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METHODS OF FORMING COLOR CODES IN HISTORICAL AREAS OF THE CITY, THE INFLUENCE OF ARCHITECTURAL STYLE ON DESIGN AND CODE

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Abstract. The need to create design-code rules for the historical areas of cities, to classify the streets and roads based on the design-code rules is one of the important tasks of today. The revolutionary changes in the historical part of the city, the destruction of traditional urban structures are caused by the streets, which are an integral part of urban development. Due to improperly organized urban infrastructure constructions, the historical region loses its national-artistic identity, socio-cultural, compositional stability is disturbed. The research examines the historical regions of the ancient cities of Uzbekistan, Bukhara and Samarkand, and considers the methods of forming color codes for historical regions based on the color and stylistic solutions of the oldest architectural monuments in them.
Key words. design code, color codes, historical areas, Bukhara, Samarkand.

Introduction

In recent years, important works have been carried out in our Republic to preserve historical monuments, improve construction and architecture, develop urban planning and take it to new levels. In this regard, in order to study traditional architecture and culture, to create a stylistically unified, comfortable and safe urban environment, according to the Decree of the President of the Republic of

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http://magellanes.com/

Uzbekistan No. PF-6119 dated November 27, 2020, the development of regional "design code" release and introduction are set [1].

UNESCO and the Cultural Heritage Agency have carried out a number of efforts to preserve the historical cities of Uzbekistan and their historical environment. For example, on December 22, 1995, within the framework of the Convention on the Protection of the Universal Cultural and Natural Heritage, the object "Ichan-Qala", "Samarkand - Crossroads of Cultures", the historical centers of Bukhara and Shahrisabz, and the Chotkal biosphere (natural heritage) in the city of Khiva. Included in the World Heritage List [2]. But today, the goal cannot be achieved only by preserving heritage objects. Due to the development, there are problems that make it difficult to perceive the environment. They mainly create visual conflicts in the areas adjacent to the monument. By visual conflict, we need to understand a number of problems, such as architectural constructions that are completely alien to the environment, their stylistic and color solutions, and the disproportion of the area to the ratio. One of the most effective ways to do this and find a solution today can be the development of design codes for the area.

Methodology

1. Design-code analysis, study of world experience.
2. Visual problems of environment perception in historical cities.
3. Proposals and critical conclusions on the methods of determining the color codes of the cities of Bukhara and Samarkand.

Literatur ereview

The concept of design-code is not considered a very old concept in urban architecture and design. However, in many famous cities, unique examples of architecture were built based on specific architecture and urban planning rules, as a result of which it was able to achieve its unique appearance and uniform style. It is not an exaggeration to say that these rules in some sense motivated the emergence of the concept of "Design-code". In general, we can see a lot of foreign experiences about how the design codes of cities came about and why it is needed.

Originally, design code forms were used to set standards to improve safety, health, or sanitation. For example, after the great fire in the capital of England in 1667, the "London Reconstruction Act" was developed. In this law, buildings and streets are divided into several types. Elsewhere, they were also used to provide a reflection of the city's shape. A prime example of this is the Georgian Bathhouse in New Edinburgh, one of the cultural centers of that era [3].

Design codes and standards provide general conditions and requirements for the design, construction and use of buildings. Such codes and standards have long served as the primary tool for governments to set agreed norms across jurisdictions. The concept of building codes dates back to the time of Hammurabi (ca. 1772 BC), who created a work-based code with strict penalties for non-compliance. The design code rules have been developed and refined in Europe and adopted as building standards. These codes later became the basis for the creation of USA city codes. Serious fires in Chicago and Baltimore, and an earthquake in San Francisco in the late 19th and early 20th centuries, spurred further development of design codes for building design and construction [4].

One of the most beautiful cities in the world, the city of Siena in Italy has used the shapes of the

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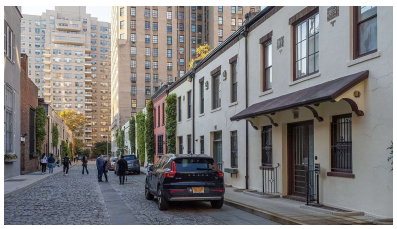
http://magellanes.com/

design code for centuries to give it a unique, harmonious shape and a unified look (find the picture kk). Today, design codes in various forms are used internationally, for example in Germany, France, the Netherlands, Australia and the United States, as a tool for high-quality modern urban planning [5].

In the 19th century, attention was also paid to the formation of city rules in the Ottoman state. In the period from 1820 to 1900, 9 regulations on buildings and streets were adopted. These rules included planning rules for building types, building heights, building types, building elements, street widths, and fire-prone areas by urban elements. Until the 19th century, several imperial decrees were issued for buildings, which regulated building types, certain building elements (roofs, caravans, terraces, oriels) and building materials in order to mitigate the risk of fire, and regulated the height of houses according to ethnic-religious origin in order to maintain social order. included restrictions. From the beginning of the 19th century, attempts were made to systematize building regulations. According to him, after the establishment of the necessary city institutions (that is, the city hall, the Ministry of Public Works, the street improvement commission), they could be used in some districts of the region. Although Istanbul's building regulations were adopted to transform the entire city, due to financial and administrative constraints, they could only be implemented in certain areas (find image kk) [6].

In world experience, design code rules are recognized for their high level of effectiveness. Today, many cities around the world have their own individual design codes (Figures 1,2).

<table>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Spy museum street</td><td>Gendarmenmarkt square</td><td>Kastanienallee street</td></tr>
<tr><td colspan="3">Historic areas of Berlin</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Washington Mews Street</td><td>Church street</td><td>Pomander walk street</td></tr>
<tr><td colspan="3">Historic streets of New York</td></tr>
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CAHIERS MAGELLANES-NS
Volume 06 Issue 2
2024

ISSN:1624-1940
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Bairro Alto, before

Bairro Alto, now

Historic street of Lisbon

Figure 1. Individual design-code solutions of historical areas.

