Place of Worship

Contemplating in a factory
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Primary Supervisor: Jeanette Budgett
Adviser: David Chaplin

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Arfa Yasin
1352450
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Abstract

This research project explores the ideas of contemporary Islamic Architecture and applies these to mosque design in Auckland. The design articulates the fundamental architectural features of a mosque and ways to integrate these features within the proposed site context.

Many small Muslim communities established in the developing countries face persecution from larger religious groups which makes it intolerable for these communities to exhibit freedom of religion. This research project revolves around the Ahmadiyya Muslim community, a minority sect in Islam. Many members of the community have been forced to seek refuge in more developed nations of the world, where they are free to practice their beliefs. The importance of building a mosque is to provide a space of worship for these displaced Muslim communities which generates a similar serene environment previously experienced in traditional mosques. A mosque represents a particular time and material culture of the people who belong to it, their value systems, social status, resilience, assimilation and an imaginary parallel space in a foreign land. Moreover, it represents a beacon of peace for the wider society. ¹

Architecture has the ability of establishing grounds of coexistence between refugee Muslim communities and western societies to promote transparency of religion and encourage peaceful dialogue with the western world.

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1.0 Introduction
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1.1 Research Question:

How does contemporary Islamic architecture respond to the current need of transparency of religion to encourage peaceful dialogue between societies and smaller displaced communities?

1.2 Aim:

The project explores contemporary design principles that express the fundamental architectural features of a mosque and ways to integrate these features within the proposed site context. The importance of building a mosque is to provide a space for worship, for displaced Muslim communities to congregate and to stand as beacons of peace for the wider society.

1.3 Project Definition:

One of the main focuses of the Ahmadiyya Muslim community is to encourage the building of mosques around the world to cater for the needs of refugee worshippers, and to stand as beacons of peace for the wider society. Due to the current political associations of Islam as a religion, non-Muslims doubt the purpose of mosques and many disapprove of the building of mosques in many parts of the world. However, the focus today for the architecture of these mosques is to be representative of peace and harmony. It should reflect on the transparency of the religion and allow the general public to see and experience the architecture of contemporary Islam. The challenge of the research project is to provide a progressive design response taking into account the religious traditions of the community.

People expect to be overwhelmed with feelings of peace upon entering a place of worship. Crossing the threshold of such spaces you expect to enter a space separated from worldliness. However, this prospect is compromised when these places of contemplation are formed within a busy area surrounded by working factories, warehouses and continuous noise from machinery and large transport vehicles. Most mosques in Auckland are built in the industrial zones of Auckland. Finance is a major factor in this trend because of cheaper land rates and the availability of larger land sizes in these areas.

The chosen site in Wiri is representative of many other mosque sites within industrial zones of Auckland and around the western world, where limited budget restricts the transparency and visibility of the mosque due to the architectural character of the industrial environment. In many western countries, keeping a low profile can be advantageous for smaller communities due to the current political resistance to Islam. On the contrary, mosques built in the more visible zones of cities face more political hurdles from local councils, general public and extremists of other sects within Islam.

The challenge of the research project is to provide a progressive design response to reflect on the unconventional transparent nature of mosque architecture while taking into account the religious traditions of the community.
2.0 Community Introduction
2.0 Community Introduction

The Ahmadiyya Muslim Community claims to be a revival movement within Islam. Due to minor conflicts in beliefs, most mainstream Muslims do not consider members of the Ahmadiyya Community to be Muslims at all. Members of the community are considered heretics, non-Muslims and are continuously subjected to persecution and oppression. Hundreds of members are assaulted or killed every year in developing countries because of their beliefs. Their freedom of religion has been denied by violence and a series of constitutional amendments in Muslim countries like Pakistan and Saudi Arabia. Since 1974, many have migrated away from these countries to developed countries where religious freedom is promoted and accepted, where members are able to build a place of worship, where they are able to gather for congregational prayers without fear and to be accepted by the wider society.

