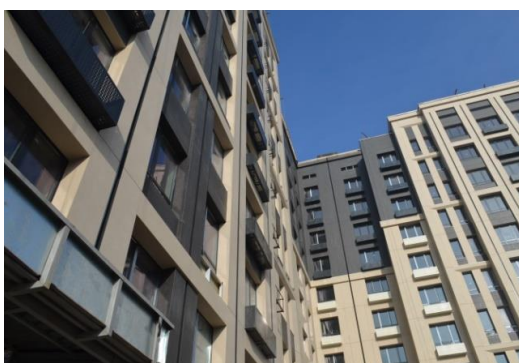


Figure 7. Residential complex “Exclusive Life”, Kabanbay Batyr St. 104 (Source: Author).



Figure 8. Residential complex “Famous Town”, St. Zhuldyz - st. 16<sup>th</sup> (Source: Author).

Creating a visually comfortable urban environment for residential areas is more relevant than ever in contemporary urban design. [15] While modern requirements and aesthetic preferences have evolved, color organization remains a crucial aspect of architectural composition,



particularly in a metropolis like Almaty. Many of the city's standardized residential buildings are in need of renovation, and diversifying their architectural appearance can help mitigate the monotony of large-panel housing developments [16].

## Conclusions

The architectural design code serves as an effective tool for managing the urban environment, balancing modern requirements with the preservation of cultural heritage. The successful implementation of an architectural design code depends on considering the local context, ensuring active public participation, and securing government support.

Applying these principles in Kazakhstan can contribute to a more harmonious and sustainable urban environment. During this study, key principles for the architectural design code, specifically regarding the color organization of residential areas, were formulated with environmental considerations in mind:

- The principle of limiting the color palette based on regional characteristics.
- The principle of contextual dependence, ensuring that color choices align with a building's position within the urban ensemble.
- The principle of harmonization, integrating the color palette of residential areas with the polychrome environment of the surrounding cityscape.

Implementing these research findings in architectural practice will ensure the optimal functionality of residential areas while contributing to a well-integrated and aesthetically cohesive urban environment.

**Conflict of interest.** There is no conflict of interest between the authors.

### *The contribution of the authors*

**Almukasheva D.B.:** contribution to the concept; execution of the claimed scientific research; creation of a scientific article.

**Nazarova D.N.:** interpretation of the claimed scientific research.

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### **Алматы қаласының мысалында тұрғын аудандардың қасбеттерін колористикалық ұйымдастыру үшін сәулеттік дизайн кодының принципін бейімдеу**

**Аңдатпа.** Біңғайлы қалалық кеңістікті жақсартудың кешенді стратегиясын ұйымдастыру қажеттілігі халықтың өмір сүру сапасының төмендігі және қалалардың қолайсыз сәулеттік келбеті проблемасына байланысты. Бұл қазіргі кезеңде қазақстанның барлық өңірлері үшін сәулеттік жобалау кодексін әзірлеудің маңызды стратегиялық міндеттерінің бірін қабылдау қажеттілігін көрсетеді.

Қазіргі заманғы қалалар тұрақты дамуды қамтамасыз етуде, мәдени мұраны сақтауда, жайлы қалалық ортаны құруда көптеген қиындықтарға тап болады. Қасбеттер, демалыс,

кішігірім архитектуралық формалар, жарнама сияқты компоненттер қаланың тұтас бейнесін қалыптастыруда маңызды рөл атқарады. Осылайша, сәулеттік жобалау кодексі—нақты ережелер мен стандарттар негізінде қалалық ортаның дамуы мен дамуын реттеуді қамтамасыз ететін құрал-осы мәселелерді шешудің негізгі тәсілдерінің біріне айналады.

Қалалық ортаның сапасын жақсартудың дұрыс құралдары мен тиімді әдістерін таңдау үшін оның қазіргі жағдайын бағалау, қала проблемаларын жан-жақты талдау, оның күшті және перспективалы даму бағыттарын бөліп көрсету қажет. Рейтингік агенттіктердің әртүрлі зерттеулері, салыстырмалы талдау кешендері, индекстері бар. Мақалада Алматы қаласының тұрғын алабының қасбеттері талданады, бұл қалалық ортадағы одан әрі даму векторларын анықтаудың нақты көрінісін береді.

**Түйін сөздер:** қалалық орта, сәулеттік дизайн-код, түс, қасбет, колористика.

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### **Адаптация принципа архитектурного дизайн-кода для колористической организации фасадов жилых районов на примере Алматы**

**Аннотация.** Растущая урбанизация все чаще дает о себе знать. Необходимость разработки комплексной стратегии улучшения комфортного городского пространства обусловлена проблемой низкого качества жизни населения и неблагоприятного архитектурного облика городов. Это подчеркивает необходимость принятия одной из важнейших стратегических задач по разработке архитектурного дизайн-кода на современном этапе для всех регионов Казахстана.

Современные города сталкиваются с многочисленными вызовами в обеспечении устойчивого развития, сохранении культурного наследия и создании комфортной городской среды. Такие компоненты, как фасады, места отдыха, малые архитектурные формы и реклама, играют важную роль в формировании целостного образа города. Таким образом, архитектурный дизайн-код – инструмент, который обеспечит регулирование застройки и развитие городской среды на основе определенных правил и стандартов, – станет одним из ключевых подходов к решению этих проблем.

Чтобы выбрать правильные инструменты и эффективные способы улучшения качества городской среды, необходимо оценить ее текущее состояние, всесторонне проанализировать проблемы города, выделить его сильные стороны и перспективные направления развития. Существуют различные исследования рейтинговых агентств, комплексы сравнительных анализов и индексы. В статье будет проведен анализ фасадов жилого района Алматы, который даст точную картину определения дальнейших векторов развития городской среды.

**Ключевые слова:** городская среда, архитектурный дизайн-код, цвет, фасады, колористика.

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