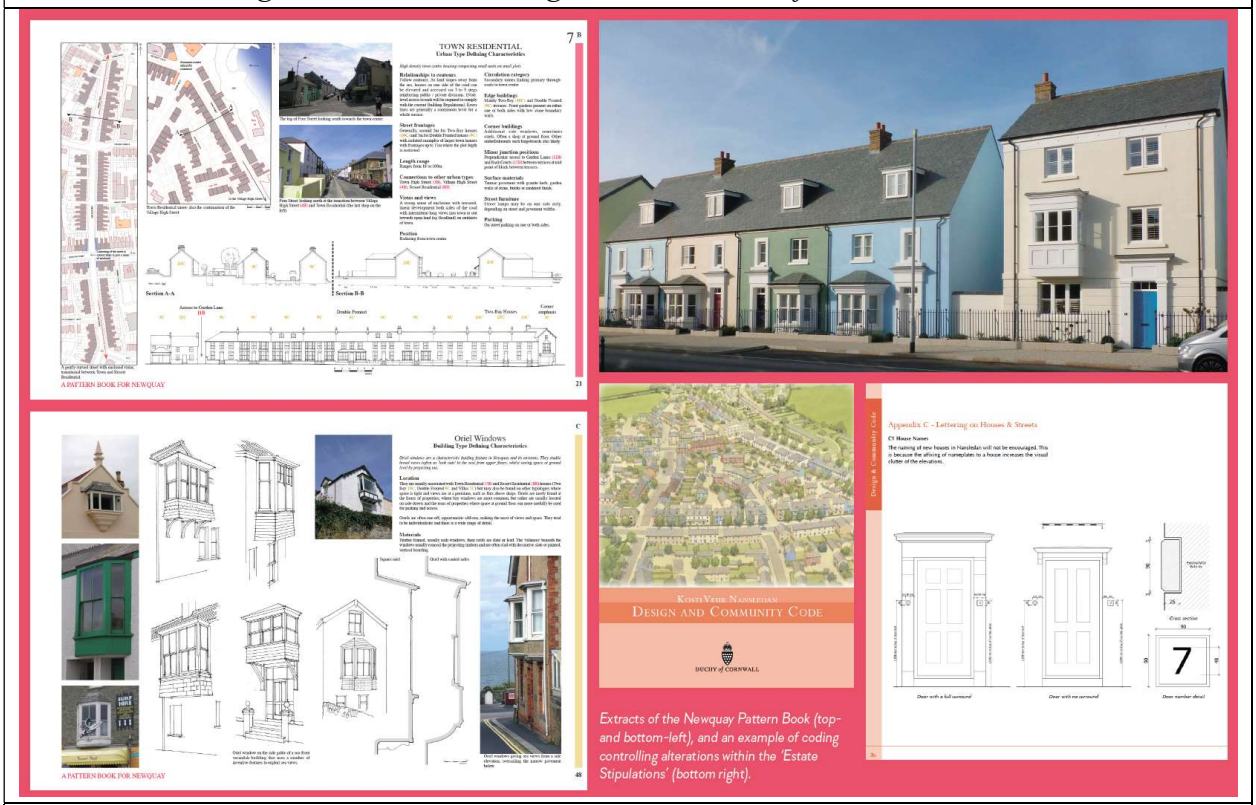

Figure 2. A snapshot of design code solutions for England's historic sites [7]

Maintaining the individuality of the environment with the help of design-code

There are many problems that can be solved within the framework of design code rules in the historical cities of Uzbekistan. Including: visual pollution of the urban environment, disproportionately changing building facades to the style of the environment, non-existence of individually considered general requirements for the selection and placement of information and improvement structures in relation to the environment, etc.

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http://magellanes.com/

The rules of the design code should be developed separately for each city or region, taking into account these requirements. Territories may have different functions or sizes and include representatives of different societies. Accordingly, areas with sports or recreational activities, areas with residential or commercial activities may have their own design code. Currently, the rules of the design code are divided into different sections. According to it, regulations for building facades, rules for signs and indicators, regulations for advertising objects, rules for beautification of areas around buildings, design codes depending on the category of streets, design codes for historical areas, separate codes for non-stationary objects, etc. there are code rules.

In our republic, Z.H. Adilov and Z.E. Researchers such as Matniyazov present their proposals for improvement. They say that educational institutions should have their own style and tradition of design and beautification solutions. According to them, if there is an entrance to an academic lyceum and an entrance door on the main facade of the main building, it is better to write the name of the lyceum in capital letters in the Latin alphabet. Also, the OTM logo can be placed before the inscription [8]. In addition, they conducted research on the arrangement of streets and roads and the organization of beautification works [9,10].

When referring to the integrity of the historical center of Bukhara, it means various peculiarities (attributes) of urban planning, including urban construction, form and design, used materials and techniques, functions and traditions. Some factors have a negative impact on the originality of objects, leading to the violation of this integrity, for example: 1) a reduction in the use of traditional materials and construction techniques and the transition to new construction materials, as well as the use of new architectural details; 2) inconsistent documentation of main buildings and city structure; 3) the introduction of incorrect designs in new buildings under the pressure of urban development [11].

Based on world experience, the design code of historical areas includes a section on color coding of facades in order to reduce the contrast between the historical center and peripheral areas. In this revision, we will consider the color, i.e., coloristics problems of the historical area and their design-code proposals on the example of the city of Bukhara and Samarkand.

