

2017

The modernization of Islamic art in the realm of architecture

Rinad Al-Shboul

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The Modernization of Islamic Art in the Realm of Architecture

By

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Thesis

Submitted by the Department of Interior Design

Eastern Michigan University

In partial fulfillment of the requirements

for the degree, of

MASTER OF SCIENCE

in

Interior Design

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November 15, 2017

Ypsilanti, Michigan

Dedication

I dedicate this Thesis to my family. A special thanks to my loving and supportive parents, Dr. Qasim and Anam Al-Shboul, for always giving me words of encouragement, love and support, and whose good examples and actions have taught me to work hard for the things I want and aspire to achieve. My twin sister, Cindy, who has been a constant and a rock in my life, and my two older brothers, Odai and Mohamed, for their unwavering confidence in my abilities.

Acknowledgments

I am fortunate and honored to have had the opportunity to perform my graduate work at Eastern Michigan University. I would first like to thank my advising professor and chair of my thesis committee, Dr. Shinming Shyu, for being supportive of me and my work throughout this process and giving me as much of his time as I needed. I am very grateful for his guidance, expertise, and the opportunities he has provided me. He is incredibly insightful and a great problem solver and above all a great person and I am very happy I had the opportunity to work with him.

I would also like thank my committee members, Dr. Jiang Lu and Sara Smereka for their very helpful comments and suggestions regarding this thesis and my academic career in general. They both have demonstrated a sincere interest in my work and were ready to help at any time I needed some guidance.

I would like to acknowledge and thank the director of the school of visual arts and built environments, Dr. Suleiman Ashur, who has been very supportive and very helpful during the development of my thesis and throughout my educational journey at EMU.

Abstract

The aim of this qualitative study is to explore the modernization of Islamic art in the realm of architecture through six case studies representing traditional and modern mosques from an architectural and decorative perspective. By examining published materials and research papers pertaining to the artifacts and analyzing their features, this study attempts to answer the following questions: how has Islamic art and architecture evolved with modern times and technologies? What new trends have aided in the evolution of this art? and have culture and religion influenced the evolution of Islamic art and continue to play a major role in its modernization?. This paper conducted comparative studies between artifacts according to their chronological timelines and geographical locations. The findings showed that social media and technologies aided in this evolution. In addition, trends of minimalism, symbolism, and the notion of isolation became apparent. Multi-cultural influences and religion continue to empower the evolution.

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Definitions of Terms

Allah: Used in Islam, Arabic for God. (*Merriam-Webster*, 2016).

Bismillah: “In the name of Allah, the Merciful, the Compassionate”, formula used especially at the head of each chapter of the Quran and usually in religious calligraphy (Frishman and Khan, 1994).

Caliph: A successor of the Prophet Muhammad as a spiritual head of Islam, used as a title. (*Merriam-Webster*, 2016).

Calligraphy: The artistic, stylized, or elegant handwriting or lettering (*Merriam-Webster*, 2016).

Camii: Turkish for mosque. (Stierlin, 1998).

Culture: the customs, arts, social institutions, and achievements of a particular nation, people, or other social group. (*Merriam-Webster*, 2016).

Hadith: Next in importance to the Quran as a source of guidance, hadith are the traditions or sayings relating to the life of the Prophet Muhammed (Frishman and Khan, 1994).

Imam: Any adult male who leads prayers during congregational worship in a mosque (Frishman and Khan, 1994).

Islamic art: Any visual art produced by a culture or civilization in which most the population, or at least the ruling element, profess to the faith of Islam (Abas and Salman, 1995).

Kufic: An early angular form of the Arabic alphabet found mainly in decorative and religious inscriptions. (Frasier and Kwiatkowski, 2006).

Mihrab: A niche or chamber in a mosque indicating the direction of the Kaaba in Mecca and where people face to pray (*Merriam-Webster*, 2016).

Minaret: Tower from which the call to prayer (adhan) is delivered by the official who delivers the call to prayer (Muezzin). (Frishman and Khan, 1994).

Minbar: Pulpit in a mosque used for the delivery of the Friday speech (Khutba) (Frishman and Khan, 1994).

Mocarabe: Honeycomb work or stalactite work as an ornamental design found in some Islamic architecture. (Frishman and Khan, 1994).

Modern: Relating to, or characterized of the present or immediate past (*Merriam-Webster*, 2016).

Mosque: A religious building used for public worship by Muslims (*Merriam-Webster*, 2016).

Muqarnas: A form of architectural ornamented vaulting producing a sort of cellular structure. (Frishman and Khan, 1994).

Qibla: The direction the direction Muslims face when they pray, Arabic for direction. (Frishman and Khan, 1994).

Religion: An organized system of beliefs, ceremonies, and rules used to worship a god or a group of gods (*Merriam-Webster*, 2016).

Sura: A chapter in the Quran (*Merriam-Webster*, 2016).

Ta'liq: Cursive style of lettering developed in Iran in the 10th century. (*Britannica*, 2017)

Thuluth: One of the chief forms of Arabic and Persian script. (*Merriam-Webster*, 2016).

Traditional: An inherited, established, or customary pattern. (*Merriam-Webster*, 2016).

Chapter 1: Introduction

What is Islamic art? In a nut shell, the term “Islamic art” refers to any visual art produced by a culture or civilization in which the ruling population or the majority of the population, are Muslims. This artistic expression has been around for approximately 1500 years, it began in the 7th century and continues into the 21st century. Islamic art differs from other historic types, such as Christian or Buddhist, because it refers to the arts produced by all Islamic cultures and not only the art produced by or for the religion itself (Blair, 2006). Islamic art reflects the history and the teachings of the faith through its elements: religious calligraphy, intricate or complex designs and shapes, and color.

Islamic architecture is comprised of both religious and secular buildings. This research will focus on the former type of building, specifically mosques. The architectural style of the mosque varies by geographical regions, yet three architectural elements stay consistent throughout – the mihrab, the courtyard, and the minaret, though expressed differently from region to region depending on their architectural language. Islamic architecture borrowed features from buildings related to other local religions which aided in its evolution and was able to find its own unique identity. The styles borrowed were easily distinguishable but with time and the evolution of the style that recognition slowly began to fade and eventually disappeared (Frishman and Khan, 1994).

Islam isn't only a religion, but it is a whole civilization and a movement that continues to evolve every day, adapting and changing to accommodate the world we live in today. Due to geographical spread and the history, Islamic art was influenced by many other cultures, religions and traditions including, Persian, Greek, Byzantine, African and Christianity itself which

indirectly correlates with Roman. It built on the knowledge it acquired from others and developed its own unique style (Frishman and Khan, 1994).

Islamic religion played a huge role in the shaping of this artistic expression because of predetermined limitations within expression and representation of living entities. The name for this prohibition is “Aniconism” defined as the practice of or belief in the avoiding or shunning of images of divine beings, prophets or other respected religious figures, or in different manifestations, any human beings, or living creatures (*Merriam-Webster*, 2016). There is no chapter in the Quran (Surah) stating clearly the prohibition of depicting human figures but there are hadiths (sayings of the Prophet) that condemns idolatry, which is the worship of an idol or physical entity as a representation of God (Garbar, 1973). This was more than enough to make artists shy away from using any human figures in their arts and motivated them to turn to other mediums for their inspiration. Lines, shapes, forms, and proportions all existed in the world and artists would imitate these elements and add some of their own creativity to make beautiful and unique designs, which lead to geometric patterns being used heavily in their designs. Geometry is the bedrock of Islamic art as a visual homage to Allah and His unchangeable discipline, unchangeable discipline meaning His permanent word and guidelines that one must listen to, follow, and obey which is detected and seen in geometric patterns and its many elements (unity, fluidity, symmetry, and elaborately intricate patterns). Geometric patterns are created with an array of different materials – brick, wood, glass, tile, paper, etc. and they are also found on many objects such as doors, manuscripts, carpets, pulpits, wooden carvings and architectural surfaces (Abas and Salman, 1995)

Islamic calligraphy which is the most authentic form of the Islamic arts is verses taken from the Quran, which is God’s eternal words and gave Arabic a special status by reflecting the

idea that God communicated with us through language. The beauty of calligraphy was not attached to the fact whether it was readable or not but how the beautiful flow and connection of lines represented its message (Frasier and Kwiatkowski, 2006). Islamic calligraphy provided a deeper and more sacred layer to the work of art made, these words add deep meaning to the work to people that are literate in the language and add aesthetic importance to people that are illiterate in the language but either way the calligraphy adds a layer of deeper meaning to the already layered piece of work (Frasier and Kwiatkowski, 2006).

Color represented a cultural occurrence, where a variety of different cultures identified color according to their own culture and language. Color was influenced by the location and historical period it was in and it used as a mean of expression. Color aided in highlighting and contrasting design elements, which in turn added another layer of meaning and attractiveness to the work of art that has been produced. Some colors used in Islamic art represented something greater and deeper than what the naked eye could see, for example, green represented growth, fertility, and nature and even given a special status in Quran in Surah Al-Kahf and mentioned in a hadith. While the color blue represented life and water (Abu Bakar, 2013).

The whole point of artistic creativity was to make the viewer or participant to search within himself and think so he can come to his own conclusions about a work of art or even pull some inspiration into his own life, in essence making Islamic art a private appreciated experience. Some would fashion it as a possible relation to the Islamic faith itself, the connection of putting man in front of God. This paper will discuss the modernization of Islamic Art using architectural spaces, such as mosques for the sake of using a consistent structure to show the evolution clearly. Spatial planning, light filtering, and the arts' elements (calligraphy, geometric patterns, and color) will be discussed and examined.

Statement of the Problem

There is a lack of information regarding Islamic art and architecture and its modernization up to and during the 21st century. There are great examples of Islamic buildings and art created after the year 2000, but few have researched or published their academic work pertaining them. Most research stops at the 20th century mark and fails to address the recent past.

Purpose of the Study

The purpose of this study is to explore Islamic art and architecture's past, present and future in depth, and to shed a light on the newest trends forming as well as to point out the visible and hidden differences. The role of technology in the modernization will be brought to the forefront and discussed as well.

Significance of the Study

This research will contribute to the knowledge of the status of Islamic art in the 21st century and will demonstrate the relationship of technology and Islamic art. This research will contribute information regarding this subject from the beginning of its emergence up to the present day thus, bridging the gap between Islamic art from the 5th century to Islamic art in our modern day.

Delimitations of the Study

The lack of constructed modern mosques in the Middle East makes the selection of case studies restricted and the information surrounding those mosques is scarce compared to information and resources related to traditional and historic mosques. Articles and information about conceptual designs in the realm of mosques are plentiful, however, the documentation of actual constructed mosques is minimal and almost nonexistent in some modern mosques located in countries inside the Middle East.

Theoretical Framework

Art during Islamic civilization was symbolic and had a meaning behind it. Islamic art defied and still defies the false views and perceptions on Islam being bland, harsh, and rejecting sophistication. These claims are rejected by the Quran and the Prophet: "Say, who is there to forbid the beauty which God has brought forth for his servants, and the good things from among the means of sustenance" (*Quran 7:32*), "O you who believe! Do not deprive yourselves of the good things of life which Allah has permitted you, but do not transgress, for Allah does not love those who transgress." (*Quran 5:87*) and "Allah is beautiful and loves beauty" (*Sahih al-Bukhari*). These examples show how the Quran permits comfortable living as long as one does not stray from God and saying by the Prophet Muhammad narrated by Sahih Al-Bukhari stating that God loves beautiful things.

Two Hadiths (reports of the teachings, deeds and sayings of the Islamic prophet Muhammad) state the following: "Ibn Abbas relates that the Prophet (peace be upon him) said: "Every image maker is in the Fire. For each image he made, a being will be fashioned to torment him in Hell." (*Sahih al-Bukhari* (2225) and *Sahih Muslim* (2110) – The wording accords with al-Bukhari) and "Abu Talhah relates that the Prophet (peace be upon him) said: "The angels do not enter a house wherein there is a dog or images representing (people or animals)." [*Sahih al-Bukhari* (3225) and *Sahih Muslim* (2106)]. I came across a text from the book "*The Formation of Islamic Art*, pg. 86" a typical and thorough text consisting of the following sayings attributed to the Prophet:

"The angels will not enter a house in which there is a picture or a dog." "Those who will be most severely punished on the Day of Judgement are the murder of a Prophet, one who has been put to death by a Prophet, one who leads men astray without knowledge, and a maker of images or pictures." "A head will thrust itself

out of the fire and will ask, where are those who invented lies against God, or have been the enemies of God, or have made light of God? Then men will ask, who are these three classes of persons? It will answer, The Sorcerer is he who invented lies against God; the maker of images or pictures is the enemy of God; and he who acts in order to be seen of men, is he who has made light of God.”

Islamic artists eliminated some things Islam frowned upon such as human representation and images and built upon three elements: - The Quran, artists used the lessons and methods experienced through the Quran. – The artist’s remembrance of God in any medium used. – The discouragement of depicting living entities. Islamic art was intellectual even in its simplest form, it concentrated on patterns and pure abstract forms. Islam was the only religion that did not need figurative art and imagery to establish its concepts (Saoud, 2014).

Islamic art focuses on geometry, pattern, symmetry, and calligraphy, celebrating the inspiring and sacred words of God. Geometric forms represent beauty, harmony, and order through their repeating and intricate forms. The use of geometric patterns extends all the way back to the beginning of Islamic civilization. Muslim scholars followed what Bronowski describes as “kleptomaniac zest,” or geometry as a reflection of Divine creation. Verse 49, Surah 54 of the Quran states “: Behold, everything have We created in due measure and proportion.”” “Measure and proportion” refers to things being precise and measured, things being able to stand the test of time. In this way, Islamic civilization found in geometry a way to maintain their beliefs and at the same time gives the artist room for creativity and further exploration in this field. (Abas and Salman, 1995)

The geometrical unity according to Muslim intellects is recognized as a link between the material and the spiritual world, in the sense that all the patterns are continuous and connected showing the cycle of life and death (Abas and Salman, 1995).

Chapter 2: Literature review

Historical & Religious background-

Karash (2006) gives a background about Islam and Islamic civilization. The rise and fall of Islamic empires during the spread of Islam is discussed and explored, giving the reader a more in-depth look at the causes that lead to their rise and fall. The article title “Islamic Civilization” by Bassiouni (2012) goes in depth about the Islamic civilization and the various elements that helped this civilization grow and evolve.

Architecture-

A collection of previously published articles about Islamic art and architecture by Grabar (2006) explores art and architecture in Islam and relating to Islam in areas beyond historical documentation. Hypotheses, questions and conclusions are risen, explored, and discussed throughout. Jones (2007) offers a collection of observations and analysis of decorative ornamentations and designs belonging to various countries from multiple continents in his book. It gives a detailed view of many cultures and their corresponding design principles along with beautiful illustrations of said designs, Islamic design being one of them. Ettinghausen, Garbar, and Madina (2001) examine Islamic art and architecture beginning from the seventh century up to the thirteenth century analyzing, discussing, and examining everything from historical background to design. Leaman (2004), takes a more aesthetic approach regarding Islamic art and architecture. The author tries to stray away from any religious and cultural ties and focuses more on the aesthetic side of things, according to the author many authors disregard Islamic art as an actual art and this is his way of showing that Islamic art should stop being viewed that way and giving it the credit it deserves. Frishman and Khan (1994), is a book dedicated to the architecture of mosques. It goes in to detail about the past, present and future of the mosque evolution and its

architectural elements both decorative and structural. It explores the religious and cultural significance of mosques around the world. Technology and architecture have become one in our modern times, Toorabally, Sieng, Norman, and Razalli (2016) explore and talk about the impact of these modern technologies on Islamic architecture explicitly. The study investigates the negative and positive effects and impacts technology has had on Islamic architecture specifically in Malaysia and the Middle East. Fitzo and Berkin (2007) explore the use of light in mosques and churches, the article addresses the importance of light in relation to each religious structure and in the way it was utilized.

Calligraphy–

Fraser and Kwiatkowski (2006) explore the most important element in Islamic art, calligraphy. This book talks about the first emergence of calligraphy and the significance of this art to the religion of Islam, they explore the history of calligraphy and its development through the centuries under different rulers and in different countries. A lecture by Michon (1982) was given at the Islamic Institute of Geneva. This lecture takes a more religious approach when talking about Islamic art, specifically when addressing calligraphy. It discusses the significance of the written word to Islam and the relationship of Islamic calligraphy and the artist developing the sacred works of art. Where Fraser and Kwiatkowski (2006) focused more on the geographical aspects of calligraphy, this lecture focuses more on the spiritual and holiness of the written word and language calligraphy portrays. Weitzal (2005) discusses the significance of calligraphy in the Islamic world and Islamic art in her article title “The Written Word in Islamic Art”. It explores the importance of the written word before and after the emergence of Islam, and how it became an art form and how it is integrated in our modern world. This article approached the topic of calligraphy from both a religious and a cultural aspect. Broug (2013) Explains and

explores the compositions, placements, design process, and the creativity that goes into the creation of geometric patterns and designs. He looks at works of past craftsmen and the steps that helped them or led them to produce such elaborate and intricate geometric patterns in hopes to give us, the readers a better understanding of Islamic compositions and the work that went into them. The book titled “Symmetries of Islamic Geometrical Patterns” by Abas and Salman (1995) explains the roles of math and sciences in the creation of Islamic geometric designs and their significance. It discusses the importance of unity, symmetry, and pattern in Islamic art. Osweis (2002) addresses and utilizes Islamic Art as an educational tool. He used this article he wrote as a structure for a series of workshops at the Arab Cultural Center in San Francisco. He goes on to define Islamic art and the elements the makeup that art, and the historical events that led to the utilization of those elements.

