Navigation of the Holy Quran to Explore the Islamic Chromatic Patterns

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Abstract  Formulation of a color identity to the built environment has to take into consideration group of constrains such as the broad meaning of environment, its traditions, special value, and other creative aspects. The spread of urban development within the age of globalization has caused the transition of specific colors between different places worldwide to paint buildings with similar colors though culture, civilization and environmental differences between these places. Moreover, the obvious chaotic and random use of colors in Cairo and several Arab and Islamic cities and capitals, requires solutions for such problem to help rebuilding the identity and associate sense of belonging to the community and the surrounding environment. This paper's aim is to propose a solution to this problematic issue through setting a systematic methodology to deduce and derive group of color patterns that has been mentioned in the Holy Quran. An analytical and deductive approach are used to serve the different parts of the research, in order to reach a color map that could be an aiding tool in reinforcing the identity, revitalizing, and distinguishing the urban fabric in the Islamic cities and capitals.

Keywords  Color Identity, Colors in Islamic Urbanism, Colors in the Holy Quran, Urban/Architecture in Islamic Cities

1. Introduction

Color is defined as the impression that light generates on the eye. The choice of color, its rejection or acceptance is taken place because of physiological, psychological, social, religious, symbolic and gustatory preferences. Each color has its psychological meaning as a result of its physiological effect on humans. Colors are joyful, relaxing, irritant, sad, distracting, worrying, painful, and disappointing. Thus, social factors such as norms, customs and traditions have its effect in the choice and preference of colors.

Since the ancient civilizations especially the Pharos civilization, colors had been used in the internal spaces such as walls and ceilings. The ancient artist used materials from soil besides other vegetarian and animal materials in producing colored powder and pigments, so colors looked natural and non artificial or intrusive on the architecture. The color treatments appeared in the Greek and Roman architecture due to the use of granite, marble, while in the Gothic architecture the stained glass had an essential effect, "Figure1".

Figure 1. The use of colors in ancient ages architecture

Figure 2. Colors in local architecture – Nubba, and African villages

The function of any color differs by the influences of civilizations and human groups. Graham Collier proposes an example to indicate the frame of symbolic function of the color in Byzantine religious drawings during the middle ages,
however, he argues that the color blue, which covers most of Virgin Mary’s robe, symbolizes purity and clearness, while the red color implies to human passion and secular preoccupation, and green represents fertility and motherhood, while gold is used as a background for pictures representing what is sacred. Moreover, colors were used in vernacular architecture through the world as villages in Middle and South Africa, and villages in Nubba, which consider coloring an important ritual of the construction process, "Figure2".

After the World War II, a lot of artistic trends appeared to evoke the use of colors in construction as architects astonished the common architecture in this era and described it by boredom and depression. Thus, different color movements appeared such as the parrot architecture or peacock architecture in which architects used the four colors: red, yellow, green, and blue to emphasize the architectural form or enhance space repetition and indicate the importance of color use in the work of architecture, "Figure3".

Colors definitely play an important role in the visual image of urban and architecture. As materials are impossible to be found without colors, and because of the chaotic use of colors in Cairo and several Arab and Islamic cities, it is, therefore, essential to investigate and find a solution to this problem. The architect has to organize and employ the use colors in the urban and architectural environment to provide a homogenous environment that enhance rebuilding identity, sense of belonging to the community and surrounding environment, as they are important aspects of sustainable architecture.

2. Colors in Holy Quran

Colors in the Holy Quran is considered to be a unique phenomenon of art expression, aesthetic, and verbal expression which characterizes the Quran miraculous method. In addition to the symbolic meaning of color in Quran as an indication of the divine power, mercy, divine beauty which appears in God's various creatures, it is, as well, can be a symbol of life and death, hope and disappointment, belief and disbelief, vitality and grief, and other connotations[20]. The word (colors) and its derivatives has been mentioned in seven Holy Quran verses (interpreters see that this is an indication from God to the known seven chrome colors that formulates the white bright color), and the word (color) has been mentioned twice in one verse of the Holy Quran. These words were mentioned in the following positions:

2.1. Word Color

They said: Call on your Lord for our sake to make it plain to us what her color is. Musa said: He says, Surely she is a yellow cow; her color is intensely yellow, giving delight to the beholders"! (Al-Baqara 69)

2.2. Word Colors

"And the things on this earth which He has multiplied in varying colors (and qualities): verily in this a Sign for men who celebrate the praises of Allah (in gratitude)" (An-Nahl 13), "Then eat of all the fruits and walk in the ways of your lord submissively. There comes forth from within it a beverage of many colors, in which there is healing for men; most surely there is a sign in this for a people who reflect, (An-Nahl 69). "And among His Signs is the creation of the
heavens and the earth, and the variations in your languages and your colors; verily in that are Signs for those who know", (Ar-Room 22). "With it We then bring out produce of various colors", (Fatir 27). "And so amongst men and crawling creatures and cattle, are they of various colors", (Fatir 28). "Seest thou not that Allah sends down rain from the sky, and leads it through springs in the earth? Then He causes to grow, therewith, produce of various colors: then it withers; thou wilt see it grow yellow; then He makes it dry up and crumble away. Truly, in this, is a Message of remembrance to men of understanding", (Az-Zumar 21). Those words were mentioned in Holy Quran to accomplish several functions, where of its main functions are the following[18]:

2.2.1. The Expressive Function

It appears in the direct quotations, which holds various meanings such as joy, happiness, pleasure, grief, terror, and dread.