In order to implement color composition solutions for facades of individual buildings and complexes in historical areas, it is necessary to define a number of basic tasks:

a) to analyze the theory and experience of coloristic design, to determine the essence of the conditions of perception of color schemes of historical and modern buildings;

b) systematization of the use of color elements in historical and modern architecture, development of classification of color and compositional solutions;

c) development of a survey methodology, conducting an experiment with the participation of a group of experts and a control group, evaluating the color and compositional solutions of the facades of modern residential buildings built in the city in question, in accordance with the approved classification;

d) development of recommendations for the construction of color and composite solutions for residential buildings that meet the requirements of the design code.

Of course, color has a great influence and importance in human understanding of the environment. Color can affect human psychology. N.Y. In her research, Volkova identified three different spheres of effect of color compositions on a person (physical effect, mental effect, symbolic

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http://magellanes.com/

effect), and also studied the effect of color on the perception of form. In addition, it creates a model for the formation of color areas of building facades [12].

Problems of size and scale of buildings in perception of the environment L.V. Robejnik proposed a solution using the following color techniques: dividing a large volume into colored pieces, using vertical or horizontal rhythm, adding small architectural details to the facade, using bright colors in painting buildings, and other techniques [13].

Methods and assumptions for determining color codes for a historic area

There are important factors to consider when assigning color codes to historic areas:

- existence of natural-climatic features;
- color of historical area, city and natural environment;
- psychological effect of colors;
- the social structure of the architectural environment;
- historical and artistic value of the architectural environment.

Within the framework of the design-code of the historical area, the color solutions of the building facades on the border of the center and periphery areas can be determined using the following methods:

- identification of historical buildings in the area based on color solution (Fig. 3);
- determination based on the color solution of buildings and structures of a certain style and type in the area (Fig. 4);
- determination based on the color solution of the dominant buildings and structures of the area (Fig. 5);
- on the basis of color changes caused by natural factors in the historical area (Fig. 6);

CAHIERS MAGELLANES-NS
Volume 06 Issue 2
2024

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http://magellanes.com/

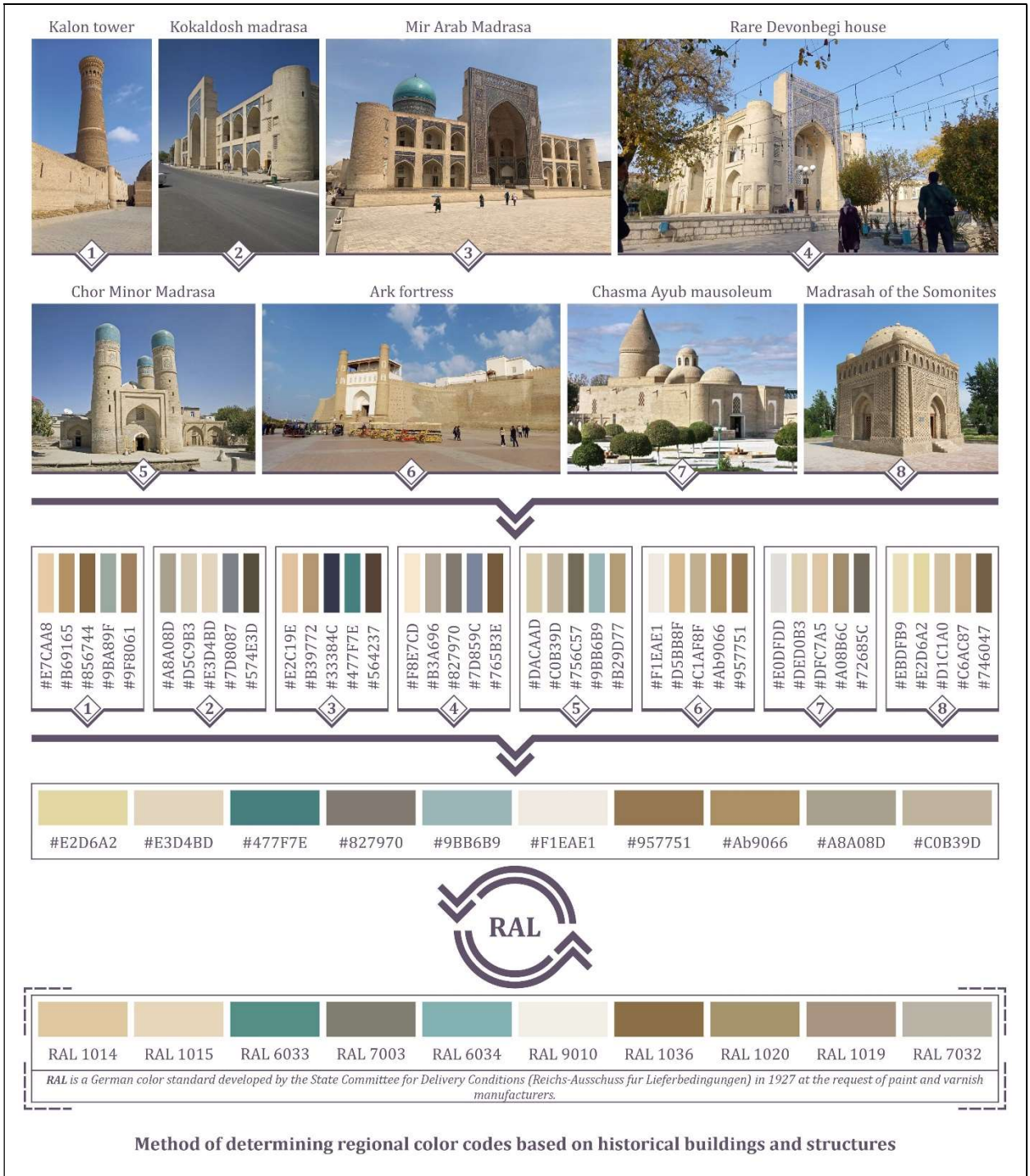

Figure 3.