Islamic art (General) –

In her book titled “Islamic Calligraphy” Blair (2006) talks about what makes Islamic art different from other religious arts. It addresses the various forms this art takes on while exploring the visual elements of this art from calligraphy to geometric patterns. Saoud (2014) wrote an article titled “Introduction to Islamic Art” that addresses the arts of the Islamic world and the Muslim civilization, while comparing it to other cultural arts. It explores the meaning and the characteristics of this art in relation to the Islamic culture. The article titled “The Status of Islamic Art in the Twentieth Century” by Ali (1992) discusses the events that Islamic art went through over the span of thirteen centuries, including the colonization and civilizations that Islamic art witnessed. According to the author Islamic art has lost its identity over the years, and if Islamic art doesn’t come up with new formulas and adjusted beliefs then modern Islamic art will never be. Garbar (1973) explores the history and the formation of Islamic art. This book

talks about the history, attitudes, issues, symbolism, and of course the art itself. Religious and secular monuments are described and discussed using illustrations along with the decorative elements found within. In the article titled “Colour in Islam” Abu Bakar (2013) goes in depth about the history of color and what it represents in Islam. It talks about what each prominent color usually found in anything relating to Islam means and how it became significant.

Case Studies –

The book titled “Turkey” by Stierlin (1998) goes in-depth and discusses the architecture of the Ottoman empire and the history surrounding each building and mosque. The mosque of Sultan Ahmet I and the Selimiye Mosque were in particularly important to this paper. McManus (2014) and the site Architizer.com give detail accounts on all aspects surrounding the Yeşil Vadi mosque. Images of the interior and exterior of the modern building are also present. Mairs (2015) Kiser (2015) address and describe the thought process and representation of Sancaklar mosque. Images and plan drawings are posted in both articles and described. Abu Dhabi e-government (2016) wrote an article exclusively regarding Sheikh Zayed Grand Mosque. It discussed the history and listed many facts relating to the mosque along with a variety of images showcasing the structure. An article by Mairs (2016) talks about Al-Warqa’a mosque and address the importance of materials selected and the approach taken in the design process and construction of the structure. Images and plans included in the article showcase the highlights of the mosque, inside and out.

Research Question(s)

1. Has Islamic art and architecture evolved with modern times and technologies?
2. What new trends have aided in the evolution of this art?
3. Have culture and religion influenced the evolution of Islamic art and continue to play a major role in its modernization?

Chapter 3: Methodology

A qualitative case study approach is adopted as the method for this paper, information collected and analyzed from books, peer-reviewed articles and journals related to Islamic art and architecture. The method was implemented to ensure specificity and emphasis on how Islamic art has adapted and transformed in modern times.

I turned my attention to one architectural artifacts that encompassed all the elements and represented the essential elements of Islamic art itself. This lead to selecting the mosque. By analyzing a consistent structure whose functions remain the same throughout history it will be possible to focus on the evolution of decorative arts, as well as the architectural envelope and elements.

Mosques located in the Middle East from the countries, Turkey and the United Arab of Emirates (UAE) were selected and six case studies in total were completed. Three built between the 16th and 20th century and three built in the 21st century. The region was selected to develop a focus on one area where Islam had a strong presence and history. The case studies are as follows:

1. Selimiye mosque. located in Edirne, Turkey and was built in 1574. (Traditional)
2. Sultan Ahmet mosque. Located in Istanbul, Turkey and was built in 1617.
(Traditional)
3. Sheikh Zayed Grand mosque. Located in Abu Dhabi, UAE and completed in 2007.
(Traditional)
4. Yeşil Vadi mosque. Located in Istanbul, Turkey and was built in 2010. (Modern)
5. Sancaklar Mosque. Located in Istanbul, Turkey and was built in 2014. (Modern)
6. Al-Warqa'a Mosque. Located in Dubai, UAE and was built in 2016. (Modern)

The first three case studies represent traditional Islamic art and architecture while the other three case studies later represent modern Islamic art and architecture. A comparison of traditional against modern that existed in the same country/region was completed to identify the differences and changes and discover whether the decorative elements within or the architectural envelope have in fact changed or remained the same throughout history.

Chronological and geographical elements determined the case studies that were compared against each other, the comparisons are as follows:

- Selimiye mosque (Case study #1) and Yeşil Vadi mosque (Case study #2)
- Sultan Ahmet mosque (Case study #3) and Sancaklar mosque (Case study #4)
- Sheikh Zayed Grand mosque (Case study #5) and Al-Warqa'a mosque (Case study #6)

Chapter 4: Results

Case Study #1: Selimiye Mosque:

Location and background. Located in Edirne, Turkey. The Selimiye Mosque was commissioned by Sultan Selim II, and built by the famous architect Mimar Sinan between the year 1567 and 1574. The mosque was located in Edirne instead of Istanbul because Edirne was Sultan Selim II's favorite city and held historical and geographical significance for the fact that it was the capital of the Ottoman Empire in the 15th century before Istanbul. The mosque stands in the center of a complex that houses a madrasah, library, hospital, baths, and a cemetery (Macaulay-Lewis, 2011). The mosque is 141 feet (43 m) high and 223 feet wide (68 m). Four minarets stand at 272 feet (83 m) high (Stierlin, 1998).

Significance to study:

The Selimiye Mosque meets the criteria set for my research, it was built in the 16th century which makes it traditional, it is in the Middle East and more specifically Turkey, which was one of my target countries. It is also a historic mosque with a traditional building structure and holds traditional architectural and decorative elements within.



Figure 1. Selimiye mosque. (Macaulay-Lewis, 2011). Mimar Sinan, Mosque of Selim II, Edirne. Photo by Grcnysll.

Case study #2: Yeşil Vadi Mosque, also known as the Green Valley Mosque:

Location and background. Located in Istanbul, Turkey. The Yeşil Vadi mosque was completed in 2010 by a Turkish architect, Adnan Kazmoglu. The mosque's main structure, the concrete shell, is made up of two different diameter hemisphere domes. The circle is used as the main form of the building. The mosque's space plan is divided into four areas, the 82-foot (25 m) diameter concrete shell is the prayer area, below the dome structure you find a meeting hall, library and social activity units (McManus, 2014).

Significance to study:

The Yeşil Vadi mosque meets the criteria set for my research, it was built in the 21st century which makes it modern, it is in the Middle East and more specifically Turkey, which was one of my target countries. This structure takes a modern approach to mosque architecture which is reflected both in the interior and exterior.



Figure 2. Yeşil Vadi mosque. (“Yesilvadi Mosque,” 2010).

Case #1 and Case #2 comparisons (refer to Appendix A for additional information):

Symbolism and Structure. The symbolization around and in modern Islamic structures have differed from those of the traditional. The concept to place the Yeşil Vadi mosque on half a site that is occupied by a shallow pool of water was to isolate the building from its surroundings, to emphasize the point of being alone with the creator. The circular forms used for the space both in two and three dimension symbolize infinity and unity and represent the universe. The bigger hemisphere of the two that makes up the main structure represents the Great Beyond while the smaller one represents the world, Allah, and the Prophet, “The Great beyond is being reached through earth’s doors.” The reflective pool that a section of the building is placed on also symbolizes the reflection of God and the Great Beyond, for when the hemisphere was reflected on the water it was transformed into a unified sphere (McManus, 2014). Every detail of this modern mosque represented and referred to religion, the placement, materials, and the structural form.

Selimiye mosque has some elements that carry religious symbolism. As mentioned in Frishman and Khan (1994), Sinan wrote in his autobiography that the dome and the four surrounding minarets represented the first four Caliphs and the Prophet, while the dome itself carried another symbolism which was the heaven hanging above with no support. Sinan also included tulip motifs painted on the Iznik tiles inside the mosque that represented “Allah.” However, these religious symbolisms were less in number in comparison to the Yeşil Vadi mosque but not any less meaningful. The traditional mosque had more representation of wealth and power starting from its location down to the materials used throughout, this mosque is a masterpiece of human creativity and dedication to the craft and a representation of prestige and a political message.

When a Sultan commissioned a mosque in the past centuries, they did it with an intention to boast about their status, wealth, and power, to leave a legacy of their ruling. Mosques in the past centuries served many purposes, first and most importantly it was a place for worship, secondly, it was a statement to show the status and importance of the Sultan who has commissioned it or built in honor for, and this mosque was no different. Selimiye mosque was to be a standard bearer of Islam and showed the status and wealth of Sultan Selim II who paid for it with spoils of war and tribute money (Stierlin, 1998).

Materials used in the construction of the Selimiye mosque symbolized status and wealth, lead-covered domes and ashlar masonry and marble were only used in sultan commissioned structures and less financially backed and of lesser status mosques had domes that were tile covered and featured alternating layers of cheaper material such as wood or brick and stone (Fishman and Khan, 1994).

Materials used in the construction of the modern building also held some symbolism. Glass was the approach to the interaction of existence and non-existence, while stainless steel represented confidence. The gold leaf which is a noble metal, symbolized endurance and abstract existence, while the Marmara Marble was used to express purity and cleanliness (McManus, 2014).

Religious Islamic architecture over the years has changed, however, in the 21st century it has taken a huge leap and took whatever traditional traits it had and modified them to join in with the modern times. When looking at both the Selimiye mosque and Yeşil Vadi Mosque right away we can see many differences, not only in the materials used, which was bound to happen with all the advances in technology and the presence of new materials that are more attainable than they were back in the 16th century, but the shape and size of the buildings themselves as well. Modern

mosques have taken the basic elements included in mosques and transformed them while still maintaining their essence.

The Selimiye Mosque was a statement piece and continues to be just that. The size of the structure is massive in both length and width. The structure was to stand out instead of blending in. This is the opposite with Yeşil Vadi mosque, the mosque is a modest size and attempts to blend into the surrounding as not to stand out. One of the important concepts of the mosque was to symbolically separate itself from the surroundings, in other words not to stand out but rather blend in (McManus, 2014). They wanted the mosque to be a place where a worshipper would walk in and feel separated from the world to be alone with his or her creator, and not call for any attention or distractions. The mosque is also the first dome shaped mosque in Turkey.

Just to make the difference in size clearer, the Selimiye mosque's central dome above the prayer hall's interior diameter is 103 feet (31.3 m) and the Yeşil Vadi mosque's hemisphere, which is the actual prayer hall is 82 feet (25 m) in diameter. Selimiye mosque has four minarets and more than nine domes, while the Yeşil Vadi mosque has one of each.

This is the opposite with Yeşil Vadi mosque, the mosque is a modest size and attempts to blend into the surroundings as not to stand out. One of the important concepts of this mosque was to symbolically separate itself from its surroundings They wanted to structure to be a place where a worshipper would walk I and separate from the world and to be alone with his/her creator, without any distractions (McManus, 2014).

Elements of mosque architecture comparisons:

Minaret. The minaret is a tower-like structure that was used as a mean to ensure that the adhan delivered by the muezzin could be heard at far distances, the muezzin would stand inside the minaret gallery and deliver the adhan. However, as technology has evolved speakers have been placed at the top of the minaret while the muezzin would remain inside the mosque and deliver the adhan through a microphone. This structure continues to serve as a local landmark indicating the presence of a mosque (Frishman and Khan, 1994).



Figure 3. Two of the minarets of Selimiye mosque. (“Wonderturquette,” 2009).



Figure 4. Yeşil Vadi mosque minaret. (“Yesilvadi Mosque,” 2010).

The Selimiye mosque has four fluted minarets with galleries wrapped around the structures at intervals with stalactite corbels underneath and capped with a turret. These minarets are located at each corner of the mosque adding verticality and emphasizing the central plan, they surround the and symbolically keep guard over the gilded copper finial placed at the top of the central dome which ties back to the symbolism Sinan wanted to achieve (Stierlin, 1998).

The Yeşil Vadi mosque has one minaret that is located to the right of the prayer hall’s entrance. The minaret’s form is obtained by combining a paraboloid cone to a cylinder. Multiple

stacked stainless steel cylinders form the turret and the gallery of the minaret. The Yeşil Vadi mosque's minaret might look like the Selimiye mosque however, modern techniques and applications have been used and added to emphasize the modern approach (McManus, 2014).

Ablution fountain. This fountain is intended for the ablution ritual which is the act of washing before prayers referred to as wudu in Arabic. Sometimes the fountain is placed as a decorative element however, more times than not it is used for wudu. The fountain allows several worshippers to wash at once under running water through faucets placed on the sides of the fountain. The fountain is usually placed near or at the center of the mosques courtyard.

The ablution fountains often come in different designs and styles such as, domed forms, small pavilion-like roofs, square or rectangular open fountains. These styles will be later altered to fit the new direction Islamic architecture is taking (Frishman and Khan, 1994).



Figure 5. Selimiye mosque main entrance. (Okcu, 2014).



Figure 6. Ablution fountains in Yeşil Vadi mosque. (Gerçek and Kazmaoğlu, 2011).

The Selimiye ablution fountain is just that, a fountain and is placed in the center of the courtyard. The ablution fountain is a sixteen-sided white marble fountain with faucets and basins provided on each side, accompanied by stone block seats before them for the worshippers performing wudu (United Nations Educational, Scientific and Cultural Organization (UNESCO), 2010).

The Yeşil Vadi ablution fountain is not a fountain but a series of faucets with marble block seats placed side by side. The ablution area takes on a modern look while maintaining the same functions. The ablution area is located on the far edge of the courtyard next to the library in its own independent structure (refer to figure 7).

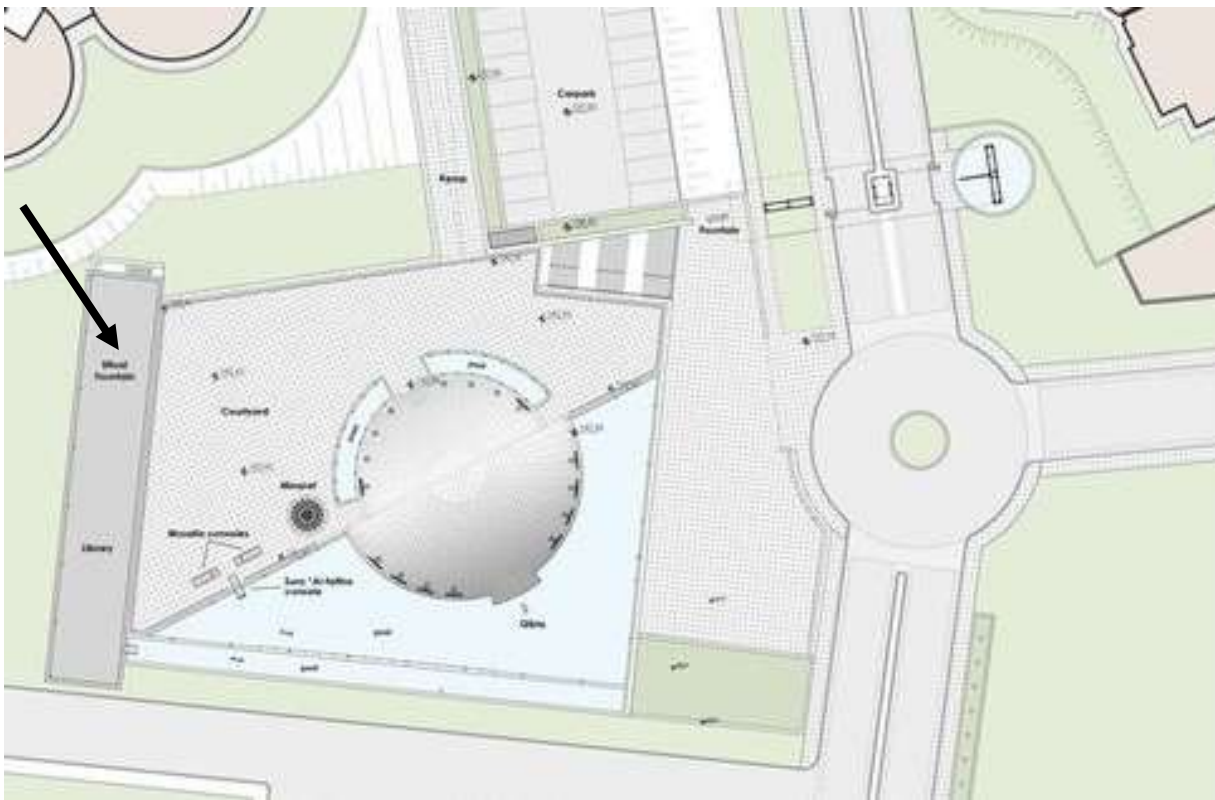


Figure 7. Yeşil Vadi mosque's site plan with arrow indicating the location of ablution fountain. ("Yeşilvadi Mosque," 2010).

Mihrab. The mihrab is placed in the center of the qibla wall which is the wall that is facing Mecca. The mihrab is a recess that indicates the direction of prayer, and it is where the Sheikh or Imam leading the prayer stands in front of and preforms the prayer as well as the adhan there through a microphone leading to speakers placed at the top of the minaret(s). It is not considered sacred however, the direction it indicates is (Frishman and Khan, 1994).



Figure 8. Selimiye mosque mihrab. (Barry, 2012).



Figure 9. Yeşil Vadi mosque mihrab. (Jürgen and Mike, 2013).

The Selimiye mosque mihrab bears a resemblance to the main entrance of the mosque (refer to figure 5). The mihrab is a pointed arch niche made of one large slab of marble carved into the wall with a muqarnas carved above (Stierlin, 1998), this marble workmanship is a masterpiece. While the mihrab in the Yeşil Vadi mosque is simple, it is a rectangular recess in the wall decorated with engraved religious calligraphy in gold foil and gold foiled covering on a white gold foiled background. Both are attractive and both speak of the different approaches the architects of the buildings have taken.

Minbar. The minbar is always placed on the right of the mihrab. The pulpit is a set of steps that differs in height from mosque to mosque, it usually is capped off with a decorative and attractive top. The minbar allows the Imam giving the Friday speech or simply addressing the worshipers the ability to see everyone and in return would be visible to everyone in the prayer hall and is heard clearly. The minbar is an important feature in a large mosque but could be a left-out feature in smaller spaces used for individual worship. The structure use to be used as a platform for “crowning” a new caliph, the mosque had a dual function back then both for worship and governmental affairs (Frishman and Khan, 1994).

