

Symbolic Meaning of Colors in Traditional Mosques

Mahsa Esmaeili Namiri

Submitted to the
Institute of Graduate Studies and Research
in partial fulfillment of the requirements for the degree of

Master of Science
in
Architecture

Eastern Mediterranean University
January 2017
Gazimağusa, North Cyprus

Approval of the Institute of Graduate Studies and Research

Prof. Dr. Mustafa Tümer
Director

I certify that this thesis satisfies the requirements as a thesis for the degree of Master of Science in Architecture.

Prof. Dr. Naciye Doratlı
Chair, Department of Architecture Department

We certify that we have read this thesis and that in our opinion it is fully adequate in scope and quality as a thesis for the degree of Master of Science in Architecture.

Assoc. Prof. Dr. Rafooneh Mokhtarshahi Sani
Supervisor

Examining Committee

1. Prof. Dr. Hifsiye Pulhan

2. Assoc. Prof. Dr. Rafooneh Mokhtarshahi Sani

3. Asst. Prof. Dr. Nazife Özay

ABSTRACT

Mosques are considered as one of the essential buildings in the Islamic architecture. They indicate the significance and value of Islamic architecture. In addition, mosques are not only the places for praying, but also they play the fundamental role in replying human's social, political, economical and even mental needs. This means that, the relation between human and mosques can represent the dignity and magnitude of these Islamic center communities. Therefore, the spiritual concepts and divine meanings of this building should convey to human. One way to display these concepts is to use color in symbolic ways which can be as a tool to communication between human and mosques.

This thesis focuses on to find the symbolic meanings of color in traditional mosques, by limiting the study to Safavid and Ottoman periods as well as Central Asian mosques. Furthermore, this study is aimed to investigate the similarities and differences between the symbolic meanings of color in the traditional mosques during these three periods. The type of research which is used in this study in order to obtain this aim is documentary research and based on this type of study, it applies particular samples which are more impressive and has more debates in terms of colors. Besides, the method for collective data and analysis is content analysis method. The achieved qualitative data from literature is investigated symbolic meanings of color in recorded periods.

Keywords: Color, Traditional mosque, Symbolic meaning, Safavid mosques, Ottoman mosques, Central Asian mosque

ÖZ

Camiler, islam mimarisinin önemli binaları olarak değerlendirilir. Aynı zamanda, büyük öneme ve değere sahiptirler. Bununla birlikte, camiler sadece ibadet amacıyla değil, insanların sosyal, politik, ekonomik, ve zihinsel açıdan ihtiyaçlarını karşılaması bakımından temel teşkil eder. Bir diğer ifadeyle, insan ve cami ilişkisi, islamik merkezli şehirlerde haysiyeti ve büyüklüğü yansıtabilir. Bu nedenle, bu binaların ruhani kavramları ve ilahi anlamları, insanlara anlatılmalıdır. Bu kavramları sergilemenin bir yolu, rengi sembolik yönden kullanmaktır, böylece renk insanlar ve cami arasındaki iletişim için araç olarak düşünülebilir.

Bu çalışmada, geleneksel camilerdeki renklerin sembolik anlamlarını bulmak amaçlanmaktadır. Limit olarak ise Safavid ve Osmanlı dönemleri ve Orta asya camileri incelenecektir. Ayrıca, bu çalışmada, belirtilen üç dönemdeki, geleneksel camilerde kullanılan renklerin sembolik anlamlarının benzerliklerini ve farklılıklarını araştırmak hedeflenmektedir. Belgelere dayanan araştırma ve bu alanda yapılan çalışmaları incelemek, renkler açısından daha etkileyici ve tartışmalara neden olan belirli uygulamaları araştırmak, bu hedefe ulaşmak için kullanılacak araştırma yöntemleri arasındadır. Bununla birlikte, içerik analiz yöntemi, verileri toplamakta ve analizinde kullanılacak metoddur. Elde edilen literatürdeki nitel veriler, belirtilen dönemlerdeki kullanılan renklerin sembolik anlamlarını soruşturmaktadır.

Anahtar Kelimeler: Renk, Geleneksel Cami, Sembolik Anlam, Safavid Camileri, Osmanlı Camileri, Orta Asya Camileri

IN THE NAME OF GOD

To my family...

ACKNOWLEDGEMENT

I would like first to declare my real profound appreciate to my supervisor, Assoc. Prof. Dr. Rafooneh Mokhtarshahi Sani, for her tolerant guidance and functional leadership that makes me more enthusiastic to developing this thesis. I would never have been able to complete my dissertation without her immeasurably precious supervision. Also, I am so thankful for the efficient comments of Prof. Dr. Hifsiye Pulhan and Asst. Prof. Dr. Nazife Özay, who helps to the improvement of this thesis. I owe entirely to my parents for their irreparable and unambiguous support also their attempt for encouraging me in this laborious way. I would like to allocate this dissertation to them in order to prove their significance in this study as well as in all aspects of my life. In addition, I am beholden to my brother for his unfailing continued support and effective consultations.

TABLE OF CONTENTS

| | |
|--|-----|
| ABSTRACT..... | iii |
| ÖZ | iv |
| ACKNOWLEDGEMENT | vi |
| LIST OF FIGURES | ix |
| LIST OF TABLES | xiv |
| INTRODUCTION | 1 |
| 1.1 Introduction | 1 |
| 1.2 Statement of problem | 3 |
| 1.3 Aims and objectives of study | 3 |
| 1.4 Research questions | 3 |
| 1.5 Limitation and scope | 4 |
| 1.6 Methodology of study | 5 |
| COLOR AND ITS SYMBOLIC MEANING | 7 |
| 2.1 Introduction of chapter | 7 |
| 2.2 Meaning in architecture..... | 8 |
| 2.3 Signs and symbols | 10 |
| 2.4 Semiotics in architecture | 14 |
| 2.5 Perception and understanding in architecture | 17 |
| 2.6 Perception of color | 20 |
| 2.6.1 Color theory..... | 24 |
| 2.6.2 Meaning of colors in various cultures | 31 |
| 2.7 Summary of chapter | 40 |
| COLORS IN TRADITIONAL MOSQUES | 43 |

| | |
|--|-----|
| 3.1 Introduction of chapter | 43 |
| 3.2 Historical background of mosques | 44 |
| 3.2.1 Different functions of mosques | 50 |
| 3.3 Symbolic meaning of color in Islamic architecture | 51 |
| 3.4 Symbolic meaning of color in traditional mosques..... | 56 |
| 3.4.1 Symbolic meaning of color in Safavid mosques (1501-1736) | 60 |
| 3.4.1.1 The Sheikh Lotfollah Mosque (1603-1619)..... | 65 |
| 3.4.1.2 The Shah (Imam) Mosque (1611-1629)..... | 74 |
| 3.4.2 Symbolic meaning of color in Ottoman mosques (1299-1923) | 79 |
| 3.4.2.1 The Sultan Ahmed Cami (Blue Mosque) (1609-1617)..... | 84 |
| 3.4.2.2 The Shehzade Cami (Şehzade Mosque) (1543-1548) | 94 |
| 3.4.3 Symbolic meaning of color in Central Asian mosques (750-1500) | 99 |
| 3.4.3.1 The Bibi-Khanym Mosque (1404 and reconstruct in 1974) | 101 |
| 3.4.3.2 The Kalyan Mosque (1514) | 108 |
| 3.5 Summary of chapter: | 113 |
| CONCLUSION..... | 118 |
| 4.1 Symbolic meaning of colors, differences and similarities between Safavid, Ottoman and Central Asian mosque..... | 120 |
| REFERENCES | 127 |

LIST OF FIGURES

| | |
|--|----|
| Figure 1. Concept of sound pattern, (Chandler, 2007) | 12 |
| Figure 2. Saussure’s model of the sign, (Chandler, 2007)..... | 12 |
| Figure 3. Peirce’s semiotic triangle, (Chandler, 2007) | 13 |
| Figure 4. Passing the white light through the prism result of colors, (Feinser, 2009)26 | |
| Figure 5. Additive and subtractive color, (Feinser, 2009) | 27 |
| Figure 6. Color wheel, (Holtzschue, 2015)..... | 28 |
| Figure 7. Primary, secondary and tertiary colors on the color wheel, (Coffin, 2016)28 | |
| Figure 8. The first circle color system of Goethe, (Perconte, 2016)..... | 30 |
| Figure 9. Goethe triangle of color based on human emotions, (Goethe J. W., 1840) 31 | |
| Figure 10. Meaning of colors in different countries, (McCandless, 2014)..... | 35 |
| Figure 11. 3 Dimensional and sketches from prophet’s house, (Hakim, 1988)..... | 45 |
| Figure 12. Basic structure of mosques which shows courtyard, porches (iwan), hall, and the wall face to Qiblah Kenney Mencher (Islam, 2016) | 46 |
| Figure 13. 3D faces of Umayyad Mosque in Damascus, (Hillenbrand R. A., 2001) 47 | |
| Figure 14. Sample of four Iwan mosque, (Weisbin K. , 2016)..... | 48 |
| Figure 15. Sample of Ottoman and Anatolian mosque (Pinterest, 2016) | 49 |
| Figure 16. Haft rangi tile (seven color mosaic tile), by author | 62 |
| Figure 17. The entrance porch of Sheikh Lotfollah Mosque, (by author in 2014) | 67 |
| Figure 18. Small turquoise windows and grille in Sheikh Lotfollah Mosque, (by author in 2014)..... | 67 |
| Figure 19. The blue background and yellow pattern under the dome of hallway in Sheikh Lotfollah Mosque, Photo by (Maiwald, 2008)..... | 68 |

| | |
|---|----|
| Figure 20. Center of the dome of hallway in Sheikh Lotfollah Mosque, Photo by (Maiwald, 2008)..... | 68 |
| Figure 21. The dome of hallway in Sheikh Lotfollah Mosque, (by author in 2014) .. | 69 |
| Figure 22. Exterior of the Sheikh Lotfollah mosque’s dome, (by author in 2014).... | 71 |
| Figure 23. The frontage entrance porch of Sheikh Lotfollah Mosque, (by author in 2014) | 72 |
| Figure 24. The color of frontage entrance porch of Sheikh Lotfollah Mosque, (by author in 2014)..... | 72 |
| Figure 25. The L-shaped connection between entrance and yard of Shah (Imam) mosque, (Archnet, 2016)..... | 74 |
| Figure 26. The main entrance Iwan of Shah (Imam) mosque, (Archnet, 2016) | 75 |
| Figure 27. The Dome of Shah (Imam) Mosque, (by author in 2014)..... | 76 |
| Figure 28. The decoration of interior walls in Shah (Imam) mosque, (Driessen, 2016) | 77 |
| Figure 29. The interior part of the dome in Shah (Imam) mosque, (Driessen, 2016) | 77 |
| Figure 30. The exterior walls in Shah (Imam) mosque, (Driessen, 2016)..... | 78 |
| Figure 31. The exterior walls of the Shah (Imam) mosque, (Driessen, 2016)..... | 78 |
| Figure 32. View of interior planning of Ulu Mosque Bursa1396, (Hattstein M. D., 2000) | 81 |
| Figure 33. Bayazid II Mosque, all domes are getting a rise toward center dome, rising and bed-chamber, or interior prayer hall is joining to courtyard, (Hattstein M. D., 2000) | 82 |
| Figure 34. Floor plan of the remaining buildings in the Sultan Ahmet Camii complex: 1. Mosque 2. Madrasa 3. Mausoleum 4. Elementary school 5. Royal | |

| | |
|--|----|
| pavilion 6. Hippodrome 7. Garden platform 8. Gazaar (arasta bazaar), (Elegant, 2016) | 85 |
| Figure 35. Iznik blue ceramic tiles interior of the Sultan Ahmet mosque (Blue mosque), (Hattstein M. D., 2000) | 86 |
| Figure 36. Sample of the different patterns of Iznik ceramic tiles in blue, azure, red, turquoise and green colors on the white background, (Elegant, 2016)..... | 87 |
| Figure 37. The blue painted decoration on the brick and stucco in the upper level of the interior part of the Sultan Ahmet mosque (Blue mosque), (Elegant, 2016) | 87 |
| Figure 38. The windows around the main and semi domes in Sultan Ahmet mosque (Blue mosque), (by author in 2012)..... | 88 |
| Figure 39. The colored windows in Sultan Ahmet mosque (Blue mosque), (by author in 2012) | 89 |
| Figure 40. The Chandelier of the Blue mosque with gold decoration, crystal gems and ostrich eggs, (Elegant, 2016)..... | 89 |
| Figure 41. The gold Qur'anic verses in interior part of mosque, (Elegant, 2016)..... | 90 |
| Figure 42. The Minbar and Mihrab of Sultan Ahmet mosque (Blue mosque), (Elegant, 2016)..... | 91 |
| Figure 43. The carpet of Sultan Ahmet mosque (Blue mosque), (by author in 2012) | 92 |
| Figure 44. Apply some different colorful stone on the exterior facade of the Sultan Ahmet mosque (Blue mosque), (Elegant, 2016)..... | 93 |
| Figure 45. The general view of the plan of Shehzade mosque, (Frishman M. K.-U.-A., 2002) | 95 |
| Figure 46. The courtyard of Shehzade mosque, (Wikimedia, 2016)..... | 96 |
| Figure 47. Decoration of dome, ceiling and interior wall of Shehzade mosque, (Brustein, 2016) | 96 |

| | |
|---|-----|
| Figure 48. Different decoration and interior color of Shehzade mosque, (Brustein, 2016) | 97 |
| Figure 49. Decoration on ceiling and wall in Shehzade mosque, (Wikimedia, 2016) | 98 |
| Figure 50. Carpet and interior part of the Shehzade mosque, (LWYang, 2016) | 98 |
| Figure 51. Plan of Bibi-Khanym Mosque, (Ratiia, 1950)..... | 103 |
| Figure 52. General view of the Bibi-Khanym Mosque, (drewmaul, 2016)..... | 103 |
| Figure 53. One of the domes in Bibi-Khanym Mosque with denticulate masonry style, (Sele, 2016) | 104 |
| Figure 54. The main dome of the Bibi-Khanym Mosque, (Sele, 2016) | 104 |
| Figure 55. The interior decoration of Bibi-Khanym Mosque with painting on plaster working, (Sele, 2016)..... | 105 |
| Figure 56. The decoration of portal gate in Bibi-Khanym Mosque, (Sele, 2016) ... | 106 |
| Figure 57. The exterior decoration of Bibi-Khanym Mosque, (Paskaleva, 2012)... | 106 |
| Figure 58. The arabesque design on the seven colored mosaic tiles in the exterior surfaces of the Bibi-Khanym Mosque, (Sele, 2016)..... | 107 |
| Figure 59. Sketch from the colorful tiles of Bibi-Khanym Mosque, (by author in 2016) | 107 |
| Figure 60. Applying colorful mosaic tiles in the dome of Bibi-Khanym Mosque, (Sele, 2016)..... | 107 |
| Figure 61. The Po-i-Kalyan complex in Bukhara, (gallery, 2016) | 109 |
| Figure 62. The Kalyan Minaret with 45, 3 meters, (gallery, 2016) | 109 |
| Figure 63. The courtyard of Kalyan Mosque, (Albers, 2016) | 110 |
| Figure 64. The exterior view of Kalyan Mosque dome, (Bukhara, 2015)..... | 111 |
| Figure 65. The interior view of Kalyan Mosque dome, (gallery, 2016) | 111 |

| | |
|--|-----|
| Figure 66. The main portal of Kalyan Mosque, (gallery, 2016) | 111 |
| Figure 67. The decoration of Mihrab in Kalyan Mosque, (gallery, 2016)..... | 112 |

LIST OF TABLES

| | |
|--|-----|
| Table 1. Structure of thesis..... | 6 |
| Table 2. Classification and summary about the architecture of mosques during Safavid domination..... | 65 |
| Table 3. Symbolic meaning of applied color in Sheikh Lotfollah Mosque..... | 73 |
| Table 4. Symbolic meaning of applied color in Shah (Imam) Mosque..... | 79 |
| Table 5. The classification and summary about the architecture of mosques during Ottoman domination..... | 84 |
| Table 6. Symbolic meaning of applied color in Sultan Ahmet mosque (Blue mosque)..... | 94 |
| Table 7. Symbolic meaning of applied color in Shehzade mosque (Şehzade Mosque)..... | 99 |
| Table 8. The classification and summary about the architecture of mosques during the domination of Central Asia..... | 101 |
| Table 9. Symbolic meaning of color in Bibi-Khanym Mosque..... | 108 |
| Table 10. Symbolic meaning of color in Kalyan Mosque..... | 113 |
| Table 11. The table of investigating and analyzing the symbolic meaning of different colors in Safvid mosque..... | 116 |
| Table 12. The table of investigating and analyzing the symbolic meaning of different colors in Ottoman mosque..... | 116 |
| Table 13. The table of investigating and analyzing the symbolic meaning of different colors in Central Asian mosque..... | 117 |
| Table 14. The table of investigating and analyzing the symbolic meaning of different colors in Safvid mosque, Ottoman mosque and Central Asian mosque..... | 124 |

Chapter 1

INTRODUCTION

1.1 Introduction

In the world of Islam, architecture is the biggest manifestation of a spiritual and divine reality in art, which appears in a material body. This means that, the architecture could transmit the spiritual meaning and concept of Islam to the space. In the history, architecture could be considered as the most compatible art with Islamic concepts and beliefs (Creswell, 1978).

Islamic art and architecture have been spread over a huge territory; it is a kind of style in architecture that is emerged under the influence of Islamic cultures. However, from 7th century, it was impressed by many domination, which were conquered by Muslims, such as; Roman, Byzantine, Sassanid, Abbasid, Safavid, Ottoman, Chinese, Indians and even different emperors in many parts of Asia.

Although, in Islamic architecture there are different types of buildings such as, Tomb, Palace, Madrasah and House, but the most significant type of the buildings, which can imply the importance, splendor and beauty of Islamic architecture is Mosque. Besides, In Islamic civilization, there is always exists an inextricable link between the material worlds and spiritual realms, this displays that there isn't any separation between God and humanity. Based on ongoing debates, Islamic spiritual

messages and the concept of faith should be transmitted to human, and mosques can be considered as an efficient unsecular building to meet this duty.

In addition, Mosque, as a valuable and fundamental place in Islamic architecture, has a vital role not only in spiritual nurturing and cultivating for humans and worshiping, but also in replying the human's social, cultural, educational and economical needs.

Hence, in the architecture of the mosque, in order to supply the spiritual and super-substantial meaning of space to human, it is necessary to provide an efficient communication between mosque and human. and since Islamic architecture is one of the most important territories for using signs and symbols, the communication between human and mosque for conveying the divine concept and spiritual meaning of mosque to human could be accomplished by the meaning and symbolic meaning of the various elements that are existing in the mosque.

This means that, there are existed different elements in mosques, which could be considered as communicational tool for making an appropriate relationship with humans and express different meanings to them.

Color could be one of the efficacious and impressive communicational tools in mosques that convey the divine and supernatural messages of this precious building to human by its symbolic meanings. Also, it can effects on human's mind and his psychological behavior, through its symbolic meanings.

Although, color has both physical and metaphysical characteristics, the metaphysical, spiritual and the transcendental features of color, cause this element to have symbolic

meanings. However, the symbolic meanings of any color are different according to various factors such as; culture, original background, memories and past experiences.

1.2 Statement of problem

The relationship between human and mosques has been one of the controversial issue from past periods until now. Color can be mentioned as a communicational tool that attempt to imply the importance of mosque and spiritual concepts of this unsecular building to human through using their symbolic meanings in architecture of mosques. During recent decades, the impressive situation of the color as an influential element and their symbolic meanings in architecture of contemporary mosques has been underestimated. This leads to study symbolic values of color in traditional mosques, during the past periods.

1.3 Aims and objectives of study

The main aim of this research is to investigate the symbolic meanings of colors, which have been used in the traditional mosques in various periods. Besides, this study attempts to illustrate the place of each color in different architectural parts of mosques. In light of this, the several symbolic meanings of colors are comprehended in the traditional Safavid, Ottoman and Central Asian mosques. In these cases, finding the similarities and differences of these meanings of colors, are the other targets of this thesis.

1.4 Research questions

In order to gain the aims of this research, it would be expected to answer the following efficacious questions. The main question is;

1. What are the symbolic meanings of colors that used in traditional mosques?

And also, this study tries to reply and pursue other questions which are;

2. What is the symbolic meaning of colors in the traditional Safavid, Ottoman and Central Asian mosques?
3. Which colors were used symbolically in the traditional Safavid, Ottoman and Central Asian mosques?
4. Where did those colors applied in the traditional Safavid, Ottoman and Central Asian mosques?
5. What are the similarities and differences between the symbolic meaning of colors, among the Safavid, Ottoman and Central Asian traditional mosques?

1.5 Limitation and scope

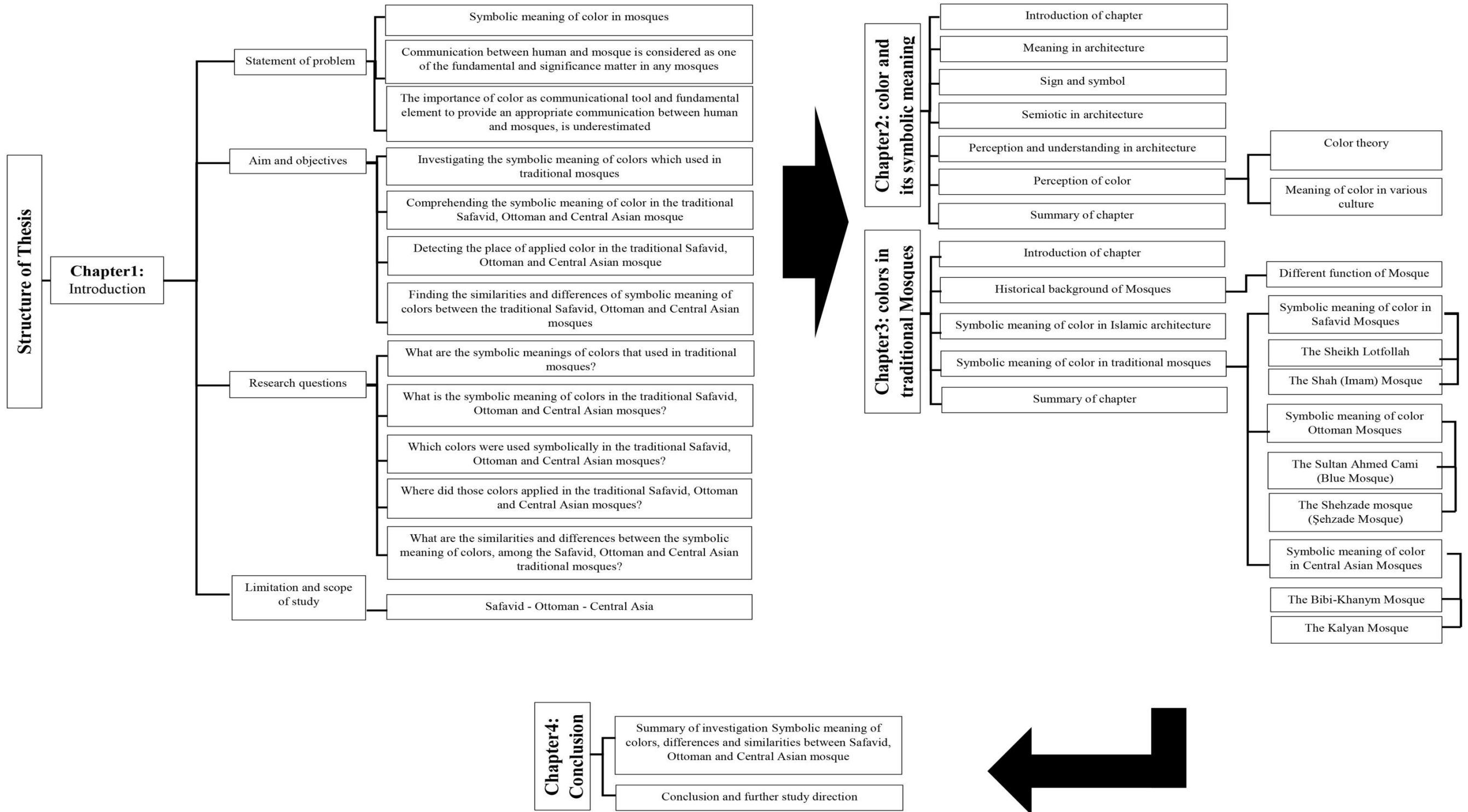
It is undeniable that, finding symbolic meaning of colors which are used in all different types of traditional mosques is a very wide and crucial subject. Hence, the study should be limited in specific periods of time. Since, Safavid, Ottoman and Central Asia were the most significant periods of flourishing culture and art in Islam also the most important styles of Islamic architecture with the most impressive history of Islam, this study has limited to these periods (Hillenbrand, 1994), Takeo, 2006, Ross, 2009). In addition, according to (Esposito, 1999), Ottoman and Central Asian Islamic architecture shows the most excellent level of Islamic architecture and Najafi, (2009) believed that, Safavid period is one part of the Islamic Golden Age, which is also considered as the peak period of Islamic civilization, when, Artists, craftsmen, philosophers, engineers, physicists, and other scholars of the Islamic world, tried to improve their skills and knowledge in various field of art, architecture, economy, industry, law, literature, navigation, philosophy, chemistry, physics and sociology. Besides, ottoman, Central Asia and Saffavid architecture are considered as major and fundamental periods of Islamic architecture among various styles of Islamic architecture, moreover, the Islamic architecture faced to its perfection during

these three periods (Armstrong, 2000). Therefore, these reasons lead this thesis to limited in Safavid, Ottoman and Central Asian periods.

1.6 Methodology of study

Despite of the aims of research, the type of study is documentary research. In addition, the method for collective data and analysis is a content analysis method. The content analysis is a technique in research, that is consisting of, the systematic analyzing and evaluating underlying codes, which could be words or phrases, in any documentary materials such as books, articles, magazines and newspapers (Kothari, 2004). In this study, expected underlying codes are color, traditional mosques and symbolic meanings that are investigated in the literature through content analyzing method. In addition, this study focuses on six mosques as sample studies. Since, the type of this study is documentary research; the chosen samples are the mosques that have more debates in terms of colors, so there are more references and documents which are focusing on the color of them. Therefore, these samples are the most monumental and significant samples from specified periods. Moreover, this research emphasizes on the qualitative method and data are collected by reviewing the literature. The structure of thesis can be seen in the following chart (table1).

Table 1. Structure of thesis



Chapter 2

COLOR AND ITS SYMBOLIC MEANING

2.1 Introduction of chapter

Color is considered as an element, which gives the space characteristic; it is also an impressive contributor for perception of space (Alsac, 2004). Therefore, obtaining knowledge about the color theories and any features of color, contribute humans to perceiving and understanding his surround environment.

In this chapter, color theories, color specifications and features, are investigated. Color, is a quality that obtained through the collision of different light wavelengths to objects, then, reflecting to the human visual system and effects on human psychological behavior and emotions, although, color has different symbolic meanings, according to various specific regions and cultures (Miller, 1997). This chapter tries to study about different aspects of color such as its scientific, psychological and symbolic characteristics.

In addition, some scientists work on the scientific aspects of color, they believe that, the source of color is light, also, they studied about features of colors and the psychological and emotional effects of colors on humans too. Beside, some scholars concentrates on subjective and metaphysical aspects of colors; they are recognizing color as a symbolic element. Moreover, the scientific feature and nature of color is a worldwide and timeless happening, however, the symbolic meaning of color has a

direct relation with time and regions according to their specific culture, political, historical and religious associations (Gage J. , 1999).

In Islamic religious belief, the source of color is the unit light and different colors are created from one light, this also, shows the meaning of unity in diversity. In addition, the unit light is a symbol of God, who is the reason for the existence of everything and makes everything appear. (Ardalan, 1973).

2.2 Meaning in architecture

It is necessary for any architectural space to have meaning, consequently, providing meaning for any architectural space is one of the substantial points that any architects and designers have to put a significant concentration on it. In addition, in order to understand any architectural place, the first requirement, is to create meaning in that place (Popple, 1999).

Architecture could transfer any meaning to space (Norberg-Schulz, 1988), or, it could be said that, architecture is a language of meaning and this meaning depends on the human's system of beliefs, opinions and the model of his lifestyle, In another words, the meaning is the substitution of the human life's language (Wittgenstein, 1963).

Therefore, meaning in architecture is in a relationship with culture, and these two criteria are always existed together. This means that, the meaning in the architecture of any particular region, is defined according to specific culture and during a specific period of time. Moreover, the meaning is not considered as constant, absolute things that could not be changed, even it is counted as a “relational” character that depends on culture and has a significant affiliation with sign and symbols (Eagleton, 1983).

In other hand, architecture could be considered as a cultural system which is consists of a system of signs, symbols and indexes. According to Roland Barthes who said:

A truly meaningless architecture remains outside the realm of culture and thus it would cease to be architecture (Barthes, 1970).

Also, this cultural system is created in human during the time from his contextual knowledge and perceptions of nature through experiences, however, obtaining humans knowledge is depends on his original background too (Barthes, 1970).

This means, symbolic thoughts and signs are created according to specific cultures and from repeating anything like images, sounds, events or having sensory experiences. In the other word, sensory experiences and human perceiving from the surround environment could convert to sign a symbol by the help of giving meaning to them according to a particular culture. In addition, these symbols and signs carried the meaning, which human takes to them from his environment, and these meanings associated with him in any languages like religion, art and architectural language. So, for human, signs and symbols create his real world (Geertz, 1973).