CAHIERS MAGELLANES-NS
Volume 06 Issue 2
2024

ISSN:1624-1940
DOI 10.6084/m9.figshare.2632599
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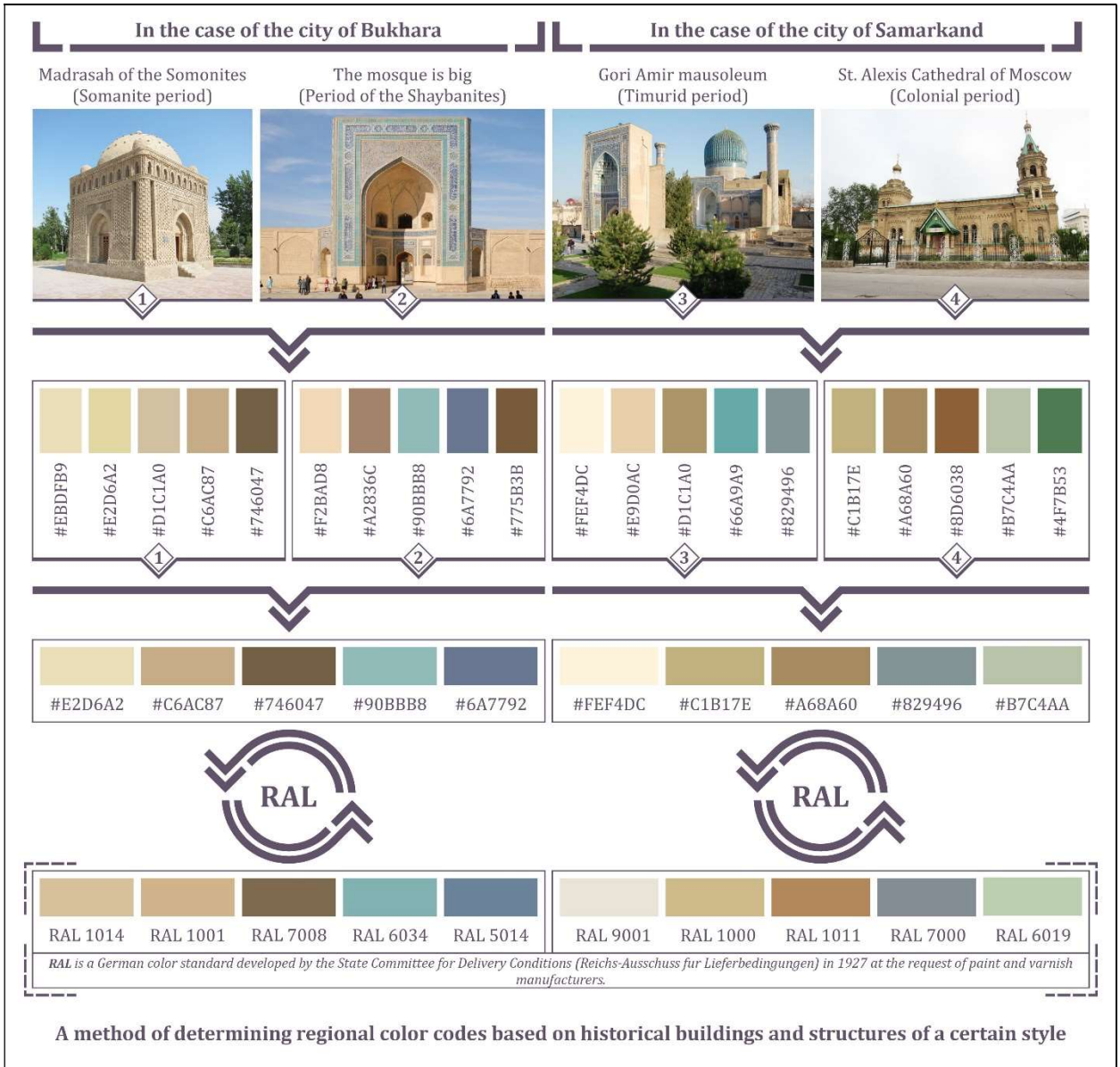

Figure 4.