The minbar in the Selimiye mosque is also a marble masterpiece. The minbar stands to the right of the mihrab. The minbar’s sides are covered with carved out geometric pattern and miniature multifoil and tudor arches along the sides, while the turret at the top is covered with blue, red, and gold arabesque patterned Iznik tile (Sue, 2016). As we look at the minbar in Yeşil Vadi mosque we can see a huge difference (refer to figures 6 and 7).

The minbar in Yeşil Vadi mosque is made of glass panels that make up the railing and white crystal marble stairs which is a huge contrast to the carved and elaborate minbar in Selimiye mosque.



Figure 10. Selimiye mosque minbar. (Günay, 2005).



Figure 11. Yeşil Vadi mosque minbar. (“Yesilvadi Mosque,” 2010).

Geometric and Arabesque Patterns. Geometric and floral patterns serve to cover an array of surfaces from flat, curved, and elaborate, both two-dimensional and three-dimensional type forms. These types of pattern can enrich and beautify an interior space, and Islamic architectural elements such as muqarnas, geometric and arabesque patterns are also used to conceal building materials and construction (Fishman and Khan, 1994). In traditional mosques patterns were viewed as a device that creates a meditation and prayer atmosphere. However, when examining modern mosques it is evident large amounts of patterns are viewed more as a distraction than promoting a spiritual atmosphere.

Selimiye Mosque is full of geometric and arabesque patterns – especially inside the central dome and the smaller domes and on the ceilings- and Islamic architectural elements. The capital of each column and pier have variations of muqarnas, as does the interior top of the mihrab. Another Islamic architectural device can be found in the pendentives which is called mocarabe. The qibla wall - which the mihrab is located – interior wall of minbar, arch corners, window tops in the direction of the qibla, entrances, and mihrab of royal lodge are decorated with Iznik tile panels that have floral patterns (refer to figure 3) and the half-moon recesses above the windows throughout the space are decorated with arabesque patterns.



Figure 12. Selimiye Prayer Hall muqarnas.
(Uidhir, 2013)



Figure 13. One of the large muqarnas inside Selimiye.
(Bacani, 2012).

Geometric and arabesque patterns are sparse in the Yeşil Vadi mosque and looks stark in comparison to the interior of the Selimiye mosque, in fact arabesque patterns are not used. The walls of the modern mosque are white with windows placed at measured intervals and decorated with little religious calligraphy, same as the ceiling. However, absent of any decorative tiles and patterns. All the spaces in the mosque are also absent of any decorative elements.

An Islamic architectural element is present in this modern building which is the muqarnas. The muqarnas is carved above the main entrance and is made of marble and has a modern twist on traditional muqarnas that is present in Selimiye mosque. A muqarnas made of steel in cylindrical shapes is also present on the minaret of the mosque.



Figure 14. Main entrance muqarnas of Yeşil Vadi mosque. (“Yesilvadi Mosque,” 2010).



Figure 15. Yeşil Vadi mosque minaret muqarnas at night. (“Yesilvadi Mosque,” 2010).

Calligraphy. Calligraphy is very well present in the Selimiye mosque. Verses are on the walls, over every entrance, inside the central dome and other domes, and written on the squinches. The majority of the calligraphy was surrounded with decorative geometric and arabesque patterned tile. The Iznik tile the calligraphy was painted on varied in color, some red, some navy blue, and some white, this color variation helped make the verses stand out to any

observer and added an aesthetically pleasing layer. The calligraphy itself was either white or black depending on the tile background it was drawn on.

The calligraphy throughout the space varied from verses and suras from the Quran, the word Allah, the Prophet's name, and the shahadatain. The scripts were written in a style called muhaqqaq.



Figure 16. Calligraphy over royal lodge entrance at Selimiye mosque. Günay, 2005).



Figure 17. Close-up view of Selimiye mosque's interior dome. (Yamanturk, 2011).

Calligraphy in Yeşil Vadi mosque is scarce however, not as scarce as the geometric patterns. Scripts and verses can be found in the interior of the prayer hall – on the walls and ceiling), on the exterior wall leading to the entrance of the meeting hall below, meeting hall foyer, on and above the prayer hall entrance, interior window glass panels, minbar, and on the mihrab wall. Gold leaf “waw” – meaning “and” in Arabic – is placed all over the dome ceiling in the prayer hall. The calligraphy uses various script styles such as, kufic (mihrab, prayer hall entrance, minbar, and windows –circular and three stepped-), thuluth (meeting hall entrance), and ta’liq (meeting hall foyer wall). All the scripts were engraved with gold foil and are placed on white or glass surfaces. Most common calligraphy in the Yeşil Vadi mosque is Allah, the prophet’s name, name of the caliphs, Bismillah (“Yeşilvadi Mosque,” 2010).



Figure 18. Yeşil Vadi mosque's prayer hall. (Conte, 2013)



Figure 19. Yeşil Vadi Mosque's Meeting Hall Entrance Wall. (Conte, 2013).

Here we see a difference in approaches to calligraphy from traditional to modern.

Traditional mosques used more color variety to highlight the scripts and used more verses from the Quran throughout the space. Modern mosques were more with the use of religious verses and color, and stuck with one color throughout. Traditional mosques also stuck to one type of calligraphy style in the structure while Modern mosques used two to three different calligraphy styles in their structures.

Lighting. Daylight design plays an important role in both the design and architectural process. It emphasizes the special concept, visual function, the aesthetic value, and sets the mood. Uniform distribution was crucial in mosque design because prayer is performed in every

corner, thus distribution was crucial and for that reason windows inside the central dome was the best solution (Fitzo and Berkin, 2007).

There are more than 300 windows in the Selimiye mosque. The light illumination flooded the space with great amount of light giving the prayer hall seem like a weightless, clear structure. Windows line the inside of the central dome and are placed along top and bottom of all the exterior walls (Stierlin, 1998). The placement of these windows work together to introduce sufficient and evenly distributed lighting for worshipping and reading. Artificial lighting was required when the sunset and there needed to be lighting for night worship (Fitzo and Berkin, 2007). Selimiye mosque has one huge chandelier that hung down from the central dome to illuminate the prayer-hall, another smaller chandelier hanging from the dome above the mihrab area, and a chandelier adorned with tulips in front of the mihrab.



Figure 20. Artificially Illuminated Selimiye mosque's Prayer Hall. (Okcu, 2014).



Figure 21. Tulip Chandelier in Selimiye Mosque. (Theprodigy. 2012).

Lighting was approached in Yeşil Vadi mosque in a distinct and unique way. The modern mosque contains three stepped windows along with circular windows lining the perimeter of the prayer hall. The three stepped windows have kufic calligraphy engraved with the shahadatain, "La ilaha ill Allah, Muhammed rasool Allah" on either side of the glass panels, the same is done with

the circular windows which are engraved with “Allah”. The calligraphy is cast to the nearest surface during the day when the light floods through, creating a deeper religious connection (“Yeşilvadi Mosque,” 2010).

The larger sized hemisphere’s interior top rim is lined with rectangular glass panes that have artificial lighting flanking either side of each glass pane. When the light of the sun comes through it illuminates the “waw” calligraphy covering the ceiling (refer to figure 18). Fiber optic lighting is used in the space to add a celestial atmosphere and symbolize the infinity of the universe. Since the door is also made of transparent glass it acts as another source of light. Other artificial lighting is used in the space such as, recess lighting (“Yeşilvadi Mosque,” 2010).



Figure 22. Lighting in Yeşil Vadi Mosque’s Prayer Hall. (“Yesil Vadi Mosque,” 2010).

Light affects the design of a mosque, it can either lift it up or bring it down (Antonakaki, 2007). Both mosques used light in a unique way and succeeded in attaining sufficient lighting into the space. However, we can see the difference between traditional and modern by the use of artificial lighting. Yeşil Vadi used the artificial light as a means to not only illuminate the space but to add symbolism and manipulate the atmosphere.

Case study #3: Sultan Ahmet Mosque, also referred to as the Blue Mosque:

Location and background. Located in Istanbul, Turkey. The Sultan Ahmet mosque was built in 1617 (17th century). This mosque was commissioned by Sultan Ahmet I and built by one of his royal architects, Sedefkar Mehmet Agha, the senior assistant of the famous architect Mimar Sinan. It is located in between the Hagia Sophia and the Byzantine Hippodrome near the Tokpaki Palace, which was the royal Ottoman residence. Unlike the previous Ottoman mosques built away from the city center to encourage development and to take advantage of Turkey's hilly surroundings, this location was purposeful for the sole fact to emphasize the triumph of an Islamic monument (Dalal, 2013). The mosque stands in a complex that houses the tomb of Ahmet I, a madrasah, and a hospital. While the six minarets stand high at 210 feet (64 m), and the central dome of the mosque is 75 feet (23 m) in diameter (Stierlin, 1998).

Significance to Study:

The Sultan Ahmet Mosque meets the criteria set for my research, it was built in the 17th century which makes it traditional, it is in the Middle East and more specifically Turkey, which was one of my target countries. This is a historic mosque with a traditional building structure and holds traditional architectural and decorative elements within.



Figure 23. Sultan Ahmet mosque. Taken from Dalal, R. (2013). Photo by: Tim O'Brien/Oberazzi.

Case study #4: Sancaklar Mosque:

Location and background. Located in Büyükçekmece, a suburban neighborhood in the outskirts of Istanbul, Turkey. This mosque was designed by Emre Arolat Architects (EAA) and was completed in 2014 (21st century) and is the embodiment of modern Islamic architecture. The mosque was built to showcase the tension of man-made and nature. It is built below ground level and blends into the hilly topography of Istanbul. The area of the mosque is approximately 7,534 sq ft (700 sqm) (Kiser, 2015).

Significance to Study:

The Sancaklar Mosque meets the criteria set for my research, it was built in the 21st century which makes it modern, it is in the Middle East and more specifically Turkey, which was one of my target countries. It takes a modern approach to mosque architecture which is reflected both in the interior and exterior. The mosque was inspired by the Cave of Hira which holds religious significance to Muslims, the cave was where the Prophet received the first revelations of the Quran.



Figure 24. Sancaklar mosque. (Mairs, 2015). Photo by: Thomas Mayer

Case #3 and Case #4 comparisons (refer to Appendix B for additional information):

Symbolism and Structure. The site occupied by Sultan Ahmet mosque is politically charged. In order for the mosque to be built the demolition of palaces belonging to Ottoman ministries had to be demolished, which they were, because prestige would always trump expenses and costs. Also, the placement of the mosque directly opposite of the Hagia Sophia also symbolized the victory of an Islamic monument over a converted Christian church (Dalal, 2013). Similar to the Selimiye mosque (case study #1), the mosque represented a political message, status, wealth, and power. The mosque is massive and overwhelming with its proportions and historical significance, it is a structure that demands your full attention. This again is opposite to the Sancaklar mosque.

Located in a prairie landscape, Sancaklar mosque is separated from its surroundings. To emphasize that separation further the structure is built below ground level and blends into the topography of the site and surrounded by stone walls acting as barriers. Worshippers and visitors must walk down the hill on manmade stone terraced steps through stone walls if coming off the street and cross stepping-stones across a shallow pool of water if coming from the lower level garden to reach the main entrance of the mosque that is intentionally situated behind walls to reinforce the concept of leaving the world behind and being alone with God to worship him in peace (Kiser, 2015).



Figure 25. Stone Terrace Steps leading to Sancaklar Mosque Entrance. (Mairs, 2015). Photo

Figure 26. Sancaklar mosque's reflection pond with stepping stones from garden. (Mairs, 2015).



Building materials used in Sultan Ahmet Mosque consisted of ashlar masonry, marble, lead-covered domes, polychrome glass and extensive amounts of handmade Iznik ceramic tile (Stierlin, 1998). The materials selected represent wealth and status which again differ from the representation that the Sancaklar mosque's materials refer to. Building materials in the modern mosque play off the tension between man-made and nature. Reinforced concrete, natural stone, Kayrak slate, wood, and steel are used in the construction of this mosque. Between the concrete, natural stone, and the natural slope of the earth the relationship of manmade and nature are strengthened, where those two elements work together and contrast each other in a beautiful way (Kiser, 2015). The difference in the representation that each type of material used in traditional and modern buildings also indicates the statement that these structures wanted to make.

A very recognizable feature in mosque architecture is missing in Sancaklar mosque, the dome. Although domes are not a basic element of mosque architecture like a mihrab or minaret is, it is however a significant feature belonging to a mosque for the symbolic representation of the vault of heaven (Weisbin, 2013).

Elements of mosque architecture comparisons:

Minaret. Now serving as a landmark and to sound the adhan, the minaret has a different look in the Sancaklar mosque. While the minarets in the Sultan Ahmet mosque remain the same keeping in tune with the traditional look and design.



Figure 27. One of the minarets of Sultan Ahmet mosque. (Dalal, 2013)



Figure 28. Sancaklar mosque minaret. (Pearson, 2014). Photo by: Thomas Mayer

Sultan Ahmet mosque has six minarets in total, they all follow the traditional architecture and design. They are fluted skinny structures with a conical spire and an end ornament at the top, three galleries wrapping around the fluted structure. The Sancaklar mosque has one minaret that is a rectangular structure with no gallery or spire, however, the phrase “Allahu Akbar” meaning God is great, appears in calligraphy writing at the top right corner. The approach of not only changing the minaret shape but also adding calligraphy to the structure is a modern approach that would not be done or seen in traditional mosque architecture.

Ablution fountain. Modern mosques have left the open fountain concept behind and have moved towards individual faucets with corresponding seats for worshippers to perform wudu.



Figure 29. Ablution fountain in Sultan Ahmet mosque. (Jontycrane, 2016)

Figure 30. Ablution fountains in Sancaklar mosque. (“Sancaklar Mosque / Emre Arolat Architects,” 2014).
Photo by: Thomas Mayer



The ablution fountain in Sultan Ahmet mosque is present in the center of the courtyard. It is a typical fountain found in traditional mosque or mosques that follow traditional architecture and designs. The ablution fountain is a domed structure that mimics the structure of the actual mosque, it is made of the same materials and includes the same dome and surrounding columns.

The ablution area in Sancaklar mosque is a continuation of the space, it uses the same natural materials found throughout the mosque. The ablution area consists of a row of twelve wooden blocks placed in front of faucets. Unlike the Yeşil Vadi mosque, Sancaklar’s ablution area is within the same structure.

Mihrab. The mihrab, which is placed at the midpoint of the qibla wall, is one of the basic elements featured in mosque architecture.



Figure 31. Sultan Ahmet Mihrab. (Islamic Arts Magazine, 2011).



Figure 32. Sancaklar Mihrab. (EAA, 2013)

Sultan Ahmet mosque's mihrab is a pointed arch niche made of one large slab of marble that is finely carved and sculptured set in the wall that is decorated with floral pattern gold plating around the muqarnas and in the indents and on the sides, edges, and top of the mihrab wall. Two scripted plates are placed above that feature of Quranic verses (Dalal, 2013). The mihrab of Sancaklar mosque is a simple recess in the qibla wall that is made of the same material, concrete, as its featured wall. It is void of any decorative elements and religious scripts, it is completely bare. This is completely opposite of the mihrab in the traditional mosque and the difference is stark. However, this simple look given to the mihrab fits in with the design of the modern mosque and the feel the architect was going for which also speaks to the direction modern Islamic architecture is taking in the 21st century.

Minbar. Like the mihrab, the minbar is also one of the basic elements featured in mosque architecture however, it is not essential or hold a sacred meaning like the mihrab.



Figure 33. Minbar of Sultan Ahmet Mosque.
(Malik, 2009)



Figure 34. Minbar of Sancaklar Mosque. (“Sancaklar Mosque / Emre Arolat Architects,” 2014). Photo by: Thomas Mayer

The minbar of the Sultan Ahmet mosque an elaborate marble masterpiece capped with an ornamental spire, it features embossed and carved out geometric patterns and miniature multifoil and tudor arches along the sides. The patterns and turret are gold plated continuing with the aesthetics of the mihrab (Dalal, 2013).

The minbar of Sancaklar is opposite, it is simple and straightforward. The minbar is a concrete niche in the qibla wall to the right of the minbar with exposed concrete stairs. Compared to the minbar in the traditional mosque this minbar is plain and bare. Similar to the mihrab, no decorative elements make an appearance keeping with the aesthetic of the mihrab.

Geometric and Arabesque Patterns. Sultan Ahmet Mosque was given the name “The Blue Mosque” because of the beautiful and intensive use of hand painted blue tile that feature geometric and arabesque patterns, more than 20,000 Iznik ceramic tiles decorate the walls, interior of domes, and arches of the prayer hall (Stierlin, 1998). Wherever the eye lands in the interior of this mosque it will see beautiful intricate designs and patterns from the bottom all the way to the top. Muqarnas can be seen in the squinches, along the capital of the piers, columns, and in the mihrab niche.



Figure 35. Interior view of Sultan Ahmet mosque prayer hall. (Halliday, 2010).



Figure 36. View of half dome and partial view of central dome in Sultan Ahmet mosque. (Cbillias, 2017)



Figure 37. Prayer hall ceiling view of Sancaklar mosque. (Mairs, 2015). Photo by: Thomas Mayer



Figure 38. Prayer hall ceiling view of Sancaklar mosque. (Mairs, 2015). Photo by: Thomas Mayer

The Sancaklar mosque is void of any geometric and arabesque patterns. The only presence of any pattern appears on the surface of the prayer hall ceiling. This muqarnas pattern of stepped concrete layers' mimics contour lines on a topographic map. The concrete layered ceiling reflects a dome and cave like forms but in an abstract and modern way.