In addition, as Ittelson mentioned, symbols are naturally created for conveying meaning (Dastjerdi, 2015). the aim of symbols could considered successful when they could transfer particular meaning through signs in order to, make that sign readable and display the meaning of it for the observer (Barr, 2003).

In the process of giving meaning to architecture through symbol and signs, the culture is considered as a kind of boundary that also is referred from original history and the background. In addition, different systems like, religion, art, philosophy and

other systems play an important role in building history, that is a fundamental element for shaping each culture (Geertz C. , 1968).

Moreover, using symbols in architecture refers to exaggerate recognition of symbolism and shows the importance of it, that helps the purpose of crystallization of meaning in architecture (Hershberger, 1970).

2.3 Signs and symbols

Studying about the sign and symbol could be considered as a fundamental study in human life, because, it is obvious that, man is always dealing with these two elements in his social life. For instance, in order to indicate the meaning of, what he wants to convey in his language, he tries to use existed and written words, however, facing to semiotic could be considered as a challenge for architects and their architecture (Jung, 1964).

In addition, Semiotic is a kind of knowledge that helps humans, to understand real phenomena in the real world through, understanding and reading signs and symbols in any occurrence, accordingly “Semiotics includes all readings related to decoding the phenomena” (Johansen, 2002).

Although, the first clear source for semiotic as a part of philosophy and theory appeared in John Lock’s essay; concerning human understanding in 1690 (Locke J. , 1970), there are two primary and key scholars who did a vast studies in this area, who are the American philosopher, logician mathematician and scientist Charles Sanders Peirce (pronounced ‘purse’) lived between (1839–1914) and also the Swiss linguist and semiotician, Ferdinand mongin de Saussure who lived in 20th century during (1857–1913), they are both worked in semiotic field (Nöth, 1990).

In the book “Semiotics: the basics” Daniel Chandler in 2007 mentioned; the word semiotic is originated from the Greek word ‘sēmēion’ which means ‘sign’, however, semiotics in general is a science that concentrated to sign and explains what is the sign? And how it works in any process or real world phenomena? In addition, (Eco U. , 1976), states that; semiotics deals with everything which can be taken as a sign.

Semiotics not only includes the study of the things that we call them sign in daily conversations, but also, entails the study of anything that refers to other things or stands for something else” (Chandler, 2007). Also, “Semiotics explores the meaning by discovering deeper layers of the text (Martin, 2000).

Also, Saussure explores this science in social psychology, that’s why he called this science semiology, he also obtains the role of sign in human social life and try to finding laws in semiology which are relevant to linguistic field. He considered language as a kind of system of signs (Saussure, 1959).

In addition, he believed that a linguistic sign is not just a connection between something and some names, also, it could be considered as a link between signified (defined as specific meaning or concept) that is abstract form, and signifier (a sound pattern or image and so on) which is a hearer’s psychological thought of a sound that can be reached through evidence of his senses. In addition, “sound pattern” could be named for the material, which is represented from human sensory reflection (figure1) (Ferdinand de Saussure, 1986).

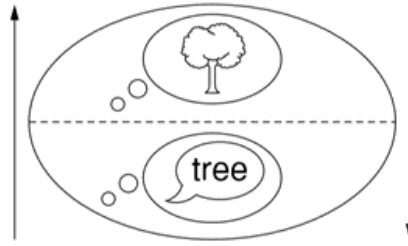


Figure 1. Concept of sound pattern, (Chandler, 2007)

(Figure 2) can clarify the definition of Saussure’s model, although, today it changed to more materialistic forms, it means, a signifier interprets physical or material form of signs which, could be tasted, smelled and also touched through human senses, however, Saussure considered both of them as the psychological elements (Figure2) (Nöth, 1990).



Figure 2. Saussure’s model of the sign, (Chandler, 2007)

The “signification” comes from the relation between signifier and signified, which could be seen in his diagram by the arrows, and also, The horizontal line referred as “the bar”, for example the word “close” which is, hung on the shop’s door is a linguistic example, this sign consists of the word “close” as a signifier and also, it signified this concept that, the shop is closed for business (Chandler, 2007).

Therefore, another important point in his model is that, he believed that a sign should have both signifier and signified otherwise it became meaningless or formless,

where, on the other side, Charles Sanders Peirce named this field of science “Semiotic” as “formal doctrine of signs” which is closely connected to logic (H. G. Townsend, 1932).

Peirce suggested the triadic (three-part) model which includes: 1. The representamen: lots of scholars called this as “sign vehicle” it is a form of sign (that is not necessary to be a material). 2. An interpretant: it is not an interpreter, but it is made of the sign. 3. An object which could mean a referent (figure3). In Peirce’s own words:

A sign [in the form of a representamen] is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the interpretant of the first sign. The sign stands for something, its object. It stands for that object, not in all respects, but in reference to a sort of idea, which I have sometimes called the ground of the representamen (Hartshorne, 1934).

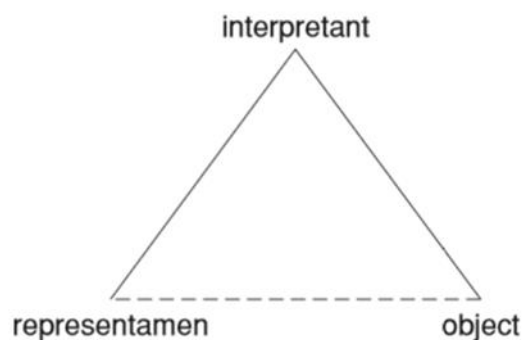


Figure 3. Peirce’s semiotic triangle, (Chandler, 2007)

In addition, Charles Sanders Peirce stated that; “we think only in signs” and signs are formed into words, sounds, images, odours, flavours, acts or objects, but they could be considered as a sign only when they interpret other things or someone explained or referred them as ‘signifying’ something else or maybe they stand for another thing which is not themselves (Quine, 1933).

Nevertheless, if an object directly known, there is no requirement for signs, in order to represent it. Also another element (Symbol), according to the Oxford English dictionary is defined as “something that stands for, represents, or denotes something else” (J. A. Simpson, 1993). It should be mentioned that symbol has more profound and deeper meaning than sign, and according to Mitford:

A symbol is linked in function to a sign, and the two words are often used interchangeably, but usually the symbol has a deeper meaning, a symbol is something that through its nature or manifestation reflects or represents something more insightful than itself (Bruce-Mitford, 1996).

Therefore, we can call some terms, pictures or names as a symbol if it couldn't immediately explained and doesn't have only clear and distinct meaning, also, it carries a wider "unconscious" aspects too (Jung, 1964).

Another theorist Eliade also mentioned, symbols shows the deepest aspect of our reality and it is inseparable part of each culture and regions, which is, not limited to just in specific time (Eliade, 1991). For Peirce;

A symbol is 'a sign which refers to the object that it denotes by virtue of a law, usually an association of general ideas, which operates to cause the symbol to be interpreted as referring to that object.

Also, the symbol could be explained according to “a rule” or “a habitual and continual connection”. Peirce thinks symbols couldn't limited into words, however, all the text, words, sentences and other established signs are considered as a kind of symbol (Nöth, 1990).

2.4 Semiotics in architecture

Architecture can be mentioned as a communication language between different civilizations and nations. Besides, it can be said that human can communicate with

their environment through architecture (Brown, 2000). Therefore, it is necessary for anybody to understand anything surrounding them. According to Roland Barthes and Umberto Eco who are influential scholars in the field of Semiotic, architecture, is layer - like text, which is full of effective signs, additionally, G. Hegel, believed that, architecture cannot singly express the idea completely (Eco U. , 1976).

In other hand, as, the semiotic is a kind of science that investigating sign and symbols according to a particular culture and also, culture, is accounted as a system of communication, so, the semiotic is a challenge for architecture, in order to provide an appropriate communication language (Eco U. , 1976).

In addition, it is undeniable that architecture always transmits meanings naturally and tries to provide relation and communication between human and phenomena, (Norberg-Schulz, 1988), but, because in architecture replying demands of function is considered as a primary necessity, these meanings should transform symbolically through signs (Chamberlain, 2008).

Thus, the architecture uses symbolism to convey particular messages (Scruton, 1979). This shows that, semiotic plays an influential role in reading of architecture which is full of concepts and complicated codes, text and ideas and also architecture is a kind of vehicle system for signs and symbols to convey their meaning to human (Pablo. Bonta, 1979). Moreover, the purpose of applying symbol and sign in architecture is to provide the comfortable communication between the designed space and user or observer (Nadin, 1988).

Lots of scholars believed that, if a building doesn't use symbols and signs, it couldn't have meaning for human and cannot convey the specific sense of space to users; however, it satisfied users by material and other element. In addition, applying signs and symbols is not used only for monumental building, to provide spiritual sense and meaning in them, but also, it is considered as a need for any kind of buildings, although, these symbolic meanings and symbolic messages carried with building and transfer to the next generation too (Harries, 2000).

Since architecture is a kind of multi-dimensional happening, perceiving any meaning in architecture, led to classify two different categories in communication of architecture which are; (1) formal & discursive and (2) non-formal & non-discursive (Gawlikowska, 2013).

In the formal & discursive communication in architecture meanings could be perceived through the specific rules and grammars which recognized by scholars, in addition, the function of meaning in this category also could be known as a kind of language. This also, shows the importance of meaning that reached through specific rules and frameworks in this kind of communication too. In the second category, non-formal & non-discursive communication, meaning could be perceived by the sensory experiences of people from the spatial area and based on their natural perception and feelings (Lawson, 2001).

Therefore, formal & discursive communication in architecture is in the relation with semantic, however, the Symbolism and semiotic in architecture deal with non-formal and non-discursive communication which is non-verbal social communication, not

intellectual and also unconscious process, it will effects on human emotions, through his sensory experiences (Fergusson, 2012).

In architecture symbolism, each space is playing the role of text or codes and when human enters to the space, he tries to recreate and understand the space, through decoding various codes, signs and symbols, according to their cultural, social condition (Eco U. , 1976). This means semiotic and symbolic communication in the language of architecture is a kind of dynamic communication that helps human as an observer to build the surround spaces according to his, socio cultural background and mental needs, and also architecture and real reality could be constructed with regards to particular people in specific regions (Markus, 2002).

Moreover, by adapting the ideas of human's belief in the context of architecture, through signs and symbols, this particular concept in architecture could be maintained and transfer to the next generation in order to create similar feeling and emotions for them and beyond the time and place it can give them particular symbolic messages too (Carey, 1989).

2.5 Perception and understanding in architecture

From the beginning of the history, it was a substantial attempt for human to answer the question of how man can perceive his environment and understand the meaning of anything which are around him? The word understanding is consists of “under” and “standing”, which means, “be standing in world”, thus in order to replying this demand lots of theorist define the relation between man and his environment. For instance, Rene Descartes one of the rational philosopher in 17th century claimed that, "I think, therefore I am." Also, he thought human has innate idea and clear, distinct

priori knowledge with his self and there are some self-evident things which don't need to experience (Merleau-Ponty, 2004).

On the other hand, John Locke as an empiricist philosopher, in one of his essay "An Essay Concerning Human Understanding" argued against the Descartes, he believed that, it is not possible to have an innate idea and knowledge for everyone, he also mentioned that, mind is like a blank or somehow white paper (white tablet- Tabula rasa). Everyone can gain knowledge of the material world and transform the reality which has existed in nature to their mind by their individual sensory experience since their childhood (Locke J. R., 1996).

Moreover, Locke considers a mind as an active receiver that organizes and process all knowledge and perceptual information (Locke, 1970).

The idea of John Locke about perception and understanding could be naturalized by explaining about his beliefs about quality of objects, he thought, there were two kinds of qualities, which were primary qualities, those exist in the object, mind independent, quantified and mathematical, like shape, size and motion, and the secondary qualities, those, perceived and produced in mind like color, sound and smell (Locke J. M., 1963).

Another theorist who has an influential role in developing perception theory is George Berkeley, who denied the mind independent things which cannot perceived in material world, in addition, he states that "Esse EST percipi" which means "to be is to perceive", this also shows, that anything could be exist if they perceived (Berkeley, 1907). Nevertheless, in modern thoughts and theory related to positivism,

many theorists and philosopher considered the human knowledge are all sensory phenomena (Gay, 1964).

So, in order to have relation with the external world and understand the surrounding environment it is necessary to perceive it. Moreover, perception is a process of mental thing and mental communication with external matter, also identification and interpretation of the human environment through his sensory experiences (Gibson, 1950).

This means, in order to perceive anything in the external world and reply your requirements, sensory experiences such as seeing, hearing, tasting and even feeling are necessary (Wegner, 2009).

In addition, the sensation is a psychological influence, which directly comes from human reactions and senses, then transformed in the sensory part of the mind, thus, sensation could be considered as a first step of feeling and simply perceiving, that occurs through observation and other sensory experiences from color, sound and other sensory features and qualities (Rajeh, 1968)

The visual perception is one of the action which is defined as an ability of expounding surrounding environment which are an outcome of the human neural system that reached through observation, these also organizing in specific parts of the brain. In the other word, the eyes which is a visual sensory instrument receiving some image and transform it to brain in order to interpret and perception (Smardon, 1986).

With regard to the importance of , human understanding and perceiving in his world, all designers and architects tries to consider this substantial point in their works and give any space specific meaning, by using various procedure, such as particular formation, decoration and giving function, which has a direct effect on psychological aspects of human through his eye and other sensory tools, as Louis I. Kahn states that, "I didn't want anything pretty: I wanted to have a clear statement of a way of life." Also, Romaldo Giurgola expressed: "It is the peculiar task of architecture to reach meaning: the human habitat is pivoted around meanings, not objects." Robert Venturi also prefers "richness of meaning over clarity of meaning." (Hershberger, 1970).

Nevertheless, the experience of the observer and the things that he observed depends on color, light and other visual features, which has direct effects on human observation and his feelings (Gage J. , 1999).

2.6 Perception of color

Color is an inseparable part of human's life. Although, it is effecting on all aspects of human's life, it has a profound influence on the inner part of the human and his mental behavior too. This means, colors convey various senses to human and effects on his emotions, however, for designers and architects it has different appearances and assumed as a fundamental elements of design too (Luke, 1989).

In addition, color plays an influential role in space perception, this means that, color can effects on the meaning of space, measurement, distances and sense of place which is consists of space moods, emotion and other perceptual features. Thus, this

functional element is a kind of non-verbal and wordless language that can transmit ideas and notions of designer to users (Holtzschue, 2015).

There are two kinds of points of view about lights and colors, those are scientific thoughts and philosophical thoughts. This means, about color perception, one method express that color could be a feature of an object, and human's mind is free of any disputes, however, another method displays that, color could consider as a phenomenon, and, it is a perceptual element for human, also, his mind is in conflicts that could have symbolic meaning too (Lancaster, 1996). In the scientific category (Objectively) scholars and theorists are focusing on the scientific dimension of lights and colors and describe these two elements according to scientific classification, rules of physics, chemistry and other sciences (Feinser, 2009).

Since ancient time; According to John Locke in 1660, color counts as a secondary quality of the object and which is not tangible, visual and tasty. Ancient man named colors through his experiences or from the color of animals (Kuehni, 2003), but the definition of color depends on light, so it couldn't have external existence without light.

Characterizing the light absorbed the human attention from the ancient period; ancient human believed that light is a small particle that humans can see objects through it. However, during recent century theory of quantum illustrated that light is a radiant energy that is consists of small particles named photons (Patricia Valdez, 1994). Although, modern natural science considers darkness as nothingness, Goethe thinks darkness doesn't mean the absence of light. For Goethe light means:

The simplest, most undivided and most homogenous being that we know.
(Goethe J. W., 1840).

Therefore, it could be concluded that, the impact of light on objects or surface would be absorbed or reflected back and transmit to the human eye, then convey to his brain and become a word (color) (Ladau, 1989).

According to Elizabeth Barrett in 1844, in the book; *Understanding of color* an introduction for designers, colors, which are appearing in the light of a candle are not same as colors which appears through sunlight, so the color is not stable quality. According to Helmholtz, in 1866 he founded out each color has three different separate features which are hue, value and saturation or Chroma (Ching, 1987).

In order to define hue, which makes differentiation between colors, it should be mentioned that; in the human's eyes the visible light wavelengths are between, 380 to 720 nanometers, and, the amount of this light wavelength for each color is the hue of that color. This means, the hue is the name of each color. For example; the longest light wavelength which is visible to human is 720 nanometers, it is assigned to the red color, then after that respectively orange, yellow, green and blue are located, also, 380 nanometers belong to purple, in addition, the human vision is more sensitive to middle range wavelengths of this spectrum, which is between yellow to green (Holtzschue, 2015).

The second feature is the value, that is distinguished the dark and light tones of color, this means it refers to the comparative amount of the brightness and darkness of color (Ching, 1987). The last quality that names Chroma or saturation interprets the

purity and Purulent of color it is also a kind of power and weakness representation of the color too, the grade of Chroma usually located between one to eight, these three features are more studied by Albert Munsell, although different theorist and philosopher studied about different aspect of colors (Landa, 2004).

Another approach that concentrating to the philosophical dimension and investigating color and light with regards to philosophical thoughts is (Subjectively). Although with regards to human perception, in this category, not only psychological factor and cultural factor effect on perceiving color, but also all the physical elements such as the color features (hues, value, chrome) effects on understanding of color too (Tymoczko, 1979).

Different scholars and Sufi masters consider light and colors as metaphysical and supernatural elements that should be perceived by human according to the epistemological issues, for instance, from the ancient period, many scholars such as Descartes and Locke considered color as a secondary quality which could be perceived by the human mind through his experiences (Clarke, 2009). According to David Hume, who stated that; color is considered as a subjective quality, in addition, color is a quality that doesn't exist in an object and only could be comprehended in human's mind (Hume, 1911).

Also, S. K. Palmer believed that, when human see some object with his sensory experience thing color is part of that object, for example, he thinks sky seems blue, because, it is blue or plants are looking green because they are green, but this supposition is incorrect because, color is considered as a metaphysical properties which is depends on light and physical conditions of the object (Palmer, 1999).

Moreover, as (Walbridge, 2005) said, Sohrawardi who was a Sufi masters in scholars believed in his theory (Ishraq illumination), light doesn't need any definition because anything appears without light and colors are supernatural qualities which created by light, therefore it is undeniable that this quality carries divined and spiritual meanings that could be expressed via symbolic way (Arjmandi, 2012).

2.6.1 Color theory

The field of color theory in architecture is a wide field and color theories expressing a lot of things in various dimensions about color, but basically, it is explaining about, where the color comes from, how it formed and how it will understand and perceived as a particular language (Grimley, 2007).

At the beginning Aristotle, who was one of the ancient philosophers, argued color creates by the combination of light and darkness, he also specified five pure colors which are purple, gray, yellow, deep blue, leek green, crimson and purple, although he thought colors should have seven hues from white to black same as musical octaves. His theory had some problems, although it was prevailed over many centuries (Gage J. , 1995).

In 1651, Leonardo DA Vinci an Italian artist with regard to Aristotle theory of color and also 'chiaroscuro' technique (light to dark) consider white, yellow, green, blue, red and black as a primary colors, however, he didn't put these color in the color wheel. In addition, he was interested in perspectives and use light and shade to create 3-dimensional objects (Feinser, 2009).

In addition, in his important book "Treatise on Paintings" which was for a long time source of basic theories about the colors he mentioned; when colors with different

harmonies like red and green or yellow and blue placed together and next to each other, it creates an appropriate contrast and makes two colors more live, also increase their beauties of combination instead of apply similar and same color next to each other (Leonardo, 2002).

Moreover, harmony defines something pleasant for human and his eyes, thus the harmony in the color, explain that, colors those locating next to each other should be organized, also have a pleasant and logical structure to bring the sense of order and visual satisfaction for human (Ardalan, 1973).

Then, after Leonardo DA Vinci, Sir Isaac Newton, who played a substantial role in color theory and make evolution in this field, he studied color in another perspective and prepared the logic laws and frameworks for color perception and understanding. He began by interaction of light and color and same as some other theorists claimed that, without light not only color also other objects in the world couldn't be visible, in addition, Isaac Newton tried to investigate all the effects of colors on human different systems like blood circulation and different organisms which colors influence those physical systems in the human body (Goethe J. W., 1840).

The main idea about understanding light and color created by Newton, he mentioned about various light wavelengths and clarify white light contains all colors, Newton through the experiment of reflecting a narrow beam of light to the glass prism in a dark room, demonstrated the white light disintegrate into a spectrum of colors, and when this light impact to object some rays are absorbed and some of them reflected this reflected beams are colors. At first, in 1669 he just saw five different colors, but

later in 1671 the number of colors raised to seven (Red, Orange, Yellow, Green, Blue, Indigo and Violet) (figure4) (Caygill, 2005).

Additionally, he provided an innovative color wheel for the first time and considers blue, red and green as primary colors and the equal production of these three colors creates the white light, although, his theory was based on the light and not hues of colors (Finlay, 2014).

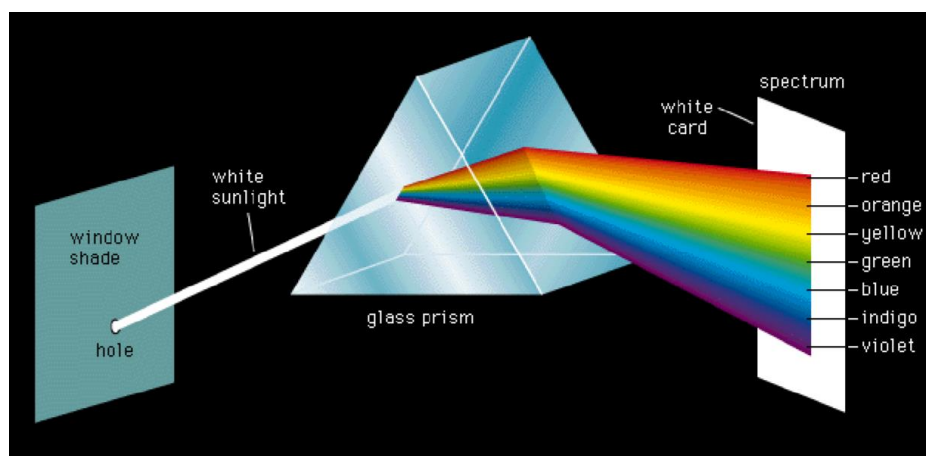


Figure 4. Passing the white light through the prism result of colors, (Feinser, 2009)

After Newton, scientist define the primary colors, Red, green and blue. Also, the secondary colors, yellow (Red + green = yellow), blue-green or cyan (Green + blue = cyan), magenta or purple (Blue + red = magenta) are colors that are derived from combining two primary colors, these colors are also called addition colors. Moreover, the placement of each secondary color in the color circle is between its two primary constituent colors (Baker, 2002) (figure5).

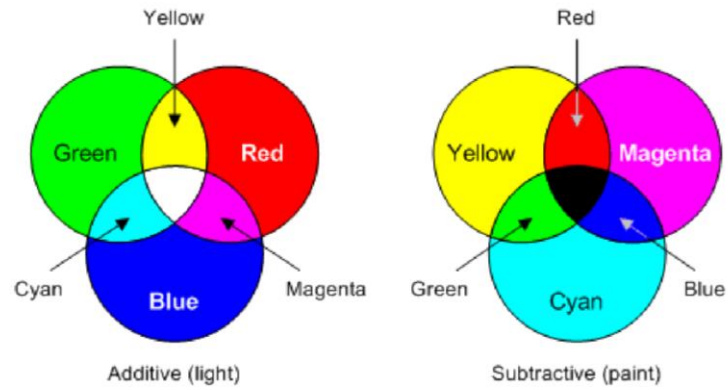


Figure 5. Additive and subtractive color, (Feinser, 2009)

In 1766 Another English entomologist theorist Moses Harris represented a color wheel within primary colors in terms of hues in color circle are yellow, red and blue because, the pigment's ingredients in these colors, are not consists of the composition of other colors, nevertheless, The Harris theory at that time became a fundamental theory for improvement in color wheels (Schmid, 1948).

The compound or secondary colors are green (yellow + blue = green), orange (red + yellow = orange) and magenta or purple (blue + red = purple) (figure6) (Feinser, 2009). In addition, in this color wheel the tertiary color are, red-violet, blue-violet, blue-green, yellow-green, yellow-orange and red-orange are also created by a combination of two colors which are next to each other (figure7) (Finlay, 2014).

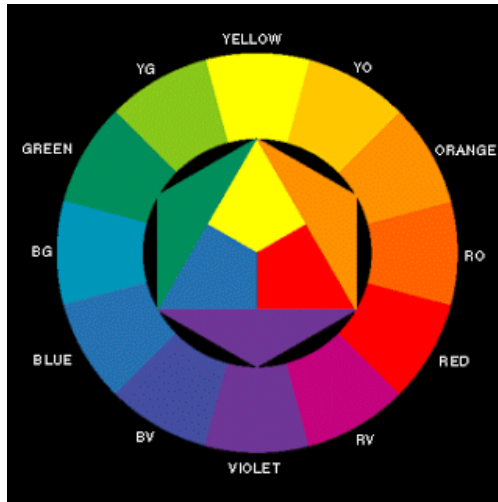


Figure 6. Color wheel, (Holtzschue, 2015)



Figure 7. Primary, secondary and tertiary colors on the color wheel, (Coffin, 2016)

Accordingly; the main purpose of Harris theory could be the effect of darkness and brightness of the colors in the color wheel, for instance, the human brain can recognize the green color of the little wavelength remains of both blue and green located next to each other. In the opposite of Newton, Harris claimed subtractive color mixture, he thought the combination of three colors together brings black color in the center of prismatic center. While Newton considered white color as an equal mixture of colors Harris though white color is the total absence of colors (Harris, 1963).

Harris system was an influential system for artist, designer and painter during 18th and 19th centuries. A little different from other theorist Johann Wolfgang Von Goethe a German writer and theorist focused on the role of perceptual in creating and understanding colors through human sensation and experiences he states:

I am the only person in my time, that has the right insight into the difficult science of colors, that is what I am rather proud of and that is what gives me the feeling that I have outstripped many (Goethe, 1971).

While, Newton provides a mathematical framework for lights to create color Goethe claim completely new perspective, he thought all the sensational colors feeling which is reached by his vision build in the human mind through his perception. This means that, he assumed color as a subjective visual phenomenon which is originally depends on human perception with regard to his visual system and it's not just the physical reaction of the eyes from lights.

In addition, he believed color comes from the interaction of light and darkness, for example, in his point of view, yellow is a light which is moderate by darkness or blue could consider as darkness with a weak light (Goethe J. W., 1840). Accordingly, the seen colors depend on three main factors include; the object, lighting and the angle of the light source with object and human eye by his perception (Byrne, 2003). At first he makes a circle system for color based on the yellow, red and blue as a triad of primaries (figure8) then Goethe provide an equilateral triangle for colors, in the vertices of the triangle he classified yellow, red and blue as primary colors, which he chooses through his senses and emotional contents rather than their physical features, then after secondary in different groups (figure9).

For him, the triangle was a kind of diagram of human mind which is directly attached to his emotions, so based on the people and designer emotional point of view, he arranged these triangles and then provide colors into two categories based on their temperature as warm and cold color wheel which are created through human emotions (Byrne A. R., 2006).

In another words, “plus side” consists of the color which are located from red to yellow and in the other side “minus side” which are contained the colors located from green to blue (Feinsler, 2009). Ribe and Steinle state that:

For Newton, only spectral colors could count as fundamental. By contrast, Goethe's more empirical approach led him to recognize the essential role of magenta in a complete color circle, a role that it still has in all modern color systems (Ribe, 2002).

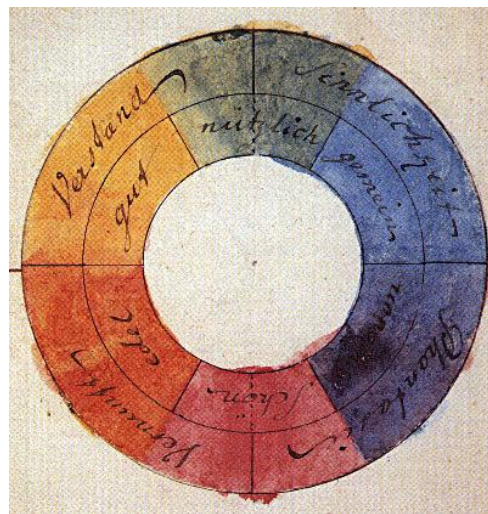


Figure 8. The first circle color system of Goethe, (Perconte, 2016)

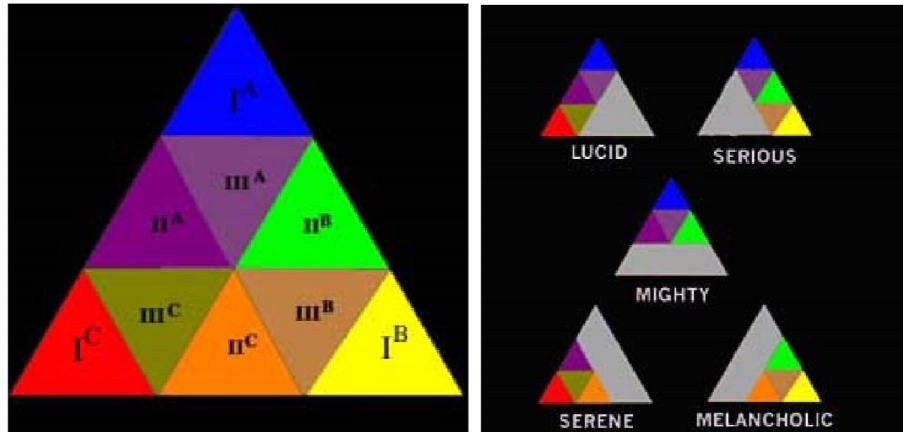


Figure 9. Goethe triangle of color based on human emotions, (Goethe J. W., 1840)

It is a substantial point that, colors and light has an influential role in human psychological feeling and even his reactions, tolerable illumination from light and pleasant also relax environment could be reached through application of suitable color (F. Pile, Color in interior design, 2002).