CAHIERS MAGELLANES-NS
Volume 06 Issue 2
2024

ISSN:1624-1940
DOI 10.6084/m9.figshare.2632599
http://magellanes.com/

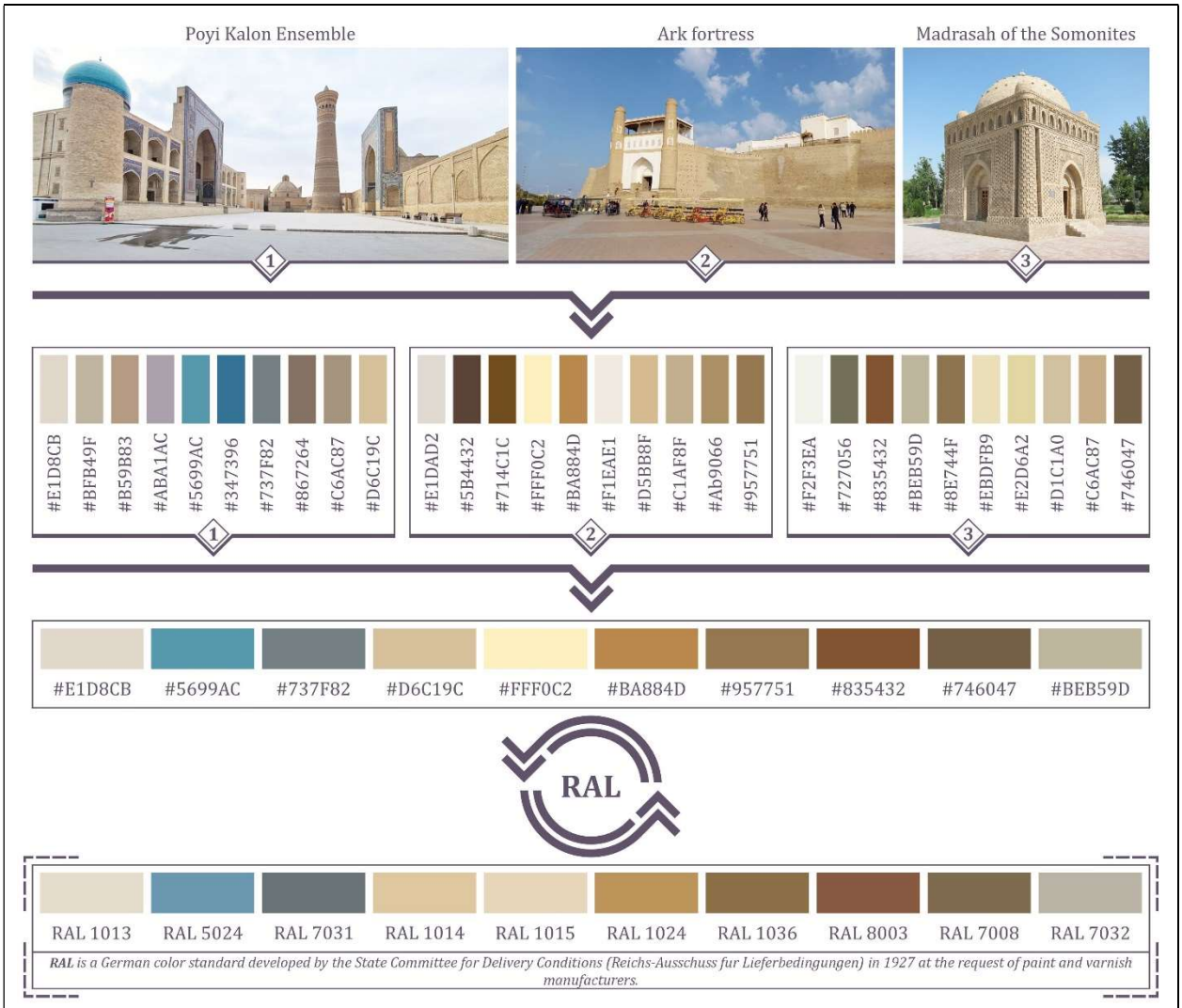

Figure 5.

CAHIERS MAGELLANES-NS
Volume 06 Issue 2
2024

ISSN:1624-1940
DOI 10.6084/m9.figshare.2632599
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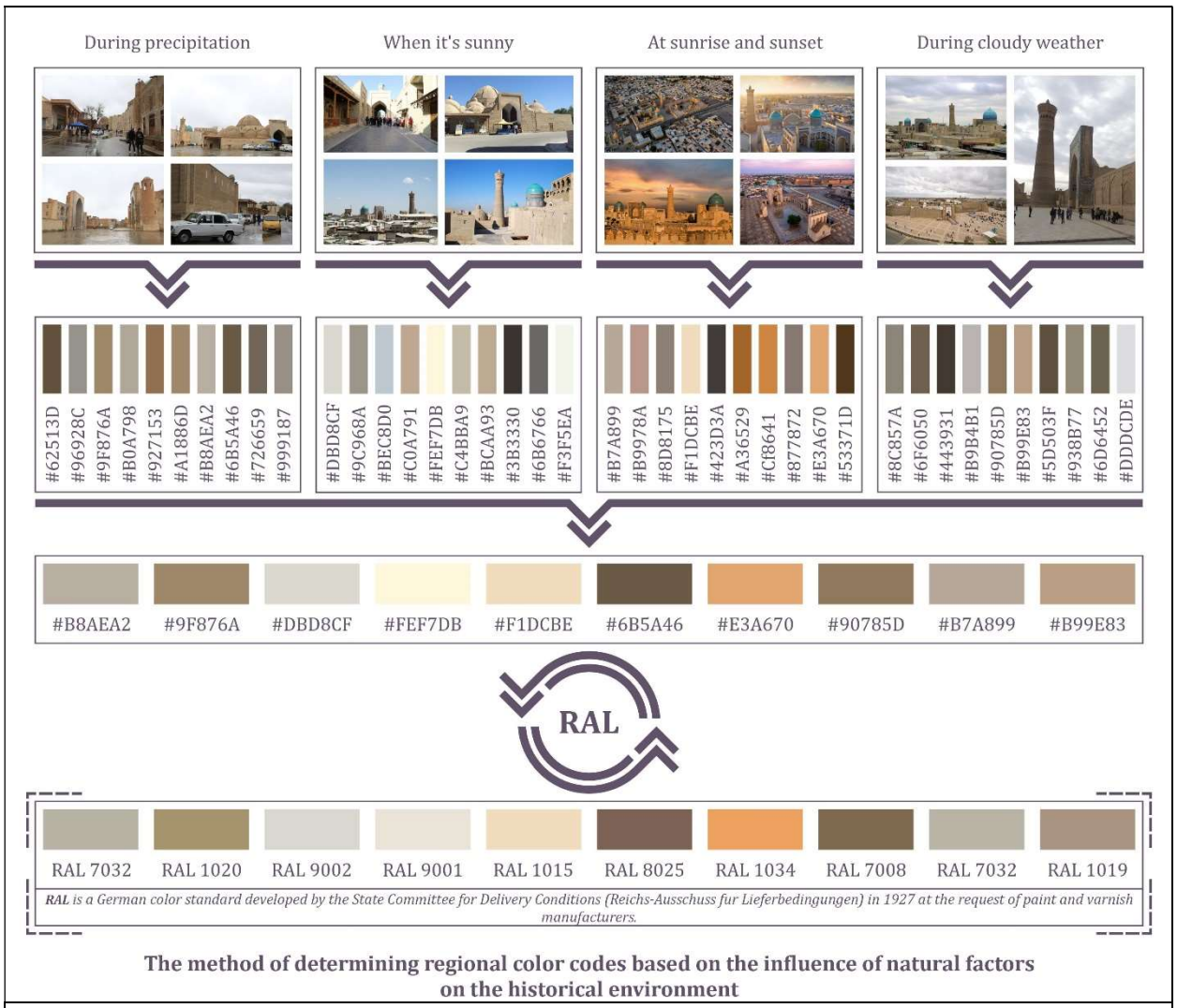