Calligraphy. Calligraphy as it is in traditional and religious architecture is important for two main reasons. The first reason is, the words and verses written and present throughout the space are taken from the Quran which in Islam are words from God. The second reason is the Arabic language Islamic calligraphy is written is a sacred language considering the Quran was revealed to the prophet in that language specifically (Weitzal, 2005). Calligraphy plays two roles in a space, it adds both an attractive aesthetic and a deep sacred meaning to the space and that is why it is an important element of Islamic art.

The Sultan Ahmet mosque's interior is covered with calligraphy, everything from the walls to the interior of domes. Islamic calligraphy can also be found on the exterior, above entrances to various spaces of the mosque and on the inside of the domes in the portico. The style of writing inside of the mosque is muhaqqaq script, which in Arabic means clear, is known as one of the most beautiful scripts but also one of the most difficult to perfect and execute (Mansour, 2011).



Figure 39. Calligraphy on one of the interior massive main pillar in Sultan Ahmet mosque. (Bull, 2013)



Figure 40. Calligraphy on the interior of one of the half domes in Sultan Ahmet mosque. (Bull, 2013)

While calligraphy in Sultan Ahmet is extensive, Sancaklar mosque's calligraphy is sparse. Only two surfaces have calligraphy present upon them, the minaret and on the east black glass wall. The minaret calligraphy is embossed on a steel plate and is placed on the top right, while the calligraphy on the black glass wall is made of clear glass is illuminated from behind. The script used on both the wall and the minaret is the thuluth style which was considered one of the most elegant scripts to be produced (Fraser and Kwiatkowski, 2006).



Figure 41. Calligraphy on black glass wall in Sancaklar mosque prayer hall. (Mairs, 2015). Photo by: Thomas Mayer



Figure 42. Sancaklar mosque minaret calligraphy. (Alin, 2015). Photo by: Nancy Habbas

Lighting. Light introduction and distribution in the Sultan Ahmet mosque followed the traditional means. The central dome has windows inside the drum for even light filtration, many windows pierce the walls on the floor level to compliment the dome windows and help with lighting the space. There are more than 200 windows inside the mosque, the windows are glazed with polychrome glass to continue the colorful aesthetic the mosque is known for (Stierlin, 1998). Chandeliers now help assist with illumination in the mosque, a large chandelier is hangs

down from the central dome over the prayer hall and smaller matching chandeliers hang around the perimeter of the rest of the space.



Figure 43. Lighting inside Sultan Ahmet mosque. (Turtle, 2013)

Lighting inside the Sancaklar mosque has a dual function. Light was used to add a dramatic feel to the space through playing with the contrast of shadow and light. Since the mosque does not feature a dome a narrow skylight is used to introduce light from above, however, the skylight is strategically placed to run along the south wall (qibla wall) in the prayer hall to emphasize the direction of prayer and with the use of ceiling supporting concrete beams that exist under the skylight the light is cut into segments of light changing at certain times of the day. LED strips lining concrete steps and top of walls are used throughout the space as well as backlighting showing the different use of lighting methods and the introduction of modern lighting.



Figure 44. lighting inside Sancaklar mosque. (Pearson, 2014). Photo by: Thomas Mayer



Figure 45. Skylight inside Sancaklar mosque. (Mairs, 2015). Photo by: Thomas Mayer

Case study #5: Sheikh Zayed Grand Mosque:

Location and background. Located in Abu Dhabi, UAE. Sheikh Zayed Grand mosque was built between 1996 and 2007 and is the third largest mosque in the world. The location of the mosque was chosen by the founder and the first president of the UAE, Sheikh Zayed bin Sultan Al Nahyan, who also had a vision for the grand mosque and a lot of input in the architecture and the design. The mosque is the resting place of Sheikh Zayed who passed away in 2004. The building complex is approximately 960 feet (290 m) wide and 1,380 feet (420 m) long, the main dome's diameter is 107.6 feet (32.8 m), and the four minarets stand at 351 feet (107 m) high ("Sheikh Zayed Grand Mosque", 2016).

Significance to study:

Sheikh Zayed Grand Mosque meets the criteria set for my research, it was built in the 20th century which makes it traditional however, the building process was completed in the 21st century due to financial issues. The mosque is in the Middle East, more specifically the UAE, which was one of my target countries. This is a historic mosque with a traditional building structure and holds traditional architectural and decorative elements within.



Figure 46. Sheikh Zayed Grand mosque. ("The Private Travel Co," 2017)

Case study #6: Al-Warqa'a Mosque:

Location and background. Located in Dubai, UAE. Al Warqa'a mosque was built in 2016 (21st century) by architects Wael Al Awar and Kenichi Teramoto. The structures built up area is 15,069 sq ft (1400 sqm), with large dome positioned over the prayer hall.

Significance to study:

Al Warqa'a mosque meets the criteria set for my research, it was built in the 21st century which makes it modern, it is in the Middle East and more specifically the UAE, which was one of my target countries. This structure takes a modern, minimalistic approach to mosque architecture which is reflected both in the interior and exterior.



Figure 47. Al Warqa'a mosque. ("Al Warqa'a Mosque/ ibda design," 2016). Photo by: Sadoa Hotta.

Case #5 and Case #6 comparisons (refer to Appendix C for additional information):

Symbolism and Structure. Sheikh Zayed Grand mosque, now renamed “Mary, Mother of Jesus”, was commissioned by the founder and late president Sheikh Zayed bin Sultan Al-Nahyan and he himself directed the design of this architectural wonder. This mosque was erected to celebrate his achievements and his power, to immortalize his legacy. This was achieved through the mosque becoming the third largest mosque in the world, after Masjid Al-Haram in Mecca and Masjid Al-Nabawi in Medina Located in Saudi Arabia, holding three records in the Guinness book of world records for the largest carpet, chandelier, and dome (Adelani, 2016) There is no denying that this mosque is now an icon and a statement piece. Symbolism in the mosque was minuscule, one design in the shape of an eight-pointed star appears in the central space of the largest prayer hall (the mosque has three prayer halls, one large and two other smaller halls) that symbolizes the sacred throne being transported or supported by eight angels (Saoud, 2011).

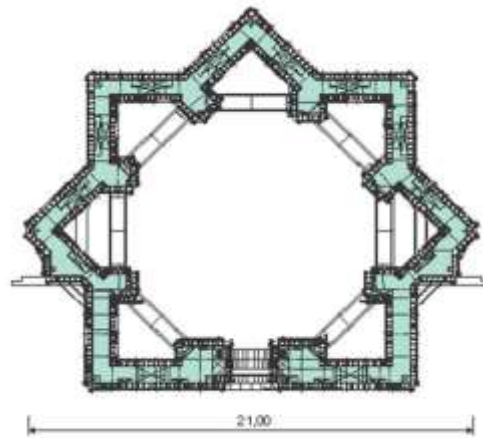


Figure 48. Plan of central space in Sheikh Zayed Grand mosque’s large prayer hall. (Saoud, 2011).

This grand mosque’s plan is a classical hypostyle plan modelled after traditional Moroccan mosques, traditional Ottoman mosque architecture, and was heavily inspired by the Taj Mahal which is a Mughal architectural style mosque (Saoud, 2011).

Al-Warqa'a mosque is the opposite of Sheikh Zayed Grand mosque. Becoming a mosque icon was the last thing the mosque wanted to achieve but rather become a social space, a gathering point for all the neighborhood. The was the main focus of the building, the lack of boundary walls, the three entries provided, the contrasting exterior to interior, and many more indicators were placed to make sure the mosque space is treated as a dual space. The simplicity of the space was inspired and modeled after the first mosque in Islamic history, the Prophet's home in Medina back in the 7th century ("Al Warqa'a Mosque/ibda design," 2016).

Sheikh Zayed used a plethora of building materials, the majority of the materials were imported from multiple countries such as Italy, Germany, Turkey, Malaysia, New Zealand, and many more. Over 30 types of marble can be found throughout the space along with semi-precious stones, Iznik ceramic tile, cedar wood and stone. The entire structure is built from reinforced concrete and finished with sivec marble from Macedonia, decorative marble covers the courtyard, walls, and columns. Marble covered outer columns are decorated with mother of pearl, lapis lazuli and other types of precious stones, while the interior columns are decorated with white mother of pearl, dark lapis lazuli and fancy jasper. Swarovski crystals, Italian glasswork, and gold plating and gold carats are also used in the space (Saoud, 2011).

Building materials in Al-Warqa'a are limited to, Saudi Sandstone, reinforced concrete, glass, wood and marble. While Sheikh Zayed used the material to show luxury and wealth, Al-Warqa'a used the limited materials to reflect the environment the structure is located it and to allow the structure to become an extension of its environment, to blend in. The contrasting color of the ochre colored walls of the exterior to the bright white walls of the interior was used to indicate the and enforce the concept of a sanctuary from the harsh and busy outside world. The marble lined the interior walls and the courtyard within the mosque (Mairs, 2016).

Elements of mosque architecture comparisons:

Minaret. Minarets of the Sheikh Zayed Grand mosque is a combination of traditional Ottoman, Mamluk, and Fatimid styles. The four minarets are located at the corners of the mosque and carry the design of a square base that transitions into an octagon and finishes with a circular form. Following traditional architecture, the minarets feature galleries that use to function as a space where the Muezzin would stand to recite the adhan (Saoud, 2011).

Al-Warqa'a has one minaret that continues the theme of simplicity and minimalistic design the architects and designers strived for. The minaret is a white cylindrical structure that stands at the corner of the courtyard. As with other modern minarets these days, the gallery is absent ("Al Warqa'a Mosque/ibda design," 2016).



Figure 49. Sheikh Zayed Grand mosque minaret.
("Sheikh Zayed Grand Mosque Abu Dhabi," 2016)



Figure 50. Al-Warqa'a mosque minaret. ("Al Warqa'a Mosque/ ibda design," 2016). Photo by: Sadoa Hotta.

Ablution fountain. Sheikh Zayed Grand mosque’s ablution fountain also follows traditions. It is a large fountain in the middle of a separate room prior to entering the prayer hall. The ablution fountain features over ten faucets on the sides with corresponding marble blocks, as well as a working mini fountain above. It is finished with Ming green marble and Makrana marble, continuing the theme and design found throughout the mosque (Nahabedian, 2011). Al-Warqa’a’s ablution area is located opposite the courtyard across the portico in a separate room. Ten individual ablution spaces are found with faucets and sitting blocks placed opposite them.



Figure 51. Sheikh Zayed Grand mosque’s ablution fountain. (Nahabedian, 2011)



Figure 52. Al-Warqa’a mosque’s ablution fountain floor plan. (“Al Warqa’a Mosque/ibda design,” 2016). Cropped

Mihrab. A narrow marble niche covered and adorned with gold-glass mosaics is carved in the center of the qibla wall, the shape mimicking the domes of the mosque itself. This mihrab stands as a symbol of Islam’s bright light shining all the way from Mecca (Saoud, 2011). The aesthetic look and design of this piece carries the theme and vision of the mosque.

Al-Warqa’a mosque’s mihrab is plain and stark in comparison to the golden mihrab of Sheikh Zayed mosque. No decorative elements both 2D or 3D are present on or around the

mihrab, it is a continuation of the qibla wall except for the fact that it is a half oval niche. This also continues the design and feel set forth by the architects and designers, simple and minimalistic.



Figure 53. Mihrab of Sheikh Zayed Grand mosque. (McMorrow, 2011)



Figure 54. Mihrab of Al-Warqa'a mosque. ("Al Warqa'a Mosque/ ibda design," 2016). Photo by: Sadoa Hotta.

Minbar. An eleven-step carved cedar wood minbar inlaid with mother of pearl, white gold, and glass mosaics stands at the right of the mihrab in the grand mosque. features a dome shaped roof and floral and shell carved patterns along the sides and on the domed roof ("Sheikh Zayed Grand Mosque Center," 2017). However, the minbar is not present in Al-Warqa'a mosque (refer to figure 55).

A minbar serves the purpose of giving the Sheikh and the worshippers a better view both ways, the Sheikh towers and sees everyone in the prayer hall during Friday speech, and in return all the worshippers see and hear the Sheikh clearly wherever they might be in the prayer hall. Due to the smaller size of Al-Warqa'a, a minbar isn't present because it wasn't needed.



Figure 55. Minbar of Sheikh Zayed Grand mosque. (Van Duke, 2013)

Geometric and arabesque patterns. Every surface in Sheikh Zayed Grand mosque is covered with geometric and arabesque patterns. The favored pattern found in the mosque is a floral and vegetal pattern made of semi-precious stones, hand-painted, reliefs, and gypsum friezes of arabesque patterns. Ceramic Iznik tiles similar to the ones in Sultan Ahmet and Selimiye mosque are present within the mosque. Gold plated muqarnas in the shape of palm trees top the capital of the exterior columns, other simpler muqarnas are found underneath the galleries of the minarets as well. This mosque has no shortage of patterns adorning the space both inside and outside, all the way from the floors to the interior of the domes, present in an array of beautiful vibrant colors (Saoud, 2011).



Figure 56. Sheikh Zayed Exterior columns with palm muqarnas. (“Wikiarquitectura,” 2017)



Figure 57. Sheikh Zayed Interior floral patterns from floor to wall. (“Wikiarquitectura,” 2017)



Figure 58. Al-Warqa'a floating bridge with floral relief. ("Al Warqa'a Mosque/ ibda design," 2016). Photo by: Sadoa Hotta.



Figure 59. Al-Warqa'a Exterior wall with floral relief. ("Al Warqa'a Mosque/ ibda design," 2016). Photo by: Sadoa Hotta.

Patterns in Al-Warqa'a are scarce and are void of color. Abstract geometric reliefs are present on the minaret, one side of the interior floating bridge, and exterior walls of the structure, the relief is the same pattern on all surfaces and is white in color (Al Warqa'a Mosque/ibda design," 2016). In comparison to all the patterns and designs found in Sheikh Zayed, Al-Warqa'a might stand stark however, it stays true to the concept and vision set forth for the mosque (refer to figures 56, 57, 58, and 59).

Calligraphy. Calligraphy appears inside domes, inside shallow niches above doorways and recess', and on the walls. Three types of scripts are used within Sheikh Zayed Grand mosque, kufic, thuluth, and nasikh, all three of these styles have an elegance and complexity in their own sense. The qibla wall is a beautiful display of calligraphy, the ninety-nine names of Allah are carved in traditional kufic script and are surrounded with lighting and floral patterns. Domes and niches feature verses from the Quran in both nasikh and thuluth scripts (Nahabedian, 2011).

There is no trace of calligraphy in Al-Warqa'a mosque. This decision, in my opinion, goes back to the concept of modeling the mosque after the Prophets home and first mosque, the walls were bare and the interior space was simple and straight forward.



Figure 60. View of calligraphy inside dome of Sheikh Zayed Grand mosque. (McMorrow, 2011)



Figure 61. View of calligraphy above a decorative wall recess of Sheikh Zayed Grand mosque. (McMorrow, 2011)



Figure 62. View of qibla wall featuring the 99 names of Allah in Sheikh Zayed Grand mosque. (Warah, 2013)

Lighting. Chandeliers are one of the sources of light within the grand mosque. There is a total of seven chandeliers, all of them were imported from Germany and made from gilded steel and brass, 24 carat galvanized gold, glass panels peppered with Swarovski crystals. Other lighting used inside and outside of the mosque incorporates modern advances and strays from tradition in this area. Optic lights are incorporated inside the qibla wall and exterior lighting uses lunar lighting, which are lights that shift with the phases of the moon, this use of advance

lighting nods to the year the final touches were done (“Sheikh Zayed Grand Mosque Center,” 2017).

Lighting in Al-Warqa’a is simple and basic. LED strip lighting is used side the narrow recess’ of the minaret, spot lights are featured inside the mosque’s hallway and prayer halls and inside the courtyard, ceiling mounted fluorescent lighting is used inside the portico. Lighting is used as a physical component as well as a spiritual element within the space. A skylight wraps around the entire interior space of the mosque to introduce natural light and to call attention to the sun path during differing prayer times throughout the day. The notion of movement is also reinforced through the movement of light and shadow on the abstract relief of the floating bridge which also ties back to the concept of calling attention to the prayer times (“Al Warqa’a/ibda design,” 2016).



Figure 63. One of the chandeliers of Sheikh Zayed mosque. (Nahabedian, 2011)



Figure 64. Minaret and courtyard lighting in Al-Warqa’a mosque. (“Al Warqa’a Mosque/ ibda design,” 2016). Photo by: Sadoa Hotta.

Chapter 4.1: Discussion

1. How has Islamic art and architecture grown evolved with modern times and technologies?

The results above show that through technology, both the actual evolution of technology and the emergence of social media, has given accessibility a new meaning. Access to different cultures, designs, locations, and images are a click away making inspiration, creativity, replicating, blending, and incorporating in terms of art and architecture much easier and attainable. Technology has given architects and designers the ability to take a small sketch or concept on a piece of paper into a 3D model to be viewed, critiqued, and adjusted in real time. Iconic Islamic art and architectural structures can be virtually visited, viewed, and selected just through the web, nitpicking elements for inspiration and elements to avoid or eliminate for a design. In our modern times, many people are taking a simpler route in respect to their lifestyles and living situations and this influences the way new structures and art are being reimaged and created.

2. What trends have aided in the evolution of this art?

Through the findings of this research, many trends appear in both the traditional and modern mosque case studies. The first and most apparent trend is, **minimalism vs. highly ornate**, traditional mosques are very decorative and lavish whereas modern mosques are simple and stark. Focusing on interior aesthetics, modern mosques are bare in comparison, traditional mosques seek out to make a statement and leave a mark. Modern mosques use the bare minimum of geometric and arabesque patterns, color, and calligraphy, where we see traditional mosques using plenty of these Islamic art elements. Floors to ceilings are covered with these elements, color is used heavily, patterns and calligraphy cover every surface the eyes see.

Statements. Both types of mosques make statements, however these statements are complete opposites. Traditional mosques are commissioned by powerful figures, sultans and sheikhs in the cases of the mosques selected above. Statements of wealth, power, and control are usually what these commissioners attempt to communicate to the people, whether it's to show a religious victory, political message, a powerful position, or a legacy of how they ruled. They are made to stand out, to be a focal point of the country or area they exist in.