2.2.2. The Symbolic Function

It appears in the indirect or inspiring quotation, which calls for meditation, thinking, and reflection, as recited: "He who has made for you the fire (to burn) from the green tree, so that with it you kindle (fire)", here, the green color first symbolizes fertility, and continuity of life and then refers to the fuel for combustion and death.

2.2.3. The Sensual Function

It depends on the effect of shapes and visuals seen in most of God's creatures on human eyes, as it is considered a mean of connection with the universe and creatures. It is an invitation for thinking and reflection, because a number of these color words were followed by the phrase "Haven't you seen that Allah..." which is a direct call to look through eyes, and think mentally, and recognize with our heart, to study these mentioned phenomenon in the Holy Quran verses.

2.2.4. The Aesthetical Function

The words (aesthetic and beautiful) are mentioned in eight Holy Quran verses, that talks about creation, moral, and sensual beauty and some of these verses were connected to colors, as recited by God: "As if they were (delicate) eggs closely guarded", (As-Saaffat 49) to indicate the beauty of paradise women described with the best women colors. The color's aesthetical function, has worked on clarifying the picture and emphasizing the idea, indulging the meaning, and affecting the person by temptation and intimidation, which awakens the heart, and is considered a source of inspiration. Modern science has defined that the primary colors of light as: red, green, and blue, while the primary colors of paint or pigments are: red, blue, and yellow. All these four colors have been mentioned in the Holy Quran (red, yellow, green, blue) considering that Allah hasn't missed anything in the Holy book[13]. Additionally, we find as well in the Holy Quran the black and white colors, because they have a special situation among colors though they are not main. Thus, it can be said that all colors have been mentioned in Holy Quran, and they are recited as following:

(1) White

The White color is special in its nature, function, symbolism and indication rather than other colors. However, there are various connections of this color and human behaviour. In its reality, the White color contains all the colors, thus it reflects them and the word "the white" has been mentioned once in Holy Quran in (Al Bakara) verses in God's recitation: "And eat and drink until the white thread of dawn appear to you distinct from its black thread"; (Al-Baqara 187). The prophet's (peace be upon him) explanation about the word white is the whiteness of the day in its beginning just before sunrise[14].

Nasa space agency's cameras has recorded a picture for the area where day and night integrate, and found that it is a delicate layer with thickness no more than (1 by 100) of the earth diameter surrounded by night darkness from all sides. They installed several pictures of the Earth, and edited them with the computers. The west coast for both the european and african contenents are appeared in this processed picture and there was an obvious line separating night from day, with a clear black line in the night area, and a clear white line in the day area and a very tight area in between which is the dawn area, "Figure 5". Moreover, the word (White) was mentioned in (As-Saaffat) verses where God described women of paradise with the best women's body colors and that's in god's recitation: "As if they were (delicate) eggs closely guarded" (As-Saaffat 49). In the explanation of the White color in this verse, it was mentioned that it is the yellowish white and it's the best women body color[14]. Also the word white has been mentioned in (Fatir) verses in God's recitation: "...And in the mountains are tracts white and red, of various shades of color, and black intense in hue", (Fatir 27). The tracts refer to the horizontal layers the formulates several range of mountains called sedimentary. Most of them are white which is the limestone (and its widely available, thus mentioned first) and in various cases, it integrates with layers of red iron.
The word "White" was mentioned in six positions, God recited that: "And he drew forth his hand, and lo! It was white to the beholders" (Al-‘Araf 108) (Ash-Shuara 33), and in other Holy Quran verses such as: "And enter your hand into the opening of your bosom; it shall come forth white without evil..." (An-Naml 12), "Now draw thy hand close to thy side: it shall come forth white (and shining), without harm (or stain), - as another Sign," (Taha 22), "Move thy hand into thy bosom, and it will come forth white without stain (or harm)" (Al-Qasas 32).

And in the sixth topic, God described the paradise wine, in (Safat) verses, as running white wine with a bright color, where God recited: "Crystal-white, of a taste delicious to those who drink (thereof)", (As-Saaffat 46). The interpretation of this verse refers to this wine as the purest wine in the world, where all disadvantages and defects of the world's wine are not exist. The word (Whitened) has been mentioned first in Holy Quran in (Aal-e-Imran) verses in God's recitation: "But those, whose faces will be (lit with) white, they will be in (the Light of) Allah's mercy; therein to dwell (forever)", (Aal-e-Imran 107), and the second was in Yushf verses of Holy Quran in God's recitation: "And he turned away from them, and said: "How great is my grief for Yushuf!" and his eyes became white with sorrow, and he fell into silent melancholy", (Yushuf 84), to indicate that white color is the contrast of black color. Also, the word white has been mentioned once in (Aal-e-Imran) verses assuring the clarity, purity, and righteousness as God recited: "On the Day when some faces will be (lit up with) white, and some faces will be (in the gloom of) black", (Aal-e-Imran 106), it's the day of resurrection when the faces of those who have faith are white, and those who don't have faith will have black faces[17].