Figure 6.

The influence of natural factors on the facades of architectural objects in the historical regions of Bukhara and Samarkand:

- the intensity of the sun's rays affects the perception of the contrast of the color environment and the color and texture of the materials. in the southern regions of the country, saturated colors, great brightness and color contrasts are naturally accepted;

- climatic conditions of the region. since it has a hot climate, it is recommended to use a relatively cold color range when designing the color code for the facades of buildings;

- it is necessary to take into account the spectrum of scattered rays in the cloudy sky of climatic conditions,

- impact of precipitation and fog;

- color perception decreases as a result of air pollution (dusting), color combinations lose contrast due to dust. In such conditions, it is recommended to use a more saturated and contrasting color scheme;

CAHIERS MAGELLANES-NS
Volume 06 Issue 2
2024

ISSN:1624-1940
DOI 10.6084/m9.figshare.2632599
http://magellanes.com/

- in a noisy environment, it is advisable to use calm, that is, cold, low-saturated colors.

Another way to form color codes is to organize wide use of building and decoration materials of historical buildings and structures on the facades of buildings within the borders of the historical area. Through this method, it is envisaged to develop a color solution of the environment based on traditional materials. Improper use of historical architectural style elements, incorrect placement of its ornaments, adding extraneous elements to the style destroys the stylistic individuality of monuments in protected areas, reduces their historical value, and even has a great impact on the color solutions of buildings (Figure 7).

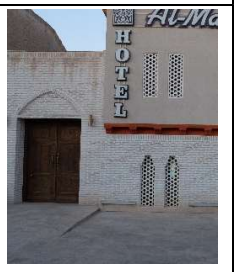
Hotel Malika Prime. Samarkand

Shohjahon Palace. Samarkand

Hotel Durdona. Samarkand

Hotel Caravan. Bukhara.

Chor Minor market. Bukhara.



Hotrl Al-Malik. Bukhara.

Figure 7.

In the cities of Bukhara and Samarkand, we can see straw, brick, wood, gypsum as the main building materials. For decoration, ganch, glazed rivet, glazed brick, choru brick were widely used. For example, both the core and decoration of the Kalon tower were made of chorus bricks (27x27x4-5 cm) [14].

Results

In an experiment conducted using analytical methods, the final color results for building facades were determined based on RAL standards. According to it, the general results of the above 4 methods were analyzed. Ral 5014, Ral 5024, Ral 6033, Ral 6034 colors are recommended for glazed bricks, tiles and their facades. RAL 6033 and RAL 6034 colors are very suitable for the protected areas of some colonial-style monuments of the city of Samarkand. Ral 1014, Ral 1015 colors are optimal for giving a brick effect on building facades. Ral 7032 and Ral 9001 colors received the most votes for the gray wall

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effect. Ral 1036, Ral 7008 colors are recommended for wooden elements and other decorations on the front, structural parts. These results are highly effective in achieving the intended goal, even if the highest accuracy is not calculated.