We see this in Selimiye mosque, it was commissioned by Sultan Selim II and he had the most popular and talented architect of his time, Mimar Sinan, work on it. The location of Selimiye also held significance because it was the capital of Turkey back in the 15th century and his favorite city. Sultan Selim II paid for the mosque through the spoils of war and tribute money collected, he wanted the mosque to show his status and wealth and as well as having the mosque represent the message of Islam in a dominating way. The same concept of statement was done with Sultan Ahmet, it was commissioned by Sultan Ahmet I and he used an architect who was an apprentice of the famous Mimar Sinan, similar to Selimiye mosque. The structure was placed directly opposite Hagia Sophia to show the victory of Islam over Christianity and to send a political message, not only that but for the mosque to be built many palaces of Byzantine emperors had to be demolished and this shows the Sultan's status and power in return.

The mosque features six minarets which forced the two important mosques in Saudi Arabia to add a minaret to their mosques. Sheikh Zayed Grand mosque was commissioned by Sheikh Zayed bin Sultan Al-Nahyan himself, the mosque was to celebrate all the achievements completed during his ruling. This mosque is considered one of the largest mosques in the world, it holds records in the Guinness book of world records, and it is the largest mosque in the UAE.

Many people were brought in to work on Sheikh Zayed Grand mosque, multiple imported materials were used in the construction and billions of Dirhams was spent on the mosque.

However, in modern mosques the statements made by each one is of humbleness, blending in/isolation, and simplicity. The sites of the mosques are the first to emphasize this statement, Yeşil Vadi mosque sits on a site where a shallow pool of water takes up half of it, to symbolically isolate itself from the busy and materialistic world around us. Sancaklar mosque is integrated into the hill it sits on, it blends into its surroundings again for the purpose of separating and isolating the worshippers from the distractions beyond the walls of the mosque. Just like the other two modern mosques Al Warqa'a uses the color and material of the exterior walls to blend in to its surroundings and uses color alternating to gradually separate and isolate the worshippers that enter.

All the interiors of these modern mosques have little to none Islamic art elements. Yeşil Vadi mosque is the most decorative mosque out of the three modern mosques selected for this research. In comparison, it has more patterns and calligraphy however, they have the absence of color in common. The concept of isolation that they all share serves one purpose and it is so all the worshippers wouldn't have any distractions and have one focus, and that is to worship Allah. Distractions are one of the things these mosques are trying to eliminate, whether be physical or psychological.

Inspiration. The design inspiration for a mosque is important for many reasons, one reason is, it decides the look and feel the mosque will have after completion and the other it dictates the message being set forth. Traditional mosques don't have any solid inspirations but rather they just want to be the most decorative and lavish mosque out there. The trend of extravagance and the "awe" factor is much to evident in traditional mosques, you can see it just

by looking at one surface in the whole space. Modern mosques aspire for a different type “awe” factor, the modern mosques above were inspired by simple spaces. Yeşil Vadi mosque itself is a cave like structure, Sancaklar mosque was inspired by Cave of Hira and if you look at the space of Sancaklar you get the feeling of a cave through the atmosphere (both inside and outside), location, and materials used. Al-Warqa’a mosque was modeled after the first mosque, and again if you look at the space it is simple and minimal just as it would have been back in the 7th century.

Symbolism and Representation is the next trend found in both types of mosques. Mosques usually hold many symbols within, whether it be the dome symbolizing the universe or heaven there is no denying symbolism has a place in mosque architecture. Through research it was evident that modern mosques outweigh traditional mosques in that area, Yeşil Vadi mosque in particular is peppered with symbolism from the exterior and its surroundings to the interior. Materials selected for modern mosques were purposefully chosen for their symbolization, for instance, Sancaklar used its materials to show the tension between man-made versus nature and further emphasize the “cave like” atmosphere it sought. However, traditional never took that extra step to incorporate religious symbolism within the design process, the same representations are present in traditional mosques, the dome being the vault of heaven, minarets representing the Caliphs, interior columns angels, and so on. Political symbolism nonetheless is very much present in traditional and is absent from modern mosques, the location is an important aspect for any building but in traditional you usually find that the reason the site was chosen was to send a political message as was the case for Sultan Ahmet mosque, another would be with Sheikh Zayed Grand mosque, the location was chosen because it is the capital of the UAE and it would be the first thing you see when you enter the city of Abu Dhabi.

Breaking “unspoken” rules. Modern mosques have strayed away from traditional mosque architecture and decorative elements within. The dome for example is not present in Sancaklar mosque while, Yeşil Vadi mosque uses the dome as the prayer hall instead of an element to capping the prayer hall. Minarets are void of galleries, even when traditional mosques have experimented or designed unique minaret designs galleries and access to the minaret have always been included. The absence of calligraphy, Al-Warqa’a doesn’t have this decorative element anywhere on the exterior or interior, Sancaklar only has calligraphy present on one wall inside and on the minaret.

The scarcity of geometric and arabesque patterns is also evident in modern designs, all three mosques (Yeşil Vadi, Sancaklar, and Al-Warqa’a) have minimal amounts of geometric patterns and elements compared to the use within traditional mosques. Modern mosques are moving back to the basic teachings of Islam, visible worldly richness and magnificence being displayed is frowned upon in Islam, Islam teaches us to be humble and to abandon and focus less on materialistic things in this world, they should not be considered sacred or important. This is exactly what these modern mosques advocate, they created a simple and bare place to encompass the sacred act of prayer and the connection between man and Allah. They turned away from extravagance and materialistic focus and focused solely on the essence of the religious act and space, thus freeing and rejecting traditional reference and conventional architectural elements and designs.

Technologies. Technology plays a major role in architecture and design now-a-days and mosque architecture is no exception. The main focus here when discussing the relationship between technology and the modernization of Islamic art and architecture is going to be related to the way technology has made access easier. Access to inspiration and unique ideas, being able

to visit a location with a touch of a button, for example, Sancaklar mosque was inspired by the Cave of Hira which is in Saudi Arabia and the architect is in Turkey, he didn't go to Saudi Arabia to look at the cave but instead looked up some images and modeled based off that. Al-Warqa'a mosque's special plan was modelled after the first mosque to ever exist, which is also located in Saudi Arabia, the architects pulled pictures off the internet straight from their phones and laptops and proceeded to design the mosque. Yeşil Vadi mosque is also inspired by cave like structures and the architect and design team didn't go around looking for caves to understand the structure and curves, they looked up images of caves and studied them through that.

Technology also helped introduce new ways of presenting decorative Islamic elements into a space, like calligraphy. Traditional mosques, and Sheikh Zayed Grand mosque, hired and brought in individuals who specialize in the art of calligraphy to hand-paint the verses on to the walls. New styles of calligraphy and geometric patterns are being produced with the aid of new programs and techniques, adding modern tweaks and looks to distinguish them from historic or traditional styles and techniques. Enhanced building materials and techniques have now been introduced that make creativity and out of the box designs possible, the viewing of these designs have changed thanks to digital architecture as well, now we can quickly see if the idea in our head looks as cool or totally not what we expected. Technology has also allowed complex designs and calculations to be formed and executed with ease, the connection between designing and building. A quick delivery from the brain straight to something visible by all (Afana, 2011).

3. Have culture and religion influenced the evolution of Islamic art and have they continued to play a major role in its modernization?

Many cultures have preferences when it comes to design styles, in the Middle Eastern culture a more classical and luxurious style is in demand or want. Nowadays when looking at

Western culture more minimalistic and simple styles are being introduced and adopted, and this approach is spreading to the Middle East with the aid of social media and this is evident through the modern mosques selected above. Access of different cultures is influencing and introducing new styles to each other and giving people the ability to blend styles to create a new look suitable for their taste and adding a new twist to an existing style. Cultures are also becoming more environmentally aware in their designs not only in the sense of recycling and such, but in the way of appreciating their surroundings and wanting to incorporate and highlight nature, a good example is shown in Al-Warqa'a mosque where the architects placed trees inside the courtyard of the mosque and Sancaklar mosque which is integrated into a hill.

The way that different cultures are being exposed, introduced, and integrated within each other shows that culture will continue in aiding this evolution, a great example would be "The Vanishing Mosque" by RUX Design a Manhattan based studio that has won the competition to design a mosque in the UAE. The concept is an open mosque that is incorporated into a city plaza that features retail stores, apartments, and hotels. The open space is a partially risen triangular platform featuring an ablution pool beneath the lifted part of the triangle is used for the 5 prayers during the day then used as a public space at other times. The concept is to create a sacred space that is seamlessly integrated into the city while keeping it open and accessible by all and at any time of the day (Etherington, 2010). This is one of the many creative and innovative concepts of mosque architecture being produced around the world, I've chosen this design to highlight because this has never been done in a Middle Eastern country before, the idea of having an open mosque wouldn't have been accepted 20 years ago or more which is a testimony of the modernization and evolution of culture, society, and perspective.

Religion is and will always be a major influencer of Islamic art. The style might change but the essence of the style which encompasses the religious aspects will remain the same. The argument some might make is the disappearance of religious calligraphy in some modern mosques but the counter argument would be that the verses don't have to be physically engraved in the structure but they are spiritually engraved during the acts of worships being performed. The mosque itself as a structure is Islamic art, everything it represents and what takes place within is enough to categorize it as such. The steps the architects have taken to revert to the simplicity of the religious spaces that have existed in Islamic history and that hold religious significance shows a breaking away from tradition and the process of paving a new way for this artistic style to fit in more with the modern times while keeping the core principals intact.

Another piece of discussion has risen during this research is the ages of the architects that have developed and designed the modern mosques. The question was whether their age influences the direction chosen for these mosques in regards to a simplistic and minimalistic approach, the answer is age is irrelevant. Four architects in total have worked on the three chosen mosques, Mimar Adnan Kazmaoğlu is the architect behind Yeşil Vadi mosque. He is 69 years old and has spent all his personal and professional life in Turkey, he is the manager at Adnan Kazmaoğlu Mimarlık Araştırma Merkezi, Which translated to Adnan Kazmaoğlu Architecture Research Center located in Istanbul, Turkey. The firm has never ventured into the religious sector of architectural designs until the early 2000's where many of their designs are conceptual except for the Yeşil Vadi mosque (MAM, 2017).

Mimar Emre Arolat is the architect behind Sancaklar mosque, he is 54 years old and has completed his education in Turkey however, he has worked in Washington D.C. for a year right after graduating with a BA in architecture then returned to Turkey where he continues to work.

Emre Arolat is the co-founder of Emre Arolat Architects with locations in Turkey and London, the firm designed two religious spaces Sancaklar mosque in Turkey and a religious complex for Madrin Artuklu University that encompassed spaces for three faiths – Christianity, Islam, and Yazidi (EAA, 2013).

The two architects behind Al-Warqa'a mosque are Wael Al Awar, a Lebanese architect, age 39 and Kenichi Teramoto, a Japanese architect, age 42. Wael Al Awar studied in Beirut and went off to work in Tokyo for a period of time where he worked with Japanese architects and Kenichi Teramoto, until he decided to move back to the UAE and start Ibda Design. Kenichi Teramoto also studied in Tokyo, where he eventually worked after working a couple of years in the Netherlands, and moved to the UAE to partner up with Wael Al Awar at Ibda Design. The firm is located in Dubai and has offices in Beirut and Tokyo, they work on various types of projects including religious. Al-Warqa'a is the first religious project they have done as of now, they have a conceptual design of another mosque posted on their website which is also located in Dubai (Ibda design, 2017).

Chapter 5: Conclusion

Islamic art and architecture is moving towards embracing the modern times and has made an effort to reflect that in the architecture and art within, whether it be the scarcity and absence of art and architectural elements or new approaches taken towards new ideas and designs. Especially, with the presence of technology and social media Islamic art is being exposed to everyone and is simultaneously being influenced and influencing new designs. New technology is emerging that is helping make the creation of complex patterns and designs on larger scales possible, outrageous and unique creations are more achievable. The ability to simultaneously sketch and model a design idea is now a given and is becoming a norm in the architectural and design world.

Trends of minimalism, blending, and much more have emerged in modern Islamic art and architecture. Modern styles of calligraphy are being used, lack of color and decorative elements are evident and are becoming a style themselves, risks of moving away from familiar and traditional looks and designs are becoming more common and welcomed. In the 21st century, one thing is being recognized that in order to create a beautiful and awe inspiring masterpiece the teachings of Islam regarding vanity and materialism doesn't have to be compromised. Those feelings and emotions could be evoked through the simplicity and minimalism displayed within these structures that encompass such a beautiful and sacred act and less on material and worldly clutter and objects.

Many new concepts for mosque architecture and Islamic designs are being awarded and recognized around the world. The designs are not only limited to architects with middle eastern backgrounds or Islamic faith, many architects from different cultures and religions are taking on the challenge to reimagine mosques.

I would want to carry out more research on Islamic art and architecture in other continents such as, North America and Europe to begin with. Many mosques and designs are being constructed over there that I would be interested in exploring and studying. I would be curious in discovering the inspiration for such a concept and the idea that sparked the interest in venturing into religious architecture.

References

Abas, S. J., & Salman, S. A. (1995). *Symmetries of Islamic Geometrical Patterns*. Singapore: World Scientific.

Abu Bakar, B. F. M. (2013). Colours of Islam. Retrieved from http://www.academia.edu/6434115/Colours_of_Islam

Abu Dhabi e-government. (2016). Sheikh Zayed Grand Mosque. Retrieved from <https://www.abudhabi.ae/portal/public/en/homepage/culture-and-recreation/cultural-and-historical-sites/sheikh-zayed-grand-mosque>

Adelani, A. (2016). The Iconic Sheikh Zayed Grand Mosque Abu Dhabi. Retrieved from <http://adewaleadelani.com/sheikh-zayed-grand-mosque-abu-dhabi/>

Afana, M. (2011). How Does Technology Impact Architecture? Retrieved from <https://mafana.wordpress.com/2011/10/03/how-does-technology-impact-architecture/>

Al Warqa'a Mosque/ibda design. (2016). Retrieved from <http://www.archdaily.com/787633/al-warqaa-mosque-ibda-design>

Al-Ghazali, M. (1998). Journey Through the Quran. | Surah | Allah. Retrieved from <https://www.scribd.com/doc/119258077/Journey-Through-the-Quran>

Ali, W. (1992). The Status of Islamic Art in the Twentieth Century. *Muqarnas*, 9, 186–188. Retrieved from <https://doi.org/10.2307/1523143>

Alin, M. (2015). Does Islamic Art Exist? Retrieved from <https://iwamag.org/2015/09/06/does-modern-islamic-art-exist/>

Allah. (2016). In *Merriam-Webster.com*. Retrieved from <https://www.merriam-webster.com/dictionary/Allah>

- Aniconism. (2016). In *Merriam-Webster.com*. Retrieved from <https://www.merriam-webster.com/dictionary/aniconism>
- Antonakaki, T. (2007). Lighting and Spatial Structure in Religious Architecture: a comparative study of a Byzantine church and an early Ottoman mosque in the city of Thessaloniki. Retrieved from <http://www.spacesyntaxistanbul.itu.edu.tr/papers%5Clongpapers%5C057%20-%20Antonakaki.pdf>
- Bacani, M. (2012). Years Ago in the Deserts of Turkistan | Interior of the Selimiye mosque in Edirne, Turkey. Retrieved from <http://touba.tumblr.com/post/6145697021/interior-of-the-selimiye-mosque-in-edirne-turkey>
- Barry, P. M. (2012). Selimiye Camii – Mihrab and Panels. Retrieved from <https://turkishtiles.wordpress.com/2012/01/28/selimiye-camii-edirne-turkey/>
- Bassiouni, C. (2012). Islamic Civilization | Middle East Institute. Retrieved from <http://www.mei.edu/content/islamic-civilization>
- Blair, S. (2006). *Islamic Calligraphy*. Edinburgh: Edinburgh UP.
- Broug, E. (2013). *Islamic Geometric Design*. London, England: Thames and Hudson.
- Bull, P. (2013). Posts about Istanbul on Enthusiastical. Retrieved from <https://enthusiastical.wordpress.com/category/istanbul/>
- Caliph. (2016). In *Merriam-Webster.com*. Retrieved from <https://www.merriam-webster.com/dictionary/caliph>
- Calligraphy. (2016). In *Merriam-Webster.com*. Retrieved from <https://www.merriam-webster.com/dictionary/calligraphy>

- Cbillias. (2017). The Blue Mosque in Istanbul, A Window to the Muslim Religion. Retrieved from <http://www.thesuitelifeoftravel.com/istanbul-the-blue-mosque/>
- Conte, R. (2013). Yeşilvadi Mosque - Photographies. Retrieved from <http://www.archilovers.com/projects/109944/yesilvadi-mosque-photographies.html>
- Culture. (2016). In *Merriam-Webster.com*. Retrieved from <https://www.merriam-webster.com/dictionary/culture>
- Dalal, R. (2013). The Blue Mosque (Sultan Ahmet Camii). Retrieved from <https://www.khanacademy.org/humanities/art-islam/islamic-art-late-period/a/the-blue-mosque-sultan-ahmet-camii>
- EAA – Emre Arolat Architecture. (2013). Retrieved from <http://www.emrearolat.com/gallery/sancaklar-mosque/>
- Etherington, R. (2010). The Vanishing Mosque by RUX Design for Traffic. Retrieved from <https://www.dezeen.com/2010/07/19/the-vanishing-mosque-by-rux-design-for-traffic/>
- Ettinghausen, R., Grabar, O., & Jenkins, M. (2001). *Islamic art and architecture 650-1250*. New Haven, CT: Yale University Press.
- Fitzo, I., & Berkin, G. (2007). Space Light & Beliefs: The Use of Daylighting in Churches and Mosques Retrieved from https://www.researchgate.net/publication/256715298_Space_Light_Beliefs_The_Use_of_Daylighting_in_Churches_and_Mosques
- Fraser, M., & Kwiatkowski, W. (2006). *Ink and gold: Islamic calligraphy*. London, England: Paul Holberton Pub.
- Frishman, M. and Khan U. H. (2002). *The Mosque: History, Architectural Development and Regional Diversity*. London, England: Thames and Hudson.

