

# THE COLORS OF MZAB CITIES: HERITAGE, CULTURE AND SYMBOLISM

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## 1. Introduction

The Mzab region has been a UNESCO World Heritage Site since 1982 [1]. Its quality and beauty lie in its highly distinctive architectural and chromatic character. In Algeria, with the transformation of the urban landscape due to the transition from the traditional to the contemporary world, the traditions and heritage of the past are gradually losing their importance, with the result that architectural heritage is being replaced by modern, standardized construction. In addition, industrialization has diminished representativeness at a time when housing should consider the cultural norms of society, local climatic factors and architectural heritage.

Mozabite cities have long preserved their architectural appearance, but this architectural heritage has unfortunately deteriorated in recent years. The inhabitants, however, are keen to preserve their visual and built environment and to respect the architectural and chromatic character of the region. Painting is one maintenance method that is accessible to all and offers the inhabitants of this area considerable chromatic potential, since from a practical point of view, it allows them to maintain and preserve the original appearance and color of their building cladding. Thus, by generally adopting the sandy tone of the original material the inhabitants of Mzab create a close relationship between the color of the site and that of their dwellings.

## 2. The Mzab: presentations and retrospectives

The Mzab (Ghardaïa) is located in a stony desert around 600 km south of Algiers, the capital of Algeria, in a valley of almost 40,000 km<sup>2</sup>. Its inhabitants, the Rostemide Ibadites, survivors of *Isedraten*<sup>1</sup>, settled in this virtually untouched valley in the 11th century A.D.<sup>2</sup>, and were able to implement the requirements of religious, philosophical, and social morality continuously for 10 centuries. From the year 1011 A.D. to 1347 A.D., they designed an urban ensemble with three constituent elements: a series of fortified towns (*ksour*), palm groves with their summer cities, and cemeteries. These traditional settlements were shaped by the Oued Mzab and its tributaries.

Despite their modest means, the Mozabites achieved the essence of beauty, harmony and rationality in their settlements [2]. Their architecture was designed for communal living while respecting family structures. In this way, they established the region of the Mzab, an undisputed national and international heritage.

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The series of *ksour*, called *Pentapolis* (in Arabic *Chebka*) (Figure 1), is located on the edge of the Algerian Lower Sahara, between the oases of Laghouat to the north and Ouargla to the south [4].

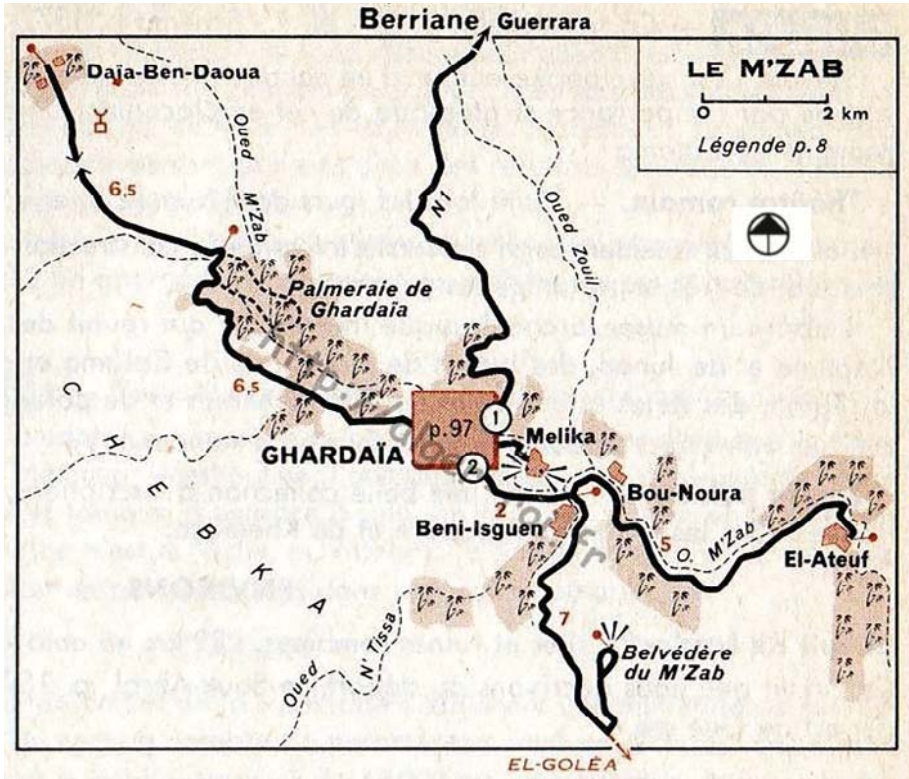


Figure 1. Position of the Mzab ksour [3].