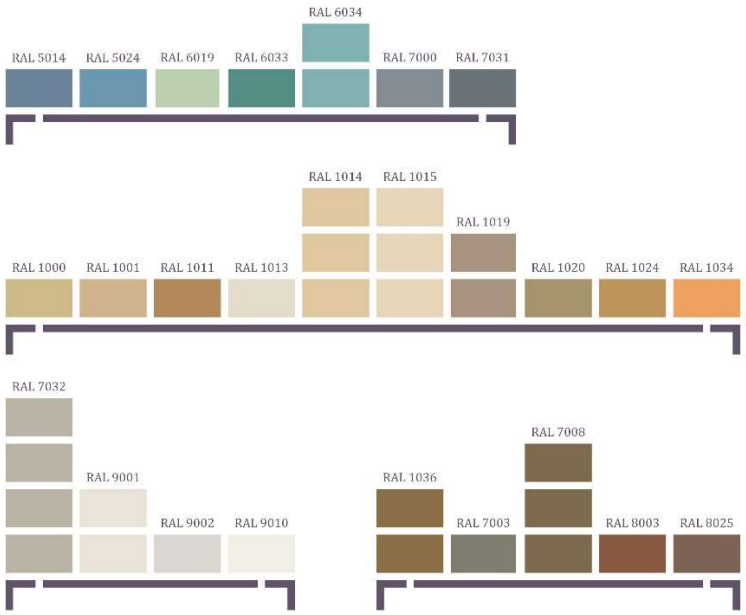

Figure 8. Total value of detected colors

Discussion

Using this method, the elements of historical architectural objects and aspects of their use in buildings today were studied. Color solutions of existing buildings in protected areas were analyzed (Figures 9, 10). The results of the analysis showed that in the buildings of the protected areas of Bukhara, we witnessed a wonderful solution of intertwining traditional and modern style. Although the materials were used relatively correctly, different colors of the same type of material were used in one building. In some places, completely incompatible forms and contrasting colors of decorations occupy the front surfaces. In the buildings, a special combination of straw material and brick facade compositions was found (Fig. 11). One of the biggest problems in the color composition solutions of the city of Samarkand is the use of dark reddish-brown, which contrasts with the color of the environment. This is a process mainly related to tomyopka material, and the color of this modern material is very contrary to the historical context. In addition, in both cities, we witnessed a rough mixing of oriental and Hellenistic horns in decorations. This, of course, greatly affects the design potential of the city.

CAHIERS MAGELLANES-NS
Volume 06 Issue 2
2024

ISSN:1624-1940
DOI 10.6084/m9.figshare.2632599
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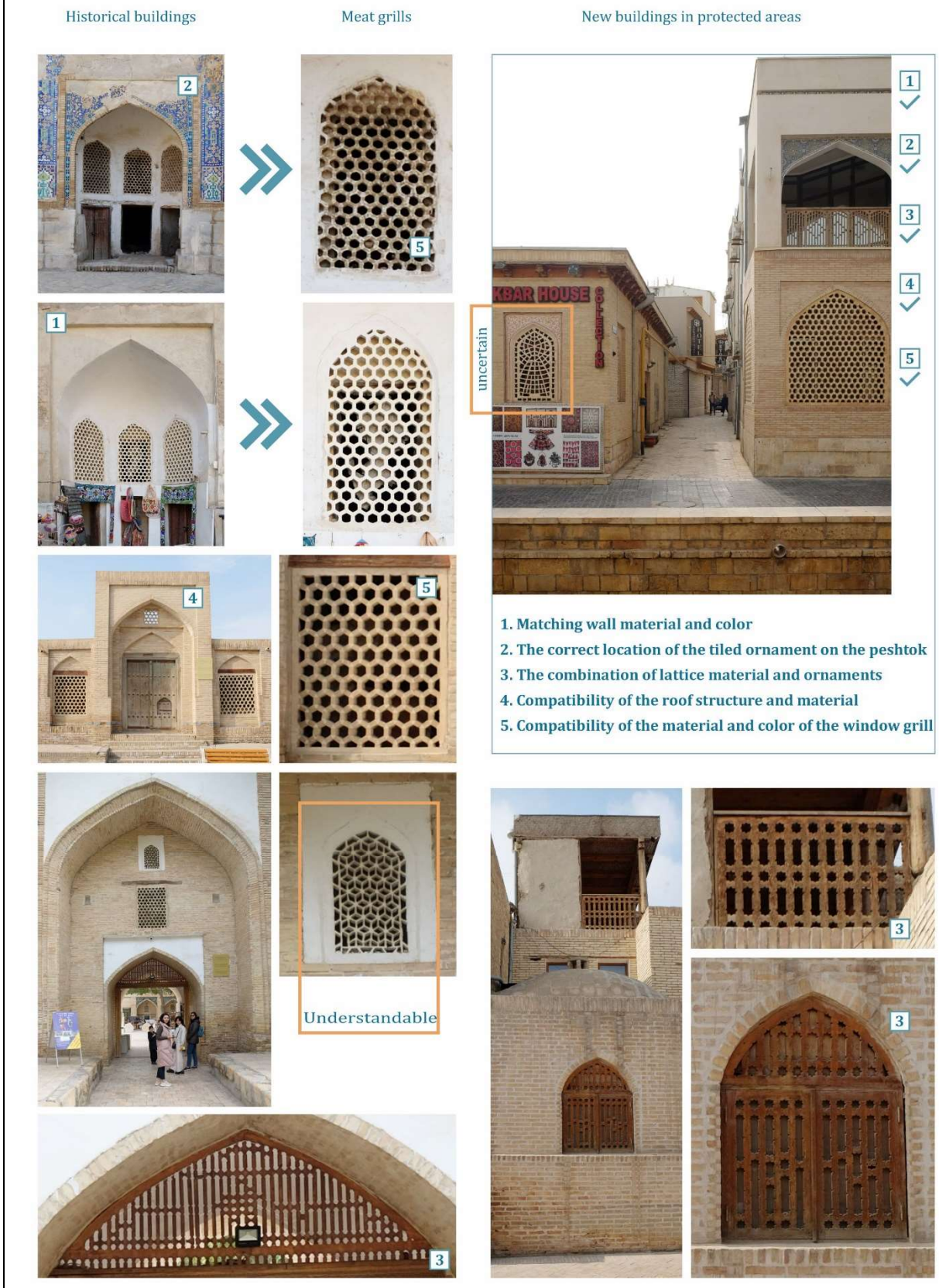

CAHIERS MAGELLANES-NS
Volume 06 Issue 2
2024

ISSN:1624-1940
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Figure 9. Analyzes of the use of decorative elements on facades