- Gerçek, E and Kazmaoğlu, A. (2011). Yeşilvadi Mosque. Retrieved from <http://v2.arkiv.com.tr/p2668-yesilvadi-camisi.html>
- Grabar, O. (1973). *The Formation of Islamic Art*. New Haven: Yale UP.
- Grabar, O. (2006). *Islamic Art and beyond*. Aldershot, England: Ashgate Variorum.
- Günay, R. (2005). Selimiye Külliyesi. Retrieved from https://archnet.org/sites/1941/media_contents/42726
- Halliday, S. (2010). Blue Mosque Interior. Retrieved from <http://www.soniahalliday.com/category-view3.php?pri=TR777-8-FHC.jpg>
- Ibda design. (2017). Retrieved from <http://ibdadesign.com/about>
- Islamic Arts Magazine. (2011). 10 Amazing Examples of the Ottoman Mihrab in Istanbul. Retrieved from http://islamicartsmagazine.com/magazine/view/10_amazing_examples_of_the_ottoman_mihrab/
- Jones, O. (2007). *Grammar of Ornaments*. Prentice Hall. Print.
- Jontycrane. (2016). Further afield – Istanbul. Retrieved from <https://jontynz.com/2016/02/11/further-afield-istanbul/>
- Jürgen & Mike. (2013). Modern Mosques | Istanbul for 91 Days. Retrieved from <http://istanbul.for91days.com/2013/07/07/modern-mosques/>
- Karsh, E. (2006). *Islamic imperialism: A history*. New Haven: Yale University Press.
- Kiser, K. (2015). Sancaklar Mosque. Retrieved from <http://www.arcspace.com/features/emre-arolat-architects/sancaklar-mosque/>
- Leaman, O. (2004). *Islamic aesthetics: An introduction*. Notre Dame, IN: University of Notre Dame Press.

- Macaulay-Lewis, E. (2011). Mimar Sinan, Mosque of Selim II, Edirne. Retrieved from <https://www.khanacademy.org/humanities/ap-art-history/early-europe-and-colonial-americas/ap-art-islamic-world-medieval/a/mosque-edirne>
- Mairs, J. (2015). Terraced Landscaping Surrounds Concrete and Stone Structure of Emre Arolat's Sancaklar Mosque. Retrieved from <https://www.dezeen.com/2015/04/06/sancaklar-mosque-emre-arolat-architects-istanbul-concrete-stone-terraced-landscaping/>
- Mairs, J. (2016). Ibda Design Uses Sandstone and Marble for Mosque in Dubai. Retrieved from <https://www.dezeen.com/2016/05/02/ibda-design-sandstone-marble-mosque-architecture-al-warqa-a-dubai-united-arab-emirates/>
- Malik, A. (2009). Minbar of the Blue Mosque (Sultanahmet). Retrieved from <https://www.flickr.com/photos/aiyshamalik/3371002345>
- MAM – Adnan Kazmaoğlu Mimarlik Araştırma Merkezi. (2017). Retrieved from <http://www.adnankazmaoglu.com/eng/pages-about.html>
- Mansour, N. (2011). *Sacred Script: Muhaqqaq in Islamic Calligraphy*. London: I.B. Tauris.
- McManus, D. (2014). Yeşilvadi Mosque Istanbul, Turkey. Retrieved from <http://www.e-architect.co.uk/istanbul/yesil-vadi-mosque>
- McMorrow, J. B. (2011). Sheikh Zayed Mosque - Interior. Retrieved from <http://www.pbase.com/bmcmorrow/shkzayedmosqueinterior&page=2>
- Michon, J.L. (1982). The Message of Islamic Art [1]. Retrieved December 12, 2016, from <http://www.studiesincomparativereligion.com/uploads/articlepdfs/422.pdf>
- Mihrab. (2016). In *Merriam-Webster.com*. Retrieved from <https://www.merriam-webster.com/dictionary/mihrab>

- Modern. (2016). In *Merriam-Webster.com*. Retrieved from <https://www.merriam-webster.com/dictionary/modern>
- Mosque. (2016). In *Merriam-Webster.com*. Retrieved from <https://www.merriam-webster.com/dictionary/mosque>
- Nahabedian, D. (2011). Photo Essay: The Sheikh Zayed Mosque-UAE. Retrieved from <http://www.canvas-of-light.com/2011/03/photo-essay-sheikh-zayed-mosque-uae/>
- Okcu, E. (2014). Selimiye Mosque. Retrieved from <http://www.tourmakerturkey.com/selimiye-mosque.html>
- Open Buildings. (2010). Yesil Vadi Mosque. Retrieved from <http://openbuildings.com/buildings/yesil-vadi-mosque-profile-5368>
- Oswais, F. S. (2002). Islamic Art as an Educational Tool about the teaching of Islam. *Art Education*,55(2), 18–24. Retrieved from <https://doi.org/10.1080/00043125.2002.11651482>
- Pearson, A. C. (2014). Sancaklar Mosque. Retrieved from <http://www.architecturalrecord.com/articles/7977-sancaklar-mosque>
- Religion. (2016). In *Merriam-Webster.com*. Retrieved from <https://www.merriam-webster.com/dictionary/religion>
- Sancaklar Mosque / Emre Arolat Architects. (2014). Retrieved from <http://www.archdaily.com/516205/sancaklar-mosque-emre-arolat-architects>
- Saoud, R. (2011). Sheikh Zayed Great Mosque in Abu Dhabi: Islamic Architecture in the 21st Century. Retrieved from <http://www.muslimheritage.com/article/sheikh-zayed-great-mosque-abu-dhabi-islamic-architecture-21st-century#ftn4>

Saoud, R (2014). Introduction to Islamic Art. Retrieved from <http://www.muslimheritage.com/article/introduction-islamic-art>

Selimiye Mosque. Retrieved from <https://selimiyemosque.wordpress.com/>

Sheikh Zayed Grand Mosque Abu Dhabi | iDesignArch | Interior Design, Architecture & Interior Decorating eMagazine. (2016). Retrieved from http://www.idesignarch.com/wp-content/uploads/Zayed-Mosque-Abu-Dhabi_10.jpg

Sheikh Zayed Grand Mosque Center. (2017). Pulpit (Menbar). Retrieved from <http://www.szgmc.ae/en/pulpit>

Sheikh Zayed Grand Mosque. (2016). Retrieved from <https://www.abudhabi.ae/portal/public/en/homepage/culture-and-recreation/cultural-and-historical-sites/sheikh-zayed-grand-mosque>

Stierlin, H. (1998). *Turkey: From the Selcuks to the Ottoman*. Köln: Benedikt Taschen.

Sura. (2016). In *Merriam-Webster.com*. Retrieved from <https://www.merriam-webster.com/dictionary/sura>

Ta'liq. (2017). In *Britannica.com*. Retrieved from <https://www.britannica.com/art/taliq-script>

The Private Travel Co. (2017). Sheikh Zayed Grand Mosque. Retrieved from <http://www.theprivatetravelcompany.co.uk/sheikh-zayed-grand-mosque/>

Theprodigy. (2012). Selimiye Mosque Part 11. Retrieved from <http://www.deviantart.com/art/selimiye-mosque-part-11-79874300>

Thulth. (2016). In *Merriam-Webster.com*. Retrieved from <https://www.merriam-webster.com/dictionary/thuluth>

- Toorabally, F. M., Sieng, H. C., Norman, B. F. H., & Razalli, B. Z. (2016). Impact of Modern Technologies on Islamic Art in Malaysia and Middle East. Retrieved from <http://nova-jeas.com/index.php/jeas/article/view/44/pdf>
- Traditional. (2016). In *Merriam-Webster.com*. Retrieved from <https://www.merriam-webster.com/dictionary/traditional>
- Turtle, M. (2013). Two Great Mosques of Istanbul. Retrieved from <http://www.timetravelturtle.com/2012/10/hagia-sophia-blue-mosque-istanbul/>
- Uidhir, M. K. (2013). Selimiye Mosque [Photo]. Retrieved from <https://www.flickr.com/photos/keithmaguire/12642776465/>
- United Nations Educational, Scientific and Cultural Organization. (2010). Selimiye Mosque (Turkey). Retrieved from <http://whc.unesco.org/document/152488>
- Van Duke, J. (2013). Minbar of Sandalwood and Mother of Pearl. Retrieved from <https://www.flickr.com/photos/justinbvandyke/8535494035/>
- Warah, S. H. (2013). Arabic Zeal » Sheikh Zayed Mosque ~ Floral & Exquisite. Retrieved from <http://arabiczeal.com/sheikh-zayed-mosque-floral-exquisite/>
- Weisbin, K. (2013). Introduction to Mosque Architecture. Retrieved from <https://www.khanacademy.org/humanities/art-islam/beginners-guide-islamic-art/a/introduction-to-mosque-architecture>
- Weitzal, C. (2005). The Written Word in Islamic Art. Retrieved from <https://ses.library.usyd.edu.au/bitstream/2123/1267/1/WeitzelF.pdf>
- Wikiarquitectura. (2017). Sheikh Zayed Mosque. Retrieved from <https://en.wikiarquitectura.com/building/sheikh-zayed-mosque/#lg=1&slide=33>

Wonderturquette. (2009). Selimiye Mosque. Retrieved from

<http://www.paperblog.fr/2353341/selimiye-mosque/>

Yamanturk, E. (2011). The Dome of Selimiye Camii. Retrieved

from <http://www.panoramio.com/photo/62771911>

Yesilvadi Mosque. (2010). Retrieved from <http://architizer.com/projects/yesilvadi-mosque/>

APPENDECIES

Appendix A: Case studies 1 and 2

Case Study # 1: Selimiye Mosque:

Floor plan.

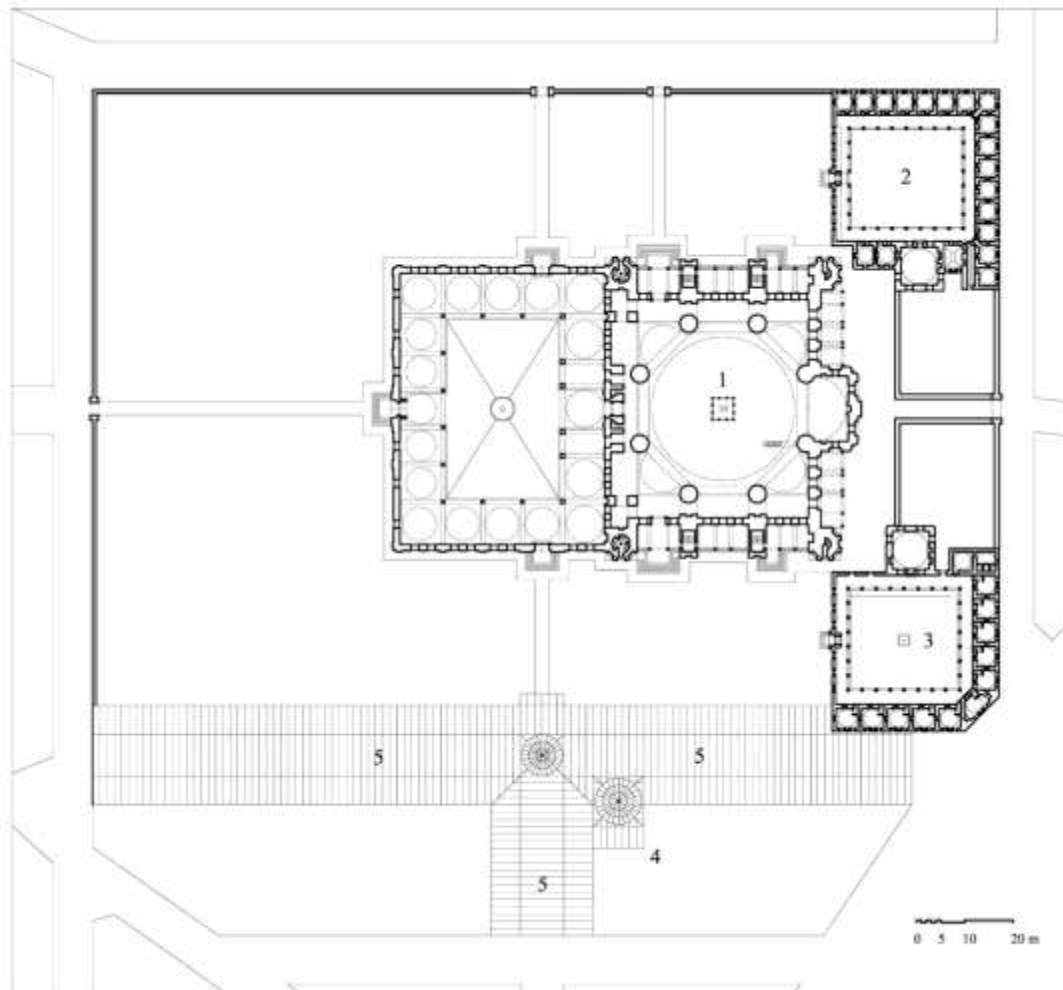


Figure A1. Selimiye Mosque floor plan. The Selimiye mosque (1) is located within a complex which included a school, hospital, library, bazaar, and baths. Taken from: Arapi, N. A. (2004). Floor plan of Edirne Selimiye Complex. Retrieved from <https://archnet.org/sites/1941/publications/1449>

Isometric view.

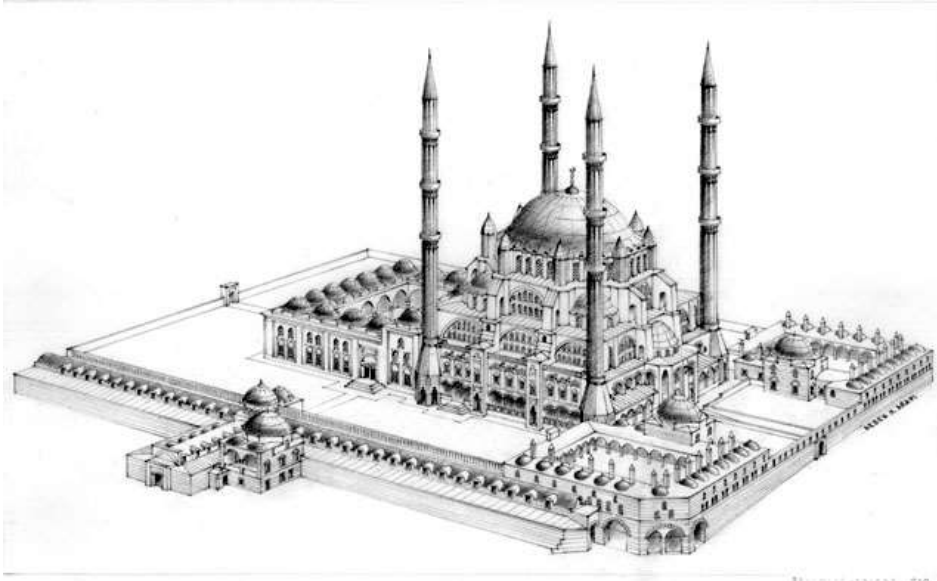


Figure A2. Selimiye mosque isometric view. Taken from: Arapi, N. A. (2005). Selimiye Külliyesi.

Retrieved from https://archnet.org/sites/1941/media_contents/42962

Section cut.

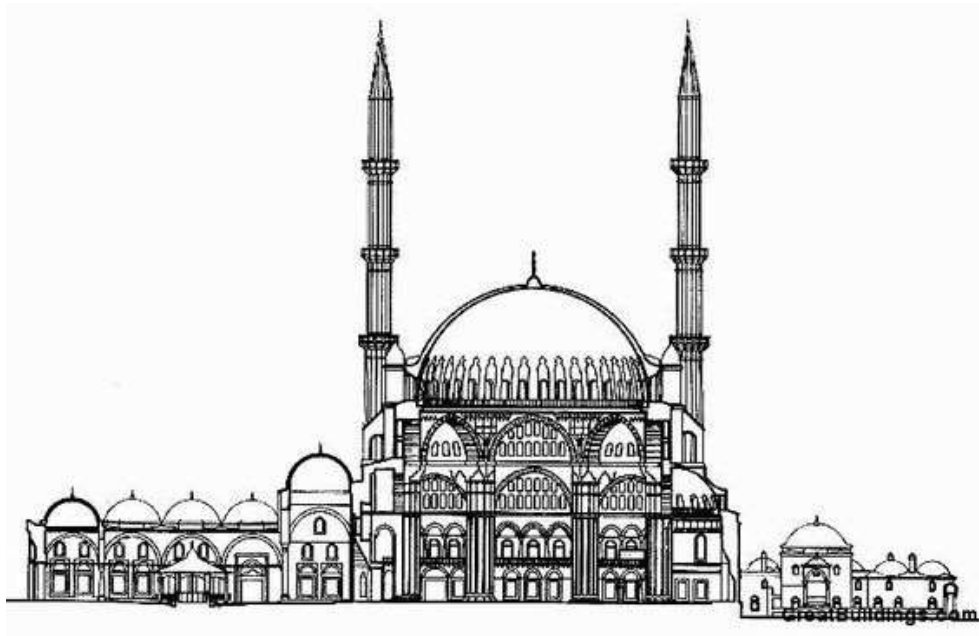


Figure A3. Selimiye mosque section cut. Taken from: The Selimiye. (2002). Retrieved from

http://www.greatbuildings.com/cgi-bin/gbc-drawing.cgi/The_Selimiye.html/The_Selimiye_Section.html

Case Study #2: Yeşil Vadi Mosque:

Floor plan.