(2) Black

Blackness in physics means losing the color, where everything that doesn't send waves to the eye is seen black. The word (black) and its derivatives has been mentioned seven times in Holy Quran verses, twice was to express the hue of the black color, as following: "And eat and drink until the white thread of dawn appear to you distinct from its black thread", (Al-Baqara 187). This verse is referring to the blackness or darkness of light, while for material blackness, the verses says: "And in the mountains are tracts white and red, of various shades of color, and black intense in hue", (Fatir 27).

Those mentioned mountains with clear mountain top consisting of igneous rocks, like that consisted of "El Gabro" rocks, yet volcanic mountains that consists of Basalt rocks known with its extreme black color, and what is meant with this verses is that mountains consists of layers of colors (from white to red), and others consists of one color with no layering (no color gradients) which is black. These black mountains were actually found in various places in the world such as in Canada, Hawaii islands and El-Perta city- Jordan, "Figure7".

The derivatives of the word (black color) are mentioned five times to express the situation of the infidels and the hypocrites whom faces are blackened, and this is a metaphoric expression where the word black has been mentioned to show the intense grief, and how dark it is[15].

The verses were recited as follows:

"On the Day when some faces will be (lit up with) white, and some faces will be (in the gloom of) black: to those whose faces will be black, (will be said): "Did ye reject Faith after accepting it? Taste then the Penalty for rejecting Faith"; (Aal-e-Imran 106,107);"And on the day of resurrection you shall see those who lied against Allah; their faces shall be blackened. Is there not in hell an abode for the proud? (Az-Zumar 60),"When news is brought to one of them of (the birth of) a female (child), his face darkens, and he is filled with inward grief" (An-Nahl 58),"When news is brought to one of them of (the birth of) what he sets up as a likeness to (Allah) Most Gracious, his face darkens, and he is filled with inward grief" (Az-Zukhruf 17 ). A derivative of the word (black) was mentioned once to express the condition of the pasture which are crops and plants after drying off and corruption, so God recited: "And Who brings forth herbage. Then makes it dried up, dust-colored", (Al-Ala 4, 5). Thus, the Holy Quran verses shows how the (white) is the extreme serenity, clarity, pureness, purity, and acceptance from God, and that (black) is extreme darkness and gloomness. Both (white) and (black) are followed in one verses to explain the
extreme contrast between the two colors which enhances the meaning of the two contradictions.

(3) Yellow

The color yellow is the most joyful color as it represents brightness and illumination, and is considered the most bright and lightening color, because it is the sun color, the source of light, heat, life, and activity. Yellow color has been mentioned once in Al-Bakaraa verses to explain the color of the holy cow, as God recites: "He says: a fawn-colored heifer, pure and rich in tone, the admiration of beholders" (Al-Baqaraa 69). This color has been indicated as being one of the most precious and beautiful colors, where God described the bright yellow cow's colors as a source of attraction and appealing for the viewers, "Figure 8".

A lot of references, as well as interpretations of the Holy Quran indicated the recitation of God " pure and rich in tone" which means the color is so pure because its so bright. (El Kotobee) has mentioned by the name of (Ebn Abbas) pure and rich in tone which means that when yellow is so bright it tends to appear white and indulge the viewers indicating its beauty, elegance and vitality. (El Kesaa'e) says:"If its color deprecitates its yellow color vanishes".

The derivatives of the word (yellow) are mentioned in three positins in the Holy Quran including examples god shows for life in the world when rain falls from the sky, planting fruits and seeds, then dries and becomes yellow in color, to be crash afterwards[12]. In the first position in (Ar-Room) verses where God recites: "And if We (but) send a Wind from which they see (their tilth) turn yellow, behold, they become, thereafter, ungrateful (Unbelievers)" (Ar-Room 51). In this verses God explains the effect of wind when it comes without rain, where it makes the crop be yellow in color. The crops' colors changing from green to yellow indicates that it is just wind with no rain. It is noticed that yellow color in this case indicates loss, where it announces being close to loss, life, and vitality ending, trash and nothingness, "Figure 9".

In the other two positions God states that the world is fertile green with all joys it holds then it turns old, and the youth becomes an old weak man, as well as the green color of crops and plants turns dry, so it is seen yellow," In this, is a Message of remembrance to men of understanding", Which means that those who remember this ought to be wise of it. This meaning was recited in the following Holy Quran verses: "See thou not that Allah sends down rain from the sky, and leads it through springs in the earth? Then He causes to grow, therewith, produce of various colors: then it withers; thou wilt see it grow yellow; then He makes it dry and crumbles away. Truly, in this, is a Message of remembrance to men of understanding", (Az-Zumar 21). "Thou wilt see it grow yellow; then it becomes dry and crumbles away", (Al-Hadid 20).