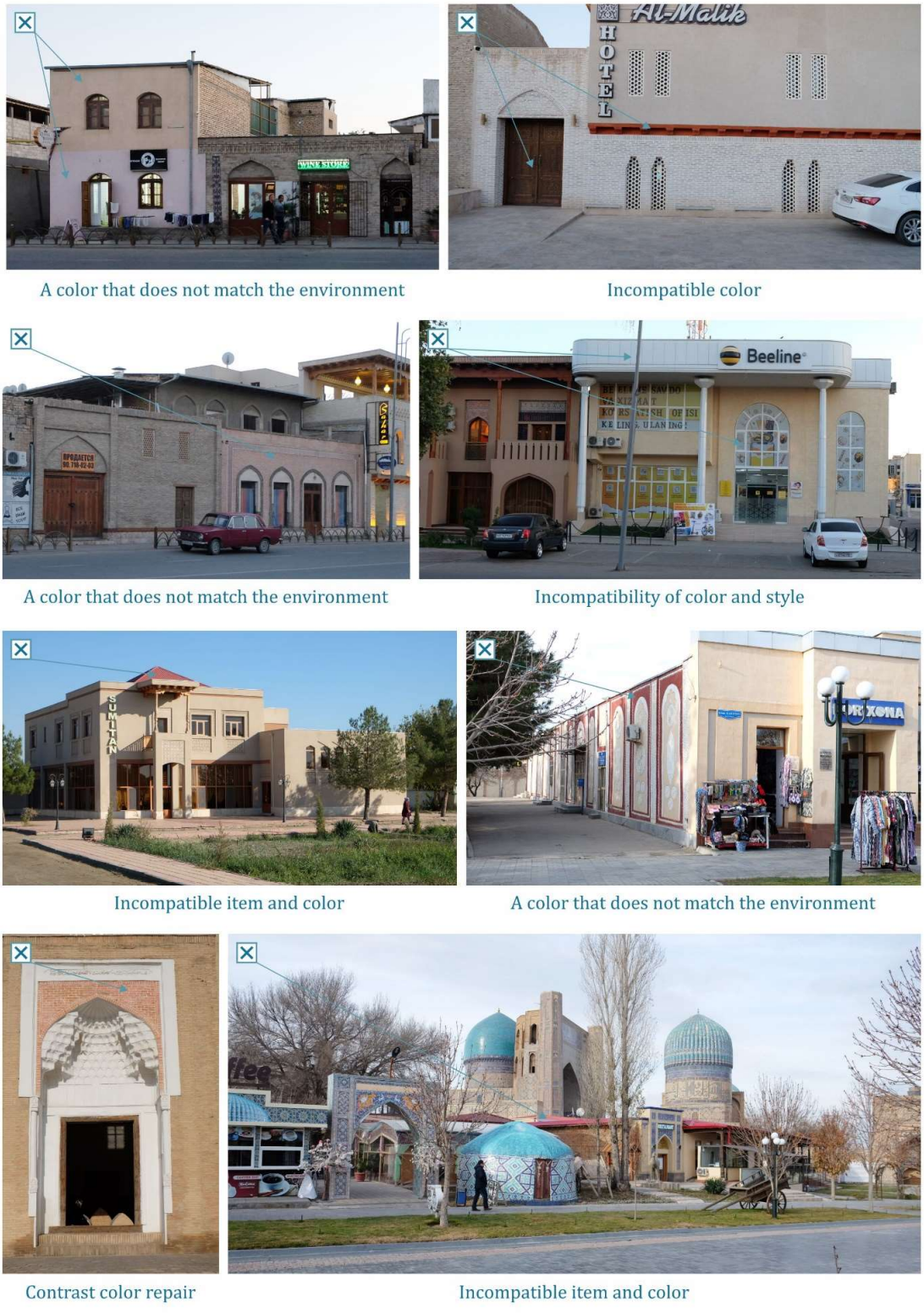

Figure 10. Inconsistency of colors on facades

CAHIERS MAGELLANES-NS
Volume 06 Issue 2
2024

ISSN:1624-1940
DOI 10.6084/m9.figshare.2632599
http://magellanes.com/

Figure 11. Bukhara.

Conclusion

One of the most important directions in the process of increasing the aesthetic and artistic level of the historical areas of the city is to create a harmonious expressive color composition of the facade, taking into account the conditions of perception and the specific characteristics of the architectural object.

Taking into account the interaction of factors affecting the perception of an architectural object, the methods of defining color codes for facades were considered.

Based on the proposed methodology, it can be used in project proposals for the color restoration of buildings in the border areas for the design code rules of the historical regions of Bukhara and Samarkand.

Bukhara and Samarkand cities, by introducing harmonious color codes for service, residential complexes and building facades in their historical areas, taking into account the polychrome, natural and urban environment color of the national architectural traditions, large historical and between monuments of artistic value and modern urban planning, it is possible to reveal the specifics of a complete perception of the environment.

The scientific-theoretical hypotheses developed by the researcher are aimed at determining the relationship between color and architectural forms of modern (built in the last 20 years) architectural objects in the historical area.

The following laws are of practical importance in the formation of color-coded solutions for facades:

- active polychrome and subtle color combinations of mainly warm shades, characteristic of many monuments of traditional architecture, are equally legitimate and should be used in the practice of building historical areas;

- color code solutions for the facades of modern residential buildings have a wide palette of interactions and constructions of architectural forms, eliminating visual disparity on the facades;

- color code solutions for facades densely located in the historical area should be implemented taking into account the impact of the opposite buildings on the level of natural lighting;

The following design principles and color code solutions are recommended for the facades of residential and public buildings in historical areas:

- colored compositional elements should emphasize the individual characteristics of the

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http://magellanes.com/

architectural object, the plasticity of the surface of the facades, and strengthen harmony with the historical environment;

- in the color schemes of the buildings, the methods of construction of the composition of the facades, which emphasize the tectonic structure of the building, should remain dominant;

- when perceiving architectural objects from long distances and in motion, it is necessary to strengthen and emphasize large-scale elements of volumes and planes with color;

- for flat facades of buildings with a large number of monotonous repetitive architectural details, it is recommended to use colorful compositional elements that provide a rhythmically complex structure.

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