Currently, the community has over 15,000 mosques around the world. The images below are some examples of Ahmadiyya mosques built around the world. They strongly reflect Persian Islamic architecture throughout the designs. The Ahmadiyya Community in New Zealand, with just over 300 members, recently built their first mosque in Wiri, South Auckland which is also the largest mosque in Auckland.
Fig 2.7 Map of Auckland
Fig 3.1 Location of community members in relation to existing mosque
Green squares identify the dwellings spread across Auckland
3.0 Site

The chosen site is an existing site currently occupied by the Ahmadiyya community of Auckland. This site was purchased in 1989 when the community was newly registered. A modest scale timber building, already on site, was used as a community centre and mosque till 2013. The existing building had to be modified and adjusted to suit the growing community’s needs before a proposed new mosque was built. The aim of the new building was to integrate typical mosque features and make it 'look like a mosque'.

The site is situated in the south of Auckland in the industrial suburb of Wiri and is easily accessible through a long 145m driveway. The driveway is shared by the adjacent Fluidex Transport Ltd warehouse and is generally accessed by oversized trucks. The main road, Dalgety Drive does not get congested with traffic except during the rush-hour peaks. The site is located an approximate 20 minute drive from Auckland CBD and a 10 minute drive from Auckland International Airport. Figure 3.1 represents the specific permanent locations of residences of the members that make up the community. This suggests that the members of the community prefer to stay where it is more convenient for them, depending on their everyday work routines, locations of businesses, schools and general lifestyle. Furthermore, it suggests that they are willing to travel to the mosque for prayers and events.

The main activity that takes place inside the mosque is the weekly Friday prayers (mid-day) when most people take time off work or universities to attend. Although it is not compulsory for women to attend this, many women also take part in these prayers. During the weekends the mosque is usually occupied for religious education of the members including children and general clean-up and maintenance of the premises.

The site is surrounded by large industrial warehouses and factories and the Homai train station (Fig 3.8). The total site area is 5900m². The main limitations of the site includes noise from the trains passing the Homai train station, chemical smell from surrounding factories and poor visual prospects.

A public car park that serves as a Park & Ride for the Homai train station and a bus interchange is located on the southern end of Dalgety Drive within walking distance to the site. This car park serves as additional parking if required by the mosque community during larger events. The car park is also used as additional parking by the public attending the local school sports events during the weekends. A real community feel is created during the weekends and holidays by all people occupying these different spaces for different purposes.
Fig 3.2 View from Dalgety Drive, existing mosque in the background

Fig 3.3 View from Dalgety Drive, existing mosque in the background

Fig 3.4 Outlook from the male prayer hall

Fig 3.5 View from Homai Train station

Fig 3.6 View from the train tracks

Fig 3.7 Run down nature of the driveway and the neighbouring sites
Fig 3.8 Site with immediate context
Fig 3.9 Site with wider context of industrial zone and residential zone
3.1 Introduction to the Existing Ahmadiyya mosque in Wiri:

The newly built Bait ul Muqeet mosque, reflects typical mosque features mostly expressed in the style of Persian Islamic architecture. This is representative of the geographical backgrounds of the members of the community. The elegant white concrete box stands out from the neighbouring industrial architecture and can be viewed from a distance mainly due to its size and height. The large dome intrigues many passers-by to question the purpose and functionality of the building and also encourages them to question more information about the community.

The driveway is long and does not give any information about the functionality of the buildings located at the end of it. The existing mosque and other surrounding buildings lose the direct relationship with the main road because of the 200m set-back. Due to the small site area and the large scale of the building some of the mosque features are only visible from a distance.

It is an important aspect of mosque design to create visual and physical separation between men and women. Even today, many mosques hesitate to offer space for women. However, Ahmadiyya Muslim community, who claim to revive the true teachings of real Islam, have always stressed on the equality among all human beings despite race, culture and gender. The existing mosque offers prayer space for women and separate space for children at the ground floor level of the mosque, that follows the same floor print of the male prayer hall at first floor level. Many visitors question the separation between male and female spaces and the placement of the men’s prayer hall over the women’s prayer hall. The women and children occupy the lower floor to make access to the prayer hall easier, it also works well with the location of the car park at the front of the site. There is no set rule for men’s prayer hall to be on the higher level, as some mosques offer space on the upper floor and some on the same level depending on the site constraints and advantages. The two main external architectural features of this mosque is the minaret and the dome. The dome on the existing mosque can be viewed internally from the prayer hall located on the first floor and it illuminates the whole space with a band of clerestory windows (Fig 3.10). This creates a beautiful and illuminated space in the upper level prayer hall used by males. The existing mosque offers two separate entrances, for men and women. Either entrance leads to large exclusive foyers that creates a welcoming space but the front facade does not clearly distinguish the separate entrance between male and female spaces. The site shape and form is such that the most suitable place for car parking is at the front of the site for visible and easy access to visitors and regular members. There is a huge scope for improvement of landscaping on the site. This is an integral feature of the proposed design. The older existing structure remains and is currently used as a separate dining facility. The library that houses all literature and historical documentation and missionary offices, still exists in the old building and is somewhat disconnected from the new mosque.