The word "yellow" came in only one position in the holy Quran, yet to indicate the black color mixed with yellow, where God described this color as that flame glowing out of hell. This is mentioned in the following Holy Quran verses: "As if there were (a string of) yellow camels (marching swiftly)" (Al-Mursalat 33). In the interpretation of "yellow camels" most explanations state that the beauty of yellow is in its look, quantity, and continuation. This shows that the color indications are such as linguistic indications in terms of referring and relating to the culture. It is however clear that the yellow color in the Holy Quran related to loss and sickness when it is a result of green changing into yellow, or when its related to black color. On the contrary when the yellow color is bright integrated with white it gives a feeling of joy and self comfort[17]. Since the yellow color is a basic color in paint and not in light, as mentioned earlier thus, the Holy Quran verses that mentioned yellow color were all considering the yellow colored materials and not in light which is an indication to this scientific fact[13].

(4) Green

This color is a symbol of goodness and faith in the islamic thoughts, and it is the most popular color in the islamic culture, litterature, and art. It is always appeared in mosque's domes, curtains of God's home (Al- Kaaba), turbans (coven of head) of religious men, and with no dought the material that is produced of the chlorophile which is one of life's origion on Earth. Recently, experiments have been held to use color in treating some illness, where the patient gets to wear a robe with a certain color or be seated in a room with its walls and furniture of a specific color, and focus his sight to some time and concentrate his mind and contem plates the pain location he suffers from, these experiments have discovered that green color specifically determines the spread of germs, bacteria, and helps release pain, resists fatigue and feeling tired, so it makes patient feel happy and heel from bacterial diseases.

Thus, they knew the secret of the use of green color by the Pharos in their graves, to protect their mummies from the bacteria. In the Holy Quran, God made the green color as the distinguishing color of people in heaven and their furniture to point out the importance of imitating their clothes and furniture in our life aiming at feeling some of their happiness. The color green took most of the attention in the Holy Quran more than other colors, it has been mentioned once to indicate liveable creatures, as God recited: "He who has made for you the fire (to burn) from the green tree, so that with it you kindle (fire)" (Ya Seen 80).

God indicated his entire ability in bringing life to the death, and his ability to change the existing condition like getting
dry and burn of the moist and life, from it you are flamed to have life again. The word "green" is mentioned in three positions which are: "...And seven green ears of corn and (seven) others withered", (Yusuf 43, 46). The word "green" here indicates the color of specia, and this confirms that green color means life with all it hold of relaxation and stability, and fertility[18]. The third location where the word green is mentioned is in God's recitation: "Reclining on green Cushions and rich Carpets of beauty", (Al-Rahman 76).

The interpreters see in God's recitation "Green Cushions" that describing couches as green refers to the meanings of stability and serenity, it is striking that God didn't describe these couches as comfortable, wide, or other descriptive expressions, but God shortened all these meaning in one word which is "green", and this indicates the value of green color and its role in the positive psychological impact on the people and human feel of joy, happiness, and enjoyment. In (Al-Insan 21), God recited: "Upon them will be green Garments of fine silk and heavy brocade", Here the word "green" was used to describe heaven and its components of furniture, clothes and accessories.

The word "green" also came in God's recitation: "And they will wear green garments of fine silk and heavy brocade; they will recline therein on raised thrones. How good the recompense! How beautiful a couch to recline on!" (Al-Kahf 31). In this verse God has described the accessories and silk cloths of people in heaven with unique description and there were no better color than the green color to describe it with. Thus the green color is considered a distinguishing color for paradise, to indicate bliss, and life after death[17]. One of the synonymous of the word "green" is used in one position in Holy Quran. God recited:"With it We produce vegetation of all kinds: from some We produce green (crops), out of which We produce grain, heaped up (at harvest)"; (Al-Anaam 99).

Some interpretations mentioned that the word "green" was used to describe some crops such as wheat, barley, maize, rice and other grains. Another synonym of the word "green" came in one position and it indicated God's entire ability to bring life after death, and God recites: "See thou not that Allah sends down rain from the sky, and forthwith the earth becomes clothed with green? For Allah is He Who understands the finest mysteries, and is well-acquainted (with them)", (Al-Hajj 63). The word "Both inclining to blackness" in God's recitation: "Both inclining to blackness", (Al-Rah man 64), is a synonym of dark green as mentioned by (Al-Tabary) who said that "both inclining to blackness" means "They tend to appear black as they are extremely green" in his description of dark green grading to black, and these tones of green color was found on earth in some forests intense with trees like in Spain forests and the black forests in Germany, "Figure 10".

(5) Red

Is a main color in light and in paint, as well as blue color. This indicates a characteristic of stability in the red color[13]. The (Red) color has some indication like red gradients found in mountains, and red color existing in fruits and plants. The word "red" was mentioned in one location in the Holy Quran to explain the hue of the color and its proprieties, and refers to that differences in colors originally come from white and red. God recited in his holy Quran: "...And in the mountains are tracts white and red, of various shades of color, and black intense in hue", (Fatir 27).