It is composed of various towns: El-Atteuf (The turning point), Bou-Noura (The luminous), Beni-Isguen (The Saint), Melika (The Queen) and Ghardaïa, which are isolated by ramparts or fortified houses. The *Pentapolis* is 20 km long and 2 km wide, with altitudes ranging from 300-800 m. The *Mzab Pentapolis* also includes two other *ksour*: Berriane, located 50 km to the north and Guerrara, located 116 km to the northeast (as the Algerian Sahara is so vast, the towns are far apart from one another). These seven villages, or *ksour*, were established over time as a result of various events.

The neighborhoods are arranged in a concentric configuration around the mosque (Figure 2). Positioned at the summit of the hill, the mosque serves as a landmark [5] (Figure 3).

Mozabite towns developed from top to bottom, following the contours of the rocky outcrops, a military tactic aimed at ensuring that any assailants were exposed in the open terrain during an attack [6]. Conversely, on the nearby arable land, one can find cemeteries and palm groves.



Figure 2. Compact, radio-concentric configuration of the Ghardaïa ksar (© Alain Sèbe images).



Figure 3. At street level, the visual perspective leads to the great mosque (source: author 2023).

The palm groves (*Ghaba*) are separate from the *ksour* and are located on the outskirts of the cities. The dwellings, built on the edge of the palm grove, serve as summer residences (*Dar el Ghaba*), where the inhabitants seek refuge during the hot summer months<sup>3</sup> [7].

The climate of the Mzab region is generally harsh and very arid, with minimal rainfall. However, the system for sharing and distributing water is ingenious. It consists of *seguias*, a system for collecting and distributing water from wells and the flooding of the Oued River.

Belonging to a very conservative Muslim society, the architecture of the Mzab is distinctive and characterized by an organization of space that revolves around the sacred and the profane (mosque and cemetery, market and homes). It is also defined by an interior and an exterior that characterize both the family home and the city, with a clear preference for simplicity. As places of economic activity and exchange with foreigners, markets are situated outside the ramparts [8] (Figure 4).

On the other hand, Mozabites who work in agriculture and construction are also frequent travelers. They temporarily emigrate, especially to the Tell region, where they engage in profitable commercial activities, mainly in food and textile retailing [9].



Figure 4. Large market square in the ksar of Ghardaïa (source: author 2023).

### 3. The palette of the site

“Simple, well-thought-out architecture can bring happiness; it must logically be pleasing. Architecture that presents a unity of thought does not go out of fashion: it becomes the expression of a civilization, a real one” [10]. The landscape of the Mzab is an admirable homogeneous organization of site conditions within the framework of the physical environment.

The color of the site is one of the peculiarities of the valley. What strikes the observer upon first contact with the Mzab is the general unity of the chromatic landscape which is in harmony with the surrounding area (Figure 5). Similarly, in the urban environment, color is more attractive than form. Urban color is a strong point in the spectacle of the city as well as within buildings [11]: “Polychromy is an integral part of the architectural environment. It brings together, in different lights, the components of the urban fabric, natural built landscapes, outdoor pavements and the design of street furniture” [12]. The tonalities of the site represent those of:





Figure 5. General view (valley and surrounding area) (source: author 2016).

- The colors of the natural environment, composed of valleys (sandy, stony sites) and palm groves. The colors are those of warm, luminous materials, such as the monochrome sandy tone of the valleys.
- The colors of the built environment include those of the *ksour*, which rise above the valleys. It also includes buildings outside the *ksour*, such as palm grove houses, mosques, cemeteries, markets, dams and other structures. The overall color scheme is sandy, similar in tone to the natural context (Figure 6).
- The appearance of a house is related to the materials used to build it. If we consider the causes that produced this or that color, we may be able to contribute to the data of morphology, climate, botanical geography, and human geography [13].
- The color of sand is due to oxidation. Older and more immobile sand exhibits a more pronounced color; golden-yellow sand is found only on the wind-exposed edges of ergs, where the sand is mobile. Rubbing grains of sand together causes the oxidized part to disappear [14].
- Overall, the color of the site is a sandy tone, similar to that of the original material. The green of the palm groves against the ochre-sand background enhances and embellishes the chromatic composition (Figure 6).



Figure 6. Palm groves and houses near Beni-Isguen ksar (source: author 2023).

### 3.1. The color of site features

In the past, before the introduction of paints by the Mozabites, the color of the buildings was expressed by the material or coating used. The architectural aspect of Mozabite constructions is egalitarian and respects a strict religious morality, has no decorative elements and disregards any state of prestige.