The occupants depend on active heating and cooling systems to keep ideal temperatures inside the mosque. The windows to the exterior walls of the building allow natural light and ventilation to the male and female prayer halls illuminating the whole space as seen traditionally in mosques. However, this aspect also encourages large visuals to the outlook of the site. This also allows in noise from the train tracks of the passing trains. As seen in Figure 3.4, the views are mainly of the surrounding large industrial buildings and the train tracks, which is not the most ideal space for contemplation. Therefore, it is necessary for a mosque in similar surroundings to provide inward facing spaces to help generate the real feel of a sacred space.
Fig 3.10 Inside the male Prayer hall

Fig 3.11 Existing mosque and context

Fig 3.12 View from inside towards train tracks
4.0 Traditional Mosque Features
4.0 Traditional Mosque Features

4.1 Mosque function:

‘Mosque’ is a term translated into English and does not necessarily refer to any one kind of building. Many argue that the actual meaning has been lost in translation and the correct term to use is ‘Masjid’, because The Prophet Muhammad himself said “wherever you pray, that place is a Masjid”. In its simplest terms a mosque is a dedicated space erected around a single horizontal axis, the Qibla, which passes invisibly down the middle of the floor in the direction of the Ka’aba in Mecca, Saudi Arabia. When Islam was being introduced in other areas around Mecca, the need for a place of communal worship by Muslim communities was often served by the existing buildings of other religions but their symbolic elements frequently contradicted Islamic religious beliefs. 

Furthermore, when it comes to describing the architecture of the mosque, and looking through the history for references to the complex and symbolic aspects of Islam, one finds the simplest requirements for religious architecture. Pared-down to its essentials, the mosque is not a building at all, it is merely a space set aside for prayer. Once the worshipper steps over the virtual boundary he enters the realm of ritual purity. No enclosing walls, roof or any other liturgical accessories are required to make a mosque. Mosques are generally misinterpreted as the complex response to liturgical needs but their complexity was often created from the integration of non-Islamic architectural features into their new context. In reality the first mosque space was set aside inside the private dwelling of the prophet for the purpose of communal prayers.

During the early years of establishing Islam, mosques had to create a statement of intent in the previously stable Christian environments. The new building form borrowed many architectural elements to create a grand image for the religion to make a mark and to represent the superiority of the new religion. The humble simplicity of the house of the prophet was now covered with the ornamentation of power, wealth and status to compete with other neighbour Christian and Muslim communities.

4.2 Symbolism:

Mosque architecture possesses the most charged set of visual symbols. These symbols are the representation of a visual language that bounds the architectural forms together. Many aspects of this visual language relate to various ecological and a cultural region, therefore some of the vocabulary is achieved through geographical evolution.

The visual symbolic system is dependent on the relationship of man and the setting, not in the form, because the Masjid is formed wherever a Muslim prays. A Muslim’s perception of his architecture is based on the sounds, history and the mode of life. The views and understanding of an outsider is mere interpretation of personal experiences. The danger of these experiences is that they transform into meaningless and obvious generalities.

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3 Ibid
4 Ibid P 144.
George Michell and Dalu Jones sum up Islamic architectural character by saying that Islamic religious buildings should be fundamentally inclusive rather than exclusive in character. This is represented in many surviving mosque structures from the first century that represents the nature of the space created inside the enclosed walls. Some mosques reflect on the theological differences, minor distinctions between various groups. Three main ethnic architectural traditions represent the Islamic architecture: Arab, Turkish and Persian.  