In addition, these two elements effects on man's concentration and sense of health same as, when man locates in a sunny day and having the sense of happiness or in the opposite being in rainy and cloudy day that makes him more depressed. The major effects of the color on human and his psychology happens to his emotions through his nervous system and hormonal activities, so it can give the space amount of calmness, anxiousness, motivation, happiness, cheer and other feelings (Gillespie, 1954), however, these kinds of effects are also depends on particular regions with their specific background and the method of human lifestyle or how human trained during his growing up.

2.6.2 Meaning of colors in various cultures

It is undeniable that perceiving and understanding the meaning of color and the effect of this element on human, depends on various factors like; the original background, old experiences, memories and cultures, these factors influences to the relation

between understanding of color and the effect of color on human and cause to create different symbolic meaning of colors among different peoples (Solli, 2008), that's why, one color could have different meaning and have different effects on various people who are lived in different countries (Feinser, 2009).

Generally, different category of colors could also have the usual meaning for human and effects on his emotions and reactions, as warm color makes humans more extroverted and brings the sense of excitement by increasing his activity cause to raise the blood pressure (Rexford, 1925). In the opposite, cool and cold colors make human introverted and also, these colors cause to make them more silent, calm, relax and bring the sense of Stasis for him (Shevell, 2003).

In addition, Mc Murray in 2002 mentioned; for making the places more relax and calm, blue color could be used, however, yellow or red which are considered as warm color could applied in live place, that needs more activation, this means the fabric colors which is existed in place or objects could help to give them correct characterization (Taylor, 1924). All these, means there are some general frameworks for use colors correctly and according to human needs and feelings.

Furthermore, colors also could have symbolic meaning because of their metaphysical, supernatural and transcendental characteristics they can explain some messages symbolically by affecting human psychology through the influence of their features on the human mind, however, these symbolic meanings, also are under the influence of specific cultures and the region although, they have a direct relation with particular sociocultural thoughts and backgrounds. As Hyman thoughts, color could explain the physical world of cultural ideas in a symbolic way (Hyman, 2000).

According to Heller (1989) cultural, anthropological and even biological features, effects on the symbolic meaning and value of color which will transfer to the next generation (Arjmandi, 2012).

In another words, for people in different locations of the world with different background and culture, colors have different meaning. The accumulated knowledge, which is gained from different sensory experiences of various phenomena like flavor, sound and other, happens directly effects on creating particular symbolic meaning of colors (Holtzschue, 2015). Nevertheless, since symbolism is a kind of social communication language in architecture, culture could be an essential element that has a direct effect on this field.

According to Agrest and Gandelson in (1995), the book semiotics and architecture, the definition of architecture depends on social and cultural convention of the meaning. Therefore, it is originally linked to society and their culture (Agrest, 1995). In another words, understanding symbols is based on particular society and its culture, also perceiving the meaning of symbols which is a mental phenomenon would be different for any spectator because of their individual cultural background and cultural experiences that they had done before, however, some existed resemblance and differences in various cultures could be expressed through these symbols. As Eliade in (1991) mentioned:

Different cultural styles are represented by their various images, archetypes, and symbols (Eliade, 1991).

In addition, Pierce stated that the relation between each element in architecture or any form (signifier) and its concept, idea or any meaning of it (signified) also

depends on that architecture original culture, this is because of the fundamental relationship between human's social life and architecture, also,

Semiotics views the things and actions in a culture as a sign so that it intends to recognize the rules, which the members of that culture accepted them consciously or unconsciously and give meaning to them (D. Culler, 1981).

David McCandless's in his book Information is Beautiful provide a chart that shows the different meaning of colors which, affected by different cultures and it is considered as the chart of symbolic meanings of colors in various countries and cultures (figure10) (McCandless, 2014).

Colours In Culture



- | | | |
|----------------------|--------------------|----------------|
| A Western / American | 1 Anger | 19 Desire |
| B Japanese | 2 Art / Creativity | 20 Earthy |
| C Hindu | 3 Authority | 21 Energy |
| D Native American | 4 Bad Luck | 22 Erotic |
| E Chinese | 5 Balance | 23 Eternity |
| F Asian | 6 Beauty | 24 Evil |
| G Eastern European | 7 Calm | 25 Excitement |
| H Muslim | 8 Celebration | 26 Family |
| I African | 9 Children | 27 Femininity |
| J South American | 10 Cold | 28 Fertility |
| | 11 Compassion | 29 Flamboyance |
| | 12 Courage | 30 Freedom |
| | 13 Cowardice | 31 Friendly |
| | 14 Cruelty | 32 Fun |
| | 15 Danger | 33 God |
| | 16 Death | 34 Gods |
| | 17 Decadence | 35 Good Luck |
| | 18 Deceit | 36 Gratitude |
-
- | | | |
|-----------------|-------------------|---------------------|
| 37 Growth | 55 Luxury | 73 Royalty |
| 38 Happiness | 56 Marriage | 74 Self-cultivation |
| 39 Healing | 57 Modesty | 75 Strength |
| 40 Healthy | 58 Money | 76 Style |
| 41 Heat | 59 Mourning | 77 Success |
| 42 Heaven | 60 Mystery | 78 Trouble |
| 43 Holiness | 61 Nature | 79 Truce |
| 44 Illness | 62 Passion | 80 Trust |
| 45 Insight | 63 Peace | 81 Unhappiness |
| 46 Intelligence | 64 Penance | 82 Virtue |
| 47 Intuition | 65 Power | 83 Warmth |
| 48 Religion | 66 Personal power | 84 Wisdom |
| 49 Jealousy | 67 Purity | |
| 50 Joy | 68 Radicalism | |
| 51 Learning | 69 Rational | |
| 52 Life | 70 Reliable | |
| 53 Love | 71 Repels Evil | |
| 54 Loyalty | 72 Respect | |

- | | |
|--------|--------|
| Yellow | Grey |
| Gold | Silver |

Figure 10. Meaning of colors in different countries, (McCandless, 2014)

Therefore, any color could have specific symbolic meaning in various cultures and by its features effects on human's mind and psychological dimension. For instance;

Yellow: Generally, yellow is one of the colors which located in warm category, this color doesn't have too much energy and it is not aggressive compared with red, although it makes joy, optimistic, cheerful and sense of glad, in addition, this color makes the space more bigger and lots of scholars, appointed this color into the earth. It is also, consider as one of the strongest colors too (Pile, 2016).

Although, yellow color has positive symbolic meaning in Western and some Eastern country in some country it has dark meaning, for instance, in France the symbolic meaning of yellow refers to jealousy, weakness and crime, also in Germany it means jealousy too. This color in Egypt and Africa means, high ranking and it refers to gold, therefore it used in tombs. Howbeit, this color in many other countries like western countries and Japan symbolize cheer, happiness, warmth, hope, joy and wish (Briggs, 2016).

Green: General views about green color shows the valuably also it shoes the highest place in terms of level, intelligence or social ranking. This color according to psychologist bring calmness, relax and quiet life and makes people more refresh and bring the sense of renewing it also refers to the suitability, protecting environment and nature. In addition, it shows fecundity, balance, development and increasing. Dark green also forced to think about money that's why makes people more jealous (Willard, 2000).

Moreover, the green color is a symbol of money, freshness, and rebirth, also some phase such as “green business” is used because in some cultures green also is explaining the development and “green” means “go” or most of active military used the color of olive green (Cousins, 2016). In Eastern and Asian culture, it has the same meaning and represents good luck, new beginning, health, success and fecundity; although in Chinese culture using green hat for men is taboo because it shows their wife’s adultery, infidelity and cheating on their spouse. In addition, the green color in Spain for a Mexican person from 19th century shows their independence and used in their flag. In South America also, green symbolize death, however, in Eastern culture, it is associated with Islam and shows the refreshing, power and fecundity (Black, 1965).

Blue: Is one of the colors that makes too much relax and comfortability which led to be calm this color also decrease blood pressure, this color shows conservatism and frigidity and representing wisdom, loyalty and truth (Riley, 1995). This color usually, considered as a color of the sky and it is a safe color which appears trust, although, in north America and Europe it illustrates trusty and safety, calm, peace and also power, that’s why there are a lot of banks in America with blue logos such as Citi and bank of America. Also, in western culture this color can represent the masculine or shows the birth of a boy, however, in China blue is a feminine color. In addition, this color in the Middle East is symbol of Heaven and demonstrates divinity, spirituality and immortality or it applied for evil repellece. Besides, in Latin America among Catholic people it used for hope and healthy, and use it as a sign in the scarf or clothes of Virgin Mary (Briggs, 2016).

On the other hand, for Indian people it is representing the Krishna (highest worshipped Hindu god) that annihilate guilt, moreover Judaism believed this color is a symbol of holiness, in Islam also, blue means calmness, relax, divinity, spirituality and safety.

Red: this color is considered as a warm color with high temperature and it shows the highest power among other colors, it also, displays the high sensation and emotion, it is a color of blood and shows the life, energy and intensity too. This color increase blood pressure entirely opposite of blue, this energetic color make human to focus and notice on it (Elliot, 2015).

This color is a symbol of love, danger, fire or even evil and also brings lots of excitement, activation and energy and passion in most of the countries and cultures. This color also represents communism and revolution in Russia. Also in some Eastern countries it used for bride clothes because they think that it brings good luck, joy, happiness and longevity in life also in china it is a sign of the New Year or in Thai tradition is a sign of their Sunday God (Surya). Nevertheless, Indian people think that red is a symbol of purity and spirituality. In addition, using red in white for Latin American and Mexican people mentioned the religion for them, however in South Africa it is representing death (Lartey, 2003).

Orange: this color consists of red and yellow, it has somehow specific features of red color, but in lower level, as an example, it shows excitement but less than red. In the other place sense of cheer and encouragement exists in this color because of yellow (Pile, 2016). The temperature of this color is high and it counted as a hot

color it represent the sun, good feeling, success, creativity and attraction too (Black, 1965).

Violet or purple: this color is created by the mixture of red and blue color, therefore, it carries both warm and coolness also stability of blue and the high energy of red. This color is a sensitive color, this color represents luxury, power, mystery, and magic (Elliot, 2015). This color in most of the countries symbolizes richness, wealth, fame and even spirituality. In the United States of America it used for showing honor, so the highest award for military is Purple Heart. In addition, a lot of eastern countries believed that this color means property, power, exclusivity and I symbolize queen and king, however, in the opposite, some countries such as; Thailand, Brazil and some European countries think this color refer to mourning and death, this is same as Brazilian culture who consider this color as unlucky color (Willard, 2000).

Pink: pink color is used for femininity in a large amount of countries in Western and even Eastern cultures, although, in Japan it used more for men. But it has other different symbolic meaning too. In Korea, it refers to trusty, in Latin countries it symbolizes architecture (Briggs, 2016).

Brown: the brown color makes comfort and especially in quite spaces, it doesn't have a good relationship with dirty place, it doesn't have that much energy and it's not active color. In addition, this color is stable and consider as an earthy color and shows neutrality and organic. Most of the times when it mixes with warm color it brings comfortability otherwise it is a sadness (Pile J. F., 1997).

White: with contrast to black it represent a high level of light, this color also shows the purity, safe, natural and clean it could be an appropriate color for background. This color is a symbol of peace, clean, pure and holiness in many western or eastern countries, but it has meaning of death and bad luck in China, Korea, India and Italy (Willard, 2000).

Black: this color has the highest attractiveness from the light, this color shows the absence of color, this means it shows there is no light, this color has a high power and strong characteristic, in addition, dark gray or dark blue are close to black, it represents absurdity and darkness (Ladau R. F., 1989). In the opposite of white, black has a meaning of death and mourning in various countries in North America and Europe also it symbolizes power, hard and solidity in these countries. In china it represents a masculinity also symbol of wealth and health. However, it shows evil, death, rebirth and mourning in the Middle East.

Gray: the combination of white and black bring gray. The tone of this color related to how much usage of black or white. Dark gray which has blacker represent sadness and depresses where, light gray has good. Gray color makes timeless, conservative, intellectual and it is practical, although, has controlling features too.

2.7 Summary of chapter

According to (Berkeley, 1907), the existence of everything in human external world depends on his perceiving through his sensory experiences, this means anything in the material world with primary and secondary qualities should be perceived by humans.

According to ancient scholars, color is one of the secondary qualities, which is created from the light emission and will perceive in the human mind, although, it could be investigated, subjectively, metaphysical, psychological with spiritual meaning in one hand, and, objective, scientific and according to natural frameworks in the other hand.

In the scientific and objective approach it clarified that, colors have three separate features, which are hue, value and chrome, In addition, Sir Isaac Newton plays and influential role in this field and provide an innovative color wheel through his light and glass prism experiment, however, other scholars prepare different color wheels and define primary and secondary colors too. In the opposite, Johann Wolfgang Von Goethe has a different point of view in color theory and believed color is not just the scientific quality in effects on human perception and feeling through his emotions and sensory experiences. In addition, color as an objective feature, not only has several psychological effects on human, also, it represents various symbolic meanings according to different cultures and regions depend on their original background.

Since, architecture is a communication language and it cannot explain any concepts singly, it is full of functional signs, this means, semiotic in the field of architecture tries to clarify signs and symbols in order to convey various meanings and messages, in addition, symbolism in architecture considered as a non-formal, non-verbal and non-discursive communication.

Therefore, color as a substantial element in architecture has symbolic meaning according to any kinds of building in any culture. For example, in Europe and North

America black shows the death and mourning, however it displays the masculinity in China. Also, blue color in America and Europe demonstrates trusty and safety, calm, peace and also power, in western culture this color represents the masculine, however in China blue is a feminine color. In addition, this color in the Middle East is symbol of Heaven and demonstrates divinity, spirituality and immortality. The symbolic meaning of yellow color in France is jealousy, weakness and crime, although, this color in Egypt and Africa means, high ranking and it refers to gold, therefore it used in tombs. Howbeit, this color in western countries and Japan symbolize cheer, happiness, warmth, hope, joy and wish.

The green color In Eastern and Asian culture, refers to new beginning, health, success and fecundity; although in Chinese believes that, a green hat for men is taboo because it shows their wife's adultery on their spouse. This color in Eastern culture, it is associated with Islam and shows the refreshing and power. Moreover white is a symbol of peace, pure and holiness in many western or eastern countries, but it has meaning of death and bad luck in China, Korea, India and Italy.

Chapter3

COLORS IN TRADITIONAL MOSQUES

3.1 Introduction of chapter

Mosque is the most impressive building in Islamic cultures and Islamic countries (Alsac, 2004), also, mosque plays a central role in Muslim societies and mostly defines the society's background and original identity of that society, therefore, it will have direct communication with people, in addition, it is also under the influence of culture and identity of each region (Serageldin, 1996).The Muslim world consists of the huge region from Asia, to China, North Africa and Spain, and their history began from the seventh century (Frishman, 1994).

This chapter will discuss, first about the historical background of mosque and clarify the architecture of this precious building, from the Prophet House that was the first mosque. Then it will investigate the symbolic meaning of color in Islamic architecture. Besides, symbolic meaning of color is comprehended in mosques during three different Islamic traditional periods which are Safavid, Ottoman and Central Asia, because of their impressive and fundamental role in Islamic history and Islamic architecture, also the importance and grandeur of them in Islamic architecture in terms of color.

Islamic architecture, always deals with the inner side of human and mosques as sacred spaces in Islamic architecture reply human's mental needs, and separate

human from material world to push him into mental and spiritual world. That's why, it is necessary, to take off shoes when you want entering to mosques, this also is a symbol of coming out from secular life to ideal and spiritual world which is more immortal for human (Alsac, 2004). According to (Hillenbrand R. , 1994); mosque is a place of representing all secrets and divinity and also, it tries to express these mysteries through the application of symbolism.

3.2 Historical background of mosques

The word "Mosque" is originated from the Arabic word "Masjid" which is based on the root verb of "sajada" and is referred in Quran as a place of worshipping (Hillenbrand R. , 1994). In addition, Mosques are considered as quite Islamic buildings which have natural expression of faith and manifesting the significance of God. At first, it is a substantial point to define mosques and explain what makes the mosques a real mosque? As prophet mentioned (masjid) mosque is a place, where people pray there. Besides, according to; (Hillenbrand R. A., 2001) mosque is a place, that has one wall, facing to the Qiblah and the direction of Mecca. And also, Mihrab is placed in this to show the Qiblah direction too. Moreover, the mosque is counted as an Islamic architectural masterpiece; also, the aim of constructing this religious building is to make it immortal and indestructible forever. Hence, the structure of this valuable building should be superlative, and the permanent materials should be applied in the mosque's structure. However, other kinds of buildings like non-religious buildings with loose structure. Furthermore, accordingly,

This is the Islamic building par excellence, and as such the key to Islamic architecture (Mohd Taib, 2012).

Thus, mosques as sacred and spiritual buildings are not only, the most representative place of Islamic traditional excellent architecture, but also this place is the first place

for displaying Islamic art and architecture, same as the church for Christians. This shows that, the mosque as an important social place for Muslims is the place for intersection of religion and Islamic Art (Rezai, 2003).

Although, this in not explains that, mosques are the first place for showing Islamic art, just because of, Prophet Muhammad’s house in Madinah, which is the first mosque in Islam (Esposito, 1995). In another words, the prophet’s house located in Medina in Saudi Arabia, and built in 622 was not just a house, it is also, used as a sanctuary and shelter for Muslims. In addition, this large place with brick structure, extensive courtyard and three side walls and entrances not only, used for residential purpose, but also, it has other goals which are, attracting people for worship and playing the role of the mosque and replying social demands through other functions (figure11) (Meri, 2006).

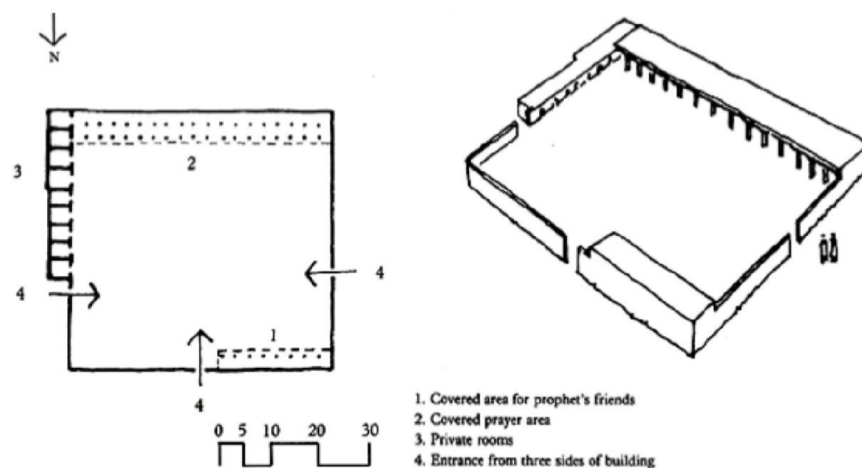


Figure 11. 3 Dimensional and sketches from prophet’s house, (Hakim, 1988)

Although, there are different kinds of mosque, in order to define the mosque, it should mention that the basic structure of any mosques should have courtyard,

porches (Iwan, Ravagh) which, covers all surround space and will lead to indoor hall, and the wall which is face to Qiblah is also the place of Mihrab (Weisbin, 2016).

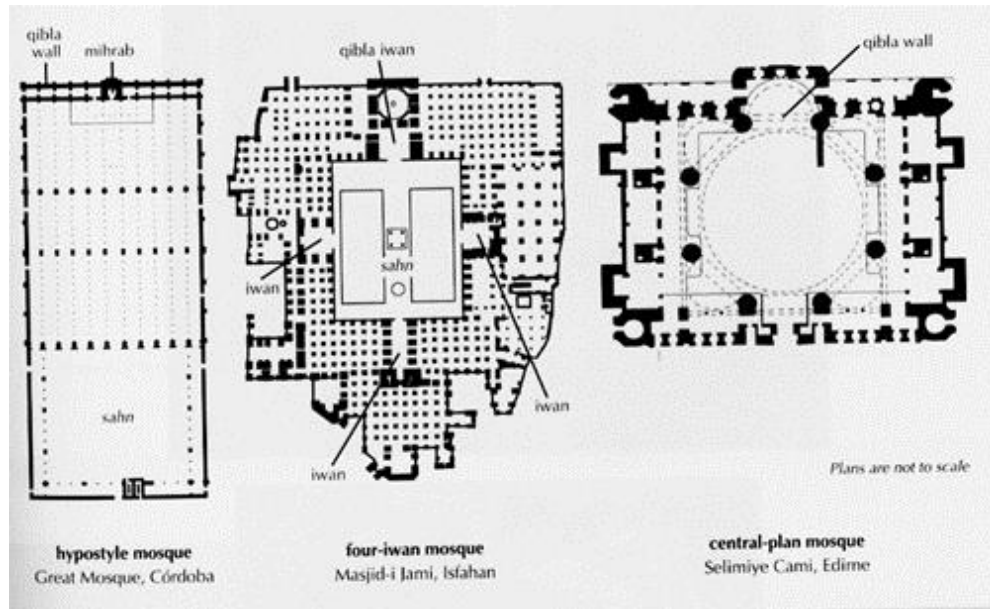


Figure 12. Basic structure of mosques which shows courtyard, porches (iwan), hall, and the wall face to Qiblah Kenney Mencher (Islam, 2016)

Moreover, from the 7th century, different factors like, region and culture in different countries, according to their social life and their specific condition, provide a variety of types in mosques. Therefore, there are three major types of mosque, which are, Arabic or hypostyle mosque, the Persian or Four-Iwan mosque and Anatolian-Turkish or The centrally-planned mosque (Alsac, 2004);

The first Arabic mosques; consists of different periods such as, Umayyad Mosque, Abbasid mosques, then after that Morocco mosque, Yemen mosques, mosques in Anatolia and Egypt were counted as Arabic mosques. in addition, the first hypostyle mosque Prophet Muhammad's house in Medina, however, Umayyad Mosque mostly concentrated in three main cities which are, Medina, Jerusalem and Damascus

because of their Islamic political and governmental position (figure13) (Petersen, 2002).

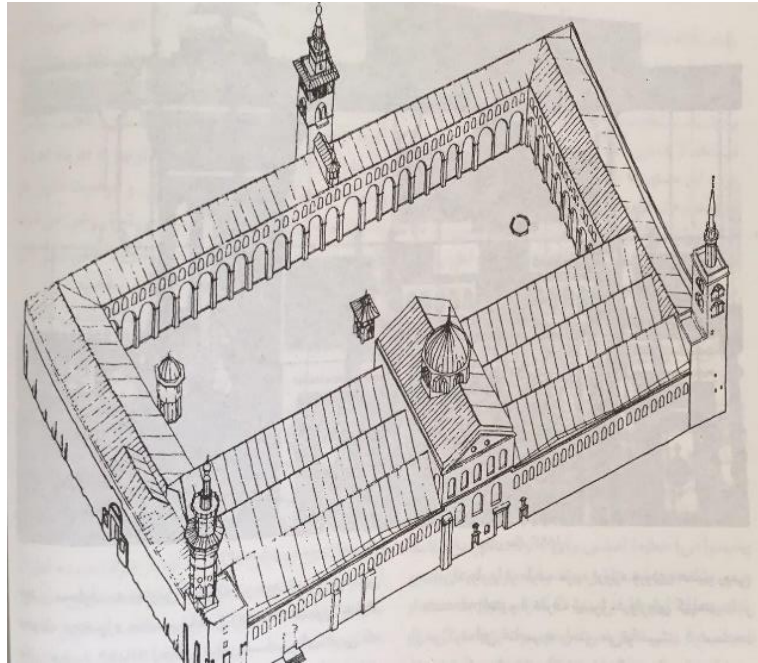


Figure 13. 3D faces of Umayyad Mosque in Damascus, (Hillenbrand R. A., 2001)

Beside, between 750 and 945, Abbasid mosque mostly in the south of the Mediterranean Sea and central Asia became famous, the structure of mosque was close to change and applying roof on the courtyard and the place of praying, because of the direct sun is displayed this change, also it was the beginning of creating bedchambers in mosques (Weisbin K. , 2016).

Moreover, Arabic mosques also effects on first Persian Iranian mosques and Four-Iwan style since 11th and 12th century. Iwan is a space with arcades and opens to the courtyard and Persian mosques mostly had four Iwan, that one of them faced to Qiblah and others used as an entrance (figure14), this type of mosque had efficient effects on the Central Asian mosques and their architecture (Alsac, 2004).

Nevertheless, the architecture of mosque in Iran was under the influence of different periods consists of; Seljuk, Ilkhanid, Timurid and Safavid. Although, art and architecture of mosques are wonderful in any of these periods, the expression of Islamic Persian and Iranian art and architecture reaches its highest level in the Safavid era (Hillenbrand R. , 1994).

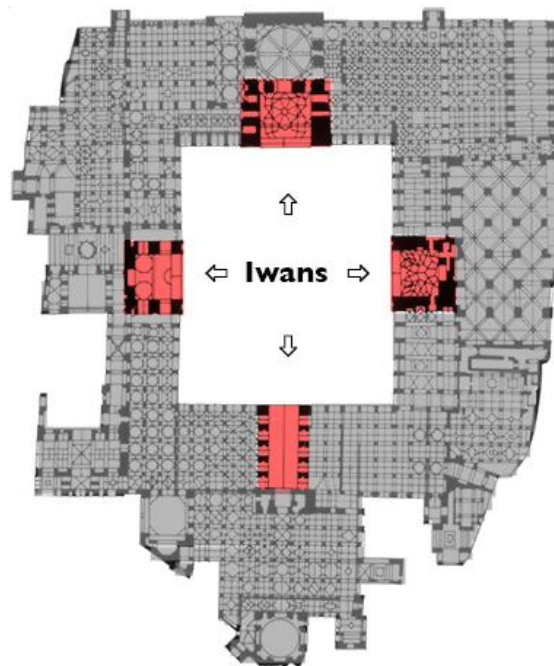


Figure 14. Sample of four Iwan mosque, (Weisbin K. , 2016)

Another type of mosque is Turkish Ottoman mosque, in this type the most concentration is on the main dome, so, it has a central simple plan with a huge dome and courtyard, in addition, between the Anatolian Seljuks and Ottomans there was one type which is named upside down T-plans that developed by Anatolians (figure15) (Alsac, 2004).

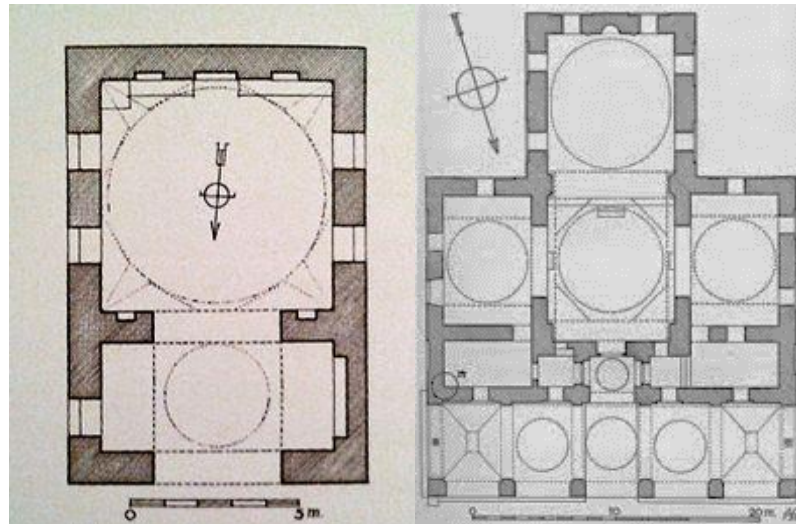


Figure 15. Sample of Ottoman and Anatolian mosque (Pinterest, 2016)

Among all of the Islamic domination, Ottoman Empire, which was governing during (1299-1922), was considered as a longest empire, the Ottoman territories were under the control of Turks people mostly in turkey. Ottoman architecture, apart from Persian architecture focused on domes (Ross, 2009). Nevertheless, there are various mosques in India, China, Spain, Africa and other part of the world, but these region were not under the Islamic domination for long duration, and the formation of their mosques has less influence on the Islamic architecture of mosques in all around the world, therefore, they couldn't be a separate style and type (Takeo, 2006).

It is undeniable that, mosques are counted as a heart of any Islamic cities or countries, which shows that society's behavior, origination, public society's spirit, emotions and also customs in a natural way. This is because of unsecular, divine, sacred and celestial feature of this place which is surrounded by secular elements, those are following this place and its divine features (Mohd Taib, 2012). In addition, mosques in any Islamic places are not just considering as a place for worshiping, also, for this kind of buildings, there are different usage, according to specific

traditional customs, which related to any Islamic and social affairs, since old times (Sibai, 1984).

3.2.1 Different functions of mosques

It is undeniable that, mosques as sacred places were not just built for a divine purpose and worshiping. Also, there were built according to a particular culture, which is related to specific regions with their psychological spirits. This, also, adapted different people to their specific behavior for reconciling themselves to this space and be comfortable there. This represents that, mosques are build relevant to human desire and demands. In the other word, it could say that, the art and architecture of mosques can naturally manifest specific culture, human behavior and psychological reactions of people related to their particular regions (Majidi, 2015).