- The material used, rubble of various sizes, was extracted from the same site. Where the exterior walls are in direct contact with neighbouring buildings, the sandy rocks are not coated with gypsum (a type of locally extracted plaster). The coating is only used to fill gaps that are too deep.
- For their buildings and facade cladding, local residents use natural materials such as rubble stone, sand and gypsum (see below). The use of natural materials respects and reproduces the tonalities of the site: the yellow ochre, the sandy tone.
- On the façade, plaster<sup>4</sup> is applied to the walls. As a natural element, plaster is obtained from the abundant gypsum deposits on the site. It hardens quickly and can be applied with bare hands, without using any tools.
- The color of the sand and plaster used in the mortar determines the color of the coating, which ranges from yellow ochre to pink (due to the iron oxide in the silica) [15]. Sometimes, when coatings are made with plaster alone<sup>5</sup>, the resulting color is gray.
- In addition to its isothermal properties, gypsum plaster has aesthetic qualities because it can be handled and shaped by hand, just like earth, without the need for a trowel, as with lime and cement. In fact, gypsum's quick-setting properties allow it to be shaped in a variety of ways. For example, this type of coating sometimes reveals hand marks on the walls. A "Tyrolean" effect can be achieved by whipping the plaster with palm leaves. It is also possible to achieve a honeycomb texture<sup>6</sup>. With these different processes, the texture can range from rough to smooth, from gritty to fine.
- These different textures bring out the delicate harmonies of plaster-based coatings. The play of light and shadow creates different aspects, such as a matte and/or textured appearance. A creamy matte finish gives the wall a warm presence which is added to the ambience of the place. Walls harmonize with different reflections and sunlight brings out warm tones.
- In some buildings (palm grove houses, mosques, cemeteries, etc.), the walls were regularly whitewashed with lime, which has purifying and protective properties.
- Sometimes one or more coats of whitewash are applied to the plaster. The latter is either left naturally white or lightly tinted yellow, ochre or blue [16].
- As for the surrounding walls, the ramparts are made of stone, so they have a natural color.

However, with industrialization and the advent of paints, the inhabitants of the Mzab, eager to adapt to the new rhythm of the world, today use various shades of mineral paints available on the market. This allows them to renovate and give a fresh look to their buildings. "Color affects environments, forming and transforming them. In towns and cities, it confers magic to everyday life and experience" [17].

Tinctorial paints are easy to apply and allow for regular color changes. As a result, residents gain the freedom to manage their living environment. The simple act of repainting a home produces immediate and remarkable results at a relatively lower cost than other types of treatment or renovation.

However, despite the considerable chromatic potential of the paints, inhabitants generally opt for the sandy color of the base material (with a few touches of white, blue or green for architectural details such as doors).

The paints used for the houses are tinted in shades of yellow and red ochre, creating a vibrant spectrum of warm colors. These tones are very similar, with slight differences in hue, saturation and clarity. Total harmony is achieved through this “*nuancement*”<sup>7</sup> [18] when the same color is used in different tones (Figure 7).



Figure 7. Front of ksar Melika made of rampart houses, in a cameo of sandy tones (source: author 2016).

In fact, the color schemes are based on ancient harmonies, rather than being dictated by precise specifications. The whitewashes and renderings are in subtle gradations that resonate with the surrounding tones. Ochre and sand tones dominate the overall color palette. Today, the perimeter walls are tinted ochre to reflect the natural color of the material used.

### 3.2. Chromatic dynamics inside the ksour

The streets of Mozabite towns are narrow but surprisingly bright due to the intensity of the sun's rays in this region of the Sahara. “The daylight reflected by the vertical walls, or the ground, illuminates the space and gives a special quality to the colors of these alleys” [19].

Mزاب architecture is coherent and very simple, representing austerity itself without any additional decoration or artifice. “The remarkable unity and harmony of the Mزاب is no accident. Reason, rigor and the essential have been chosen. And from this chosen rigor, beauty has emerged” [20].

Unity and social equality are abundantly expressed here; there are no palaces, and all the houses are the same height, as is the mosque. “The Mozabites, for their part, have been at ease for ten centuries in this absence of art - in the Western sense of the word -... pure architecture...” [21]. This austerity is expressed throughout the buildings:

their dimensions, spaces, details and colors. Likewise, color is less expensive than molding and relief decorations and can be achieved with little money, which is why it is becoming increasingly popular with residents.

In fact, on the pedestrian streets, the refusal to decorate, for the sake of equality desired by the Mozabites, has been replaced by a nuanced chromatic dynamic. Inside the *ksour*, paint covers the plaster. Paint is the main coating for the facades, serving as a means of protection and maintenance while also offering an exceptional range of colors (Figure 8).



Figure 8. Market square inside ksar Melika (left) and a street in ksar Ghardaïa (right) showing shades of warm pastel tones (source: author 2023).

The combination of materials, such as stone and plaster coated with either paint or natural lime, is now harmonized in a palette of natural colors to create the sober decor of Mzab architecture. However, the purity of form of the architectural details, enhanced by the warm colors and materials, gives the whole an abstract character “of great plastic and pictorial strength” [22]. In general, the tones of the paints used reflect the natural color palette, with yellow-ochre blending in perfectly with the surrounding architecture. Various shades of warm, luminous ochre, red and sometimes pastel shades of pink, blue and green adorn the lower part of the houses and, at times, even the entire house. Architectural details, such as the doors (usually made of tall, wide planks of palm wood assembled with wrought-iron nails), are highlighted and emphasized by a warm-cold contrast due to their blue color against the ochre background of the houses (Figure 9).