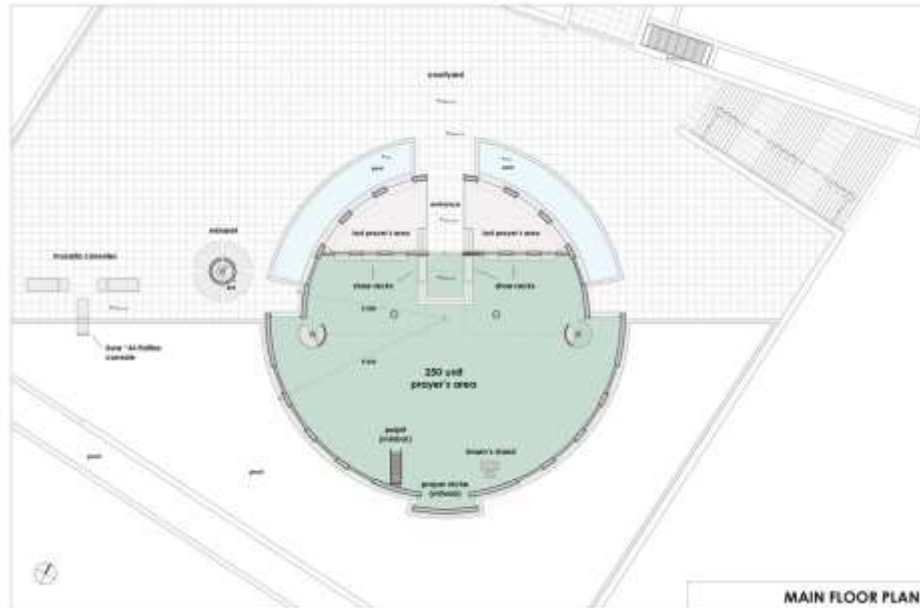


Figure A4. Yeşil Vadi mosque main floor plan. Taken from: Yesilvadi Mosque. (2010).

Retrieved from <http://architizer.com/projects/yesilvadi-mosque/>

Section cut and elevation.

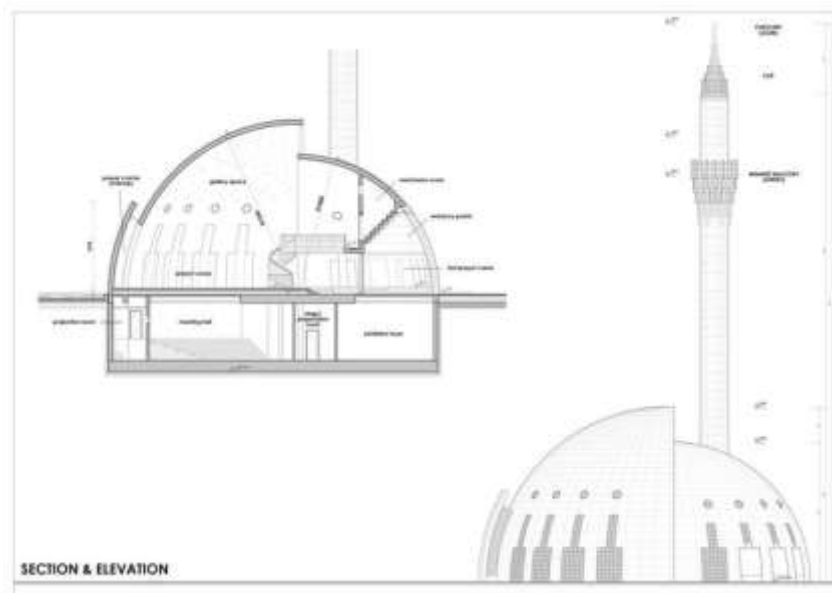


Figure A5. Yeşil Vadi mosque section and elevation. Taken from: Yesilvadi Mosque. (2010).

Retrieved from <http://architizer.com/projects/yesilvadi-mosque/>

Appendix B: Case studies 3 and 4

Case Study #3: Sultan Ahmet Mosque:

Floor plan.

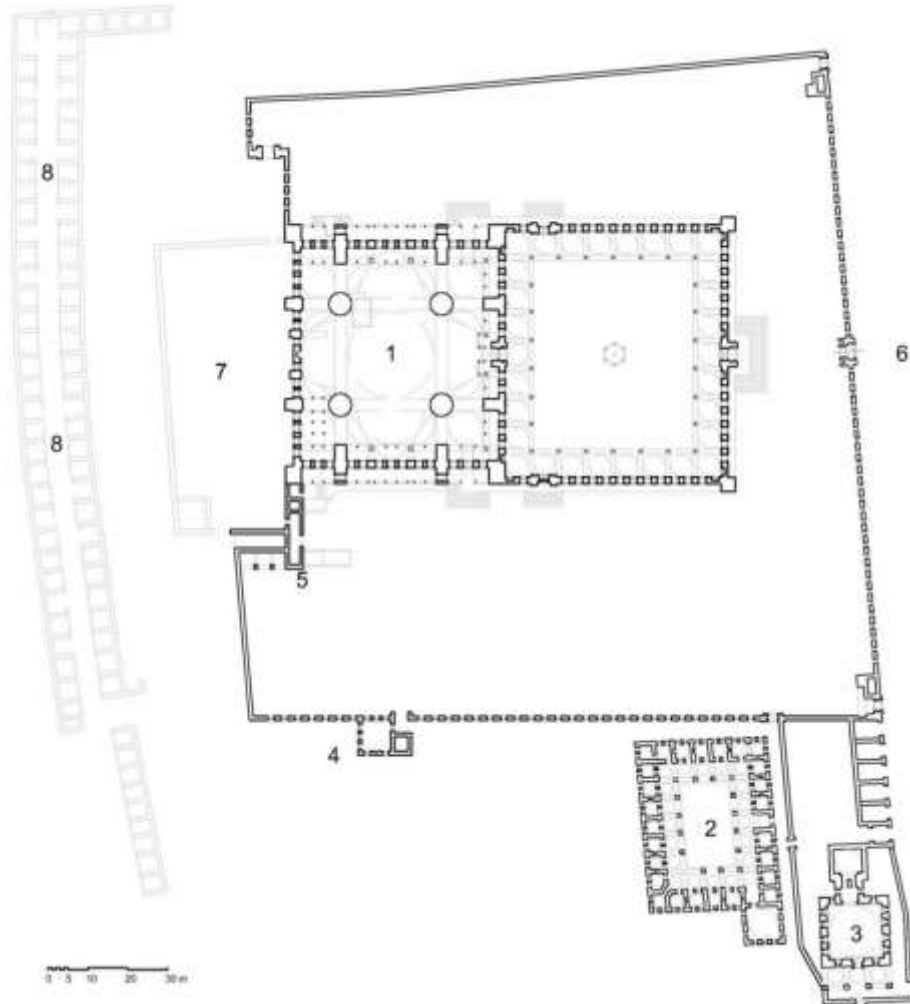


Figure B1. Sultan Ahmet mosque floor plan. The mosque (1) is located within a complex which included a school, hospital, library, bazaar, and baths. Taken from: Structure and Form of The Mosque. (2006). Retrieved from <http://www.sultanahmetcamii.org/structure-and-form-of-the-mosque/>

Section cut.

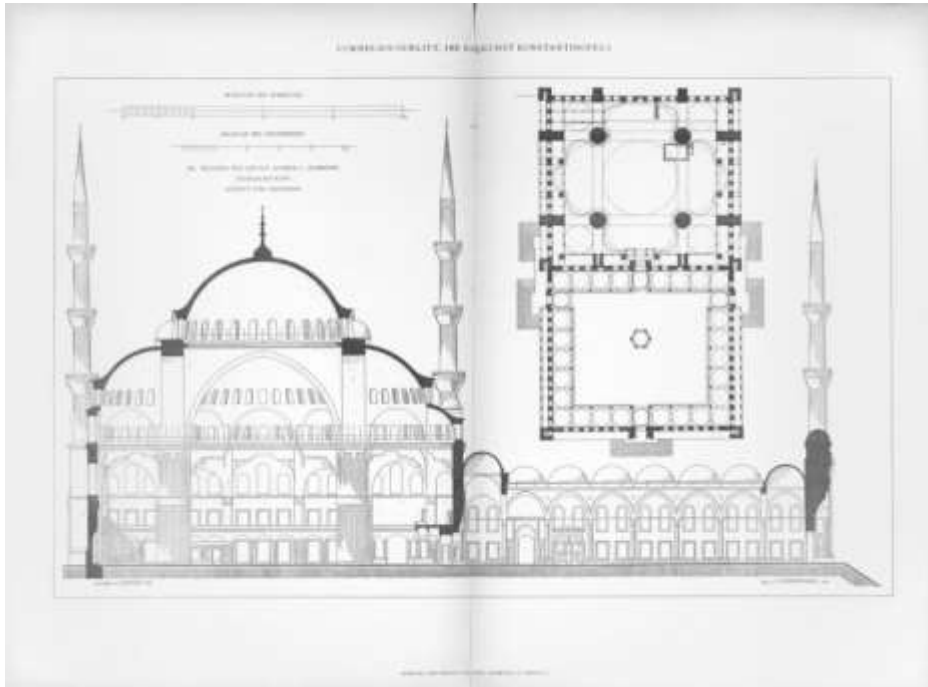


Figure B2. Sultan Ahmet mosque section cut. Taken from: Structure and Form of The Mosque. (2006).

Retrieved from <http://www.sultanahmetcamii.org/structure-and-form-of-the-mosque/>

Exterior elevation view.

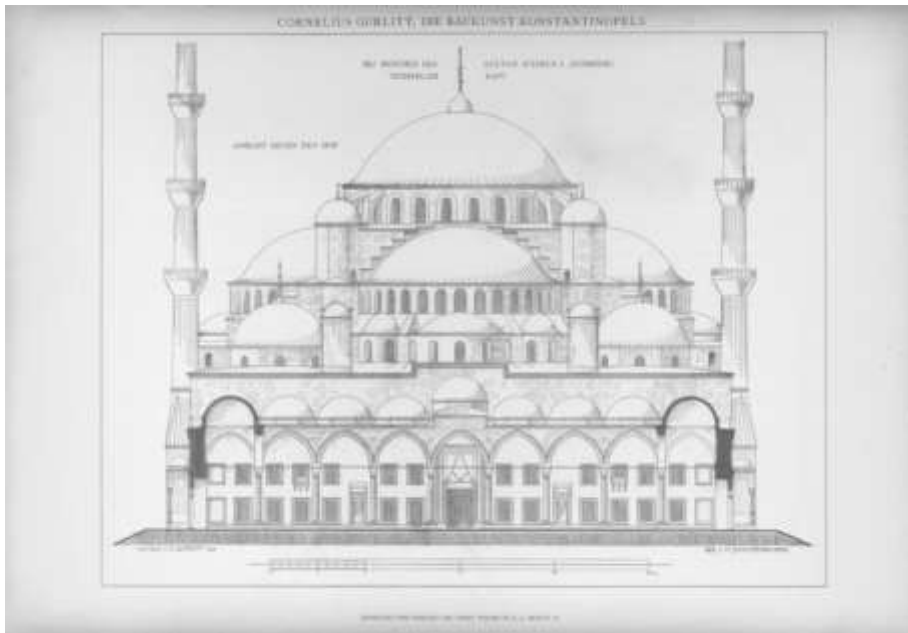


Figure B3. Sultan Ahmet mosque exterior elevation view. Taken from: Structure and Form of The Mosque.

(2006). Retrieved from <http://www.sultanahmetcamii.org/structure-and-form-of-the-mosque/>

Case Study #4: Sancaklar Mosque:

Floor plan.

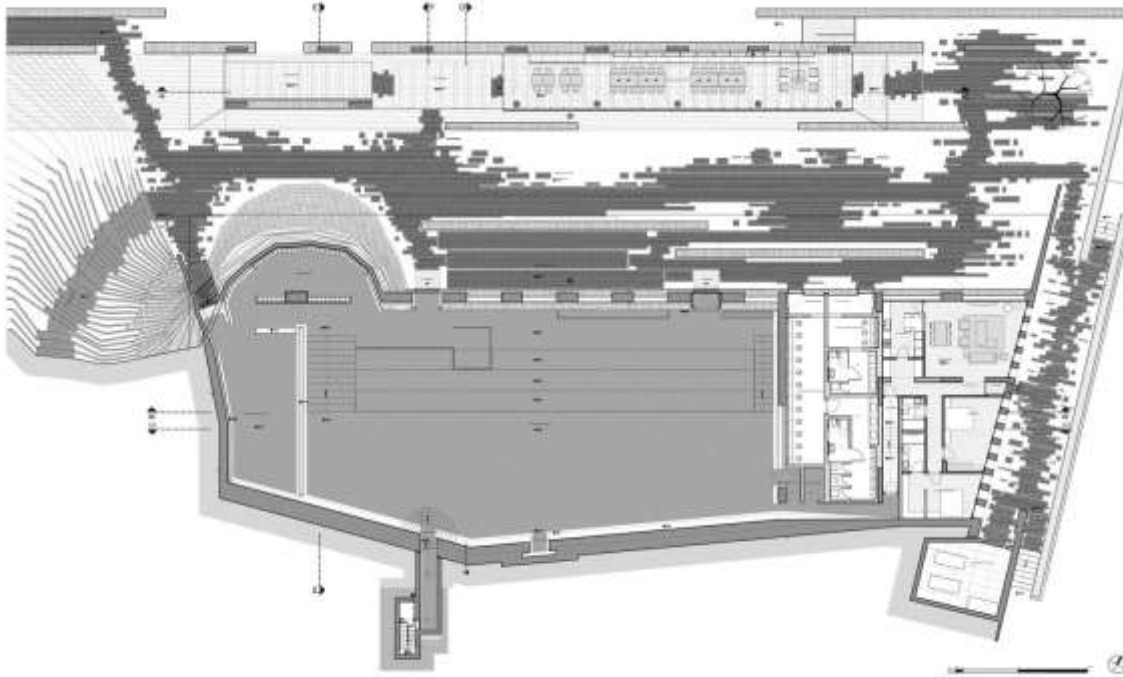


Figure B4. Sancaklar mosque floor plan. Taken from: Sancaklar Mosque / Emre Arolat Architects. (2014).

Retrieved from <https://www.archdaily.com/516205/sancaklar-mosque-emre-arolat-architects>

Longitudinal section cut.

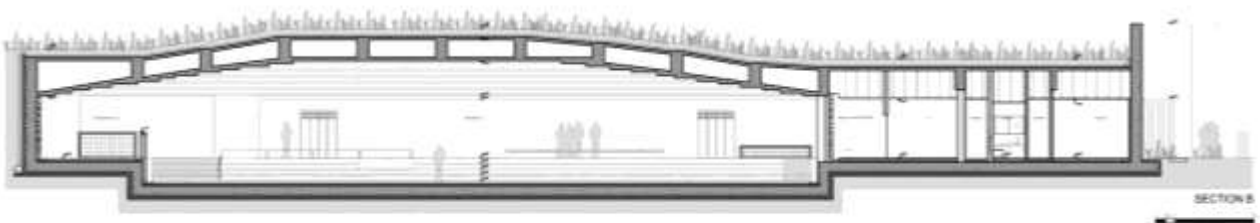


Figure B5. Sancaklar mosque longitudinal section cut. Taken from: Sancaklar Mosque / Emre Arolat Architects.

(2014). Retrieved from <https://www.archdaily.com/516205/sancaklar-mosque-emre-arolat-architects>

Transverse section cut.

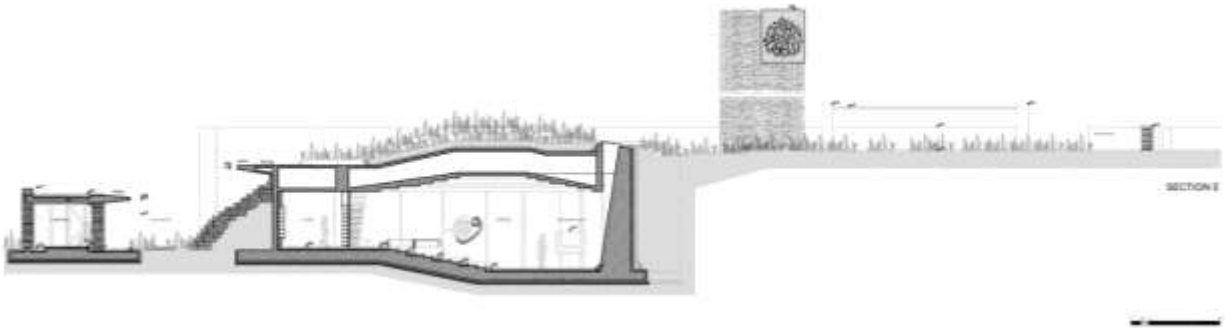


Figure B6. Sancaklar mosque transverse section cut. Taken from: Sancaklar Mosque / Emre Arolat Architects. (2014). Retrieved from <https://www.archdaily.com/516205/sancaklar-mosque-emre-arolat-architects>

Interior elevation and detail.