4.3 Mihrab:

Mihrab is known to be the earliest and the most practical architectural feature of Islamic architecture. The concave form of the mihrab was introduced in 707-9 during the rebuilding of the Prophet’s mosque, which involved Coptic masons who introduced a niche in the wall, similar to the Coptic Churches they worked on in Egypt. Mihrab is represented by the indent in the Qibla wall which visibly represents the liturgical axis. Generally shaped like an arched niche which may be assisted with columns to emphasize the visual focal point of the mosque, the mihrab is generally presented with much generous ornamentation as seen in Figure 4.1. This is where the Imam stations himself to lead the congregational prayer. The earliest mosques including the Prophet’s mosque did not have a mihrab, some stones placed on the bare ground indicated the direction of prayer. When Muslim armies started travelling outside of Madina, the problem of the correct direction of prayer was resolved by tracing a line in the sand with a spear and inserting the spear into the ground to mark the direction to face. Therefore, the spear is known to be the first indicator of mihrab and later it was believed to be a symbol of the direction of prayer during the Umayyad dynasty. This soon became the most dominant feature of all Islamic arts and architecture and thus became the focus for elaborate decoration with costly materials. Mihrab was also considered a royal addition to the mosque because only the Caliph or his successors would pronounce the sermon, giving it a royal character. Mihrab is an internal architectural feature and the need to reflect this in the external architecture of the mosque became the most durable and versatile aspect of medieval Islamic architecture.  

Mihrab works well as an acoustic device to expand and magnify the sound of the Imam and reflects it back. Mihrab has achieved immense respect among the general Muslim society not because of its form but because of the direction it represents. Due to this reason, bedrooms and other private spaces are disorientated from the Qibla wall and the mihrab to prevent the possibility of unintended disrespect.

6 Ibid P 33
7 Ibid P 34
The most known feature of Islamic architecture would be the dome but it probably has the least significance compared to all other features. Roman architecture developed the honourable character of the dome and this is evident in the Pantheon. Byzantine architecture adopted similar forms for churches. It was a natural transition to employ this form in the mosque as a representation of honour and prestige. The earliest domes were directly over the mihrab to define direction externally and to illuminate the area for the Imam internally. At a later stage, the dome was used to emphasize the chamber of the founder’s grave and then it was moved towards the centre of the mosque to illuminate the whole area internally. For most religious traditions, the dome has some cosmic status, and some believe that in Islam the dome also represents the vault of heaven.  

Another principle responsible for the current mosque architecture is introversion because most mosques focused on the space created inside the front entrance of a mosque, evident in the courtyard placement and centrality of the dome. In the narrow streets of Arabia, when mosque building was becoming common, every neighbourhood had their own mosque. The plain front façade was the only element visible to the public and that was all that was necessary because the size of the mosque and its beauty could only be recognized from afar or from within the courtyard of the mosque. Consequently, the decoration of the interior space was becoming important to give it the recognition it deserved.  

The enclosed space within the mosque and its boundaries has been the focal point of Islamic architecture, compared to the exterior facade of the building. This feature comes from the design of a typical Muslim dwelling where the focus of design is the inner courtyard and public and private spaces spread from there. These dwellings are generally recognized by a large window-less wall with a single door access. 

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9  Ibid P 34  
10  Ibid P 34
4.5 Minaret:

With the spread of the new religion the needs of the mosque also grew. The means of calling people for prayer had to be resolved. One of the companions of the Prophet Muhammad suggested that a man chant the call to prayer, after a dream. The Prophet Muhammad turned to Bilal, known for the sweetness of his voice, to call people for prayer from the rooftop of the mosque. This describes the need for a tower-like feature to project the voice as far as possible but the actual motivation of the invention of minaret evolved from the Christian tower. It was actually developed from Damascus from the corner towers of the church of St John the Baptist. But of course the towers had to be modified for the use of the minaret as the towers were built sturdy to take the weight of the church bells, whereas the minarets were more graceful and fragile in form.11

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4.6 Minbar:

Minbar can be defined as a reserved space that is used by the Imam to lead the Friday Sermon or generally to address the crowd. Minbar was mainly concerned with Friday prayers to make the sermon visible and audible. This was an essential feature especially when larger mosques were built. Originally built in stone and later replaced with mud brick and developed further and built in wood for easy transportation within the mosque.¹²

These days the minbar has been minimized to an ordinary podium (Fig 4.10) in some mosques because the purpose is fulfilled by the latest audio/video technology. However, some mosques are keeping up the symbolic reference and use a timber minbar with steps for the Imam to sit or stand to address the congregation.