Sometimes, to stay in tone, the wooden doors are painted in the same warm hue, creating a tone-on-tone effect with the color of the building. Brighter and more saturated, the tone of the doors, nevertheless, still forms a light-dark contrast against their background. In addition to the architectural details, the various contrasts enhance the texture and highlight the building materials. Moreover, the intensity of natural light and the high temperatures of this Saharan region directly influence the choice of colors for these homes. “Over time and distance, variations in urban color appear to be influenced by their geographic locations ... City color in diverse parts of the world shows a distinct relationship between locale and palette, a variance in spectrum shaped by light” [23].

In narrow, winding streets, colors energize the pedestrian’s path. They are expressed in yellow tones and in shades of ochre-red and ochre-yellow (Figure 10). The colors used by the inhabitants enliven the Mozabite space, where old and new buildings merge in form and color.





Figure 9. Cold-warm contrast of the blue of the door against the ochre-yellow background of the house (source: author 2023).

### 3.3. Interior color

In the Mzab, traditional houses always face south to ensure they do not block daylight from their neighbors. They benefit from oblique rays in winter and vertical rays in summer [24]. There are no large patios in Mzab houses; the lower level is completely covered, with only a zenithal opening of about one square meter (a *chebeq* in Mozabite terms) (Figure 11). This solution reduces the amount of sunlight and light entering the interior. It also creates a large plateau of terraces (useful during winter days and hot summer nights) on the upper level, where there are almost no windows.



Figure 10. Street inside a ksar; chromatic dynamics in warm-cold and light-dark contrasts and texture enhance the journey (source: author 2023).

“On the other hand, in the Mzab, the light needed for the shelter is taken from its center. The need to look out is satisfied by the oculi on all the facades, which allow air to pass through” [25]. In the past, terraces and walls were often painted with whitewash over a layer of plaster to accentuate the refraction of light.

To restore their interior spaces, today's residents use paint coatings. Despite the ample choice of shades, they tend to retain the light, luminous ochre tones, evoking the authentic hues of the house while providing the spaces with an illuminated ambience.



Figure 11. Palm house with chebek, whitewashed over a sand-colored patina that highlights the dark red of the wooden beams (left). The entrance to a chicane house, painted in luminous yellow and white tones (right) (source: author 2016).

However, there is an attempt to liven up the interior by diversifying the tones. For example, the chicane entrance<sup>8</sup> was painted yellow and white as for the rest of the house (Figure 11).

On residential terraces, the railing height is 1.50m to protect the privacy of residents and prevent overlooking onto neighbouring terraces. Ventilation slots and manholes are provided. These terraces have been patinated in the same shades as the exterior paintwork: yellow, red ochre, pink and, sometimes, blue and green.

Mozabite builders abandoned the ornamental motifs of their original society, focusing solely on what was essential to their constructions, so moldings were replaced by varied textures and dynamic colors.

### 3.4. Other spaces and building colors

Similar to the austere architecture and cladding of their homes, Mozabite mosques are stripped bare of all decoration and ornament. “What is admirable and exemplary, and not found in any other society, is that the arches of the mosques are of the same workmanship as those of houses or public galleries. They are neither more regular nor more decorated, neither higher nor wider” [26].

Today, tinctorial paints are usually used as part of the maintenance work in places of worship and even cemeteries. These spaces are embellished and renovated with new colors, as seen in the mausoleum in the Cheikh Belhadj cemetery, which is

adorned with broken pottery and objects that once belonged to the deceased. The mausoleum was repainted a bright yellow to preserve its original color (Figure 12).

The Cheikh Bassa mosque is only used occasionally, during festivals and religious celebrations. Its naturally shaped arches and columns, the result of palm bending, are covered with several layers of stratified coatings; the large plaster-coated rubble stones have been painted yellow and then whitewashed (Figure 13).

Warm, pastel colors respect the sober, refined unity of the premises, reflecting the tones of the natural materials. Mosque interiors are often whitewashed to purify the sacred space. Occasionally, they are also painted green, the symbolic color of Islam.



Figure 12. Cheikh Belhadj cemetery, where the color of the renovated mausoleum contrasts with its surroundings (source: author 2016).



Figure 13. The Sheikh Bassa mosque (on the left) and Koranic school in Ghardaïa (source: author 2016).



### 3.5. Ghardaïa and Timimoune the Red

In Algeria, several cities are designated by their colors, such as Timimoune the 'red', so called due to the color of its earthen buildings. Indeed, Timimoune<sup>9</sup> is an architectural heritage complex built of earth and located in the Western Sand Sea:

The Grand Erg Occidental of the Sahara. It is endowed with a large groundwater table, where a particular system of water distribution, known as the *foggara*, uses ingenious underground water collection techniques. It has been used since the 2nd century A.D. for optimal and rational distribution between dwellings and oases.