It is obvious from this verse that the asethistic sights of mountains that Quran emphasizes comes from the beauty of colors and color gradients in those mountains, as God described in this verse the mountains as tracts and lines of white and red with its different color gradients[18]. God didn't mention any other color than "red" and the Holy Quran mentions the phrase "various shades of color" after god's recitation "red" indicating that it's the original of colors, mentioned after white that is the source of all other colors, "Figure 11".

This Holy verse showed a short and accurate glimpse identifying the change of color in nature. However, it showes colors in nature are originally a derivative of white color, then it grades from red to black[17]. The field and practical experiments have proved that natural colors are formulated through the integratin and combination of basic red paints, which means that all red colors are integrated in the primary component because of the disolvation of iron items in nature. This verse in the Holy Quran: "...And in the mountains are tracts white and red, of various shades of color, and black intense in hue" shows that God didn't choose a color rather than red as he knows the reason of color origin, either natural or light colors.

The red color has been mentioned twice in the Holy Quran, once in this verse where red color was mentioned directly indicating the integration of ultra red rays and red color rays to produce all other colors. The other time to mention the red color, was taken place to indicate a specific gradient of red which is a word mentioned in the following recitation of God:
"And when the heaven is rent asunder, and then becomes red like red hide", (Al-Rahman 37). The meaning in this verse is that the sky turns red like that of roses, where it melts until it becomes red like the color of fire with all meaning of power, excitement, and extreme hot feeling it holds[15], "Figure 12".

![Figure 12](image12.png)

*Figure 12. Red colors and the color tone it indicates—Barcelona/Spain*

(6) Blue

The color blue is one of the main colors in paint and light, and it shares this same characteristic with the red color. The word "blue" was mentioned in the Holy Quran in only one position and it referred to sadness and concern, in God's recitation: "...And We shall gather the sinful, bluer-eyed (with terror), on that day", (Taha 102).

It is known that the color of blood is red and when it turns to blue it means extreme suction of oxygen and that blood is corrupted, which is the perfect expression of condense. The word "blue" indicates all meaning of severe depression, sadness, and feeling of death. Thus the blue color was used in the verses of Holy Quran to indicate fear and loneliness when it is mentioned with black[18].

On the contrary, baby blue which is known in rainbow colors as Nile blue was the only blue gradient color that appears on the surface of Earth in seas, niles and oceans, and it has positive impacts on feeling relax and minimize tenses. Nations' interpretation for blue color differs a lot as for jewish, it means sanctuarity, while for most of Islamic and eastern countries it is not preferable and is used to prevent envy and damage.

3. Applications for the Use of Colors in Islamic Cities and Capitals

Urban and architecture is like a painting that its aesthetical elements never be completed without the use of color. Lot of beautiful designed buildings may lost its beauty because of misuse of colors. Colors are element of attraction, where people with various cultures meet and share in feeling the aesthetical value of color and in differentiating between ugly and beautiful colors. Muslims have excellence in initiating their special architectural trend characterized by its unique colors concentrating on those colors mentioned in the Holy Quran. It appeared in direct application in Islamic urban and architectural environment.

It has been noticed that the use of color in Arab and Islamic cities has taken different patterns, where it appeared in some cities as the monochromatic architecture (such as: Sedi Bo-Saied/Tunisia, Dara/Morocco, Jerusalem/Palestine, Amman/Jordan, Muscat/Oman …etc.). This unity in color, in addition to the presence of greenery and trees that makes it seem as an artistic paint, might give the city an aesthetic identity, where colors were used on several levels (cities, squares, streets, public buildings and symbols, details and miniatures of Islamic buildings), "Figures 13, 14, 15, 16".

![Figure 13](image13.png)

*Figure 13. On the level of islamic cities, Towns and governorates*

![Figure 14](image14.png)

*Figure 14. On the level of Squares and public streets in some Islamic spots*

![Figure 15](image15.png)

*Figure 15. On the level of the public, symbolic, monumental, and sacred buildings*

![Figure 16](image16.png)

*Figure 16. On the level of the details and ornaments of the buildings*
The use of colors in the Islamic culture is not limited to urban and architecture places, but it appears as well in graphics, poster design and other fields. Most of applications of colors in Islamic cultures have focused on the use of green color, which is an important color in the Islamic culture. It is seen in the flag of Saudi Arabia, the logo of League of Arab states, the official website for the prophet Muhammad (peace be upon him), which is recently established on the web, and as well in the suggested design for Medina’s logo, "Figure 17".

It is noticed from those practices that the use of the Holy Quran colors: red, blue, yellow, and green besides black and white, is taken place in the iconic buildings that have special value in the Islamic cities and capitals. Those colors are used in different degrees that vary from one city to the other due to the culture and community differences and the colors of the surrounding environment. Generally, Islam has pruned the taste of bedouin life to be loving of nature and colors, and it was reflected in the Islamic urbanscape with the intense use of light colors. For example, the blue color, though it has been mentioned in the Holy Quran as the blue of death, yet the Islamic architect used the Nile blue tone because it’s the color of sky, and water which are the essence of life "we’ve created everything alive from water". Thus the Islamic architect paid attention to this color as it is integrated with the soul of Islam and because this color is matching with the cool effect desired for the people of such hot climatic environment.