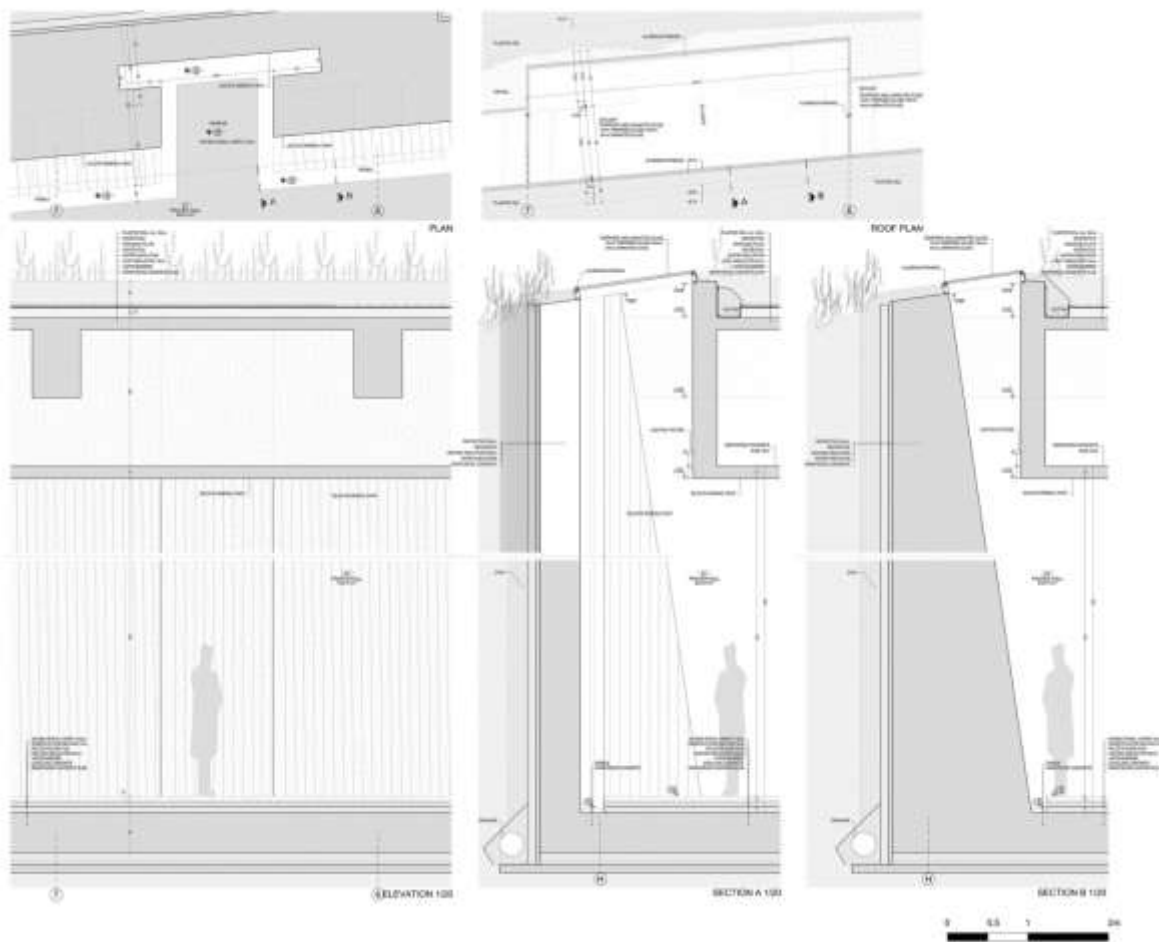


Figure B7. Sancaklar mosque interior elevation and detail. Taken from: Sancaklar Mosque / Emre Arolat Architects. (2014). Retrieved from <https://www.archdaily.com/516205/sancaklar-mosque-emre-arolat-architects>

Appendix C: Case studies 5 and 6

Case Study #5: Sheikh Zayed Grand Mosque:

Floor plan.

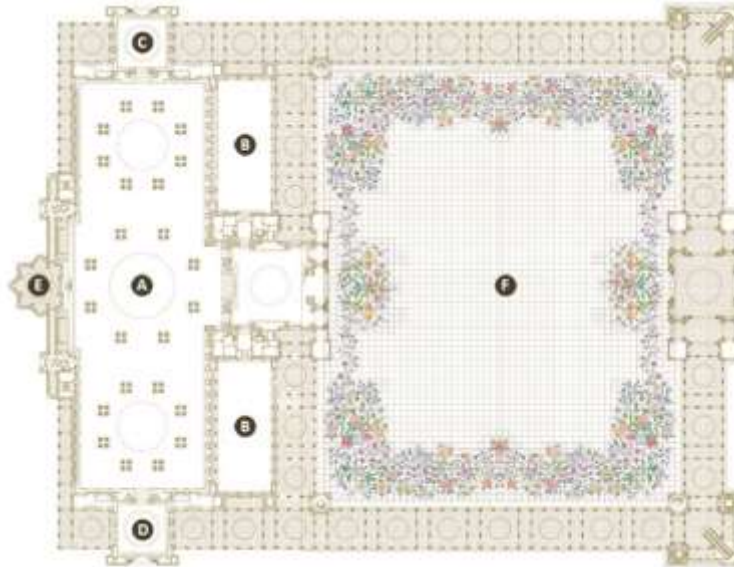


Figure C1. Sheikh Zayed Grand mosque floor plan. (A) main prayer hall, (B) open prayer hall, (C) and (D) entrance, (E) VIP area, (F) the courtyard. Taken from: Italian Artisans in the Sheikh Zayed Grand Mosque. (2012). Retrieved from <http://www.abudhabimosque.com/en/the-design-pictures.html>

Exterior elevation.

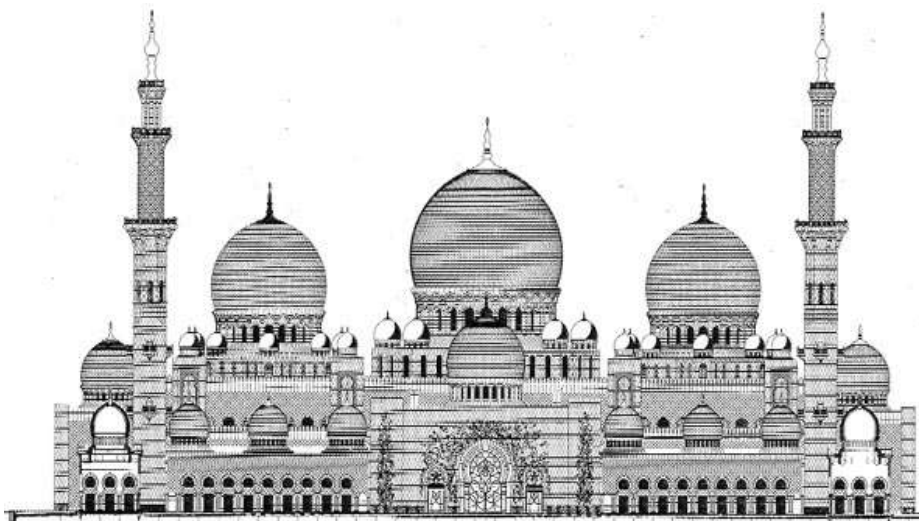


Figure C2. Sheikh Zayed Grand mosque exterior elevation. Taken from: Sheikh Zayed Mosque. (2010).

Retrieved from <https://en.wikiarquitectura.com/building/sheikh-zayed-mosque/#lg=1&slide=1>

Exterior elevation.

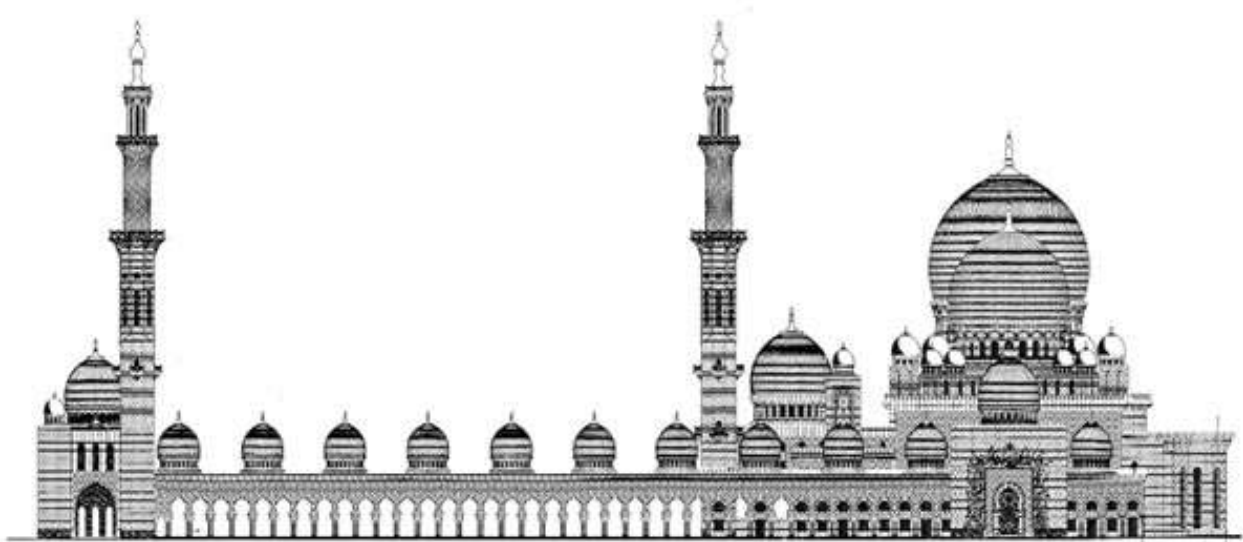


Figure C3. Sheikh Zayed Grand mosque exterior elevation. Taken from: Sheikh Zayed Mosque. (2010).

Retrieved from <https://en.wikiarquitectura.com/building/sheikh-zayed-mosque/#lg=1&slide=0>

Isometric view.



Figure C4. Sheikh Zayed Grand mosque isometric view. Taken from: Italian Artisans in the Sheikh Zayed Grand

Mosque. (2012). Retrieved from <http://www.abudhabimosque.com/en/the-design-pictures.html>

Case Study #6: Al-Warqa'a Mosque:

Concept.

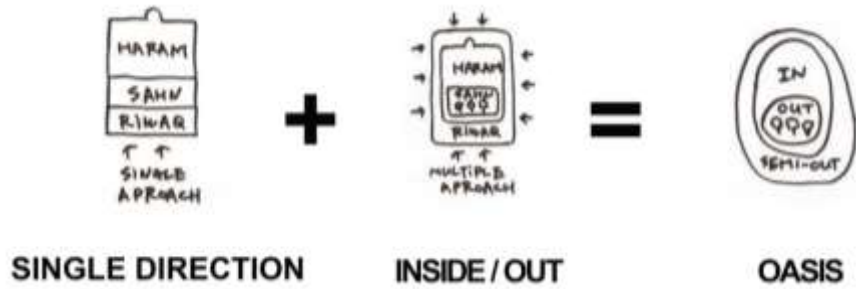


Figure C5. Al-Warqa'a mosque Concept. Taken from: Al Warqa'a Mosque/ibda design. (2016). Retrieved from <https://www.archdaily.com/787633/al-warqaa-mosque-ibda-design/573aa983e58ece15df00012f-al-warqaa-mosque-ibda-design-diagram>

Ground floor plan.

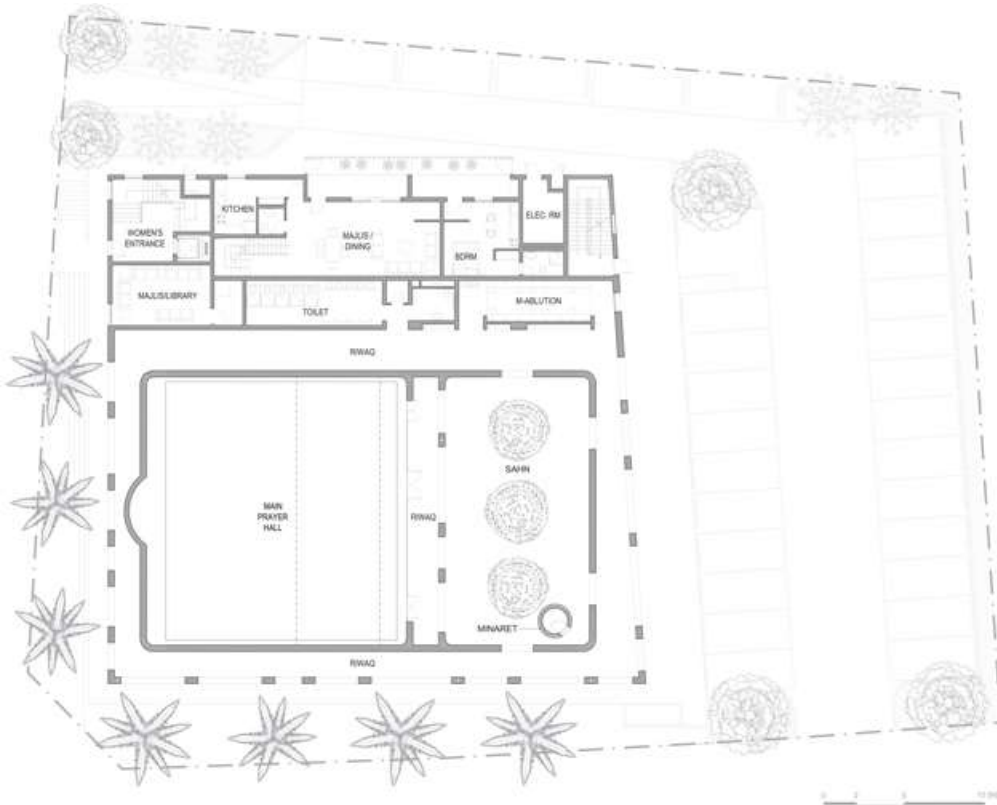


Figure C6. Al-Warqa'a mosque ground floor plan. Taken from: Al Warqa'a Mosque/ibda design. (2016).

Retrieved from <https://www.archdaily.com/787633/al-warqaa-mosque-ibda-design/573aa983e58ece15df00012f-al-warqaa-mosque-ibda-design-diagram>

First floor plan.

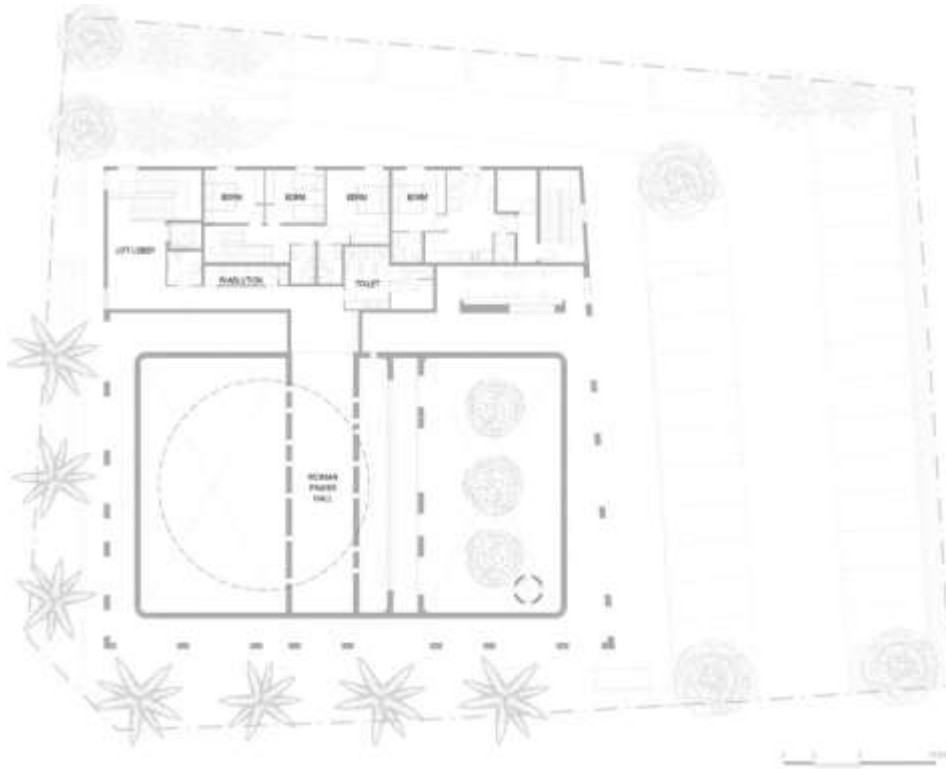


Figure C7. Al-Warqa'a mosque first floor plan. Taken from: Al Warqa'a Mosque/ibda design. (2016). Retrieved from <https://www.archdaily.com/787633/al-warqaa-mosque-ibda-design/573aa983e58ece15df00012f-al-warqaa-mosque-ibda-design-diagram>

Section cut.

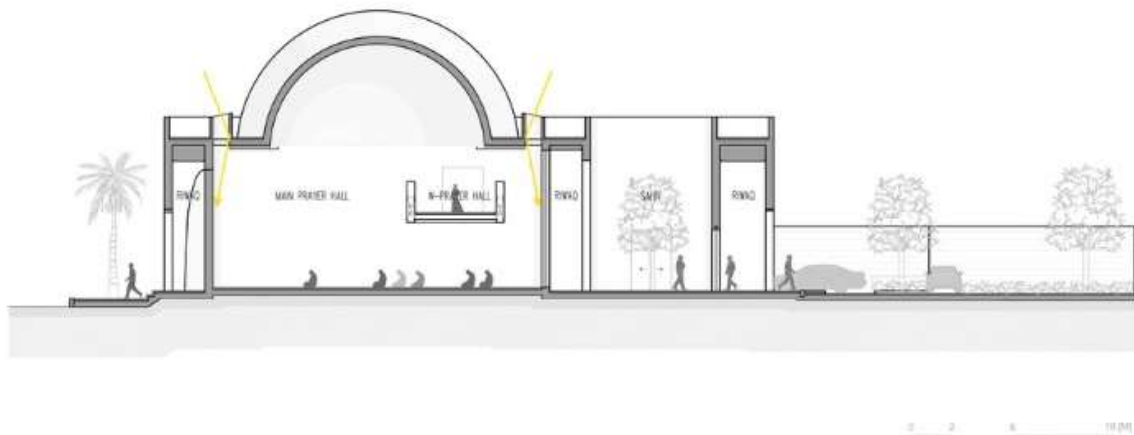


Figure C8. Al-Warqa'a mosque section cut. Taken from: Al Warqa'a Mosque/ibda design. (2016). Retrieved from <https://www.archdaily.com/787633/al-warqaa-mosque-ibda-design/573aa983e58ece15df00012f-al-warqaa-mosque-ibda-design-diagram>