This means that, not just worshiping, also, this place was used for other public gathering such as, school of teaching Islamic regulation (Madrasa), Social interactions, that anybody could involve in it, and also the religious and spiritual usage of mosques incorporated even with hospital function or other service facilities, the mosques which have some other functions also considered as a complex mosques (Ross, 2009). Nevertheless, the substantial point here is that, when mosques used for other affaires, these functions shouldn't disturb the traditional originality of the mosques, also, all of these functions should follow the divinity, religious and spiritual aspect of this sacred place (Frishman M. K.-U.-A., 2002).

Moreover, other function mostly were related to human services also related to religious aspects were applied in mosques, for instance, education and training which were the second usage of mosques, especially in the first four centuries in advent of

Islam. Education and school in mosque was consists of interpretation and jurisprudence and memorize the Quran (Darol Quran) (Laugu, 2007).

Also, there are many mosques which are famous because of the role of them in education more than worship like Al-Azhar Mosque in Egypt, established in 970 which is certainly the oldest university of education in all around the world. In addition Al-Zaytuna Mosque in Tunis is an educational academy too (Hillenbrand R. , 1994).

There are also other functions such as residential and dwelling, hospital (Darol shafa), birth, marriage, divorce, Judgment and justice, consulting and solve people's problems, even policy as an important function in society was very common in mosques. Speech and reading Sermon (Khutbe) between praying (Salat) is one of the way for expressing policies in mosques and display the relations between mosques and politics (Hillenbrand R. , 2002).

3.3 Symbolic meaning of color in Islamic architecture

Like Judaism and Christianity, Islam is one of the monotheistic beliefs that was established by Prophet Muhammad in the 570-632 C.E. in the city of Mecca, however, today this belief is existed in lots of countries in Asia, Europe and Africa too (Macaulay-Lewis, 2016). This means that, the Islamic empires began with Umayyad and 'Abbasid dynasties and then later were controlled by the powerful Safavids, the Ottomans, and the Mughals, however, they are not considered as Arabic countries, but also, other countries from Spain to China, Iran, Turkey, India, Central Asian countries and other countries were under this empire during 1300 years until now (Heilbrunn, 2016).

Therefore, it seems that the Islamic art and architecture in any kinds of buildings such as; tomb, mosques, palaces, madrasas and other buildings, could not be considered as a monolithic style or solid movement, it also consists of different styles which are under the influence of Muslims in Roman, Byzantine and Sasanian patronage in various regions like, Chinese, Indian, Iranian and other countries and their art and architectures from 7th century, although, each of these countries has a specific culture, social features and backgrounds too (Krautheimer, 1986).

In addition, any religion has a mystical and also secret meaning in themselves, which are spiritual and metaphysical and related to the immaterial and mental aspect of human also these meanings expressed through indirect usage of elements in a symbolic way (Esmi, 2014).

In Islamic art and architecture also, theosophical, transcendental and divine sense became a cause to apply sign and symbols consumedly, also, in Islamic architecture, even building could answer material and secular requirements in not enough and doesn't give the building the sense of place for users (Bloom, 1997).

Thus, buildings should consist of at least a few symbols and signs in order to shows the spiritual meaning, this means that, symbols and signs in Islamic architecture includes both conventional and divine symbols, however, it is undeniable that, most of them are based on 'means' rather than 'visual' appearance and shapes or forms as Grabar in (1979) stated:

There are no Islamic symbols and signs, but they consist less in visual perceptible features than in memories of men and events: the place where something took place or where someone did something (Grabar, 1979).

The Islamic architecture consists of symbolic elements that have different meaning in distinct countries with various cultures, for instance; Grabar says about minaret;

As a tower for the call to prayer, the minaret is but a sign suggesting a function; it becomes a symbol when it reminds one of Islam, when it appears on stamps identifying a specific country or when it serves to design a space. In other words, while the sign attributes fixed, the symbol attributes is a variable, which depends on some "charge" given to it or on the mood of feeling of the viewer (Grabar O. , 1979).

In Islamic architecture, and architecture of sacred spaces, it is undeniable that color and light not only have physical and psychological effects also they have spiritual and metaphysical meaning on human too. This means, color could be an internal experience from an outside and the external world that illustrates inner part in a symbolic way, this again depends on their culture, region and their background too (Kenney, 2005). In the other word, because of various styles depends on different cultures the symbolic meaning of colors also is different in various Islamic architectural styles.

In addition, color in Islamic architecture could consider as an element that can apply different substantial function, which require in Islamic architecture and religious building. For example, this element creates information and meaning, it can transfer this meaning to human also convey this meaning to future generation, in addition color can attract and absorb human attention and even hold this attention for ever.

This means that, color could play an important role to attract people also expressing particular messages in a symbolic way to them (Feinser, 2009). Islamic architecture focused on the spiritual aspect of light, in Islamic architecture light is a symbol of unity and being one (*La ilaha illa'Llah*), and manifesting the reality substances, and

also human soul, also Islamic theorists and philosophers thought, according to the theory of (*wahdat al-wujud*), God is the original existence of everything, and it is the spirit and inner reality of any existing and being (Arjmandi, 2012).

In addition, color is achieved from light proliferation. This means the relation between light and color shows the expression of unity in multiplicity and dependence of multiplicity in unity (Othman, 2011).

Moreover, light is a manifestation of God and according to the Quran (*Al-Nour Surah*), God is the light of the skies and earth (*Allah o nouro samavate val arz*) and colors are different face of light and each of them symbolize a particular state, emotions and expression. Different colors in Islamic architecture have spiritual approach and through symbolism represent emotional and sensory qualities, for example, white means the absolute existence and symbolize God, black color also is the color of Ka'bah refers to transcendental and supranational. Blue color, turquoise and golden also have inner representation among colors, with regard to (*verse69 baqare surah*) yellow has glad and cheer representation (Nasr, 1987).

Nevertheless, white is the desirable and selective color for prophet or green is the color of the prophet's family. Turquoise for lots of scholars is one of the main colors in Islamic architecture, and not only American astronomers believe that the universe is in turquoise color and light turquoise is gained by a combination of all visible lights also according to Golru Najib oglu and other Islamic scholars, this color has an important relation with inner structure and molecular order of creatures which effects on Islamic decoration (Qahi, 2009).

In a study about the symbolism of color in Islamic architecture, it is undeniable that any color has a direct meaning on their own nature and substance and this meaning has effects on human, although, they are an indirect language and has religious, spiritual and emotional function which conveys messages in a symbolic way. For instance, as mentioned in the book *Art and spirituality*; red refers to the intensity, anger and blue has deepness and benevolence meaning, when the eyes move it can sink in blue, however, it is not possible about red, because it stands against the eyes like a fire. Yellow has more heaviness beside these two colors and it represents the particular sense of ideality too. In Islamic art and architecture, generally, the symbolic meaning of red is having pugnacity and makes external and superficial, blue refers to discovering intuition and makes internal, yellow is symbol of glad and happiness, white also shows the perfect reality and black display interminable, inexhaustible and endless (Herman, 2008).

Therefore, when yellow incorporates with blue it adds cheer to the mystical feature of blue and creates hope, redemptive happiness, this means blue, which is deep and makes inner gracious and turning human to his inner side combine with yellow, which makes him glad eventuate green which means expectancy, this collaboration build a coherent and consistent contrast because, they are supplement color and they have complete contrast. In the opposite the incorporation of red and green make a direct conflict. Nevertheless, in the other place purple is a heavy color which comes from one warm and one cool color and both of them are consider as a heavy color too (Rahmati E. N., 2015).

3.4 Symbolic meaning of color in traditional mosques

Symbolic usage of color is emphasized in many traditional mosques. In addition, since, colors have perceptual meaning and its psychological features, it could directly effects of humans emotions and senses, this, component contributes to provide spiritual and divine sense in mosques (Conroy, 2013).

This means that, colors are providing distinct moods, emotions and feeling in mosques, corresponding to their qualitative reality or their specific features and symbolic significance. Although, there are several meaning for any colors in different mosques during different periods and in various regions because of their cultures and historical backgrounds (Ross, 2009).

In order to apply various colors in mosques; awareness about the symbolic meaning of colors is a fundamental necessity, also the harmony of compound colors and psychological meaning of those colors which effects on human's mind and behavior and cause to create several reactions in human should be considered (Grube, 1978).

This means that, symbolic, spiritual and sacred meaning of colors, which used in traditional mosques try to, remind the heaven and super substantial reality, also spiritual and divine essence of God which is existed originally in human's soul. Therefore, symbolic meaning of colors in mosques indirectly represented some inner meaning of the Islamic architecture and art, such as, worship, secret art, divinity and any senses related to God and the spiritual dimension of human. According to AlGhazali;

The visible world was made to correspond to the world invisible and there is nothing in this world but is a symbol of the other world where is the original destination for human (Meri, 2006).

In the mosques also, different elements like colors, is representing immaterial world in order to separate human from his usual life and brings the sense of calmness for him, these elements effect on human mental dimension, and puts him apart from pluralism, this means, this separation push him to his inner reality, which, in fact introduce him the God's unity and original essence (Othman R. Z.-A., 2011).

In addition, the unexpected decoration of mosque, application of various beautiful and efficient elements, elegance spacing and building's splendor, occupies human's mind to God and inner spiritual aspect of human, rather than, paying attention to material world, in this senses, mosques are reaching their goal and attaining their perfection. This became a cause to make this glorious building as a "gallery of Islamic art" from the standpoint of viewers (Zia, 2004). In this gallery (mosque) colors plays an influential role in creating rich decoration, providing sumptuous and magnificence space, according to Nasr who mentioned the meaning of one verse in Quran, and states:

One of God's Names is being al-Jamil, (the beautiful) and this teaches that God loves beauty (Nasr, 1987).

Therefore, application of different colors in mosques for replying the purpose of decoration and making this place more beautiful, is one of the fundamental principle in decoration of mosques, where is considered as an Islamic divine gallery. In addition, in traditional mosques, architects and designers tried to manifesting the completeness different name of God such as; glory (Al jalal) and the beauty (Al jamal), for human through usage of color in decoration and spacing of mosques. But, this is not the only things, that color creates for the mosques atmosphere, different colors are allocating wide and enormous meaning, that can close the human to his

sacred nature, this, also is the main target of mosque's architecture and even Islamic architecture (Gilliot, 1988).

This means that, the colors used in mosques, not only can stimulate human and provoke his emotions, but also, equips the space with sense of peace, faith, security, love, sacrifice, immortality, comfort and gaining success, for Muslims who are worshipping the God, this gives believers opportunity to rescue, and under this comfortable shadow, encountering with their God which flames the spirit of faith and spirituality in their nature, this additionally is the final destination for both human and architecture of mosques (Zia, 2004).

In addition, Nasr in his book (Islamic Art and Spirituality) mentioned, colors has alchemical features, and integrating colors is like an art, which is similar to alchemy. Although, each color has its individual meaning, it has also specific symbolic meaning, which is in the direct relation with human inner behavior and his spiritual emotions (Nasr, 1987).

Thus application of various colors in traditional mosques followed a specific unit frame works, in order to provide suitable relationship between human and mosque, for instance, it is more usual to apply green, turquoise and blue in mosque. In addition, ultramarine blue or azure and turquoise mainly use in background color of the walls, tiles, altar (Mihrab), domes, courtyards and mosques bedchamber (Shabestan). Moreover, azure and turquoise blue colors which are locating in the spectrum of blue and green together, assigned to the early hours of a day, because blue associated with the sky, infinity and immortality which representing strength

and extent (Rahmati, 2000). Although, in different mosques these colors have different meaning or symbolize diverse concepts too, as (Nasr, 1987) stated:

If the white or earthen-colored mosques remind man of his poverty before Divine Unity and correspond both to the spiritual poverty of the Blessed Prophet and to the aspect of his soul as related to submission, peace, serenity, and sepulchral beatitude, the intensely colored mosques symbolize the richness of God's creation and the other aspect of the soul of the Blessed Prophet which is a theophany and reflection of the infinite richness of that Divine Treasury which creates at every moment without ever exhausting its infinite possibilities (Nasr, 1987).

This additionally demonstrates, during different periods there are many colors used in architecture of mosques, which represented different concepts. The spectrum of applied colors in mosques by architects and designers became more completed by passing the times, because of many reasons such as, development of the material's technology, creating Polychrome tiles like seven colors (haft rangi) tiles, increase and enhancement of the knowledge about colors and their features with regards to the connection of human and colors in mosques (Hattstein, 2004).

Among different Islamic mosque's styles, the architecture, art, and application of colors in mosques, faced to their perfection, in three main periods which are Safavid, Ottoman and the Central Asian mosques, also, the Ottoman and Safavid , are consider as a major domination of Islam (Armstrong, 2000). Safavid empire dominated between 16th to 18th century, this, of course is one part of the Islamic Golden Age, and the peak period of Islamic civilization, when, Artists, craftsmen, philosophers, scholars, engineers, physicists, and other scholars of the Islamic world, tried to develop their skills and knowledge in various field of art, economy, industry, law, literature, navigation, philosophy, chemistry, physics and sociology (Najafi, 2009).

In addition, Ottoman is the longest empires in Islam. And also, Islam is dominated in many countries and cities in Central Asia between the 8th to 16th centuries, those has the high level of architecture too (Esposito J. L., 1999) . In addition, not only, the importance of these periods in Islamic architecture history and the longevity of their domination, but also, The outstanding and prominent position of these three periods, in term of application of colors in architecture of mosques, led to investigating, Safavid, Ottoman and Central Asian history of mosque's architecture and obtaining the symbolic meaning of applied color in the mosques of these striking periods.

3.4.1 Symbolic meaning of color in Safavid mosques (1501-1736)

During the Safavid dynasty (from 1501 to 1736) when, Timurid kings was defeated by the Safavids, any kind of art such as Architecture, painting, calligraphy, illumination and gilding, manufacturing of carpets and textile and also tiles became more considerable for kings and monarchs who are also artists themselves (Ágoston, 2009). Mostly, there were Shi'i Muslim, and this Islamic Shi'a is became the unit religion during their domination, the first central capital of them was Tabriz city, then it moved to Qazvin city and, in 1597 Isfahan became the capital of Safavid Empire (Petersen, 2002).

The Safavid monarchy began by Shah Ismail and Shah Tahmasp reign, in this early period, Safavid art and architecture was under the influence of the combination of Timurid and Turkman architecture, but, the Safavid art and architecture exploded during Shah Abbas domination period, in Iran, that is one of the largest country located in southwest Asia. In this period art and architecture faced to the huge changes and Shah Abbas try to develop art, architecture, any kind of materials and decoration, moreover, designers and architects became more sensible in their duties

in order to satisfy the kings, this means the tremendous architecture was under the direct influence of sensitivity and significant (Canby S. , 2000).

The architecture of mosques in the Safavid architecture is consists of simple geometry also, the broken lines and simple geometric shapes are used rather than conventional winding lanes, in addition, logical classification and proportions is applied, and for decoration the space various techniques is used such as; brickwork, tiling, inscriptions, plaster, wooden work and ever applying details like Mogharnas and three corners were reached their perfections in these period (Canby S. R., 2002).

In the architecture of the various buildings and also mosques in early Islam the main material was mostly, mud brick, however. Baked (or fired) bricks, applied in many important and substantial monuments. In the Seljuk and Ilkhanid era, on the glazed tiles and bricks, turquoise, light blue and dark blue was used more than other colors, in addition in these periods in order to vitalize the walls, soil color and dark blue were applied (Ruthven, 2004).

In fourteenth century, the technology of mosaic and burl tiles were appeared by Timurids architects, the color of this mosaic tiles consists of green, yellow and terracotta. But, in sixteenth century this technique was developed, and in Safavid period, over glaze painted panels were applied in more huge areas with inexpensive prices and by the usage of haft-rangi (i.e. seven colors) mosaic tiles, this also helped to provide more colors in the place, and cause to, not only create more complete connection between colors and humans, also makes the mosques and other buildings more attractive, elegant and beautiful. However, there are also some kinds of wooden buildings, especially, non-religions building in this era. For example Ali Qapu Palace

in Isfahan, which has wooden porches with extravagant size, which are supported by soft roof (Barr, 2003) (Petersen, 2002).

The seven color mosaic tiles is a type of tile that is often used in traditional mosques, worship chambers and tombs, this mosaic tiles has the ability to applied different color on it, also it is derived from Clay tiles in various dimensions like; 15×15 and 20×20 centimeter. The procedure of making these particular tiles is, first, patterns are copied on tiles with coal dust, after that, they become clearer with manganese oxide, and then they painted with color which has lower temperature than the first color tiles, finally, go back into the oven and ready to install. In addition, the colors that used in haft rangi tiles (seven color mosaic tiles) are mostly; black, white, blue, turquoise, magenta, red, yellow and even the color of earth and soil (figure16) (Canby, 2002).



Figure 16. Haft rangi tile (seven color mosaic tile), by author

The haft-rangi tiles (seven colors mosaic) have also another sacred meaning because of their number of color. (Seven) is consider as an unsecular number which has divine meaning, according to Quran; (Osman, 1993). If (*Al-hamd*) is the summary of Quran, it is divided into seven verses, which is in a direct relationship with seven

classes of earth and sky. In addition, in Quran it is mentioned “ثم استوى الى السما و (” also “(سواهن سبع السماوات...”) explained that God creates the earth and sky in seven different classes (Osman, 1993).

Moreover, Titus Burckhardt believed that; the Circumambulation of the Kaaba as a God's house in seven times symbolized the earth circulation, so it makes the human more calm and admit him divine sense, and convey this divinity to his spirit and reach the ascent (Burckhardt, 1986). Therefore, applying seven color mosaic tiles (haft rangi) in mosques, which is the place of worshiping and becoming irrespective of secular and material world, helps to attract people because of the particular senses that is creating for prayers during their praying and connecting their soul to the objective reality (Qahy, 2008).

From a psychological perspective, four, blue, green, red, and yellow colors represents the basic needs of human and his spirit. The need for love, the need to show, the need for action and the need to seek success, future and achieve their dreams, thus, all of these colors, have psychological importance. However, in the religious architecture and sacred spaces, symbolic meaning of colors is as important as the psychological meaning of color too (Hikmatullah Mullah, 2005).

The symbolic meaning of different colors which used on seven colors mosaic tiles in Safavid era, had efficient effects on humans, for example, they believed turquoise makes the vision stronger also raises self-esteem and health, so this color used mostly for domes and minaret, this makes mosque immortal and cause worshipers to focus on their inner side and increase their inner vision. White color used to express God, unity and monotheism, blue is representing calmness also leads to endless spirit

and symbolize the concept of faith. In addition azure is the color of spiritual universe and shows the vastness of skies, thus, this color is applying on tiles to covering like sky, also, it represents fertility and fulfilment, yellow, orange and other colorful motifs on the middle of tiles, are like stars in the sky, they shine and plays the role of plant adornments in human imagination and symbolic paradise (Pope, 1965).


Moreover, red shows activation and this color also, creates desire and passion, it indicates a worshiper's strong attempt to experience perfection. The yellow color used in Safavid mosques, also associated with understanding, knowledge and even mystical wisdom, it also represents perfection and time. In addition, this color increases the sense of encouragement in worshipers for reaching God. The combination of yellow and blue creates green that is also symbolizing the combination of, calmness, divine and faith in one hand, and also knowledge, Sake of peace and hope in the other hand (Canby, 2002).

The Masjid-e Shah (Imam) and the Masjid e Sheikh Lotfollah are two mosques, which shows the outstanding architecture of Safavid period, they located in Naqsh-e Jahan square in the center of the Isfahan city, which is one of the most important tourism centers of the world. This city, with 2,500 years old is one of the historical city in Iran and consider as a headquartered of Safavid king's art and Architecture. In addition, Isfahan city is located geographically in 414 km south of Tehran and 481 km north of Shiraz (Ruthven, 2004).

The usage of haft-rangi mosaic tiles in The Masjid-e Shah (Imam) and the Masjid e Sheikh Lotfollah is wonderful. colors stands in a suitable harmony and provide a calmness relationship between people and these secret places, therefore, people

attract to these place for praying, worshipping, psychological gentleness, quietness and even having a spiritual journey, (Blake, 1999, Hillenbrand, 1994). Table 2 gives the classification and summary about the architecture of mosques during Safavid domination.

Table 2. Classification and summary about the architecture of mosques during Safavid domination

| | |
|--|---|
| Dominated during | 1501-1736 |
| History of architecture | Architecture first was under the influence of Timurid and Turkman architecture Then by Shah Abbas art and architecture developed and improved |
| Architecture and structure of mosques | Simple geometry- broken lines- logical proportion and classification |
| Decoration and material of mosques | Brick-wood-tiling- inscription- plaster- applying details like Mogharnas and three corners |
| New method or technology | Seven colored (haft rangi) mosaic tiles  |
| Location mostly in | Tabriz → Qazvin → Isfahan(1597) |
| Masterpieces mosques | The Sheikh Lotfollah Mosque The Shah (Imam) Mosque |

3.4.1.1 The Sheikh Lotfollah Mosque (1603-1619)

Sheikh Lotfollah Mosque is one of the best examples of Islamic architecture during Safavid architecture. Sometimes, Sheikh Lotfollah Mosque is called as a royal palace for worshipers and prayers (Stierlin, 2002). It is on the eastern side of Naqsh-e-Jahan square and constructed by Ustad Mohammad Reza Isfahani, between 1603 and 1619

by the direct order of shah Shah Abbas for his father in law Sheikh Lotfollah. The structure of this masque consists of a building with a simple and small plan, including a dome, hibernal seraglio, corridor, entrance, porch, that all have rich decoration and ornamentation (Ebad, 2013).

According to (Pope, 1965); this mosque is a covenant between excitement, passion, a magnificent silence and peace, which represent the rich taste of beauty and elegance, it couldn't have any source, except, religious faith and divine inspiration. Related to this mosque, he also mentioned in 1965;

From Zoroastrian times, the beautiful was integrally associated with light and color; it was an essential component of divine personality

The entrance porch ornamented with haft rangi tiles, there, background is azure and blue colors and yellow pattern are designs between them (figure17), this kind of color decoration is symbolizing the existence of stars in huge sky and shows the paradise. Also, on the walls of inlet corridor there are small turquoise windows and grille which present themselves among shades and try to attract human vision to light and even interior space of the place (figure18).



Figure 17. The entrance porch of Sheikh Lotfollah Mosque, (by author in 2014)

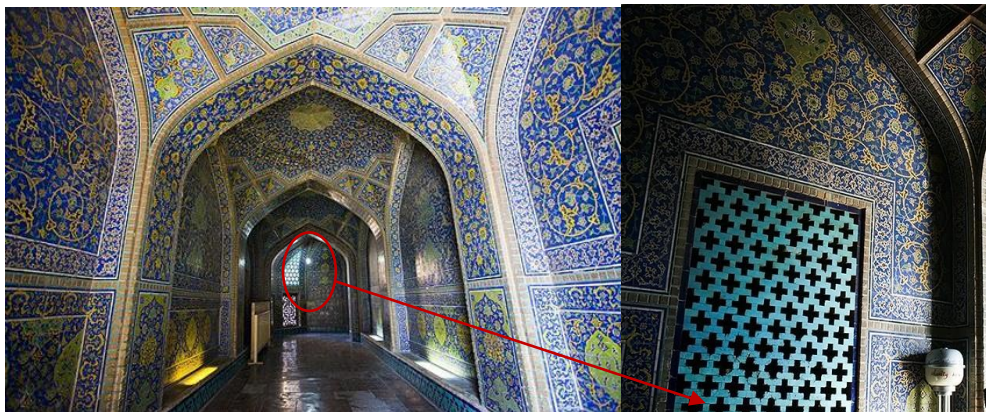


Figure 18. Small turquoise windows and grille in Sheikh Lotfollah Mosque, (by author in 2014)

In addition, each side of the octagon designs with various amazing patterns. Nevertheless, under the dome of hallway the blue and azure background and yellow pattern are clearly appeared, these patterns again shows the paradise because of shining yellow in the huge blue, and also, try to encourage human to calmness, spirituality that are gaining through worshipping (figure 19) and (figure20).



Figure 19. The blue background and yellow pattern under the dome of hallway in Sheikh Lotfollah Mosque, Photo by (Maiwald, 2008)

The colors in the dome include, companion of azure, turquoise and soil color or color of earth, that all create an elegant combination. In the center of the dome the soil color background and azure tiles are replaced with, white background and turquoise designs, this representing the human (soil color) is fading in white color and light (God). In addition, the light entries from the windows around the dome and guided to the center part, then from there, it reflected to all the interior spaces (Mitchell, 2011) (figure21).

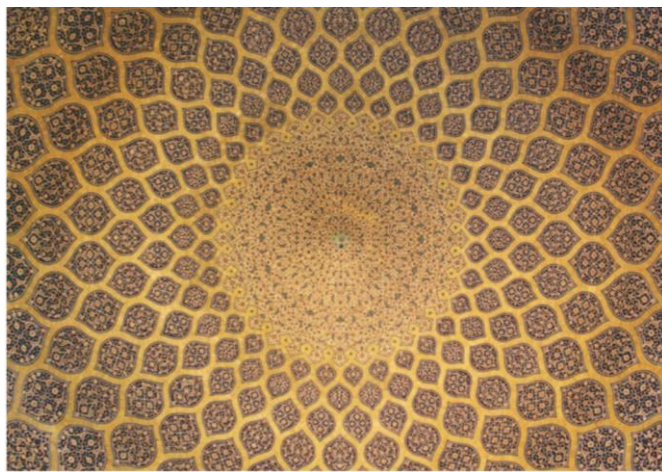


Figure 20. Center of the dome of hallway in Sheikh Lotfollah Mosque, Photo by (Maiwald, 2008)



Figure 21. The dome of hallway in Sheikh Lotfollah Mosque, (by author in 2014)

When entering to the hallway and the space under the dome, all walls decorated with azure and blue background are symbolize, vast sky, the concept of faith and illustrates endless spirit, in addition, it creates the sense of fertility and fulfilment in human too. The other colors which are shining in blue and azure colors, through patterns are referring eternal memories a, original paradise that human came from there. (Kazimee, 2003).

Moreover, the yellow motifs and patterns on the walls are symbol of wisdom, expectancy and move up to the God, this means, it represents the enhancement of motivation, wisdom and knowledge of motion toward the God, on the other hand yellow is referring to maturity and perfection during time, then the yellow color is gradually replaced by soil color, until the colorless and white color. This represents that, the worshiper is fading during his spiritual journey and his expunction in the

path of reaching God, and also shows, the mortality of seeker and worshiper in light which is the symbol of God.

In addition, this displays, happiness and exultation which is symbolized the worshiper's gladness at the end of his worshipping because of reaching the devotee and attaining to particular position, which is, the satisfaction of God's from servant and also human as a servant from God (Blunt, 2009). Moreover, the existence of turquoise color among this colors attracts human vision, this color not only, makes human healthier but also, it helps to make mosque more immortal (Pope, 1965).

Moreover, the exterior of the dome has white, blue, turquoise and black color which are located on the yellow and soil color background, this means the color of exterior part of dome also encourage humans and attract them to worshipping and shows the expectancy to gain happiness and calmness, in this pattern, although, white is symbolize God, unity and pure light, black representing the hidden divine and spirituality. (Figure 22) (Grube E. J., 1978).



Figure 22. Exterior of the Sheikh Lotfollah mosque's dome, (by author in 2014)

There is no any minaret for Sheikh Lotfollah Mosque, also, the location of the mosque is in Naqsh-e-Jahan square, where there are existing other wonderful and sumptuous buildings. These leads architect to provide specific and creative concept for designing the frontage entrance porch of the mosque and increase the sense of invitation and attraction in the mosque. In order to absorb people in this sacred space, different geometries are used, and also particular colors with various specific meanings are applied (Newman, 2006).

In addition, the azure color of entrance porch symbolically plays the role of host that calls and invites to this exhilarate and spiritual place, where; provide calmness and spiritual quietness also separated humans from their daily work and even usual daily life. In addition, the yellow arabesques patterns that twisted in azure blue, gives more life again to the passion and enthusiasm of the worshipping, also creating the visual balance for yellow in contrast with azure blue. Moreover, the turquoise color in hallway and corridor maintains the sense of desire and hope to the pleasant happiness

until reaching the highest light in mosque, which is symbol of God (figure23) and (figure24). (Grube E. J., 1978).