4. Formulation of a Chromatic Map for the Islamic Built Environment

There are several models of color systems; one of the most influential color-modeling systems was devised by Albert Henry Munsell, an American artist. Munsell desired to create a "rational way to describe color" that would use clear decimal notation instead of a lot of color names that he considered "foolish" and "misleading." His system, which he began in 1898 with the creation of his color sphere, or tree, saw its full expression with his publication, A Color Notation, in 1905[2], "Figure 18".

This model done by Munsell is the method of measuring, describing, and expressing the color, and it’s the most popular and applicable model as it is connected with the method that the eye realizes the primary colors of light (red, green, and blue) or (RGB), and other colors in nature are derived through these colors[19]. Yet it is considered a base for the color systems used in television, and several computer programs such as Photoshop and others. This system describes the color by knowing the three basic characteristics: hue, value, and chroma[4], "Figures 19-20."
(RGB) for them. This paper used the following programs for this manner: Color Palette Generator, Color Explorer, Color Calculator, and Color Munki.

3. **Compare** the colors concluded with the chromatic maps done by Munsell,"Figure 21". And those existing in what's known as Munsell Atlas Software to reach specific color gradients in a scientific accurate method.

![Figure 21. the Congruency of the color on Munsell system](image)

4. **Identifying** the chromatic color maps interpreted from the Holy Quran.

However, in the first three phases, different professional photos are selected for some elements and natural phenomenon that represent one of the colors interpreted in the Holy Quran. An analysis of such photos is done through different color analysis software that previously mentioned in order to reach its specific colors and compare those colors to Munsell system program, as an attempt to reach a color code (RGB) for those colors, which has scientific bases, "Table 1".

The Forth phase in the suggested approach is concerning with determination of a chromatic color map. The color pallets which are determined from table (1) is defined with its color code (RGB) and represented in Table (2) with additional suggestions of different values and chroma in order to give the freedom and flexibility in making these color dark or light to match the givens, climate and the surrounding environment. Whenever the values of the (RGB) for each color is low then the color sought is dark, and the opposite whenever the values are high the color is lighter.

Additionally, and in a more accurate manner the degree of color can be controlled with the previous method, yet within the level of each color code "red (R), green (G), blue (B)", which scales from number zero to 255, to be identical with the place characteristics and as well with the surrounding environment.

The next section of this paper (section 5) shows how to choose colors from this deduced color map through one of the known consensuses and tonal variation by using Munsell color pallet.

**Table 1.** Analyzing some colors of natural elements mentioned in the Holy Quran, on specialized programs And discussing them in Munsell program

| CO. | Identifying the color by Munsell model "Munsell" | The elements "indicating" color and their "analysis" |
|-----|-----------------------------------------------|--------------------------------------------------|
| WHITE | ![Image](image) | ![Image](image) |
| CO. | Identifying the color by Munsell model "Munsell" | The elements "indicating" color and their "analysis" |
| ![Image](image) | ![Image](image) | ![Image](image) |
The elements indicating color and their analysis:

| BLACK | Identifying the color by Munsell model "Munsell" | The elements indicating color and their analysis |
|-------|---------------------------------------------------|-------------------------------------------------|
| YELLOW| Identifying the color by Munsell model "Munsell" | The elements indicating color and their analysis |
| GREEN |                                                                                         |                                                 |
| CO. | Identifying the color by Munsell model "Munsell" | The elements "indicating" color and their "analysis" |
|-----|-------------------------------------------------|-------------------------------------------------|
|     | ![Image](https://via.placeholder.com/150)        | ![Image](https://via.placeholder.com/150)        |
| RED | ![Image](https://via.placeholder.com/150)        | ![Image](https://via.placeholder.com/150)        |
|     | ![Image](https://via.placeholder.com/150)        | ![Image](https://via.placeholder.com/150)        |
|     | ![Image](https://via.placeholder.com/150)        | ![Image](https://via.placeholder.com/150)        |
| BLUE| ![Image](https://via.placeholder.com/150)        | ![Image](https://via.placeholder.com/150)        |
Table 2. The chromatic color map interpreted after being revised and matched on Munsell model

| Quran Color | The Color gradients illustrated by the RGB |
|-------------|------------------------------------------|
| White       | R:229 G:229 B:229 R:228 G:238 B:242 R:242 G:250 B:249 R:250 G:250 B:245 R:255 G:255 B:255 |
| Black       | R:180 G:170 B:179 R:179 G:191 B:203 R:230 G:213 B:231 R:224 G:213 B:171 |
| Yellow      | R:217 G:200 B:87 R:251 G:235 B:100 R:245 G:238 B:131 R:251 G:232 B:164 |
| Green       | R:21 G:17 B:38 R:191 G:200 B:46 R:208 G:211 B:80 |

5. Towards a Mechanism for Classifying the Color Pallets from the Holy Quran

The color pallets that are deduced and interpreted from the Holy Quran can be divided through a defined methodology to choose them through one of the consensuses and tonal variation known through using Munsell color pallet (as shown in Figure 19), which is as the following[11],[12]:

5.1. Color Harmony

This harmony is done by two means; The first: is the monochromatic, who are dealing with colors that have common tone, but have different intensity and saturation, which might cause boredom, "Table 3". The second: is Analogous, which is usually formulated from three adjacent colors in the color pallet, such as (yellow, green, and blue),
"Table 4". Thus the analogy takes place as a result of the existence of common color between the other two, which avoids monotony because of its variation.