Just like Ghardaïa, Timimoune is organized as an oasis composed of a *ksar*, a palm grove and a water catchment system. These elements have been the most suitable response to desert constraints for several centuries. Over time, human ingenuity has been able to build quality architecture using only local resources [27]. The designation, Timimoune the red, represents the general chromatic aspect of the constructions, which are in total harmony with the surrounding natural context (Figure14).



Figure 14. The ksar of Ighzer, Timimoune, a testimony to the architectural genius of the Zenetes of Gourara (source: [30]).

Indeed, just like Ghardaïa, the color is that of the materials sourced from the site and preserved over time.

Due to its availability and advantageous thermal properties, earth is often used in construction in Timimoune. The most adopted technique is adobe, composed mainly of earth and natural fibers. The earth bricks, in adobe, are joined together using the same material and the wall is then coated with earth [28].

Adobe is a mixture of clay and sand and is a combination of the generally sandy earth, often found in situ, and clayey earth. Clay is added to the sandy earth to obtain an adequate mixture. The main materials (sand and clay) are red due to the



phenomenon of oxidation, mainly iron oxide. Storm rains, charged with carbonic acid, have overoxidized the iron salts that existed in the clays and consequently reddened them [29]. In Ghardaïa, as in Timimoune, constructions, whose materials are sourced from the site, blend and harmonize perfectly with the surrounding landscape. Rehabilitating constructions with such materials, or building new ones, maintains and transmits ancestral knowledge.

The architectural quality and harmonious chromatic aspect of the constructions show that earth, rubble, stones, water and palm trees can combine and offer an inexhaustible vector of architectural and chromatic creativity over time.

#### **4. The divine significance of colors, from denotation to connotation**

In Islamic architecture, colors carry profound metaphysical connotations, representing the beyond. They bear symbolic, far-reaching, stable meanings [31]. Similarly, the *Koran* has been an important source of inspiration for all the arts, with architecture and the world of color being just one facet [32].

The *Koran* mentions colors on several occasions, and *Koranic* verses on the meaning of colors make them an important factor in the field of symbolism.

##### **4.1. The blue of ksar houses, from profane to sacred**

In the *ksar*, the ochre sand color is punctuated by a few houses painted in luminous shades of blue and green as can be seen in Figures 2, 6, and 15.



Figure 15. The overall appearance of the Ghardaïa ksar is punctuated by houses in blue and green.

These rather cool colors enhance the overall effect, creating a warm-cool contrast with the yellow-ochre background. This contrast produces a magical and mysterious effect, representing simultaneous contrast. The law of simultaneous color contrast was extensively exploited by Impressionist painters at the end of the 19th century, including Renoir, Monet, Van Gogh and Seurat. This law is an optical phenomenon related to our perception of color. When the eye perceives a color, it simultaneously demands its complementary color, and if it doesn't receive it, it creates it itself [33].

Blue, green and white are primarily expressed inside the terraces and courtyards of the houses to maintain the general chromatic appearance of the *ksar* (Figures 2, 6 and 15). The selection of colors for homes is characterized by green, blue and yellow-ochre, aiming for the right balance between warmth and coolness. However, the reason is more than just aesthetic: the aim is ostentatious and deeply symbolic. These blue- or green-painted houses are meant to convey the message that their owners have fulfilled the fifth pillar of Islam: the pilgrimage to Mecca. But what is the meaning of blue?

For the inhabitants, the choice of blue for the buildings is symbolic, representing the color of the sky and its reflection in heavenly waters - the source of life and the spiritual mirror of the heart [34]. The blue hues of the constructions create a transition between the building and the sky, as if the construction is unified and extends toward the celestial vault. The explanation originates from a "mythological vision of the color of the vault of heaven and the refraction of the color of Mount *Qâ'*" [35]. This mountain surrounds the earth like a ring of azure-blue, which is reflected in the sky and thus represents the celestial vault.

#### **4.2. Green: analogies and metaphors**

Similarly, green represents the houses of people who have made the pilgrimage to Mecca (Figure 15). It symbolizes the immaterial and metaphysical world. Green is highly favored by desert dwellers seeking greenery. It evokes nature, water, earth and sky [36], and the lush vegetation and oases that are so cherished in arid countries.

The combination of blue-green sky and green plants makes green a soothing and satisfying color for the eyes [37], providing psychic restfulness, especially in its nuances.

According to the inhabitants, inspired by the *Koran*, the green color of the houses signifies the color of Paradise and its lush vegetation. Green is associated with vegetation and specifically with the garden of bliss promised to Muslims [38], representing the gardens of Eden - a place adorned with fruit trees, silk robes, luxurious carpets and brocade sofas. While transient on earth, it is eternal in the afterlife, as described in verses like: "These [companions] will be wearing garments of fine green silk and brocade, and they will be adorned with bracelets of silver..." and "They will be reclining on green cushions and beautiful carpets of rich fabric" [39].