Figure 23. The frontage entrance porch of Sheikh Lotfollah Mosque, (by author in 2014)

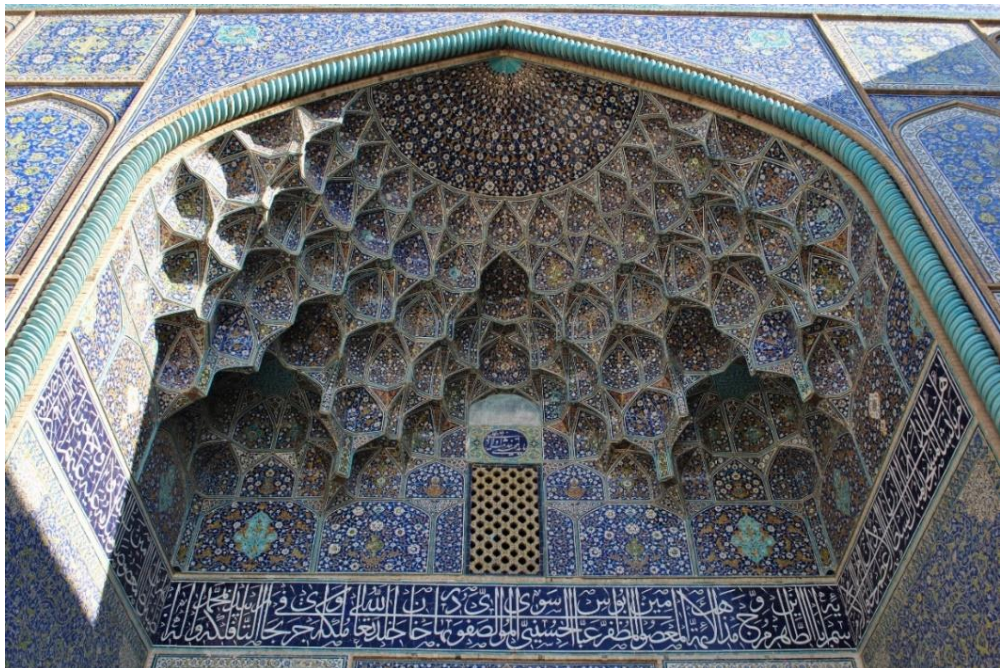








Figure 24. The color of frontage entrance porch of Sheikh Lotfollah Mosque, (by author in 2014)

Therefore, it could be said that, the symbolic meaning of color which are used in Sheikh Lotfollah Mosque could be summarized in Table3;

Table 3. Symbolic meaning of applied color in Sheikh Lotfollah Mosque

| <p>Sheikh Lotfollah Mosque is built during 1603-1619 in eastern side of Naqsh-e-Jahan square by Ustad Mohammad Reza Isfahani in direct order of Shah Abbas for his father in law Sheikh Lotfollah. The structure of this mosque consists of a building with a simple and small plan, including a dome, hibernal seraglio, corridor, entrance, porch, that all have rich decoration and ornamentation</p> | | |
|--|---|---|
| color | Place of usage | Symbolic meaning |
| <p>Azure and Blue</p>  | <p>Main Entrance, hallway and the space under the dome, interior and exterior part of mosque, minaret, dome</p> | <p>Vast sky and ocean, human eternal memories and the original paradise that human came from there, make human relax and calm, fertility and fulfilment, endless spirit, concept of faith, in the entrance porch plays the role of inviter and host, spiritual universe. (Pope, 1965) (Kazimee, 2003)</p> |
| <p>Yellow</p>  | <p>Walls, interior and exterior decoration</p> | <p>Faith, wisdom, expectancy and move up to the God, increase motivation of motion toward the God, wisdom and knowledge, maturity and perfection during time (Blunt, 2009)</p> |
| <p>Soil color</p>  | <p>Walls and Dome</p> | <p>worshiper is fading during his worshipping and expunction in the way of reaching God, human (Mitchell, 2011)</p> |
| <p>White</p>  | <p>Interior and exterior walls and Dome, for Quranic verses</p> | <p>mortality of worshiper in light and reaching God, Pure light, Unity, God, Monotheism, holiness and value of texts (Grube, 1978)</p> |
| <p>Turquoise</p>  | <p>Decoration of interior hallway corridor, portal, minaret and dome</p> | <p>Rise self-esteem in human, health, making immortal, attract vision, bring human to the inner side, showing happiness, gladness and exultation for worshipers from obtaining to God (Grube, 1978) (Mitchell, 2011)</p> |
| <p>Black</p>  | <p>Exterior part of dome and decoration</p> | <p>Hidden spirituality and divine (Grube E. J., 1978)</p> |

3.4.1.2 The Shah (Imam) Mosque (1611-1629)

Another masterpiece of Safavid architecture is Shah (Imam) mosque (Masjid-I Imam) (Masjid-I Shah) which is located in the south part of Naqsh-e-Jahan square and attributed to UNESCO World Heritage, this mosque was built during 1611-1629 by the order of Shah Abbas (UNESCO, UNESCO World Heritage Centre, 2016).

The mosque has a rectangular structure, the measure of the rectangular plan is, 100 in 130 meters, and it is a kind of four Iwani mosque with central courtyard. In order to facing one wall of the mosque to Mecca and Qibla, the architect (Ostad Ali Akbar Esfahani) solved the problem of 45 degrees orientation of mosque from Mecca by orienting the mosque 45 degrees from Naghshe-Jahan square, through the L-shaped connection between entrance and yard, however, this orientation is not appearing from the outside, this means the exterior has a suitable harmony with any other part of the square (figure25) (Archnet, 2016).

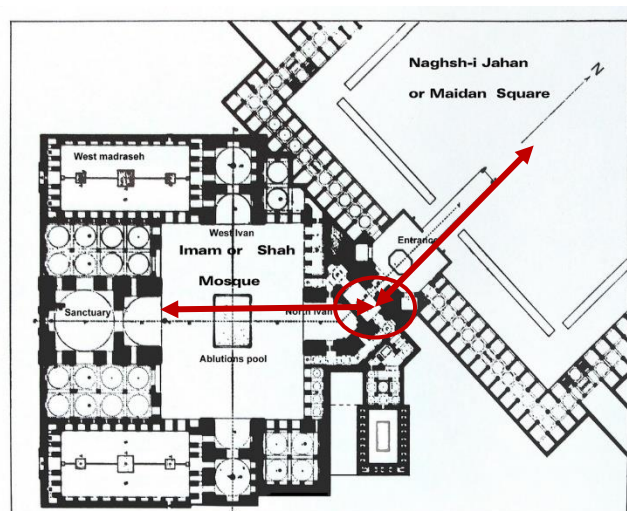


Figure 25. The L-shaped connection between entrance and yard of Shah (Imam) mosque, (Archnet, 2016)

The decoration of this mosque is consists of plaster work, brick work, and seven colored mosaic tiles, the main façade of entrance is covered by white ornamentation in the dark blue and azure color also there are turquoise cables that frame the entrance Iwan. In addition, the minarets are designed by arabesque blue and white decoration (figure26). All these colors symbolically try to attract human into mental calmness and quietness that could be gained through reaching to God, so, they make mosque more eternal, in addition, the azure blue color also symbolize, spirituality, satisfaction and fecundity (Blair, 1995).

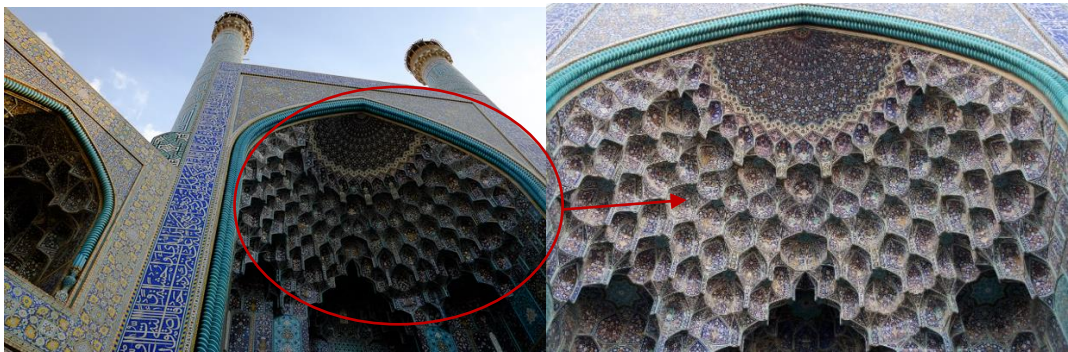


Figure 26. The main entrance Iwan of Shah (Imam) mosque, (Archnet, 2016)

The dome of Shah Mosque by 25 meters in 52 meters height is huge dome with two shells, the exterior shell is decorated by white, black, soil color and cream arabesque pattern in the light blue background, this design is symbolize the paradise and prepare happiness for human, in addition, locating cream color on the white color demonstrates the human and his soul disappearance, when he meets his Lord, however, light blue is representing sky, brown colors refers to Stability, convenient and the comfortable environment of the mosque. In addition, white symbolize God and representing unity and purity (figure27) (George, 1978).



Figure 27. The Dome of Shah (Imam) Mosque, (by author in 2014)

In addition, all the interior and exterior walls of the mosque are decorated by Haft rangi (seven colored) mosaic tiles (figure28) and (figure29) and (figure30), which has yellow, green and white pattern on the mostly dark blue background, in wall design, green symbolize the charity, peace, health and success, thus, it makes the worshipers more refresh during his worshiping, also it shows the highest, divine level of place and supreme spirituality (Kazimee, 2003). In addition green carried both of yellow and blue colors, this means green symbolize, not only hope, wisdom and perfection during time but also, it represent spirituality, faith and calmness (Canby S. R., 2002).

Yellow color also, increases the motivation and happiness in human, it symbolizes maturity during time and shows the expectation of reaching white that is symbolizing unity of light, purity spirituality and God as a destination, this color also makes the place more cheerful. In addition, the yellow color which is used in the center of the dome, tries to symbolize the sense of hope, faith and aspire to joining God and obtaining the perfect wisdom, this color is located in the highest point, and it is also

pointed to perfection and maturity by the time (figure31). Nevertheless, azure is symbolizing the divine universe that brings calmness from human original paradise, and dark blue representing sky, moreover the lower part of the walls are covered by dado marble (figure28) and (figure29) (Pope, 1965).



Figure 28. The decoration of interior walls in Shah (Imam) mosque, (Driessen, 2016)



Figure 29. The interior part of the dome in Shah (Imam) mosque, (Driessen, 2016)










Figure 30. The exterior walls in Shah (Imam) mosque, (Driessen, 2016)



Figure 31. The exterior walls of the Shah (Imam) mosque, (Driessen, 2016)

Therefore the colors in the beautiful Shah (Imam) mosque, which have symbolic meaning is explained in table 4;

Table 4. Symbolic meaning of applied color in Shah (Imam) Mosque

| <p>The Shah (Imam) Mosque is constructed during 1611-1629 by the order of Shah Abbas, it is located in the south part of Naqsh-e-Jahan square and attributed to UNESCO World Heritage, it has a rectangular structure, the measure of the rectangular plan is, 100 to 130 meters, and it is a kind of four Iwani mosque with central courtyard. The architect (Ostad Ali Akbar Esfahani) solved the problem of 45 degree orientation of mosque from Mecca by orienting the mosque, through the L-shaped connection between the entrance and yard</p> | | |
|--|---|---|
| Color | Place of usage | Symbolic meaning |
| <p>Azure and dark Blue</p>  | <p>Interior and exterior wall and ceiling, main façade entrance</p> | <p>Sky, spirituality, satisfaction, Fecundity, Calmness and original paradise (Pope, 1965) (Blair, 1995)</p> |
| <p>Yellow</p>  | <p>Motifs and pattern in exterior and interior walls</p> | <p>Increase Motivation and hope to reach God, happiness, perfection by time, faith, wisdom (Pope, 1965) (Blunt, 2009) (Canby S. , 2000)</p> |
| <p>Soil color, Cream</p>  | <p>Dome</p> | <p>Human soul disappearance when he meets his God (Mitchell, 2011)</p> |
| <p>White</p>  | <p>Motifs, Walls, Dome</p> | <p>God, spirituality, purity and unity, high level of Quranic texts (George, 1978)</p> |
| <p>Light blue and turquoise</p>  | <p>Exterior of dome entrance</p> | <p>Sky, happiness, gladness, attract more vision, make immortal (George, 1978) (Blair, 1995)</p> |
| <p>Brown</p>  | <p>Exterior part of dome</p> | <p>Stability and comfortability (George, 1978) (Mitchell, 2011)</p> |
| <p>Green</p>  | <p>Decoration of walls</p> | <p>Refresh human, health, supreme spirituality and highest level of place, peace, charity, faith (Kazimee, 2003)</p> |

3.4.2 Symbolic meaning of color in Ottoman mosques (1299-1923)

The main Islamic dynasty, mostly dominated in turkey is Ottoman Osmanli, which is one of the most extensive with very long life, among Islamic Empires. Their domination duration was more than 5 centuries also there were huge and vast regions under the power of this monarchy in its highest period of authority in the 16th

century, same as; recent Turkey, the Balkans, several parts in the Middle East, the southeastern part of Europe up to the Caucasus and even North Africa. This means, the official territory of the Ottoman Empire in the peak of their domination was nearly 5.6 million square kilometers (Meri, 2006).

The origination and provenance of Ottoman Empire could be appeared from the thirteenth century, it was at the end of the Seljuk's Empire, in the western part of Anatolia and near the city of Konya, Othman (Osman), who was the leader of Qayïgh as a section of the Turkic Öghuz tribe who were moved into Central Asia, try to unify near clans and established the Ottoman Empire in order to fight and collapse Byzantine Empire and rich the power instead of Seljuk's Empire (Petersen, 2002).

During the Ottoman Empire there were different sultans those pay essential attention to art and architecture also try to expand the Islamic religion and culture instead of Christian religion and culture, so they start to convert too many churches to mosques and tried to display their architecture in this kind of sacred place, however at first the early Ottoman architecture was under the influence of Seljuk architecture and any Ottoman's mosques are somehow similar to Seljuk's mosques (Ágoston, 2009).

The basic structure of mosque's planning was a simple rectangle with hypostyle plan, also the flat roofs are integrated on the arcades, and interior parts is leads to courtyards, in addition, ablution fountain existed there (figure32), although, from the middle of the fourteenth century the architecture of Ottoman mosques developed, this means, it faced to new metamorphosis and takes away from the Seljuk's architectural style (Saoud, 2004).

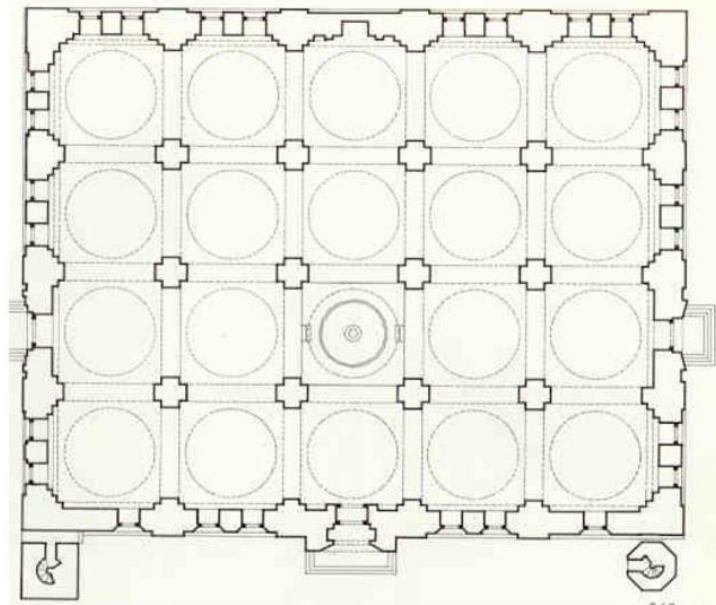


Figure 32. View of interior planning of Ulu Mosque Bursa1396, (Hattstein M. D., 2000)

In evolved Ottoman architecture, the horizontal planning takes its place to vertical scheming in order to display movement and rising to sky in a symbolic way, this also gives the mosques glory and grandeur. Therefore, first the pillars became taller; also domed roofs are gradually lifted, like steps, toward the central dome which is located in the center of the nave and the main prayer hall and bed-chamber (Freely, 2010) (figure33).



Figure 33. Bayazid II Mosque, all domes are getting a rise toward center dome, rising and bed-chamber, or interior prayer hall is joining to courtyard, (Hattstein M. D., 2000)

In addition, the interior parts changed to the new arrangement. In order to show the centrality the dome, that was in front of the Mihrab magnified and providing greater span. Another substantial point is the biggest centralization under the main dome, which is a symbol of God for representing the meaning of Tawhid as a main purpose of Islam religion, according to (Brian, 1982);

The interior is then one unit to be perceived in its entirety at a single view. Its reality is not to be found in the dome and arcades but in the cavities they define. Plenitude of space ... majestic space ... continuous space ... tawhid (the consciousness of divine unity) made visible.


In addition, in the early Ottoman architecture of mosques, rough red-clay material used together with monochrome glaze, although, In the late 15th century, Ottomans try to apply the particular ceramics in order to use different colors in mosques, these ceramics were followed the Iranian masters technology, that were from Tabriz, in this method, fine white clay rich in silica applied, also, the spaces were decorated

with the white and blue painting on Chinese motifs under the achromatic and colorless glaze (Blair, 1995).

After that, this technology improved and lets designers to apply more colorful spaces and apply rich color patterns in any space of the mosques; this means bypassing the time the technology of underglaze painting technique developed which were applied in ceramics that called Iznik Tiles. The Iznik tiles are manufactured from crystal quartz, and the main color is crystal-based glaze with any shades of dark blue or azure or lapis lazuli or other natural colors like; coral red, malachite or turquoise green (Akbaygil, 2011).

Therefore, in the second half of the 16th century, various colors like cobalt blue, turquoise, dark green and bole red used in Ottoman's mosques embellishment, nevertheless cobalt blue and white were applied mostly in the backgrounds (Ágoston, 2009). Table 5 gives the classification and summary about the architecture of mosques during Ottoman domination.

Table 5. The classification and summary about the architecture of mosques during Ottoman domination

| | |
|--|---|
| Dominated during | From 13th more than 5 centuries |
| History of architecture | First the early Ottoman architecture was under the influence of Seljuk architecture, from middle 14 th century it developed and takes distance from Seljuk. |
| Architecture and structure of mosques | First, flat roofs are integrated on the arcades, and interior parts is leads to courtyards- simple rectangle with hypostyle plan- flat roofs, then from middle of 14 th , it horizontal to vertical movement and rising to sky in a symbolic way- pillars became taller-domed roofs are gradually lifted, like steps, toward the central dome-main prayer hall and bed-chamber -central dome - simple geometry-courtyard |
| Decoration and material of mosques | Monochrome glaze- painting |
| New method or technology | Iznik ceramic tiles  |
| Location mostly in | Turkey |
| Masterpieces mosques | The Sultan Ahmed Cami (Blue Mosque) The Shehzade Cami (Şehzade Mosque) |

3.4.2.1 The Sultan Ahmed Cami (Blue Mosque) (1609-1617)

Sultan Ahmed Cami or Blue Mosque is one of the masterpieces of classical Ottoman architecture, located in the center of Istanbul, where always the mixture of culture and religion is perched, in terms of location, the blue mosque is faced to the f Hagia Sophia mosque. In addition, this mosque is one of the mosques with six minarets in Ottoman architecture which was built during 1609 until 1617 (Meri, 2006).

The architect of this amazing mosque is Sedefkar Mehmet Ağa, the disciple and senior assistant of Mimar Sinan, who was one of the greatest architects of Turkish and Ottoman architecture (Islam, 2016).

It has five main domes, although, it has eight secondary domes too. The five meters diameter and also forty five meters height of the central main dome made this part of the mosque more adsorbent. The location of the mosque is in Sultan Ahmet square, also, one gate of the mosque is open into the Byzantine Hippodrome, another important point of this mosque is that, The blue mosque is not only used as the mosque also it has other functions and used as a complex mosques, which includes; Mosque, Madrasa, Mausoleum, Elementary school, Royal pavilion, bazaar, hospital, kitchen and other social facilities (figure34) (Kantar, 2014).

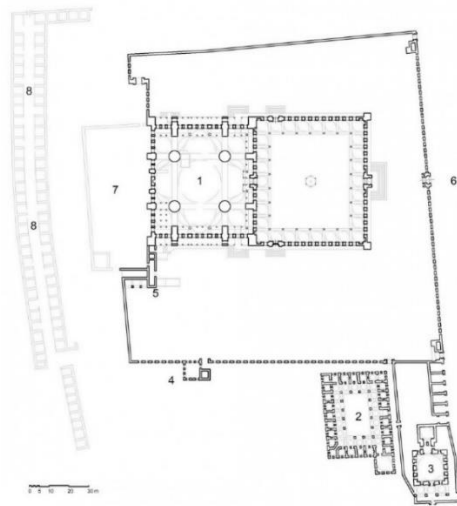


Figure 34. Floor plan of the remaining buildings in the Sultan Ahmet Camii complex: 1. Mosque 2. Madrasa 3. Mausoleum 4. Elementary school 5. Royal pavilion 6. Hippodrome 7. Garden platform 8. Gazaar (arasta bazaar), (Elegant, 2016)

The reason of naming the Sultan Ahmet mosque with blue mosque is, the usage of more than 20.000 handmade Iznik blue ceramic tiles which involves more than three

quarters of its surface in the interior part of the mosque (figure35) (Matthews, 2010). Also, as Ustun Alsac mentioned, this mosque has 21043 ceramic tiles in mostly blue color made by Kashikar Hasan Usta, and 260 windows which cross light into the interior part of the mosque (Alsac, 2004).



Figure 35. Iznik blue ceramic tiles interior of the Sultan Ahmet mosque (Blue mosque), (Hattstein M. D., 2000)

Moreover, these tiles have more than 50 tulip designs and various patterns, some of them have a traditional design and many of them applied for displaying fruits, flowers and trees which are all showing the paradise. The Iznik tiles are designed with different patterns like, mixed of the plant's branches, tulips, hyacinths, carnation which are decorated with blue, dark blue, turquoise blue, red, coral red, azure, green and emerald green colors that stood on the white background (figure36). These tiles are existed under the center of the dome, although, the upper levels are decorated with blue painting on the brick and stucco, this also brings the twiddle of lights and shadow in the dome and the interior part of the mosque (figure37) (Kuban, 2010), however, and in other parts like Minbar, windows and doors, carved wooden works are applied for decoration.



Figure 36. Sample of the different patterns of Iznik ceramic tiles in blue, azure, red, turquoise and green colors on the white background, (Elegant, 2016)

It should be mentioned that, in the decoration of mosque, green, red, black, yellow, gold and other colors are used but the prevailing color in blue.

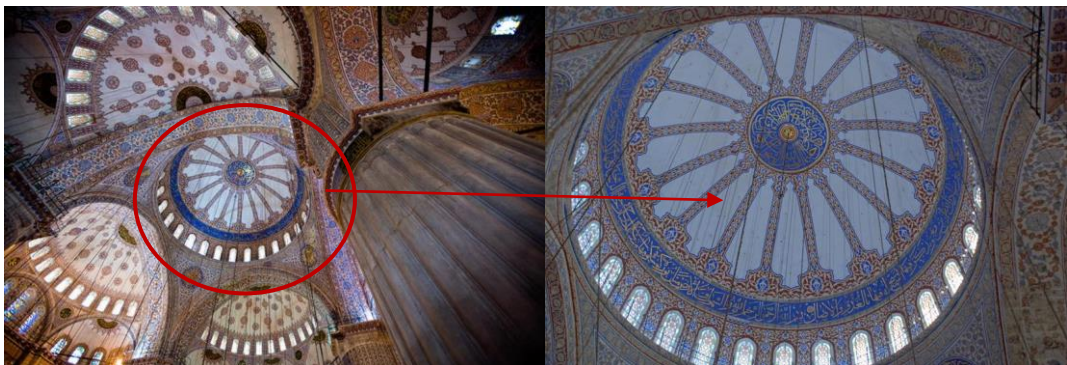


Figure 37. The blue painted decoration on the brick and stucco in the upper level of the interior part of the Sultan Ahmet mosque (Blue mosque), (Elegant, 2016)

In order to enter the light and create the colors more than 150 stained glass windows applied in the mosques which are originally presented that Signoria of the Venice gave them to the sultan, howbeit, today approximately all of them changed to modern model which has little or even not artistic competency (Archnet, 2016).

Nevertheless, around the main dome there are twenty eight windows and any semi-domes has fourteen windows too. This huge number of windows also, brings the abundance of light which symbolizes the God. This means, according to the Quran that mentioned; God is the light of earth and heaven which guide creatures so, in sultan Ahmet mosque great amount of light is applied for symbolizing the God, which makes the mosque alive too (figure38) and (figure39) (Kuban, 2010).



Figure 38. The windows around the main and semi domes in Sultan Ahmet mosque (Blue mosque), (by author in 2012)

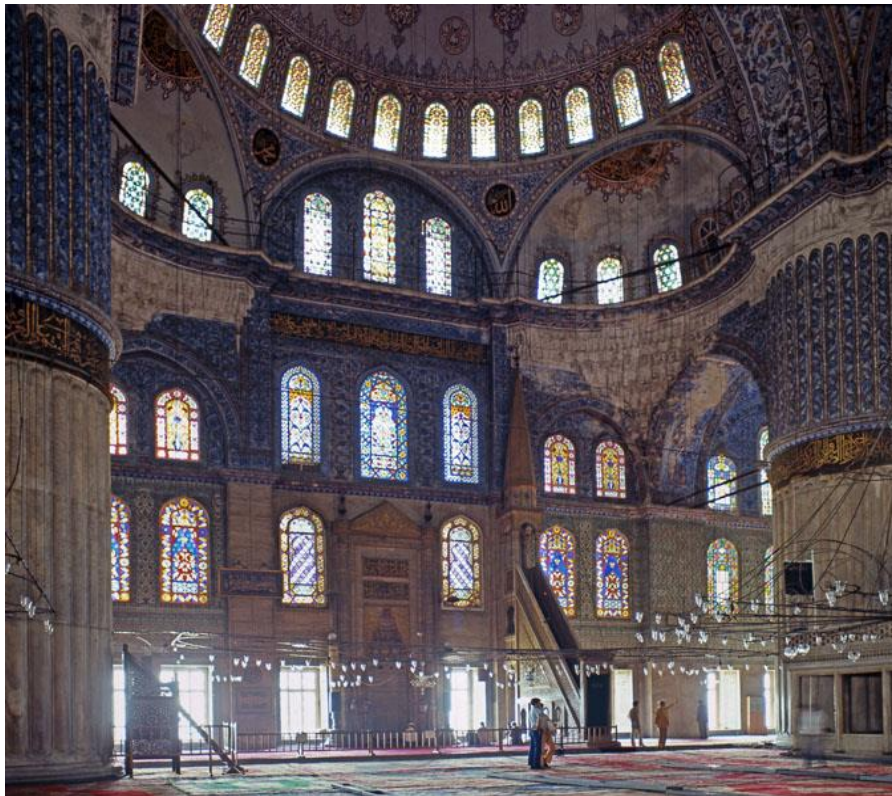


Figure 39. The colored windows in Sultan Ahmet mosque (Blue mosque), (by author in 2012)

Another element of lighting the mosque is the huge Chandelier which is decorated with gold and crystal gems, also ostrich eggs existed inside them in order to avoiding the harmfulness of spider and other insects (figure40) (Saoud, 2004).

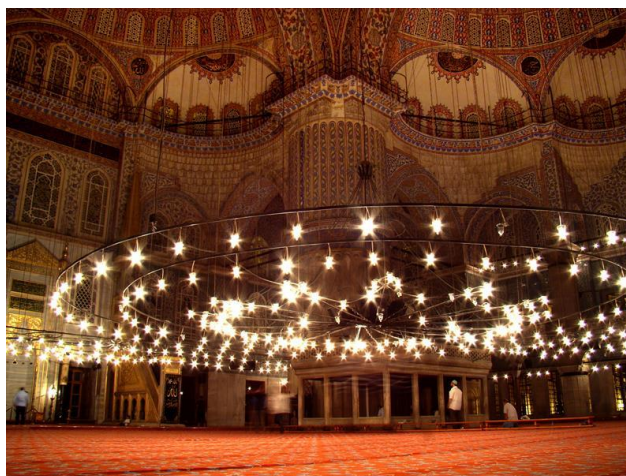


Figure 40. The Chandelier of the Blue mosque with gold decoration, crystal gems and ostrich eggs, (Elegant, 2016)

In addition, all the Calligraphy works applied by the popular calligrapher Ametli Kasim Gubari's, they were ornamented by gold color in order to representing the Qur'anic verse and sacred text more impressively in a symbolic way also creates the sense of willing in human for worshipping (figure41) (Godfrey, 1987).



Figure 41. The gold Qur'anic verses in interior part of mosque, (Elegant, 2016)

Among the diversity of colors, the huge blue, which is existed in the interior part of the mosque has significant manifestation that represented the satisfaction, calmness, spirituality of this sacred space and faith. The simple and pure white of the marble in Minbar and Mihrab of the mosques symbolize God and represents the unity of God, virginity, purity and immaculacy also simplicity which cause to gain relax and calmness from worshipping the God, however the gold ornamentation in Minbar provide geometrical embossed shapes and increase the sense of motivation in human feeling (figure42) (Kantar, 2014).

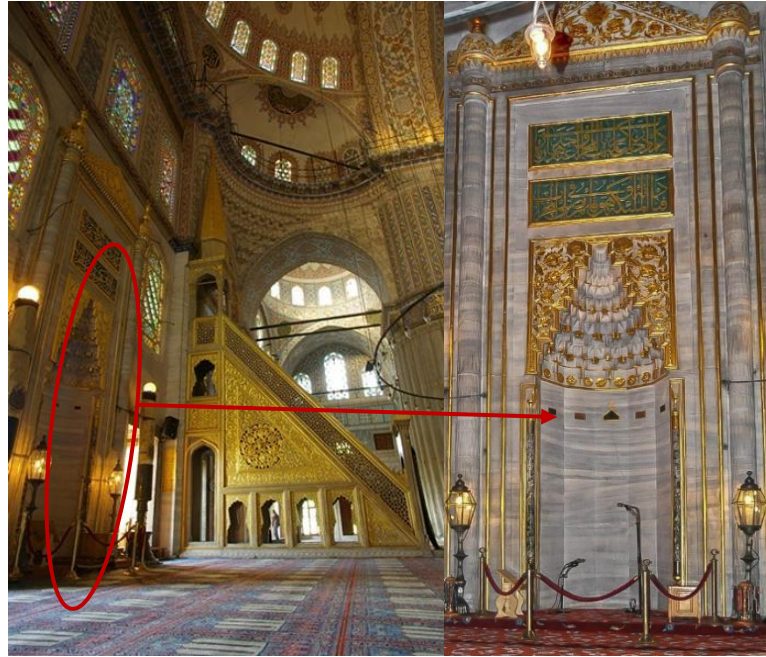


Figure 42. The Minbar and Mihrab of Sultan Ahmet mosque (Blue mosque), (Elegant, 2016)

Another important element in Blue mosque, which has a particular color and used in order to effects on human mind symbolically is the color of the carpet in the mosque. This Turkish carpet, which is manufactured in Anatolia has based on two major colors that are wine-red and azure blue (Blair, 1995).