5.2. Color Contrast

It is achieved through the use of separate colors in the color pallet, to produce four different methods, combined as the following:

5.2.1. Direct Contrasted Colors

This is resulting by choosing two opposite colors in the circle like the orange and blue, yellow and purple.

5.2.2. Analogous- Contrasted Colors

Which is resulting from the existence of two adjacent colors in the color palette with the contrasting color to one of them, such as red, orange, and blue where red and orange are two adjacent colors and blue is the contrasted color to the orange.

5.2.3. Separate Contrasted Colors

Which is resulting because of the existence of one color and the two colors that create its contrasting color, for example the color contrasting with red on the palette is bluish green, and thus the two separate colors are green and blue, formulated from red, blue, and green, "Table 5".

5.2.4. Double Contrasting Colors

Table 3. Color Harmony

| Quran Color | The Color gradients illustrated by the RGB |
|-------------|-------------------------------------------|
| White       | R:229 G:229 B:229                          |
|             | R:228 G:238 B:242                          |
|             | R:242 G:250 B:249                          |
|             | R:250 G:250 B:245                          |
|             | R:255 G:235 B:255                          |
| Black       | R:41 G:51 B:61                             |
|             | R:48 G:50 B:61                             |
|             | R:66 G:79 B:107                            |
|             | R:82 G:89 B:102                            |
|             | R:102 G:85 B:103                           |

Table 5. Color contrast by using the opposing separate colors

| Quran Color | The Color gradients illustrated by the RGB |
|-------------|-------------------------------------------|
| Red         | R:107 G:66 B:48                           |
|             | R:107 G:79 B:64                           |
|             | R:143 G:109 B:91                          |
|             | R:143 G:109 B:91                          |
|             | R:153 G:84 B:51                           |
| Blue        | R:9 G:85 B:18                             |
|             | R:49 G:89 B:18                            |
|             | R:81 G:125 B:201                         |
|             | R:125 G:154 B:212                         |
|             | R:170 G:204 B:205                         |
| Green       | R:4 G:54 B:18                             |
|             | R:32 G:51 B:36                            |
|             | R:45 G:59 B:37                            |
|             | R:48 G:64 B:54                            |
|             | R:64 G:82 B:75                            |

Table 6. Classifying the color pallets interpreted from the Holy Quran on the staggered three levels (Cities, Buildings, and Details)

| Quran Color | The Color gradients illustrated by the RGB |
|-------------|-------------------------------------------|
| Yellow      | R:229 G:229 B:229                        |
|             | R:228 G:238 B:242                        |
|             | R:242 G:250 B:249                        |
|             | R:250 G:250 B:245                        |
|             | R:255 G:235 B:255                        |
| Green       | R:38 G:97 B:48                           |
|             | R:55 G:97 B:17                           |
|             | R:73 G:11 B:43                           |
|             | R:89 G:14 B:36                           |
|             | R:27 G:148 B:63                          |
| Blue        | R:69 G:119 B:154                         |
|             | R:95 G:133 B:158                         |
|             | R:102 G:153 B:170                        |
|             | R:108 G:166 B:156                        |
|             | R:136 G:170 B:171                        |
| Red         | R:54 G:5 B:2                             |
|             | R:105 G:10 B:3                           |
|             | R:107 G:3 B:8                            |
|             | R:145 G:16 B:7                           |
|             | R:150 G:5 B:9                            |
| Green       | R:4 G:54 B:18                            |
|             | R:32 G:51 B:36                           |
|             | R:45 G:59 B:37                           |
|             | R:48 G:64 B:54                           |
|             | R:64 G:82 B:75                           |
Which are two adjacent colors to two contrasting colors like yellow and orange with purple and blue.

Accordingly, it is suggested to divide and classify these chromatic color pallet into three staggered levels, such as: color pallets on the level of cities, villages, hamlets, and human settlements, etc, and others on the level of streets, buildings, then the level of building miniatures in these buildings. These different classifications makes it easier for the designer to choose the suitable chromatic color in any of the three levels, "Table 6".