Green is the color of Islam and its flag.

Yellow-ochre, on the other hand, symbolizes light, the sun, gold, sparkle, luxury and distinction. The chromatic ensemble of the *ksar* provides a harmonious blend: yellow and blue come together to form a balanced mixture of green.

#### **4.3. White: purity and light**

The white of Mozabite homes is also expressed through whitewash, a practice observed in some mosques as well (Figure 16). For the inhabitants, white embodies purity, tranquility and serenity.

The white walls of the mosques suggest and symbolize "absolute" light. Light, which is symbolically perceived as white, descends from the sun and represents divine unity [40]: "God is the light of heaven and earth"<sup>10</sup> [41].

In the Islamic culture of the Mzab, white is an ostentatious color. Religious figures and those who have completed the pilgrimage to Mecca dress in entirely white *burnous*.

The sobriety of white represents a mantle of faith and the purity of the body, both in life and in death, as it serves as a shroud for the deceased and symbolizes the purity of the elect on the day of resurrection.

The Prophet emphasized the importance of white attire, stating, "Dress in white, for it is purer and more beautifying, and dress your dead in it" [42]. This attire reflects the color of *ihram*<sup>11</sup>, the garment pilgrims wear when entering the *haram* of Mecca.

In the *Koran*, white is associated with the light that shines on the faces of the believers and the chosen on the Day of Judgment, signifying their purity. It also symbolizes the joyful countenances of the inhabitants of Paradise. "As for those whose faces will be radiant (white in the text), they will be in the bosom of divine mercy for eternity"<sup>12</sup> [43]. Thus, whiteness is linked to the luminosity of Paradise.



Figure 16. White and luminosity inside the mosques, Ghardaïa on the left and Beni-Izguen on the right (source: author 2023).

According to Abdelwahab Bouhdiba [44], white is not strictly considered a color, but rather the synthesis of all colors.

The term "*bayadh*" encompasses everything that can be described as white: milk, day, light, clarity, the moon, the eye, the heart, the sword, water, and more. Another significant aspect of white comes from its association with hair whitened by age, symbolizing wisdom and knowledge. White beards, white turbans, and, incidentally, white clothing, serve as the distinguishing marks of *sheikhs*, professors, theologians, judges (*kādīs*), jurists (*muffīs*), *imāms* and *Koran* readers.

## 5. Conclusion

A popular tradition, color remains an inseparable emblem of architectural and cultural heritage. It distinguishes the Mozabite landscape from other urban landscapes and serves as a hallmark of the specific cultural identity of this region and its people. Amid globalization, Mozabites preserve their original building colors. Through this process,

they revive and restore the values of old neighborhoods and perpetuate their flavors, knowledge and cultures.

In this era of universal and global architecture, residents relate to color as a bearer of meaning and identity. Its goal is to provide visual satisfaction by integrating architecture into the environment, as well as having the objective of conveying spiritual messages that represent a synthesis of the universe emanating from God.

It is therefore important to support this attribute for its role as an element of architectural, social and cultural heritage, with the aim of determining, in different regions, the color palettes to be assigned to new constructions and the rehabilitation of old buildings. This allows for the respect and enhancement of urban landscape quality on a large scale, without limiting interventions to mere sporadic color treatments.

## Notes

<sup>1</sup> Sedrata (in Berber *Isedraten*) is an ancient Berber Ibadite city located southeast of present-day Ouargla, in the Algerian Sahara.

<sup>2</sup> Corresponding to the 4th century A.H.

<sup>3</sup> Most of the inhabitants have a house in the palm grove, where they take refuge in the summer because of the coolness of the vegetation.

<sup>4</sup> *Timchent* of the *chebka*, in Mozabite terms.

<sup>5</sup> Plaster is characterized by its greyish color.

<sup>6</sup> To obtain this effect the mason holds a broom in his right hand and a stick in his left; he then strikes the broom handle against the stick to project the plaster onto the wall.

<sup>7</sup> Meaning: composition between several adjacent tones or around a central tone whose brightness and saturation are fairly close.

<sup>8</sup> This entrance to the house does not offer a direct view of the interior, with the aim of preserving the privacy of the dwelling and gradually discovering the interior space [45].

<sup>9</sup> Timimoune is a Saharan oasis, the capital of Gourara and, a city - a relay between Touat and Mzab, there are more than 62 archaeological monuments, ten mausoleums, and eight places of worship, buildings made of Toub, including old ksours, mosques, mausoleums and forts, scattered throughout the Gourara territories [46].

<sup>10</sup> *Koran En-Nour*, The Light (No. 24), verse 35.

<sup>11</sup> Pilgrims are dressed in a white *izār* veil.

<sup>12</sup> *Koran, Al Imrān*, The Family of Imran (No. 3), verse 107.