The energetic red color is used in the background and azure which is symbolize the inactiveness, immortality and vast sky also defector color used for decorating and rosettes, in addition, the strong red color, gets more intensity to show the patterns too, this color shows power and youth, so makes the human more active also, flames the spirit of faith an spirituality in human soul and invites them to the interior part of mosque, it is symbolizing the potency and yard too.

The other colors are existed in the carpet like golden yellow which is used for elegant paths of arabesque and white that circle around the large rosettes that helps to

provide more radiation in the space, these rosettes are omnipresence and shaping from the center, this also is one of the original rules in Islamic art and architecture (figure43) (Burckhardt T. N.-L., 2009).



Figure 43. The carpet of Sultan Ahmet mosque (Blue mosque), (by author in 2012)

Although, the scheme plan and designs of carpet and the color combination in carpets convey to the decoration and pattern of ceramic and tiles during the time (Blair, 1995).






Some parts of the exterior of the mosque there are colorful stones which applied for creating visual influences on human in order to attract them into this sacred building, for instance, the green color under the Qur'anic verses shows the highest divine level of verses and peace (figure 42) (Grube E. J., 1978).



Figure 44. Apply some different colorful stone on the exterior facade of the Sultan Ahmet mosque (Blue mosque), (Elegant, 2016)

In addition, in the Ottoman mosque, not just the architecture, also decoration, coloring, ornamentation, geometric combination and any other designing works follows specific concept, this concept is, not paying attention to the existence of start and end. This means that, Ottoman used abstract and immaterial forms, which is representing any concepts and ideas in nature in a symbolic way, and not in direct realistic way. In addition, it shows that, Ottoman architecture same as Safavid architecture is in the opposite of making copies from nature and try to symbolize anything in nature conceptually, this belief is represented by using geometrical models, templates in modular system without any starting and ending point, also interminable diversity in patterns, shapes and scheme plan of ceramic, tiles and carpets in terms of decorating, designing and even coloring shows this idea too (Curatola, 2009). Table 6, illustrates the symbolic meaning of applied color in the Sultan Ahmet mosque (Blue mosque) which is one of the wonderful and amazing works of the Ottoman period;

Table 6. Symbolic meaning of applied color in Sultan Ahmet mosque (Blue mosque)

| Color | Place of usage | Symbolic meaning |
|--|--|---|
| Azure and Blue  | Iznik tiles in all interior decoration, wall and ceiling, Dome, Carpet | Calmness and spirituality, inactiveness also defector color used for decorating and rosettes, satisfaction, immortality (Blair, 1995) (Burckhardt T. N.-L., 2009) |
| Gold  | Minbar and Mihrab, Calligraphy works | Enhance Motivation in worshiper, Make Qur'anic verse impressive and elegance (Burckhardt T. N.-L., 2009) (Godfrey, 1987) |
| Green  | Under Qur'anic verse | Excellence of verses ,peace, charity (Grube E. J., 1978) |
| White of the marble  | Marble in Minbar and Mihrab | God, unity, virginity, immaculacy relax and calmness from worshiping the God (Kantar, 2014) |
| Red  | Carpet and some decoration on walls and ceiling | Activity, flames the spirit of spirituality in human soul, invites them to the interior part of mosque, yard, power (Burckhardt T. N.-L., 2009) |

3.4.2.2 The Shehzade Cami (Şehzade Mosque) (1543-1548)

Shehzade mosque is one of the Ottoman mosques, which is located in turkey, Istanbul city. This mosque is one of the important works of the architect, Mimar Sinan, it is built during 1543 to 1548, it was ordered by Sultan Suleiman for his eldest and favorite son Şehzade Mehmed. In addition, the mosque has simple two consecutive square plan with a central dome and 4 other half domes, with a courtyard, this mosque also, has a symmetrical plan (figure45) (Frishman M. K.-U.-A., 2002).

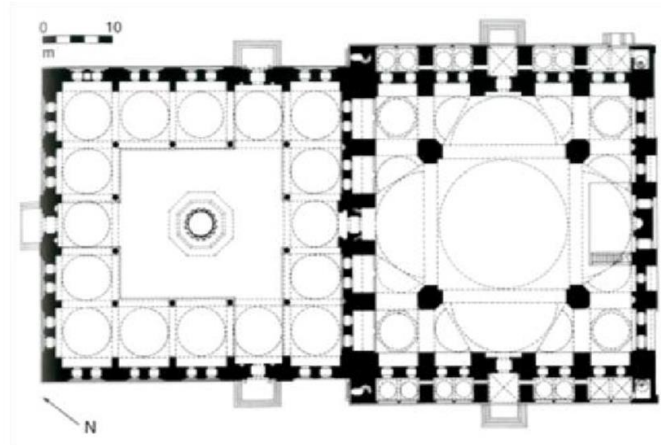


Figure 45. The general view of the plan of Shehzade mosque, (Frishman M. K.-U.-A., 2002)

Moreover, this mosque is not only a religious building but also, it is a kind of the mosque complex (külliye) too, however, the mosque and courtyard are separated from other parts of complex through walls and garden, other parts consist of, the mausoleum of shehzade Mehmed, school of Quran (madrasa), public kitchen and caravanserai. Although, this complex mosque was one of the earliest work of Mimar Sinan, it is a one of the most glorious effort of him too (Necipoglu, 2005).

The open portico and arcades in the courtyard are designed by white and pink marbles (figure46), in addition, the interior part of the mosque is mainly designed by white stones, there are also polychrome Iznik tiles which are used for decoration of the triangles and semi domes, in addition, the red and white color of voussoirs attract the visual attention to arches, which continued to main dome (figure47) (Özer, 1987).



Figure 46. The courtyard of Shehzade mosque, (Wikimedia, 2016)



Figure 47. Decoration of dome, ceiling and interior wall of Shehzade mosque, (Brustein, 2016)

The main white is symbolize the unity and pure light which is representing God, also the green color used under the gold Quranic verses and holly texts, this gold color symbolize the divinity and the importance of texts, however, the green color which is symbol of charity, peace, heaven, so it tries to make the Qur'anic verses more impressive show their spirituality, another color which applied in decoration is yellow which is symbolize time and perfection and encourage people for worshipping (figure48) (Necipoglu, 2005).

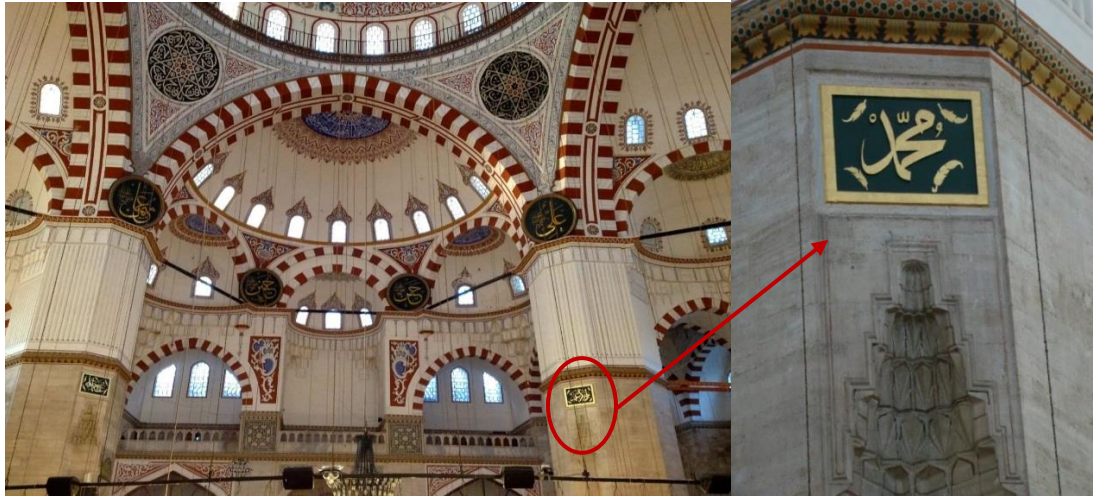


Figure 48. Different decoration and interior color of Shehzade mosque, (Brustein, 2016)

Various colors like, blue, azure, red, white and green applied in the Iznik tiles patterns stucco works and painting that decorated the dome, ceiling and interior walls. The blue and azure color, which mostly, used in the dome and ceiling representing sky and calmness, also red color which is also used in the carpet is symbolize the activation and increase the energy and power of worshipers and not only, increase the sense of spirituality in human soul, but also, make them more happy from their worshiping (figure49) (Archnet, 2016). Nevertheless, blue and white flowers pattern line are located between the red lines in the carpet (figure 50).









Figure 49. Decoration on ceiling and wall in Shehzade mosque, (Wikimedia, 2016)



Figure 50. Carpet and interior part of the Shehzade mosque, (LWYang, 2016)

Therefore, the symbolic meaning of colors in Shehzade mosque could be summarized in table 7;

Table 7. Symbolic meaning of applied color in Shehzade mosque (Şehzade Mosque)

| The Shehzade mosque (Şehzade Mosque) is built in 1543-1548 by Mimar Sinan in the order of Sultan Suleiman for his eldest and favorite son Şehzade Mehmed. The plan of mosque consists of simple two consecutive square plan with a central dome and 4 other half domes, with a courtyard, also the structure of plan is symmetrical. This mosque is a complex mosque consists of mausoleum of shehzade Mehmed, school of Quran (madrasa), public kitchen and caravanserai. | | |
|--|---|---|
| Color | Place of usage | Symbolic meaning |
| Azure and light Blue  | Iznik tiles in all interior decoration, walls and ceiling, Dome, Carpet | Calmness and spirituality, inactiveness also defector color used for decorating and rosettes, satisfaction (Burckhardt, 1986) (Archnet, 2016) (Necipoğlu, 2005) |
| Gold  | Decoration and holy texts | Motivation, divinity, Make Qur'anic verse more important (Necipoğlu, 2005) |
| Green  | Under Qur'anic verse and holy texts | Excellence of verses, peace, charity, spirituality and immortality (Grube E. J., 1978) |
| White of the marble  | Interior and exterior voussoirs, arcade | God, unity, immaculacy relax, God, pure light (Necipoğlu, 2005) |
| Red  | Carpet, decoration of interior walls and ceiling, dome, voussoirs, arcade | Activity, youth, power, attraction, happy, attract the visual senses, increase the sense of spirituality in human soul (Özer, 1987) (Archnet, 2016) |
| Yellow  | Decoration of walls | Encourage people for worshiping, time, perfection (Necipoğlu, 2005) |

3.4.3 Symbolic meaning of color in Central Asian mosques (750-1500)

The Islam was dominating central Asia during 750–1500 CE. The architecture of central Asia, that includes the countries; Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, Turkmenistan, and Mongolia is under the influence of the tsarist and Soviet principle of Russian architecture also the Islamic architecture which was

existed in Persian architecture, however, the Islamic architecture in Central Asia mostly reaches the peak in Timurid period. In addition the Samarkand, Bukhara and Khiva in Uzbekistan are considered as most outstanding cities in terms of their amazing architecture (Bradley, 2007).

The architecture of central Asia consists of substantial surviving heritages in the world. In order to explain about the central Asian architecture characteristic Philip Glazebrook (1994), wrote in the book *Journey to Khiva*:


Round the court glistened tiled facades, in every facade is a tiled arch, in the arch a fantastically carved door, every surface writhing with violently-colored patterns of Islam, which blaze up like flame, vivid and restless, to end in the suddenly cut-off of the flat-topped wall. Above that the aquamarine domes, beautiful things, in shape and substance serene. (Glazebrook, 1994).

In addition, the material which used in the hot space of the central Asia like wilderness and deserts is mainly brick, also wood, stone and this kind of materials is abundant because they creates very hard, in these hot areas, although the fried brick in this region is developed during the time and from 10th century to the 14th century, the fried bricks changed to polychrome and colorful tiles also squinches, which is used for building the big domes (Ardi, 2015).

In central Asian architecture, the mosque and other religious buildings have a huge blue dome, also the high entry gate is covered with tiles and ceramics, this gateway is very high which is representing the highest place of God from creators, in addition the minarets are mostly in tapering and cylinder shape, they build with brick and cover by tiles. Nevertheless, and in order to decrease the temperature puts the opening face to the wind and courtyard (Bradley, 2007).

In the central Asian mosques the multicolored tiles are applied not just because of the elegance also these colors make the buildings more adsorbent and impressive in the desert. In addition the color which used in domes are mostly turquoise and deep blue, and the most common color in Samarkand city is blue, however, in Khorezm and Khakis green is the most common colored which applied in mosques (Knobloch, 2001). Table 8 gives the classification and summary about the architecture of mosques during the domination of Central Asia.

Table 8. The classification and summary about the architecture of mosques during the domination of Central Asia

| | |
|--|--|
| Dominated during | 750-1500 |
| History of architecture | Architecture mostly under the influence of Timurid architecture |
| Architecture and structure of mosques | Tall and big dome- tapering cylinder minaret- opening to wind and courtyard |
| Decoration and material of mosques | Brick-wood-stone, from 10th to 14th fried brick change to polychrome tiles tiling- inscription- plaster |
| New method or technology | Polychrome and colorful tiles also squinches, which is used for building the big domes  |
| Location mostly in | Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, Turkmenistan, and Mongolia, also mostly Samarkand, Bukhara and Khiva |
| Masterpieces mosques | The Bibi-Khanym Mosque The Kalyan Mosque |

3.4.3.1 The Bibi-Khanym Mosque (1404 and reconstruct in 1974)

Samarkand city which located in Uzbekistan as a part of central Asia considered as one of the world heritage also the manifestation of Timurid architecture as a most

significant architecture in central Asia culminated in this city, this city also located on the silk road which is considered as one of the ancient, social, cultural and economic pole in central Asia with too many artistic, architectural and religious masterpieces (Hajnal, 2001).

Bibi-Khanym Mosque is one of the significant feat during a Timurid era in Samarkand and even in the Islamic world, with its particular architecture, this mosque is one of the biggest cathedrals (Jame) and Friday mosque it is built between 14th and 15th century (1399-1404) for the Timur wife (Rowland, 1974). Also Ibn Arabshah believed that:

“This mosque is The Woxsssnders of Destiny...”

This place, has the significant architecture, decoration and structure (Tabibian, 2012). From 1974 the mosque started to reconstruct in order to make the mosque revival after some parts crumble down because of earthquakes that occurred in 1897 (Frye, 1996).

This mosque has a simple rectangular plan from north to south with 167meter in 109 meter measurement (figure51) and (figure52) with courtyard, it has also, four minarets inside and four minarets outside, with portal entrances, in addition, it has four porches (Iwans), on the eastern and western part the mosque has two domes, that, one of them built in denticulate masonry style (figure53). Moreover, the main dome, which has more than 40 meter height with twin tower around 50 meters height is more famous in central Asia (figure 54), the main materials which used in this mosque is wood, marble, brick, stucco and also colorful majolica, mosaic and tiles (Petersen, 2002).

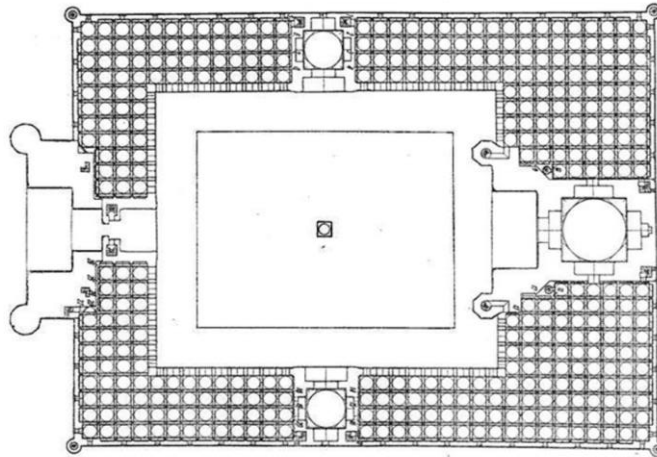


Figure 51. Plan of Bibi-Khanym Mosque, (Ratiia, 1950)



Figure 52. General view of the Bibi-Khanym Mosque, (drewmaul, 2016)

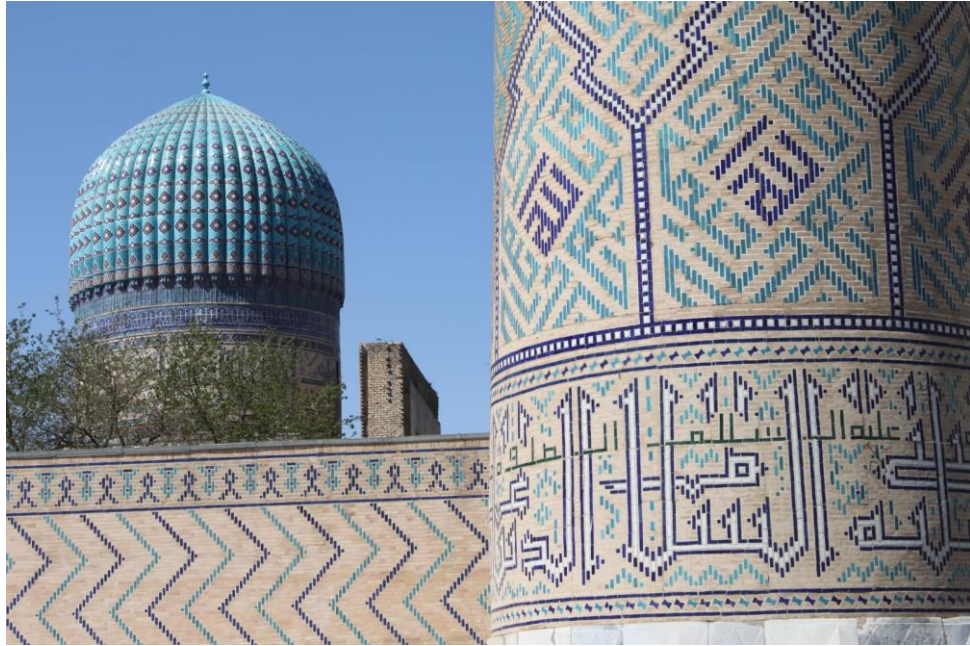


Figure 53. One of the domes in Bibi-Khanym Mosque with denticulate masonry style, (Sele, 2016)



Figure 54. The main dome of the Bibi-Khanym Mosque, (Sele, 2016)

For the decoration of the interior part of the mosque mostly wall painting and plasterwork are applied, which is painted with white, deep blue and gold colors (figure 55). These colors, demonstrating the holiness and richness of the place, also gold color which is applied in huge Qur'anic letters increase their importance to

attract human attention, however, the exterior part of the building, consists of entrance, portal, two minarets, domes, façade and surfaces that are covered by seven color mosaic tiles with arabesque pattern decoration and colored glazed bricks. Moreover, the giant Quranic letters also used in exterior too, and they covered with colorful bricks (figure56), (figure 57) (Ratiia, 1950).

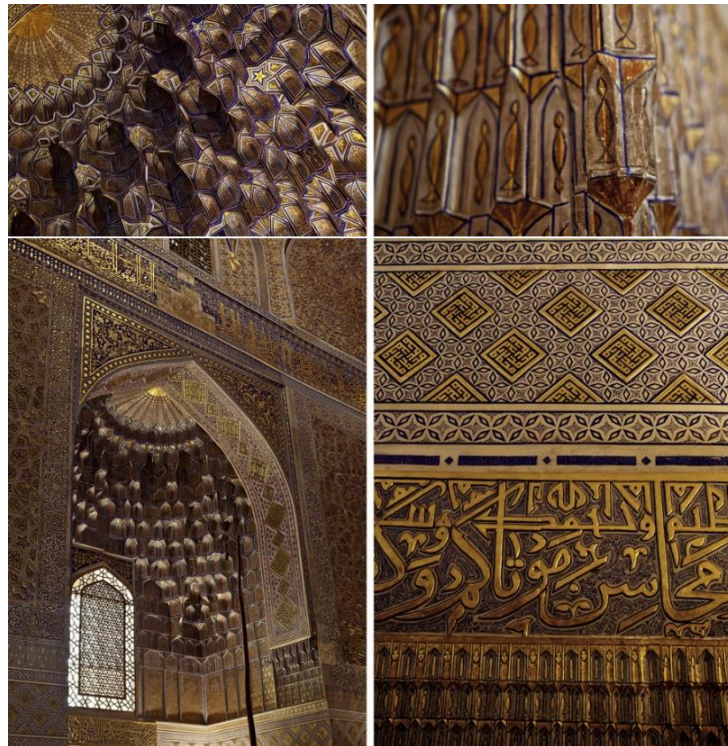


Figure 55. The interior decoration of Bibi-Khanym Mosque with painting on plaster working, (Sele, 2016)



Figure 56. The decoration of portal gate in Bibi-Khanym Mosque, (Sele, 2016)



Figure 57. The exterior decoration of Bibi-Khanym Mosque, (Paskaleva, 2012)

In addition, the most colors that used in this mosque are azure blue, turquoise and deep cobalt blue, which symbolize the Heaven and brings the sense of calmness, spirituality and divinity to the space. In addition, turquoise color is used in the exterior part of the tall dome to show the spirituality and pointed to sky also attract human. Moreover, white color representing clearly and purity, the yellow color also, refers to joy and hope, which brings happiness in human, however, the color of the soil is representing the earth and the origination of human from soil, green color also,

bring the sense of freshness and Rebirthing to human and make them cool (figure58), (figure59) and (figure60) (Edgar, 2001)



Figure 58. The arabesque design on the seven colored mosaic tiles in the exterior surfaces of the Bibi-Khanym Mosque, (Sele, 2016)

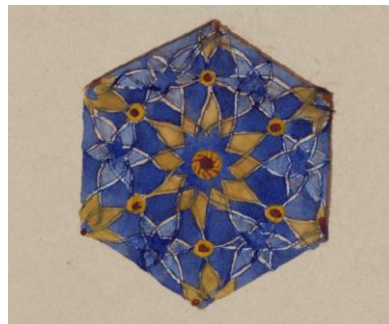








Figure 59. Sketch from the colorful tiles of Bibi-Khanym Mosque, (by author in 2016)



Figure 60. Applying colorful mosaic tiles in the dome of Bibi-Khanym Mosque, (Sele, 2016)

Therefore, symbolic meaning of color in Bibi-Khanym Mosque summarizing is like table 9:

Table 9. Symbolic meaning of color in Bibi-Khanym Mosque

| Color | Place of usage | Symbolic meaning |
|--|--|--|
| Deep Blue and turquoise  | Interior and exterior decoration, dome | Calmness and spirituality, heaven, sky, holiness and richness of the place, attract human (Ratiia, 1950) (Edgar, 2001) |
| Gold  | Decoration and holy texts | Divinity, Make Qur'anic verse more important, holiness and richness of the place (Ratiia, 1950) |
| Green  | Exterior wall decoration | Refreshing, Rebirthing (Edgar, 2001) |
| White  | Interior and exterior, decoration, holy Quranic text | Clearly, purity, holiness and richness of the place (Ratiia, 1950) |
| Color of soil  | Seven colored tiles decoration | Earth, humanity, human from soil (Edgar, 2001) |
| Yellow  | Seven colored tiles decoration | Happiness, hope, time (Knobloch, 2001) |

3.4.3.2 The Kalyan Mosque (1514)

One of the outstanding mosques in Uzbekistan is Kalyan Mosque that is in Bukhara city, it is built in 1514 during the domination of Timurid and Shaybanid periods. Also, Kalyan Mosque is considered as a part of the Po-i-Kalyan complex (figure 61), that includes the Kalyan Mosque, Miri Arab Madrasa, courtyards and Kalyan

Minaret with 45, 3 meters as one of the tallest building in Central Asia (figure62) (Golombek, 1988). In addition, this mosque is in Chahar Iwani style with inner courtyard which has 288 domes staying on 208 pillars (figure63).



Figure 61. The Po-i-Kalyan complex in Bukhara, (gallery, 2016)

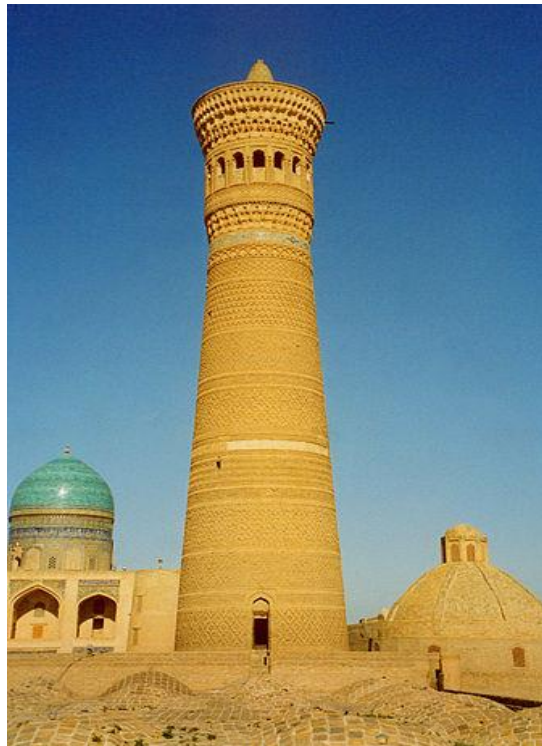


Figure 62. The Kalyan Minaret with 45, 3 meters, (gallery, 2016)



Figure 63. The courtyard of Kalyan Mosque, (Albers, 2016)

One of the important elements in Kalyan Mosque is the spherical dome of the mosque, which is covered with blue and turquoise tiles, that is symbolize the sky, and attract the human in the mosque through effecting on their visual sense, however, the interior part of the dome is an octahedron of arched and the color of the inside is white (figure64) and (figure65) (Edgar, 2001).

Moreover, Brick and glazed mosaic tiles are the most material that used for decoration and designing the mosque that are mostly in blue, turquoise, white and soil colors, in addition, the decoration in this mosque is based on face of main portal and main façade of building, nevertheless, color which are used in the courtyard and exterior of mosque are white that is symbolize unity and God, blue and turquoise which symbolize heaven, sky and divine space and the color of soil that symbolize the earth and human (figure66) (George, 1978) (Ratiia, 1950).



Figure 64. The exterior view of Kalyan Mosque dome, (Bukhara, 2015)

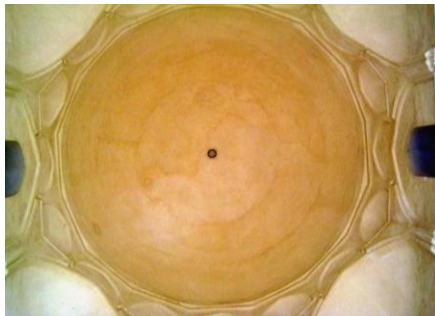


Figure 65. The interior view of Kalyan Mosque dome, (gallery, 2016)

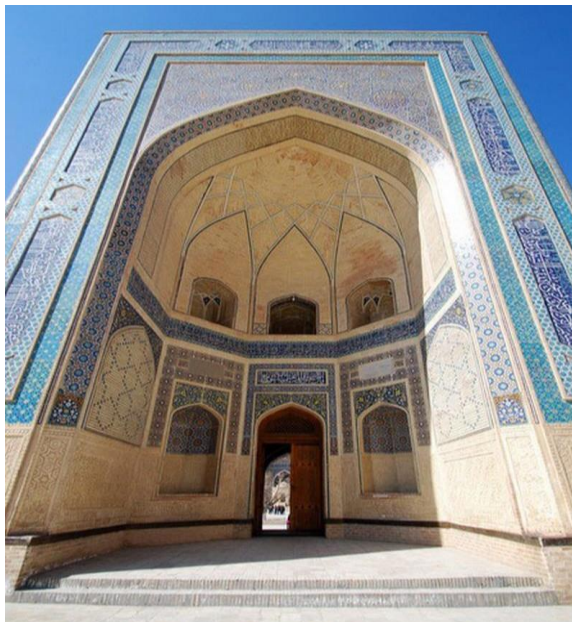


Figure 66. The main portal of Kalyan Mosque, (gallery, 2016)





In the interior part the design concentration is on Mihrab. Major colors inside of the mosque are white as a pure color which is showing the unity, monotheism and God, dark blue referring to ocean and turquoise symbolize the sky and heaven also bring calmness to human, in addition, green color that applied to the exterior tiles is a color of spirituality and create the sense of Rebirthing for human (figure 67) (Bradley, 2007).



Figure 67. The decoration of Mihrab in Kalyan Mosque, (gallery, 2016)

The symbolic meaning of color which used in Kalyan Mosque is representing in the table 10;

Table 10. Symbolic meaning of color in Kalyan Mosque

| <p>The Kalyan Mosque is built in 1514 in the Uzbekistan, Bukhara city Also, Kalyan Mosque is considered as a part of the Po-i-Kalyan complex consists of the Kalyan Mosque, Miri Arab Madrasa, courtyards and Kalyan Minaret with 45, 3 meters as one of the tallest building in Central Asia. In addition, this mosque is a 4Iwani style with inner courtyard which has 288 domes staying on 208 pillars</p> | | |
|---|--|--|
| Color | Place of usage | Symbolic meaning |
| <p>Deep Blue and turquoise</p>  | <p>Interior and exterior decoration, dome, main portal</p> | <p>Calmness, heaven, sky move up to god, ocean, spirituality, attracting visual sense (Knobloch, 2001) (George, 1978) (Ratiia, 1950)</p> |
| <p>Green</p>  | <p>Exterior wall decoration</p> | <p>Refreshing, Rebirthing, spirituality (Bradley, 2007)</p> |
| <p>White</p>  | <p>Interior and exterior, decoration, dome, holy Quranic text, main portal</p> | <p>Monotheism, Clearly, purity (Bradley, 2007) (Ratiia, 1950)</p> |
| <p>Color of soil</p>  | <p>Seven colored tiles decoration, bricks</p> | <p>Earth, humanity, human from soil (George, 1978)</p> |

3.5 Summary of chapter:

The mosques are considered as spiritual and divine places, also, this sacred place cause human to have better relationships with his metaphysical originality and inner part of his self through worshiping and communication with God, although, worshiping it is not the only function of the mosque. From the beginning of Islamic history and the prophet Mohammad period the mosque has complex and multi-functional usage, which is mostly social and economic places, thus, this place has direct relation with human and their physiological feeling and even their behaviors.