6. Conclusions

- It is obvious from this research paper a glimpse of the Holy Quran colors according to its diversity, origin, source, and its ability to affect the soul. It shows as well the importance of color which is one of the elements of formation in human life.
- Holy Quran identified this importance, some of its verses came to enhance and promote the value of color and ornaments, as God recited: "And the things on this earth which He has multiplied in varying colors (and qualities): verily in this a Sign for men who celebrate the praises of Allah (in gratitude)", (An-Nahl 13).
- The paper suggested a four phases methodology to formulate a chromatic map (based on the Holy Quran verses) that could be an aiding tool in reinforcing the identity, revitalizing, and distinguishing the urban fabric in the Islamic cities and capitals.
- The color pallets which are deduced and interpreted from the Holy Quran could be used with its tonal variations to compose color harmony or color contrast according to the designer point of view when using colors in the built environment.
- It is also suggested to classify colors in the deducted color map of Islamic built environment into three staggered levels, such as: color pallets on the level of cities, villages, and human settlements. Then the level of streets, buildings and finally the level of building details so that it would be easier for the designer to choose the suitable chromatic color in any of the three levels.

This special cultural inheritance ought to be studied, by researchers and specialists to interpret realities, cultural, and historical contributions, to innovate contemporary models to be followed by Muslims in their urban and architecture in the light of Quran and the Prophetic.

REFERENCES

[1] Alain Briot, 2009, Mastering Photographic Composition, Creativity, and Personal Style, Rocky Nook, Inc., CA

[2] Cleland, Thomas M. (1937). A practical description of the Munsell color system, with suggestions for its use. Baltimore: Munsell Color Company. An edited version can be found at http://applepainter.com/.

[3] Kasprisin R., Patinari J. "Visual thinking for architects & designers", Van Nostrand Reinhold, New York, (1997).

[4] Kuehni, Rolf G. (February 2002). "The early development of the Munsell system". Color Research and Application.

[5] Landa, Edward R.; Mark D. Fairchild, 2005, "Charting Color from the Eye of the Beholder". American Scientist Vol. 93 http://americanscientist.org/template/AssetDetail/assetid/45931/page1;jsessionid=aaa5LVF0.

[6] MacEvoy, Bruce, 2005, "Modern Color Models – Munsell ColorSystem". ColorVision. http://handprint.com/HP/WCL/color7.html#MUNSELL. Retrieved 2007.

[7] Munsell and Royal B. Farnum, 1941, A Color Notation: An Illustrated system Defining All Colors and their relations, Baltimore: Munsell Color Company.

[8] Munsell, Albert H., 1912, "A Pigment Color System and Notation". The American Journal of Psychology, University of Illinois Press, Vol. 23, http://books.google.com/FdQLAA AIAAJ&pg=PA236.

[9] Nickerson, Dorothy (1976). "History of the Munsell color system, company, and foundation". Color Research and Application, Vol.1 http://interscience.wiley.com/cgi-bin/jiss ue/11418682.

[10] Pauline Wills "Color Healing Manual" ,the Complete Color Therapy Teaching Programme, Judy Piatkus (Publishers) Ltd, London, 2000.

[11] Mahnke F., Mahnke R., (1987).

[12] Kasprisin R., Patinari J. "Visual thinking for architects & designers", Van Nostrand Reinhold, New York, (1997).

[13] "Al-Moheat Dictionary", pp. 20: 27, Al- Maaref Library, Riyadh, KSA, 2007.

[14] "Al-Mishaal Al-Mounir", p. 214

[15] "Arabic International Enyclopedia", pp. 221: 222.

[16] "Al-Galalyn Interpretation", p.28, Al-Maarefa Publishers, Beirut, Lebanon, 2003

[17] "Mokhtar Al-Sahah", p. 609, 2009

[18] "Min Fatah Albari", and Mecca News, Alazraqi, 2008.

[19] Ibn Almorra, "Mofreh Alnafs", (Arabic Reference).

[20] Al-Zaheri, Ibn Hazme, "The Color Message", (Arabic Reference), pp. 12:24.

[21] Diyab, AbdelHamid, Qarqooz, A., 2006, "Medicine in the Holy Quran", Holy Quran Sciences' Foundation, Damascus.

[22] Eid, AlSaqa, M., 2003, "Colors in the Holy Quran", (Arabic Reference).

[23] Al-Qassem, M., 2007, "Islam and Scientific Facts", AlHijra Publishers, Beirut, Lebanon.

[24] Al-Waseat Dictionary, pp. 21: 24

[25] Abu Alsaud Interpretation, Arabic Heritage Publishers, Beirut, Lebanon.

[26] Al-Ashqar, M. Soliman, 1988, "Zebdat Altafaasear min Fatah
Alqadear- Arabic Name*, Ministry of Islamic Affairs, Kuwait.

[27] Al-Sapony, M. Ali, 1981, "A Brief of Ibn Katheer Interpretation" (Arabic Reference), Holy Quran Publishing House, Beirut, Lebanon.

[28] Al-Saadi, AbdelRahman, 2003, "Facilitate Karim, Rahman, Manan in the interpretation of the words", (Arabic Reference), Ibn Hazm for Publishing and Distribution, Beirut, Lebanon.

[29] Ismail, T., 2005, "Architecture and Urban Design in the Shadow of the Holy Quran- Arabic Reference", The House of Arab Architects, Algeria.