## References

- [1] UNESCO web site: <https://whc.unesco.org/en/list/> (Accessed on: 1/2/2024)
- [2] Didillon, H., Didillon, J.-M., Donnadieu, C., & Donnadieu, P. (1977). *Habiter le désert, les maisons mozabites*. Liège: Architecture + Recherches / Pierre Margada, éditeur.
- [3] Sahara, S. m. (1955). *Le M'zab*. Alger, Algérie: documents algériens. [http://alger-roi.fr/Alger/ghardaïa/textes/16\\_mzab.htm](http://alger-roi.fr/Alger/ghardaïa/textes/16_mzab.htm)
- [4] Doumane, S. (2010). M'zab, Histoire et Société. In: *Encyclopédie Berbère*. St Rémy de Provence: Editions Edisud, pp. 5173-5181.
- [5] Benyoucef, B. (1992). *Le Mzab, Espace et Société*. Alger: IAB/Alpha design.



- [6] Ravéreau, A. (1987). *Le M'zab, une Leçon d'Architecture*. Paris: Editions Sindbad, p. 109.
- [7] Ravéreau, A. (1987). *Le M'zab, une Leçon d'Architecture*. Paris: Editions Sindbad, p. 109.
- [8] Benyoucef, B. (2018). *Le M'zab, regards d'urbanisme et de sociologie*. Paris: Librinova.
- [9] Lenclos, D., & Lenclos, J.-P. (1999). *Couleurs du Monde*. Paris: Éditions du Moniteur.
- [10] Ravéreau, A. (1987). *Le M'zab, une Leçon d'Architecture*. Paris: Editions Sindbad, p. 109.
- [11] Swirnoff, L. (2000). *The Color of Cities, An international perspective*. New York: McGraw-Hill.
- [12] Noury, L. (2010). *Symbolique, La Ville en couleurs*. Paris: Les Editions du Huitième jour, p. 7.
- [13] Perret, R. (1962). Les couleurs du Sahara. *Bulletin de l'Association de géographes français, N°305-306, 39e année*, p. 84.
- [14] Perret, R. (1962). Les couleurs du Sahara. *Bulletin de l'Association de géographes français, N°305-306, 39e année*, p. 85.
- [15] Perret, R. (1962). Les couleurs du Sahara. *Bulletin de l'Association de géographes français, N°305-306, 39e année*, pp. 84-88.
- [16] Didillon, H., Didillon, J.M., Donnadieu, C., & Donnadieu, P. (1977). *Habiter le désert, les maisons mozabites*. Liège: Architecture + Recherches / Pierre Margada, éditeur, p. 101.
- [17] Swirnoff, L. (2000). *The Color of Cities, An international perspective*. New York: McGraw-Hill, p. IX.
- [18] Fillacier, J. (1986). *La Pratique de la Couleur dans l'Environnement Social*. Paris: Dunod Éditions.
- [19] Lenclos, D., & Lenclos, J.-P. (1999). *Couleurs du Monde*. Paris: Éditions du Moniteur, p.180.
- [20] Roche, M. (1970). *Le M'Zab, Architecture Ibadite en Algérie*. Paris: Arthaud Éditions.
- [21] Ravéreau, A. (1987). *Le M'zab, une Leçon d'Architecture*. Paris: Editions Sindbad, p. 53.
- [22] Lenclos, D., & Lenclos, J.-P. (1999). *Couleurs du Monde*. Paris: Éditions du Moniteur, p. 186.
- [23] Swirnoff, L. (2000). *The Color of Cities, An international perspective*. New York: McGraw-Hill, p. IX.
- [24] Gueliane, N. (2019). Genèse de la création d'un ksar à Ighzar n'Mzab en Algérie. *Revue Annales du patrimoine, N°19*, pp. 69-86.
- [25] Ravéreau, A. (1987). *Le M'zab, une Leçon d'Architecture*. Paris: Editions Sindbad, p. 177.
- [26] Ravéreau, A. (1987). *Le M'zab, une Leçon d'Architecture*. Paris: Editions Sindbad, p.154.
- [27] Ben Charif, H. (2018). *Culture constructive traditionnelle : défis actuels Cas de l'architecture de terre à Timimoune*. Biskra: Université Khider Mohamed, Département d'Architecture.
- [28] Terki, Y., Rakotomamonjy, B., Hacini, M., Benhachmi, T., Henous, M., Belouaar, A., Almama, A. (2019). Guide de réhabilitation de l'habitat en terre à Timimoune. CRAterre; CAPTERRE, p. 52.
- [29] Perret, R. (1962). Les couleurs du Sahara. *Bulletin de l'Association de géographes français, N°305-306, 39e année*, p. 85.