In addition, in Islamic architecture, any color has specific symbolic meanings, for example, black in Islamic culture, is the color of Ka'bah is represents transcendental, supranational and hidden spirituality. Or yellow in Islamic culture refers to the

happiness and perfection during time. Also, blue concentrates on the transcendental inner part of humanity and gives any place internal sense in Islamic culture. Additionally, green symbolize fresh, charity and spirituality in Islamic culture white is a symbol of God and purity in Islamic culture, also represents purity and high level of light.

Moreover, the usage of any elements in the mosque was also, according to particular cultures, political and historical background of the specific region, so, since, application of colors as an influential element in the decoration of mosques has substantial effects on human and his mental behavior, color, should use in a correct way with regard to the symbolic meaning of color during different periods and also, scientific and psychological Chromatics knowledge. For example, according to table11, during Safavid, Ottomans and central Asian cultures which are investigated, it shows the development of different technologies like (Haft rangi) or seven colored mosaic tile or Iznik mosaic tiles let architects to apply various colors in the ornamentation of the mosque. In addition, each color has particular symbolic meaning, for instance; in the Sheikh Lotfollah Mosque and Shah (Imam) mosque as masterpieces of Safavid architecture, the colors, that are applied are azure blue which reminds, sky, spirituality, paradise and heaven to human and provides the sense of calm, fertility for him. Also, turquoise color symbolizes immortality and brings the sense of happiness and cheer to worshiper, In addition, the yellow patterns that drown in the blue color is referring to hope for attaining paradise and perfection during time, this also increase the sense of motivation in human for moving toward reaching god, then yellow change to earth color and color of soil to show the fading of worshipers in spirituality. In addition, in these mosques, white is representing God and monotheism, black shows the hidden spirituality.

In the architecture of Ottoman mosque also various colors used symbolically according to their specific culture, for instance; as table 12 illustrates, the white Minbar representing relaxation and purity, and symbol of God, also the huge blue symbolize the spirituality and divinity that makes rise the sense of calmness in the mosque for human, however the usage of red color stimulates human and decrease the sense of depression for him and increase yard and power in human. In addition, the gold color also covered the holy Qur'anic letters to make them more impressive and puts a venerable attention on them, however, the background of Quranic texts is green, to symbolize peace and charity and show the elegance of the texts.

In central Asian are mosques like In Bibi-Khanym Mosque and Kalyan Mosque same as other mosques, colors has particular meanings. Table 13 representing that, mostly, azure blue, turquoise and deep cobalt blue color demonstrate the divinity of mosque to bring composure, calmness and quietness to the mosque, also the usage of this color on dome symbolizing the blue sky and moving upward, in addition, yellow representing joy, hope and time, gold make Qur'anic text, impressive, however, the green, which is combined with it, referring to sense of Rebirthing to human for making him more fresh, also, color of soil representing human, although, white symbolizing purity and holiness.

Table 11. The table of investigating and analyzing the symbolic meaning of different colors in Safavid mosque

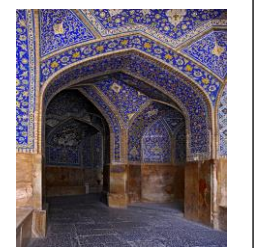









| | The background and importance of the period | Applied color | Symbolic meaning of color | The place of applied color | Picture | | |
|----------------|---|---------------|---|---|---|---|---|
| Safavid | The domination is (from 1501 to 1736) when, Timurid kings were defeated by the first king was Shah Ismail who was opening the new window in any field of art and architecture. The architecture of mosque mostly had simple geometrical shape and planning, the first material was mud brick, Baked (or fired) bricks, wood and then they applied seven colored (Haft Rangi) mosaic tiles. The Masjid-e Shah (Imam) that was constructed by Ustad Ali Akbar Isfahani, during 1611-1629 and the Masjid e Sheikh Lotfollah that was built by Ustad Mohammad Reza Isfahani, between 1603 and 1619, are two Safavid mosque that displays the excellent and outstanding architecture of Safavid period, they located in Naqsh-e Jahan square in the headquarter of Safavid king's art and Architecture, Isfahan city, with 2,500 years old, which is also one of the most important tourism centers of the world. The usage of haft-Rangi mosaic tiles in The Masjid-e Shah (Imam) and the Masjid e Sheikh Lotfollah is wonderful. | | Dark blue, light blue and azure blue are symbolizing; Calmness, vast Sky, Paradise, Spiritual universe, satisfaction of worshipers. In addition, it shows the fertility and fulfillment in human, also pointing to endless spirit and focusing on the concept of faith. | Entrance and main façade of portal, hallway and the corridor, interior and exterior part of mosque, minaret, dome |  |  | |
| | | | Turquoise, also, is symbolizing Rise self-esteem in human, making health and immortal, attract vision, bring human to his inside, showing happiness, gladness and exultation of worshipers from reaching their God | | Walls and dome |  |  |
| | | | | | | Faith, wisdom, increase motivation for expectancy and move up to the God, wisdom and knowledge, time and perfection | The Interior and exterior decoration, walls |
| | | | Refresh human, health, supreme spirituality and highest level of place, peace, charity, faith | The decoration of walls |  |  | |
| | | | Hidden divinity and secret spirituality | Decoration and the exterior motifs on the dome | | | |
| | | | Purity, unity and monotheism, holiness and richness of Quranic texts, mortality of worshiper and his disappearance and being one with his God | Interior and exterior walls and Dome, for Quranic verses |  |  | |
| | | | Stability, comfortable and suitable place | Exterior part of the dome |  |  | |

Table 12. The table of investigating and analyzing the symbolic meaning of different colors in Ottoman mosque



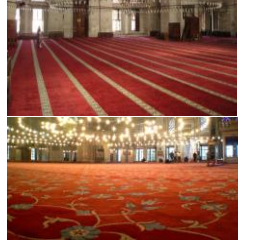

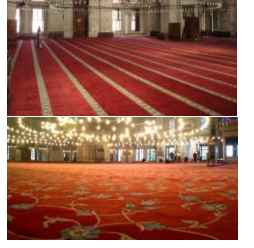

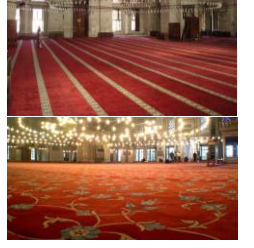

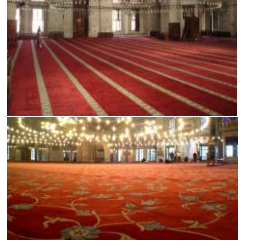


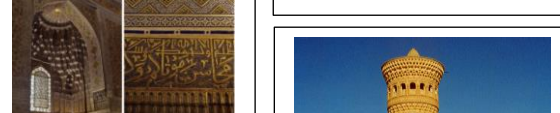




| | The background and importance of the period | Applied color | Symbolic meaning of color | The place of applied color | Picture | | | |
|----------------|--|---------------|---|---|--|---|---|---|
| Ottoman | The Ottoman monarchy mostly dominated in Turkey is Ottoman Osmanli, it is one of the longest domination among Islamic Empires, with 5 century duration. There is huge region under the domination of this empire, a simple rectangular with hypostyle plan also the flat roofs that integrated on the arcades is the main structure of the architecture of their. However, from the middle of the 14 th century the architecture of Ottoman mosques takes away from the Seljuk's architectural style, and the horizontal architecture changed to vertical style to show the movement to God in a symbolic way, in addition, there is a central dome that shows the biggest centralization under the main dome, as a symbol of God. After the technology of underglaze painting the Iznik ceramic tiles in various colors are used. Sultan Ahmed Cami or Blue Mosque is one of the masterpieces of classical Ottoman architecture, the mosque with six minarets is located in Istanbul and was built between 1609-1617, by Sedefkar Mehmet Ağa, who was the assistant of Mimar Sinan. The name of the mosque is because of the usage of more than 20000 blue Iznik ceramic tiles, those installed by Kashikar Hasan Usta. Shehzade mosque is also one of the impressive work of the architect Mimar Sinan that built during 1543 to 1548, also, this mosque is considered as a part of (külliye). In addition, not just Iznik ceramics, also white stones and painting applied in this mosque too. | | Light blue, dark blue and azure blue are symbolizing, relax, Calmness, spirituality, inactiveness also blue is using as a defector color for decorating and rosettes of carpet, satisfaction, immortality | Iznik tiles in all interior decoration, walls and ceiling, Dome, rosettes of Carpet |  |  | | |
| | | | | | Enhance Motivation in worshiper, Make Qur'anic verse impressive and elegance, divinity | Minbar and Mihrab, Calligraphy works, decoration |  |  |
| | | | | | | | Excellence of verses and holy texts, peace, charity, spirituality and immortality | On the Quranic verses and holy texts |
| | | | Activity, youth, power, attraction, happiness, attract the visual senses, increase the sense of spirituality in human soul, flame the spirit of faith and spirituality | Carpet, decoration of the interior walls and ceiling, dome, voussoirs, arcade |  |  | | |
| | | | Purity, unity and monotheism God, virginity, calmness from worshipping the God, highest level of light | Interior and exterior voussoirs, arcade, marble, Minbar, Mihrab |  |  | | |
| | | | Encourage and invite people to worshipping, time, perfection | The decoration of walls |  |  | | |

Table 13. The table of investigating and analyzing the symbolic meaning of different colors in Central Asian mosque

| Central Asia | The background and importance of the period | Applied color | Symbolic meaning of color | The place of applied color | Picture |
|--------------|--|---------------|---|---|---|
| | <p>The central Asian countries like; Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, Turkmenistan, and Mongolia were under the power of Islam, Islamic art and architecture, during 750–1500 CE. The architecture of central Asia, Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, Turkmenistan, and Mongolia, however, the Samarkand, Bukhara and Khiva in Uzbekistan are counted as the most outstanding cities in terms of architecture. The most material that used in this period is brick, wood, although the fried brick by the passage of time in 10th century appeared and from 10th century to the 14th century, this material also changed to polychrome and colorful tiles and squinches, that applied for big dome. In addition the mosque is central Asia as some characteristics such as, a huge dome, high entrance to showing the high level of place and the highest is the God, the entrance designed by polychrome tiles and mostly minarets are in tapering and cylinder shape, they build with brick and cover by tiles. Moreover, any space is open to courtyard for cooling the place. The Bibi-Khanym Mosque, is an impressive mosque in Central Asia and even in Islamic world. This mosque is built between 14th and 15th century, although, it reconstruct in 19th century too. The most material in this mosque is wood, marble, brick, stucco and also colorful majolica, mosaic and tiles. Another amazing mosque in Central Asia in Uzbekistan is Kalyan Mosque that is in Bukhara city, it is built in 1514 during the domination of Timurid and Shaybanid periods.</p> | Dark blue | Dark and azure blue is symbolizing; Calmness, spirituality, heaven, sky, ocean, holiness, richness and value of the place and represent moving toward the God | Interior and exterior decoration, dome, main portal |  |
| | | Light blue | The turquoise color attracts human vision and it is showing the richness of place | | |
| | | Blue | | Divinity, Make Qur'anic verse more impressive, holiness and richness of the place |  |
| | | Yellow | Refreshing, rebirthing, spirituality | Exterior wall decoration | |
| | | Green | Earth, humanity, human from soil | Seven colored tiles decoration |  |
| | | Orange | Purity, unity and monotheism, holiness and richness of space and Quranic texts | Interior and exterior, decoration, holy Quranic text | |
| | | | Happiness, hope, time perfection | Seven colored tiles decoration |  |
| Yellow | | | |  | |
| | | |  | | |

Chapter4

CONCLUSION

Mosques is One of the most important and excellent masterpieces in Islamic architecture. Also, Mosque is not just a place of worshipping the God. This means, this unsecular building with its immortal concept, is considered as one of the fundamental place for any region that has a direct relationship with humans and tries to convey the endless spirituality and the concept of faith to humans. Thus, the building is not enough alone to displaying the theosophical and transcendental features of the mosque, so, application of sign and symbols contributes human to perceive and understand the spirituality, divine meaning and unsecular sense of this place, although, mosque as a significant building in the Islamic art and architecture, is a desirable territory for application of sign and symbols to representing the immaterial, sacred and the super substantial notion to humans.

Color is considered as an inseparable part of human's life. It has a profound influence on all aspects of human's life, however, it can effect on the inner part of the human and his mental behavior too. In addition, this element can effects on any space and their meanings space moods, emotion and other perceptual features. This means that, this element is like a non-verbal and wordless language that can convey the meaning of space and also the ideas and notions of designer to users.

There are some scholars such as; Leonardo DA Vinci, Sir Isaac Newton and Moses Harris that clarified this element, as a quality which is created from the collision of different wavelengths to objects and reflect back to human vision. They also provide different color wheels and classified various features of colors such as hue, value and chrome.

Moreover, different scholars like Wolfgang Von Goethe believed that color has super substantial and perceptual characteristics, which has impacts on human psychological behavior and emotions. The spiritual and divine features of this quality could be a reason for color to have symbolic meanings and these symbolic meanings are created according to specific memories, experiences, regions and cultures.

Besides, color is an efficient element in mosques, even it is not only creates aesthetic glory and beauty in the mosques also, it can close the human to his inner original nature. In addition, it has impressive influence on human's visual perception and psychological behavior through its psychological and symbolic meanings. This means that not any color only, has its exclusive meaning, also, it has a symbolic meaning. This symbolic meaning, depends on different cultures with their specific lifestyles and original backgrounds.

This element with its several symbolic meanings such as; faith, charity, spirituality, peace, love, immortality, infinity, calmness, comfort, success, enjoy security, love, sacrifice and other meanings, can provide a sense of salvation, satisfaction and perfection for humans in mosques and leads worshipers to reach their final destination and goal.

Therefore, application of color in traditional mosque and according to the symbolic meaning of color follow the specific frames in different periods, In this study, symbolic meaning of colors in Safavid, Ottoman and Central Asian traditional mosques are investigated, in order to find symbolic meaning of applied colors in traditional mosques during these three various cultures.

These three dominations in Islamic history, art and architecture are the golden periods and includes the main and major domination of Islam. The Safavid monarchy reigned during the sixteenth and eighteenth centuries, where art, architecture, economy, industry, philosophy and any other field developed, Ottoman empire is the longest empire, in addition, Islam was dominating in many other cities and countries in Central Asia during 750–1500CE, that has excellent architecture, these regions is consists of; Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, Turkmenistan, and Mongolia.

4.1 Symbolic meaning of colors, differences and similarities between Safavid, Ottoman and Central Asian mosque

According to table 14, which is investigating and analyzing the symbolic meaning of colors in Safavid Mosques, Ottoman mosques and Central Asian mosques;

Light, dark and azure blue, in the architecture of Safavid mosques, that, mainly used in, hallway, portals, entrances façade, corridors, interior and exterior part of the dome, minaret, interior and exterior decoration of the walls and ceiling, are symbolizing, the calmness, vast Sky, Paradise and the eternal memories of humans , Spiritual universe, satisfaction of worshipers. In addition, it shows the fertility and fulfillment in human, also pointing to endless spirit and focusing on the concept of

faith, in addition, the azure blue which is used in the entrance is playing the role of host. However, the azure blue, light and dark blue in the architecture of Ottoman mosques that often used Iznik ceramic tiles, rosettes pattern on Ottoman carpets and decoration of the interior and exterior parts of the dome, walls and ceiling, is symbolizing, calmness, spirituality, inactiveness, satisfaction and immortality. Its play the role of fugitive in carpets rosettes. In the architecture of central Asian mosques, dark and light blue is representing calmness, spirituality, heaven, sky, ocean, holiness, richness and value of the place and motion to god, this color mostly used in, main portal, entrance and decoration of the interior and exterior parts of the dome and walls. Moreover, the application of any other colors, in between, blue and azure blue background, is representing the paradise and the gardens of paradise in all Safavid, Ottoman and Central Asian mosques.

The turquoise color in Safavid, Ottoman and Central Asian mosques is attracting humans' vision, absorbing worshipers to mosques and attracts worshipers to joining to the spirituality, that's why this color mainly is used in main portal, entrance, minaret and exterior decoration of the dome. In addition, turquoise color in Safavid mosque is symbolizing, health, happiness from worshipping the God and also makes the mosque immortal.

The white color which is mainly applied to the highest level of the dome, arcades, walls, Minbar and Mihrab, is the symbol of God and representing purity, unity and monotheism in three periods. Although, in Safavid mosques it is showing the human's disappearance during his spiritual journey. In addition, this color in the Central Asian mosque and Safavid mosque is used in Quranic verses to symbolizing the holiness and richness of space and Quranic texts. Moreover, white color in

Ottoman mosques is symbolizing, virginity, calmness from worshipping the God, and highest amount of light.

The green color in Safavid and Central Asian mosques is used for the decoration of the walls, however, it is applied as a background of Qur'anic verses in ottoman mosque. This color represents the spirituality in three periods, it is also symbolizing refresh and rebirth in Safavid and Central Asian mosques. In addition, it shows the charity, peace and excellent level of the place or holy texts in both Ottoman and Safavid mosques. Nevertheless, green color is also referring to the concept of faith and health in Safavid mosques.

The cream color or the color of soil, mostly applied in the decoration of walls, dome and also the brick works has this color. This color in Safavid and Central Asian mosques, is symbolizing humanity, and the origination of human, who is coming from the soil and earth. Although, in Safavid mosque, under the dome, from the down to up, the yellow color is replaced with the color of soil, to show the worshiper is fading during his expunction and spiritual connection with his Lord. Until the top level of the dome where the soil color background and azure changed to a white background with turquoise decoration, this also, shows that the human is glad from joining and reaching to God and being one with God.





The yellow color is representing time and perfection in three periods, this color mostly, used in the decoration of interior and exterior part of the dome and walls of mosques in three periods. In addition, yellow color is encouraging and motivating humans to moving toward the God in Ottoman and Safavid mosques. Although, it is symbolizing, faith, wisdom and perfect knowledge in Safavid mosques, it is showing













the happiness and hope of worshipers in the Central Asian mosque. Moreover, the gold color that is the color of the Minbar, Mihrab, Calligraphy works and the holy texts, in the ottoman and the central Asian mosque, tries to displaying the Divinity and increase the richness and importance of holiness, Quranic verses and texts and makes them more impressive and elegant.

In the architecture of Ottoman mosque, red color, mostly applied in the Turkish carpet, voussoirs, the arcade and the decoration of interior wall and ceiling. This color is symbolizing the Activation, youth, yard, power, happiness and flaming the spirit of faith in the human soul, that cause to human invitation to the mosque and gives life to them for moving toward the God.

Moreover, in the architecture of Safavid mosque black is applied in the decoration of the exterior part of the dome and walls, it is representing the divine and hidden spirituality; however the brown color that is used in the entrance and some part of the dome is showing the stability and comfortable environment of the mosque.

Table 14. The table of investigating and analyzing the symbolic meaning of different colors in Safavid mosque, Ottoman mosque and Central Asian mosque

| Mosque | Color | Place of usage | Symbolic meaning | Summary of the symbolic meaning of colors investigation in each period | Similarities between three periods | Differences between three periods | |
|----------------|--|---|---|---|---|--|--|
| Safavid Mosque | Sheikh Lotfollah Mosque | | Entrance, hallway space under the dome, interior and exterior part of mosque, minaret, portal | Sky, paradise, relax ,calm, fertility and fulfilment, endless spirit, host, concept of faith, self-steem, health, making immortal, attract vision, bring human to inner side, showing | <p>A blue color is symbolizing, calmness, also pointing to endless spirit and the concept of faith. The azure blue is symbolizing, vast Sky, Paradise, Spiritual universe, satisfy worshipers and creates the sense</p>   <p>of fertility. White is symbolizing God, unity and monotheism. The color of soil is referring to human and explains that human will fade in his origin to reach the God. Yellow is representing the faith, increase the motivation of worshipping and move to God, perfection and gaining knowledge and wisdom during time. The green color showing the supreme spirituality, health, refreshing, peace and charity. Turquoise try to attract human vision, bring happiness and make the mosque immortal. Brown is symbolizing the stability and comfortability. Black also shows the hidden spirituality and divine</p> | <p>The azure blue, dark blue and blue are Symbolizing;</p> <p>↓</p> <p>Spirituality, calmness, sky and paradise in three periods, however it has the meaning of satisfaction and fulfilment in Safavid and Ottoman mosques</p> <p>The turquoise, is symbolizing;</p> <p>↓</p> <p>Attraction to human's vision to mosque in three periods</p> <p>The white is symbolizing;</p> <p>↓</p> <p>God, unity, monotheism in three periods.in Safavid and Central Asian mosques is showing the holiness of Quranic verse</p> <p>The green is symbolizing;</p> <p>↓</p> <p>Spirituality in three periods. Also it representing Refreshing and rebirthing in Safavid and Central Asian mosque. However, it shows charity, peace and Excellency or highest level, in Ottoman and Safavid mosques</p> <p>The color of soil is symbolizing;</p> <p>↓</p> <p>Humanity and human from soil in Safavid and Central Asian mosques</p> | <p>1) Blue and azure blue colors in Safavid mosque are symbolizing the concept of faith but in the other periods it is not like this</p> <p>2) In Safavid mosques yellow representing wisdom and gaining knowledge also it referring the concept of faith but in other periods it doesn't have this symbolic meaning</p> <p>3) Blue and azure colors are symbolizing immortality in Ottoman mosques, although these colors doesn't have this meaning in other periods</p> <p>4) The gold color in Ottoman mosques is symbolizing human motivation to praying but in other periods it doesn't have this meaning</p> <p>5) The green color in Ottoman mosque makes Qur'anic text more elegant and shows the excellence of them but it doesn't have this meaning in other periods</p> <p>6) In Central Asian mosque yellow is representing hope and happiness which is gained from God worshipping, but it doesn't have this meaning in other periods</p> |
| | | | | | | | |
| | | | | | | | |
| | | | Walls and Dome | Worshiper is fading during the way of reaching God and expunction, human | | | |
| | | | Walls, dome and decoration | Faith, wisdom, move up to the God, motivation, wisdom and knowledge, perfection during time | | | |
| | | | Walls and Dome, uranic verse | Mortality of worshiper in light, Pure light, Unity, God, Monotheism | | | |
| | | Decoration, exterior dome | Hidden spirituality and divine | | | | |
| | Shah (Imam) Mosque | | Interior and exterior walls and ceiling | Sky, spirituality, satisfaction, Fecundity, Calmness, paradise | | | |
| | | | Interior and exterior walls and ceiling | Refresh, health, supreme spirituality, highest level of place, peace, charity, faith | | | |
| | | | Exterior of dome entrance | Sky, happiness, gladness, attract more vision, make immortal | | | |
| | | Exterior of dome entrance | Stability and comfortability | | | | |
| | | Exterior of dome entrance | Stability and comfortability | | | | |
| | | Motifs, walls, dome | God, spirituality, purity and unity | | | | |
| Ottoman Mosque | Sultan Ahmed Cami (Blue Mosque) | | Iznik tiles in all interior decoration, wall and ceiling, Dome, Carpet | Calmness and spirituality, inactiveness also defector color used for decorating and rosettes, | <p>Dark blue, turquoise and blue Iznik ceramic tiles, symbolizing, calmness, spirituality, inactiveness, satisfaction and immortality, and it plays the role</p>   <p>of defector in carpet rosettes. Gold is symbolizing divinity and try to make Quranic verses more impressive and motivate humans to praying. Yellow is representing, perfection and encourage people for worshipping. Green shows the spirituality, peace, charity and makes Quranic text more elegant. Red shows the activation, power, happiness, and yard. White is symbolizing God, unity, virginity, immaculacy relax from connecting to God.</p> | <p>The green is symbolizing;</p> <p>↓</p> <p>Spirituality in three periods. Also it representing Refreshing and rebirthing in Safavid and Central Asian mosque. However, it shows charity, peace and Excellency or highest level, in Ottoman and Safavid mosques</p> <p>The color of soil is symbolizing;</p> <p>↓</p> <p>Humanity and human from soil in Safavid and Central Asian mosques</p> | <p>5) The green color in Ottoman mosque makes Qur'anic text more elegant and shows the excellence of them but it doesn't have this meaning in other periods</p> <p>6) In Central Asian mosque yellow is representing hope and happiness which is gained from God worshipping, but it doesn't have this meaning in other periods</p> |
| | | | | | | | |
| | | | Minbar and Mihrab, Calligraphy works | Enhance Motivation, Make Qur'anic verse impressive and elegance | | | |
| | | | Under Qur'anic verse | Excellence of verses, peace, charity | | | |
| | | | Marble in Minbar and Mihrab | God, unity, virginity, immaculacy relax and calmness from worshipping the God | | | |
| | | Carpet | Activity, flame the spirit of faith in human soul, invites them to the interior part of mosque, yard, power | | | | |
| | Shehzade Cami (Şehzade Mosque) | | Iznik tiles in all interior decoration, wall and ceiling, Dome, Carpet | Calmness and spirituality, inactiveness also defector color used for decorating and rosettes, | | | |
| | | | | | | | |
| | | | Decoration and holy texts | Divinity, motivation, Make Qur'anic verse more important | | | |
| | | | Under Qur'anic verse and holy texts | Excellence of verses, peace, charity, spirituality and immortality | | | |
| | | Carpet, decoration of interior wall and ceiling, dome, vousoirs, arcade | Activity, youth, power, attraction, happy, attract the visual senses, flame the sense of spirituality in human soul | | | | |
| | | Decoration of wall | Encourage people for worshipping, time, perfection | | | | |
| | Interior and exterior vousoirs, arcade | God, unity, immaculacy relax, God, pure light | | | | | |

| | Mosque | Color | Place of usage | Symbolic meaning | Summary of period | Similarities between three periods | Differences between three periods |
|-----------------------------|----------------------------|---|--|---|---|--|-----------------------------------|
| Central Asian Mosque | Bibi-Khanyim Mosque |  | Interior and exterior decoration, dome | Calmness and spirituality, heaven, sky, holiness and richness of the place, attract human | <p>Blue, azure and blue in Central Asian mosque is representing calmness, spirituality, heaven, sky, ocean holiness and richness of place and move up to god and</p>   <p>Turquoise attracts human and their vision. The gold color representing divinity, holiness and richness of place and Quranic texts. Green is symbolizing spirituality refreshing and rebirthing. The color of soil shows the earth, humanity and human who is come from soil. White also displaying the monotheism, clearly and purity. The yellow color shows the happiness, hope which gain from connection with God.</p> | <p>The yellow color is symbolizing;</p> <p>Time and perfection in three periods, it encourage worshipers and motivates them to moving toward God, in Safavid and Ottoman mosques</p> <p>The gold color is symbolizing;</p> <p>↓</p> <p>Divinity and make Quranic verses and texts more impressive, rich and elegant in Ottoman and Central Asian mosques</p> | |
| | |  | Decoration and holy texts | Divinity, Make Qur'anic verse more important, holiness and richness of the place | | | |
| | |  | Interior walls and decoration | Refreshing, Rebirthing | | | |
| | |  | Interior and exterior, decoration, holy Quranic text | Clearly, purity, holiness and richness of the place | | | |
| | |  | Seven colored tiles decoration | Earth, humanity, human from soil | | | |
| | |  | Seven colored tiles decoration | Happiness, hope, time | | | |
| | |  | Interior and exterior decoration, dome, main portal | Calmness, heaven, sky move up to god, ocean, spirituality, attracting visual sense | | | |
| | Kalyan Mosque |  | Interior wall decoration | Refreshing, Rebirthing, spirituality | | | |
| | |  | Interior and exterior, decoration, dome, holy Quranic text, main portal | Monotheism, Clearly, purity | | | |
| | |  | Seven colored tiles decoration, bricks decoration, holy Quranic text voussoirs, and arcade | Earth, humanity, human from soil | | | |

In future studies; it is suggested, to investigate and analyze the symbolic meaning of colors in contemporary mosques in order to, compare the symbolic meaning of colors from traditional mosque to latest mosque and find the best choice of colors to providing the suitable, spiritual, divine and super substantial relationship between humans and mosque. In addition, this selection of colors should create the spiritual sense in the mosque space and encourage humans to worship the God and lead them to their spiritual perfection and reply their spiritual needs. Besides, the other contribution is that the color could be investigated in the broader sense, and any color in any specific part of the different mosques during past to recent years could be inquired.