- [30] <https://azitou.wordpress.com/2012/05/10/timimoun-loasis-rouge/>
- [31] Corbin, H., & Sarraf, M. (1973). *Traité des compagnons-chevaliers: Recueil de sept fotowwat-nâmeḥ*. Paris: A. Maisonneuve, p. 98.
- [32] Delius, P., & Hattstein, M. (2004). *L'Islam Arts et Civilisations*. Paris: Ullmann.
- [33] Itten, J. (1981). *Art de la couleur*. Paris: Dessain et Tolra, p. 54.
- [34] Majidi, F. (2015). Observation of Image and Color of Isfahan Mosques in Perspective of Islamic Art's Indices. *Research Journal of Recent Sciences*, 4, pp. 113-121.
- [35] Ringgenberg, P. (2009). *L'univers symbolique des arts islamiques*. Paris: L'Harmattan, p. 356.
- [36] Blair, S., & Bloom, J. (2011). *And Diverse Are Their Hues: Color in Islamic art and culture*. New Haven and London: Yale University Press.
- [37] Varichon, A. (2005). *Couleurs, pigments et teintures dans les mains des peuples*. Paris: Editions du Seuil, p. 203.
- [38] Clévenot, D., & Degeorge, G. (2000). *Decor d'Islam*. Paris: Editions Citadelles et Mazenod, p. 45.
- [39] Boubakeur, H. (1994). *Le Coran, tome 5*. Alger: Enag/Editions, p. 36.
- [40] Ardalan, N. (1974). Color in Safavid Architecture: The Poetic Diffusion of Light. *Isfahan Colloquium, Iranian Studies*. 7, pp. 164-178. *Taylor & Francis, Ltd. on behalf of international Society for Iranian Studies*, p. 170.
- [41] Berque, J. (2002). *Le Coran, essai de traduction*. Paris: Editions Albin Michel, p. 376.
- [42] Al Tarmaḍī, M. I. (1996). *Sunan Al Tarmaḍī* (Vol. 5). Beyrouth: Dār al gharb al islamī, p. 994.
- [43] Boubakeur, H. (1994). *Le Coran, tome 1*. Alger: Enag/Editions, p. 394.
- [44] Bouhdiba, A. (1980). Les Arabes et la couleur. *Cahiers de la Méditerranée, Recherches d'ethno-sociologie maghrébine* (n° 20-21), pp. 63-77, p. 74.
- [45] Boudon, P. (2005). L'entrelacs architectural, ou le « jeu des passages ». *Le sens du parcours*, pp. 9-18.
- [46] UNESCO web site: <https://whc.unesco.org/fr/listesindicatives/1772/> (Accessed on: 1/2/2024)

### Biographical notes

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### Summary

In Algeria, the habitat of the Mzab, a UNESCO World Heritage Site, is considered a remarkable model for the use of color in its architecture. Its chromatic physiognomy is a unique example of visual harmony, quality and simplicity, where color contributes to the identity and image of the place. In the past, Ibadite buildings were either white-washed or their color was expressed through the original material: sand. This allowed them to blend in perfectly with their surroundings.

However, technological progress and the development of industrialization have provided residents with an unlimited number of colors and the market today offers a wide

variety of paint colors. As a result, they have greater freedom of chromatic choice when renovating their homes.

So, in the face of globalization, how have building colors evolved in the Mزاب? How do residents use this variety of colors to maintain the facades of their homes? Do they always preserve the original hue of the building material?

The on-site research is based on interviews with local residents, observations over time, and photographic images of the buildings. It shows that today's increasingly diverse building colors are appropriate to the climate and the cultural, symbolic, and economic circumstances of the inhabitants. They carefully preserve the identity of the place and express the austerity of the buildings, as well as traditional Mozabite values.

## **Riassunto**

In Algeria, l'habitat del Mزاب, patrimonio mondiale dell'UNESCO, è considerato un modello di riferimento per l'uso del colore nell'architettura. La sua fisionomia cromatica è un esempio unico di armonia visiva, qualità e semplicità, dove il colore contribuisce all'identità e all'immagine del luogo. In passato, gli edifici ibaditi venivano imbiancati oppure il loro colore veniva espresso attraverso il materiale originale: la sabbia. Ciò ha permesso loro di fondersi perfettamente con l'ambiente circostante.

Tuttavia, il progresso tecnologico e lo sviluppo dell'industrializzazione hanno fornito ai residenti un numero illimitato di colori e oggi il mercato offre un'ampia varietà di vernici. Di conseguenza la popolazione ha una maggiore libertà di scelta cromatica quando ristruttura la propria casa.

Quindi, di fronte alla globalizzazione, come si sono evoluti i colori urbani del Mزاب? In che modo i residenti utilizzano i colori per mantenere le facciate delle loro case? Viene considerata sempre la tonalità originale del materiale da costruzione?

La ricerca presentata si basa su di una serie di interviste ai residenti, osservazioni nel tempo e immagini fotografiche degli edifici. Ciò dimostra che i colori degli edifici di oggi, sempre più diversi, sono adatti al clima e alle circostanze culturali, simboliche ed economiche degli abitanti. Preservano attentamente l'identità del luogo ed esprimono l'austerità degli edifici, così come i valori tradizionali mozabiti.