REFERENCES

- Ágoston, G. . (2009). *Encyclopedia of the Ottoman Empire*. New York, NY: Facts On File.
- Agrest, G. D. (1995). *Semiotics and Architecture*. New York: Princeton Architectural Press.
- Akbaygil, p. D. (2011). *Iznik foundation press trip istanbul & iznik*. Turkey : iznik foundation press.
- Albers, E. (2016, October 28). *Inner courtyard of the Kalyan Mosque, part of the Po-i-Kalyan Complex in Bukhara, Uzbekistan*. Retrieved from https://en.wikipedia.org/wiki/Po-i-Kalyan#/media/File:Inner_courtyard_of_Kalyan_Mosque.jpg
- Alsac, U. (2004). *Islamic Contribution to the World Architecture* . Gazimagusa.
- Archnet. (2016, December 4). Retrieved from archnet, Şehzade Külliyesi | View of mosque courtyard; southwest arcade: http://archnet.org/sites/2018/media_contents/35035
- Archnet. (2016, December 1). *Masjid-i Imam* . Retrieved from Archnet: <http://archnet.org/sites/1622>

Archnet. (2016, October 21). *The Blue Mosque (Sultan Ahmet Camii)*. Retrieved from Khan Academy: <https://www.bing.com/cr?IG=B7714544333347758C0F73F4395D3657&CID=3D074C5EF26C644C0C9B45BBF35D65A6&rd=1&h=tZmcbj4toxfliOtPZw5bV8nTtdh5kb2LaPRrC2LipF4&v=1&r=https%3a%2f%2fda.khanacademy.org%2fhumanities%2fart-islam%2fislamic-art-late-period%2fa%2fthe-blue-mo>

Ardalan, N. B. (1973). *The sense of unity: the Sufi tradition in Persian architecture*. Chicago: University of Chicago Press.

Ardi, K. (2015). *Central Asian cultures, arts, and architecture*. Lanham, MD: Lexington Books.

Arjmandi, H. T. (2012). Psychological and spiritual effects of light and color from Iranian traditional house on dwellers. *Social sciences and humanities*, 7(1), 288-301.

Armstrong, K. (2000). *Islam: a short history*. New York: Modern Library.

Baker, N. S. (2002). *Daylight design of buildings*. London: James & James.

Barr, P. J. (2003). "Icons R Icons: User Interface Icons, Metaphor and Metonymy." *the 4th Australasian User Interface Conference, Conferences in Research and Practice in Information Technology* (pp. 25-32). Australia: Australian Computer Society.

- Barthes, R. (1970). *Writing degree zero, and Elements of semiology*. Boston: Beacon Press.
- Berkeley, G. (1907). An essay toward a new theory of vision. *Readings in the history of psychology*, 69-80.
- Black, J. (1965). *The meaning of color: a semantic differential study*. Utah: University of Utah.
- Blair, S. B. (1995). *The art and architecture of Islam 1250-1800*. New Haven: Yale University Press.
- Blake, S. P. (1999). *Half the world: the social architecture of Safavid Isfahan, 1590-1722*. Costa Mesa, CA: Mazda Pub.
- Bloom, J. B. (1997). *Islamic arts*. London: Phaidon Press.
- Blunt, W. (2009). *Isfahan: pearl of Persia*. London: Pallas Athene.
- Bradley, M. (2007). *Central Asia: Kazakhstan, Tajikistan, Uzbekistan, Kyrgyzstan, Turkmenistan*. Footscray, Vic.: Lonely Planet.
- Brenner, C. M. (2006). *Islamic art and culture: a resource for teachers*. Washington, D.C.: National Gallery of Art.
- Brian, D. (1982). *An introduction to the philosophy of religion*. Oxford: Oxford University Press.

Briggs, O. (2016, October 12). *What Colors Mean in Other Cultures*. Retrieved from The Huffington Post: http://www.huffingtonpost.com/smartertravel/what-colors-mean-in-other_b_9078674.html

Brown, D. (2000). Words and Buildings:2000299Adrian Forty. Words and Buildings: A Vocabulary of Modern Architecture. London: Thames and Hudson 2000. 335 pp, ISBN: 0 500 34172 9 £28.00. *Reference Reviews*, 14(6), 33-34.

Bruce-Mitford, M. (1996). *The illustrated book of signs & symbols*. New York: DK Pub.

Brustein, A. (2016, December 3). *Explore Arch Mosque, Şehzade Mosque, and more!* Retrieved from Pinterest • The world's catalog of ideas: <https://www.pinterest.com/pin/135248795030289210/>

Bukhara, U. (2015, October 28). *40 Most Beautiful Po-i-Kalyan Mosque In Bukhara, Uzbekistan Pictures And Photos*. Retrieved from Uzbekistan Bukhara, Uzbekistan: <https://www.askideas.com/40-most-beautiful-po-i-kalyan-mosque-in-bukhara-uzbekistan-pictures-and-photos/>

Burckhardt, T. J. (1986). *Sacred art in East and West: its principles and methods*. Bedfont, Middlesex: Perennial Books.

Burckhardt, T. N.-L. (2009). *Art of Islam: language and meaning*. Bloomington, IN: World Wisdom.

- Byrne, A. H. (2003). Color realism redux. *Behavioral and Brain Sciences*, 26(1), 64-71.
- Byrne, A. R. (2006). Color Vision, Philosophical Issues about. *Encyclopedia of Cognitive Science*, 26(1), 50-80.
- Canby, S. (2000). *The Golden Age of Persian Art 1501-1722*. New York: Harry N. Abrams Publishers.
- Canby, S. R. (2002). *Safavid art and architecture*. London: British Museum Press.
- Carey, J. W. (1989). *Communication as culture: essays on media and society*. Boston: Unwin Hyman.
- Caygill, H. (2005). *Walter Benjamin: the colour of experience*. London and New York: Taylor & Francis e-Library.
- Chamberlain, S. (2008). Semantics or Semiotics as the Foundation for Thomist Realism? *Semiotics*, 617-626. doi:10.5840/cpsem200878
- Chandler, D. (2007). *Semiotics: the basics*. London and new york: Routledge.
- Ching, F. D. (1987). *Interior design illustrated*. New York: Van Nostrand Reinhold.
- Clarke, M. ., (2009). René Descartes: Principles of Philosophy. *Philosophical Books*, 25(1), 17-19. doi:10.1111/j.1468-0149.1984.tb00582.x

- Coffin, D. (2016, Agust 20). *Understanding Color Theory*. Retrieved from Practical Ecommerce: <http://www.practicalecommerce.com/articles/3247-Understanding-Color-Theory>
- Conroy, E. (2013). *The Symbolism of Colour*. L.A USA: Corner stone book publisher.
- Cousins, C. (2016, October 28). *Color and cultural design considerations*. Retrieved 2014, from Webdesigner Depot: <http://www.webdesignerdepot.com/2012/06/color-and-cultural-design-considerations/>
- Creswell, K. A. (1978). *A bibliography of the architecture, art, and crafts of Islam: to 1st Jan. 1960*. Vaduz: American University in Cairo.
- Curatola, G. (2009). *Visual encyclopedia of art: Islam*. Florence, ITA: Scala.
- D. Culler, J. (1981). *The pursuit of signs--semiotics, literature, deconstruction*. Ithaca, NY: Cornell University Press.
- Dastjerdi, M. S. (2015). Linking the past and present through symbolic housing features: North Cyprus. *Social Semiotics*, 25(5), 578-596.
- drewmaul. (2016, October 28). *Legend of the Bibi-Khanym Mosque*. Retrieved from PashbyMaul Adventures: <https://pashbymaul.wordpress.com/2015/11/06/the-legend-of-the-bibi-khanym-mosque/>

- Driessen, T. (2016, December 2). *Iran*. Retrieved from Flickr:
<https://www.flickr.com/photos/morelcreamsauce/albums>
- Eagleton, T. (1983). *Literary theory: an introduction*. Minneapolis: University of Minnesota Press.
- Ebad, S. (2013). Iranian mosques, the milestone of Islamic architecture: a case study of ShaikhLotfollah mosque. *International Research Journal of Applied and Basic Sciences*, 7(13), 940-951.
- Eco, U. (1976). *A theory of semiotics*. Bloomington: Indiana University Press.
- Eco, U. (1976). Theory of Sign production. *A Theory of Semiotics*, 151-313.
- Eco, U. (1976). Theory of Sign production. *A Theory of Semiotics*, 151-313.
doi:10.1007/978-1-349-15849-2_4
- Edgar, K. (2001). *Monuments of Central Asia: a guide to the archaeology, art and architecture of Turkestan*. London: I.B. Tauris.
- Elegant, T. (2016, September 29). *Benim Blog*. Retrieved from Organise Your Visit:
<http://www.demositeniz.com/stn/>
- Eliade, M. (1991). *Images and symbols: studies in religious symbolism*. Princeton, NJ: Princeton University Press.

- Elliot, A. J. (2015). *Handbook of color psychology*. Cambridge: Cambridge University Press.
- Esmi, A. S. (2014). Mysticism and Its Impact on Safavid Dynasty Architecture (Mosque of Sheikh Lotfollah in Isfahan). *Journal of Environmental and Earth Sciences*, 6(2041-0484), 233-239.
- Esposito, J. L. (1995). *The Oxford Encyclopedia of the Modern Islamic World*. New York: Oxford University Press.
- Esposito, J. L. (1999). *The Oxford history of Islam*. New York, NY: Oxford University Press.
- F. Pile, J. (2002). *Color in interior design*. South Korea: McGraw-Hill Korea.
- Feinser, A. (2009). *Choose a color pallate with meaning*. London: Laurence king .
- Ferdinand de Saussure, C. B. (1986). *Course in general linguistics*. LaSalle, IL: Open Court.
- Fergusson, J. (2012). *Historical inquiry into the true principles of beauty in art*. Place of publication not identified: Rarebooksclub Com.
- Finlay, V. (2014). *The brilliant history of color in art*. Los Angeles: The J. Paul Getty Museum.
- Freely, J. B. (2010). *A history of Ottoman architecture*. Southampton: WIT Press.

Frishman, M. K.-U. (1994). *The mosque: history, architectural development and regional diversity*. London: Thames and Hudson.

Frishman, M. K.-U.-A. (2002). *The mosque: history, architectural development & regional diversity*. London: Thames & Hudson.

Frye, R. N. (1996). *The heritage of Central Asia from antiquity to the Turkish expansion*. Princeton: Markus Wiener Publishers.

Gage, J. (1995). *Color and culture: practice and meaning from antiquity to abstraction*. London: Thames and Hudson.

Gage, J. (1999). *Color and meaning: art, science, and symbolism*. Berkeley: University of California Press.

gallery, B. m. (2016, December 3). *Poi Kalyan Mosque in Bukhara - Uzbekistan*.

Retrieved from Beautiful mosque gallery:

<https://www.beautifulmosque.com/poi-kalyan-mosque-in-bukhara-uzbekistan>

Gawlikowska, a. P. (2013). From SemanticS to SemioticS. communication ofF architecture. *ARCHITECTURAE et ARTIBUS* , 50-61.

Gay, P. (1964). *The party of humanity; essays in the French enlightenment*. New York: Knopf.

- Geertz, C. (1968). *Islam observed; religious development in Morocco and Indonesia*. New Haven: Yale University Press.
- Geertz, C. (1973). *The interpretation of cultures: selected essays*. New York: Basic Books.
- George, M. (1978). *Architecture of the Islamic World*. London: Thames and Hudson.
- Gibson, J. (1950). *The perception of the visual world*. Boston: Houghton Mifflin.
- Gillespie, R. W. (1954). *Lighting for color and form: principles, equipment, and applications*. London: Pitman.
- Gilliot, C. N. (1988). Islamic Spirituality Foundations. *Studia Islamica*, 68, 192.
- Glazebrook, P. (1994). *Journey to Khiva: a writer's search for Central Asia*. New York: Kodansha International.
- Godfrey, G. (1987). *A history of Ottoman architecture*. London: Thames and Hudson.
- Goethe, J. W. (1840). Paroptical Colours (Light spectrum, from Theory of Colours). *Goethe's Theory of Colours*, 163-177. doi:0-262-57021-1
- Goethe, J. W. (1971). *Goethe's color theory*. New York: Van Nostrand Reinhold.

Golombek, L. W. (1988). *The Timurid architecture of Iran and Turan*. Princeton, NJ: Princeton Univ. Pr.

Grabar, O. (1979). *Form: A Vocabulary and Grammar of Symbols, Symbols and Signs in Islamic Architecture*. Retrieved October 25, 2016, from archnet.org: http://www.bing.com/cr?IG=64F998DBE47B46C9BD0B25F7E58C823A&CID=23D05C48BC0C60A5063A5590BD3D6122&rd=1&h=9oRXECKLI_wArg5EULzm8whFA96V_xJxJoCNxjCJy1Q&v=1&r=http%3a%2f%2farchnet.org%2fsystem%2fpublications%2fcontents%2f3548%2foriginal%2fDPC0096.pdf%3f13847755

Grabar, O. (1979). *Form; a vocabulary and grammar of symbols: symbols and signs in Islamic architectur*. Retrieved October 20, 2016, from The Aga Khan award for architecture, proceedings of seminar four in the series: <http://www.archnet.org/library>

Grimley, C. L. (2007). *Color, space, and style: all the details interior designers need to know but can never find*. Beverly, MA: Rockport Publishers.

Grube, E. J. (1978). *Architecture of the Islamic world: its history and social meaning*. New York: Morrow.

Grube, E. J. (1978). *Architecture of the Islamic world: its history and social meaning*. New York: Morrow.

- H. G. Townsend, C. S. (1932). Collected Papers of Charles Sanders Peirce. Vol. I, Principles of Philosophy. *The Philosophical Review*, 41(6), 621.
- Hajnal. (2001). *Collection of materials: UNESCO International Forum "Culture and Religion in Central Asia" (Kyrgyzstan, September, 1999)*. Bishkek: National Commission of the Kyrgyz Republic for UNESCO.
- Hakim, B. S. (1988). *Arabic-Islamic cities: building and planning principles*. London: Kegan Paul International.
- Harries, K. (2000). *The ethical function of architecture*. Cambridge, Mass. <etc.>: MIT Press.
- Harris, M. B. (1963). *The natural system of colours*. New York: Privately printed; distributed by the Whitney Library of Design.
- Hartshorne, C. W. (1934). Collected Papers of Charles Sanders Peirce: Vol. II, Elements of Logic. *The Philosophical Review*, 43(2), 209.
- Hattstein, M. D. (2000). *Islam: art and architecture*. Cologne: Könemann.
- Hattstein, M. D. (2004). *Islam: art and architecture*. Köln: Könemann.
- Heilbrunn. (2016, October 26). *The Nature of Islamic Art on the Metropolitan Museum of Art's Heilbrunn Timeline of Art History*. Retrieved from

khanacademy: <https://www.khanacademy.org/humanities/art-islam/beginners-guide-islamic/a/arts-of-the-islamic-world>

Herman, D. T. (2008). *Art and spirituality: the visual culture of Christian faith*. Provo, UT: BYU Studies, Brigham Young University.

Hershberger, R. G. (1970). Architecture and Meaning. *Journal of Aesthetic Education*, 4(The Environment and the Aesthetic Quality of Life), 37-55.

Hikmatullah Mullah, S. (2005). The Reflect on some of the characteristics of the category of aesthetic elegance and some forms of it in the Safavid era. *Golestan Art*, 3, 15.

Hillenbrand, R. (1994). *Islamic architecture: form, function, and meaning*. New York: Columbia University Press.

Hillenbrand, R. (2002). The Mosque in Medieval Islamic world an Essay by Robert Hillenbrand. *Medieval Mosque*, 33-53.

Hillenbrand, R. A. (2001). *Islamic architecture: form, function, and meaning* (معماری (، کارکرد، معنی شکل: اسلامی). Tehran: Rozane Publication.

Holtzschue, L. T. (2015). *Understanding Color: An Introduction for Designers* (مبانی (کامل شناخت رنگ برای طراحان). Mashhad: Kasra Publication Press.

- Hume, D. (1911). *A treatise of human nature* (Vol. 22). London: J.M. Dent & Sons Ltd.
- Hyman, J. (2000). Pictorial art and visual experience. *The British Journal of Aesthetics*, 40(1), 21-45.
- Ibn Batuta, H. R. (1958). *Travels, A.D. 1325-1354*. Cambridge: Hakluyt Society at the University Press.
- Islam. (2016, October 25). *Islam*. Retrieved from Islam and Art : http://www.kenney-mencher.com/pic_old/islam/islam.htm
- J. A. Simpson, E. ., (1993). *Oxford English dictionary*. Oxford: Clarendon Press.
- Johansen, J. D. (2002). *Signs in use: an introduction to semiotics*. London: Routledge.
- Jung, C. G.-L. (1964). *Man and his symbols*. Garden City, NY: Anchor Press Doubleday.
- Kantar, B. M. (2014). The Blue Interpretation of Art: The Blue Mosque Sanatın Mavi Yorumu: Sultan Ahmet Camii. *Turk Neurosurg*, 24(4), 445-450.
- Kazimee, B. A. (2003). *Place, meaning, and form in the architecture and urban structure of eastern Islamic cities*. Lewiston, NY: Edwin Mellen Press.

- Kenney, K. (2005). *Representation Theory*. Smith, K. *Handbook of Visual Communications: Theory, Methods and Media*. New Jersey, London: L.E. Associates.
- Knobloch, E. (2001). *Monuments of Central Asia: a guide to the archaeology, art and architecture of Turkestan*. London: I.B. Tauris.
- Kothari, C. R. (2004). *Research Methodology: Methods and Techniques*. Dehli, Daryaganj: New Age International Pvt. Ltd., Publishers.
- Krautheimer, R. C. (1986). *Early Christian and Byzantine architecture*. New Haven: Yale University Press.
- Kuban, D. M. (2010). *Ottoman architecture*. Woodbridge: Antique Collectors' Club.
- Kuehni, R. G. (2003). *Color space and its divisions: color order from antiquity to the present*. Hoboken, NJ: Wiley-Interscience.
- Ladau, R. F. (1989). *Color in interior design and architecture*. New York: Van Nostrand Reinhold.
- Ladau, R. F. (1989). *Color in interior design and architecture*. New York: Van Nostrand Reinhold.
- Lancaster, M. (1996). *Colourscape*. London: Academy Editions.

- Landa, E. R. (2004). Albert H. Munsell: A Sense Of Color At The Interface Of Art And Science. *Soil Science*, 169(2), 83-89.
- Lartey, E. Y. (2003). *In living color: an intercultural approach to pastoral care and counseling*. London: Jessica Kingsley Publishers.
- Laugu, N. (2007). The Roles of Mosque Libraries through History. *Al-Jami'ah: Journal of Islamic Studies*, 45(1), 91-118.
- Lawson, B. (2001). *The language of space*. Oxford: Architectural Press.
- Leonardo, J. N. (2002). *A treatise on painting*. Amherst, NY: Prometheus Books.
- Locke, J. (1970). *An essay concerning human understanding, 1690*. Menston: Scolar Press.
- Locke, J. M. (1963). A Letter Concerning Toleration. *A Letter Concerning Toleration*, 1-5.
- Locke, J. R. (1996). *Some thoughts concerning education ; and, Of the conduct of the understanding*. Indianapolis: Hackett Pub. Co.
- Luke, J. T. (1989). Color and Light in Man-Made Environments. *Leonardo*, 22(3-4), 450.
- LWYang. (2016, December 4). *Şehzade Mosque*. Retrieved from We love Istanbul: <http://www.weloveist.com/listing/sehzade-mosque>

- Macaulay-Lewis, b. D. (2016, October 25). *Essay by Dr. Elizabeth Macaulay-Lewis*. Retrieved from Archnet: <https://www.khanacademy.org/humanities/art-islam/beginners-guide-islamic/a/arts-of-the-islamic-world>).
- Maiwald, P. (2008). Retrieved October 25, 2016, from https://commons.wikimedia.org/wiki/File:Sheikh-Lotf-Allah_mosque_wall_and_ceiling_2.jpg
- Majidi, F. (2015). Observation of Image and Color of Isfahan Mosques in Perspective of Islamic Art's Indices. *Research Journal of Recent Sciences*, 10(4), 113-121.
- Markus, T. A. (2002). *The words between the spaces: buildings and language*. London: Routledge.
- Martin, B. . (2000). *Dictionary of semiotics*. London: Cassell.
- Matthews, H. (2010). *Mosques of Istanbul: including the mosques of Bursa and Edirne*. Istanbul: Scala.
- McCandless, D. (2014). *Knowledge is beautiful*. London: William Collins.
- Meri, J. W. (2006). *Medieval Islamic civilization: an encyclopedia*. New York: Routledge.

- Merleau-Ponty, M. (2004). *The world of perception*. London and New York: Routledge.
- Miller, M. C. (1997). *Color for interior architecture*. New York: Wiley.
- Mitchell, P. C. (2011). *New perspectives on Safavid Iran: empire and society*. Milton Park, Abingdon: Routledge.
- Mohd Taib, M. Z. (2012). Islamic Architecture Evolution: Perception and Behaviour. *Procedia - Social and Behavioral Sciences*, 49, 293-303.
- Nadin, M. (1988). Interface design: A semiotic paradigm. *Semiotica*, 69(3-4), 269-302.
- Najafi, M. (2009). *Postmodern Revolution and Islamic Civilization (fourth wave of Islamic awakening)*, (موج چهارم بیداری اسلامی) (نقلاب فرامدرن و تمدن اسلامی). Tehran: Institute for Iranian Contemporary Historical Studies.
- Nasr, S. H. (1987). *Islamic art and spirituality*. Albany: State University of New York Press.
- Necipoglu, G. (2005). *The age of Sinan: architectural culture in the Ottoman Empire*. London: Reaktion books.
- Newman, A. (2006). Review: Safavid Art and Architecture. *Journal of Semiotic Studies*, 51(1), 224.

- Norberg-Schulz, C. (1988). *Architecture: meaning and place: selected essays*. New York, NY: Rizzoli International Publications.
- Nöth, W. (1990). *Handbook of semiotics*. Bloomington: Indiana University Press.
- Osman, T. E. (1993). *Qoran-e-madjid: ba tardjomeh-ye-Moezzi (Al-hojr Surah verse 87)*,. Qom: Osveh.
- Othman, R. Z.-A. (2011). The Importance of Islamic Art in Mosque Interior. *Procedia Engineering (The 2nd International Building Control Conference)*, 20, 105-109.
- Othman, R. Z.-A. (2011). The Importance of Islamic Art in Mosque Interior. *Procedia Engineering*, 20, 105-109.
- Özer, F. (1987). The Complexes built by Sinan. *Environmental Design: Journal Of The Islamic Environmental Design Research Centre* 5, 5-6, 198-205.
- Pablo. Bonta, J. (1979). *Architecture and its interpretation: a study of expressive systems in architecture*. New York: Rizzoli.
- Palmer, S. E. (1999). *Vision science: photons to phenomenology*. Cambridge, MA: MIT Press.
- Paskaleva, E. (2012). The BiBi Khanum mosque in samarqand: iTs mongol and Timurid archiTecTure . *The Silk Road*, 81–98.

Patricia Valdez, A. M. (1994). Effects of color on emotions. *Journal of Experimental Psychology: General*, 123(4), 394-409. doi:0096-3445/94/S3.00

Perconte, J. (2016, October 25). *Explore Colour Facts, Color Systematics, and more*. Retrieved 2012, from Pinterest: <https://www.pinterest.com/pin/56435801551155737/>

Petersen, A. (2002). *Dictionary of Islamic architecture*. London and USA: Routledge and Taylor & Francis.

Pile, J. (2016, November 2). *Colour and its effects in interior environment: a review*. Retrieved from http://www.bing.com/cr?IG=2DA6D3FB6D674B92868EBAA4041DA8EE&CID=31EEA34DA4876E8C03B9AAACA5B66F56&rd=1&h=nNbjM0nud2ejvb8WumflWOrafd0kdCzS_v3QQdUmP6A&v=1&r=http%3a%2f%2fwww.ijarst.com%2fjournals%2fVolume%25202_Issue2%2fIJARST-02-02-10.pdf&p=DevEx,5087.1

Pile, J. F. (1997). *Color in interior design*. New York: McGraw-Hill.

Pinterest. (2016, December 27). *Islamic Architecture II*. Retrieved from Pinterest The world's catalog of ideas: <https://www.pinterest.com/nikvai/islamic-architecture-ii/>

Pope, A. U. (1965). *Persian Architecture: The Triumph of Form and Color*. George Braziller.

- Popple, A. (1999). Reviews: Visual Space Perception: A Primer. *Perception*, 28(6), 797-798. doi:10.1002/9780470753477.ch5
- Qahi, H. B. (2009). *History of art in Islamic culture (music and architecture)* (موسیقی و معماری) (سرگذشت هنر در تمدن اسلامی). Tehran: Mehr Press.
- Qahy, B. H. (2008). *History of art in Islamic culture (music and architecture)*. Tehran: Sureh Mehr.
- Quine, W. V. (1933). Collected Papers of Charles Sanders Peirce. -- Volume II: Elements of Logic . Charles Hartshorne , Paul Weiss. *Isis*, 19(1), 220-229.
- Rahmati, E. (2000). *Art and Spirituality (articles on the Philosophy of Art) Schuon, Guenon, Coomaraswamy, Nasr*. Tehran: Matn Works of Art, Academy of Arts.
- Rahmati, E. N. (2015). *Art and Spirituality (articles on the Philosophy of Art) Schuon, Guenon, Coomaraswamy, Nasr and ...* (مجموعه مقالاتی در هنر و معنویت) (ای حکمت هنرزمینه ...شوان، گنون، کوماراسوامی، نصر و). Tehran: Compilation of Translation and Publication of tart Works, the Academy of Arts.
- Rajeh, A. (1968). *Psychology Origins*. Beirut, Lebanon: House science.
- Ratiia, S. E. (1950). *Mechet' Bibi-khanyam v Samarkande: issledovanie i opyt restavratsii*. Moskva: Gos. izd-vo arkhitektury i gradostroitel'stva.

- Rexford, O. (1925). *The psychology of color: its effect upon health, happiness and finances*. San Francisco: O. Rexford.
- Rezai, A. (2003). *Role of Mosques in Islamic culture* (جایگاه مساجد در فرهنگ اسلامی). Tehran: Saghalein Publication.
- Ribe, N. S. (2002). *Exploratory experimentation: Goethe, Land, and color theory: the style of investigation exemplified by Goethe's experiments with color is often undervalued, but has repeatedly proved its worth*. New York: WorldCat.
- Riley, C. A. (1995). *Color codes: modern theories of color in philosophy, painting and architecture, literature, music, and psychology*. Hanover: University Press of New England.
- Ross, L. (2009). *Art and architecture of the world's religions*. Santa Barbara, CA: Greenwood Press/ABC-CLIO.
- Rowland, B. (1974). *The art of Central Asia*. New York: Crown.
- Ruthven, M. M. (2004). *Historical atlas of Islam*. Cambridge, MA: Harvard University Press.
- Saoud, R. (2004). Muslim architecture under the ottoman patronage (1326-1924). *Foundation For Science, Thechnology and Civilisation*, 4064, 26.

- Saussure, F. d. (1959). *Course in general linguistics*. New York: Philosophical Library.
- Schmid, F. (1948). The Color Circles by Moses Harris. *The Art Bulletin*, 30(3), 227.
doi:10.2307/3047186
- Scruton, R. (1979). *The aesthetics of architecture*. Princeton, NJ: Princeton University Press.
- Sele, p. (2016, October 28). *Uzbekistán 2011 Archives - El rincón de Sele*. Retrieved from El rincón de Sele:
<http://www.elrincondesele.com/category/relatosdeviajes/asia/uzbekistan-2011/>
- Serageldin, I. S. (1996). *Architecture of the contemporary mosque*. London: Academy Editions.
- Shevell, S. K. (2003). *The Science of color*. Amsterdam: Optical Society of America.
- Sibai, M. M. (1984). *An historical investigation of mosque libraries in Islamic life and culture*. New York: Indiana University.
- Smardon, R. C. (1986). *Foundations for visual project analysis*. New York: J. Wiley & Sons.

- Solli, M. R. (2008). Color emotions for image classification and retrieval. *4th European Conference. CGIV: Colour in Graphics, Imaging, and Vision*.
- Stierlin, H. . (2002). *Islamic art and architecture*. London: Thames & Hudson.
- Tabibian, S. (2012). Samarkand Jame' Mosque (BibiKhanym Mosque). *Life Science*, 9(4), 4115-4119.
- Takeo, K. (2006). *CLASSIFICATION and TYPES of MOSQUES*. Retrieved October 21, 2016, from Architecture of Islam: http://www.ne.jp/asahi/arc/ind/1_primer/types/typ_eng.htm
- Taylor, G. H. (1924). Color Testing and the Psychology of Color. *The American Journal of Psychology*, 35(2), 185.
- Tymoczko, T. (1979). The Four-Color Problem and Its Philosophical Significance. *The Journal of Philosophy*, 76(2), 57.
- UNESCO. (2016, December 2). *UNESCO World Heritage Centre*. Retrieved from Masjed-e Jāmé of Isfahan: <http://whc.unesco.org/en/list/1397>
- Walbridge, J. (2005). Suhrawardī and Illuminationism. *The Cambridge Companion to Arabic Philosophy*, 201-223.
- Wegner, D. L. (2009). *Psychology*. New york: Worth Publishers.

Weisbin, K. (2016, December 26). *Common types of mosque architecture*. Retrieved from archnet.org: <https://www.khanacademy.org/humanities/art-islam/beginners-guide-islamic/a/common-types-of-mosque-architecture>

Weisbin, K. (2016, October 28). *Introduction to mosque architecture*. Retrieved from Khan Academy: <https://www.khanacademy.org/humanities/art-islam/beginners-guide-islamic/a/introduction-to-mosque-architecture>

Wikimedia. (2016, December 3). *Şehzade Mosque Neurological disease of Şehzade Cihangir in the Ottoman ...* Retrieved from https://commons.wikimedia.org/wiki/File:Courtyard_of_the_%C5%9Eehzade_Mosque_1.jpg

Willard, C. (2000). Color and meaning: Art, science, and symbolism. *Color Research & Application*, 25(5), 382-384.

Wittgenstein, L. (1963). *Philosophical investigations*. Oxford: Blackwell.

Zia, P. k. (2004). *Art and Architecture of Mosque*. Tehran: Resanesh.