4.7 Courtyard:

The openness of the courtyard space acts as a transition point between the sacred and the materialistic by defining the boundaries of the holy space. It holds the overflow of worshippers, ideal for hotter climatic conditions. The columned arcade around the courtyard provides extra protection against weather and allows the courtyard to accommodate extra worshippers for Friday prayers.

4.8 Washing area/ Islamic Fountain:

Generally a fountain is located in the centre of the courtyard to emphasize the importance of purification with water before you enter the sacred realm. Supplementary washing facilities are also provided closer to the prayer area. Generally the fountain or the other washing facilities will include taps with running water and low stools for the user to comfortably sit and to physically isolate himself or herself from other impurities. The showers and toilets are generally separated from all other areas, especially from the prayer space to define the boundaries between ritual purity and other impurities. To define this boundary even further the worshipper must remove shoes before entering the sanctuary. Shoes are generally stacked in racks outside the prayer space. Another gesture of showing respect towards the divine is the covering the head inside the mosque. 13

4.9 Other Mosque functions

Celebration of rites: birth, circumcision, marriage, divorce and burial. Other rules developed over time with the influence of culture and societies, for example, the removing of shoes, avoiding spitting, preserving silence and cleanliness. Around the 12th century separate space for women within the mosque grounds was established. Over the years this has become a major conflicting issue within the Islamic society and questionable by many belonging to other faiths. This makes it a very political and sensitive topic.

Ahmadiyya Community has always encouraged on the place of women inside the mosque and equal rights as men. This is evident in the mosques all over the world and the special and equal place of women in all mosques which reflects the true teachings of the religion that got lost somewhere between external influences and political conflicts.

4.10 Decorative elements:

Oleg Grabar, through his vast knowledge on Islamic history and architecture, further enlightens the importance of decoration in Islamic architecture. The geometry of the Islamic patterns and Islamic art starts from the form of the circle and through repetition, symmetry and scaling. The circle is transformed into complex patterns that express the negative and positive areas. The complexity and depth of these patterns extract the viewer into a non-materialistic world. The use of contrasts of colours and the complexity of the geometric patterns creates three-dimensional effects on the flat walls, ceilings and floors, adding depth and intimacy to the space. The decoration creates inward attention of these spaces by inviting contemplation with its complexity. Most of the decoration in any Islamic building consists Arabic calligraphy, which reflects precise geometry of the line and curves in the form of text. The calligraphy provides a legible message from the Quran and also serves as a decorative motif in the form of abstract patterns.

Fig 4.18 Typical geometrical pattern Fig 4.19 Figure-ground diagram Fig 4.20 Figure-ground diagram Fig 4.21 Circular geometric pattern

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Moreover, Light also plays a major role in the aesthetics of Islamic architecture, especially mosque design. The reflection and refraction of light is accentuated by the materiality. The light shining through the patterned windows and other openings onto the patterned surfaces dissolves the boundaries of solid and void. The differentiation between permanent and temporary is very subtle, this contributes to the fluidity of the space and helps make the transition from one place to the other. The light transforms the space and the forms enter a new dimension of time as the day progresses. There are no sharp corners, everything is dissolved within the building and anything that enters the building is filtered.

Water is also significant in its own character as it also helps the formation of these dissolved spaces. It provides reflectivity and multiplies these patterns and forms to create the sense of continuous and never ending space that extends beyond the physical. Water is sometimes used as a guidance sequence and to mark the hierarchy of spaces within the building.

The motifs, tile work and various other forms of art found on mosques merely serve the function of beautification and visual pleasure. It is a common misconception that these art forms have some kind of intellectual or cultural meaning behind them. This is yet to be proven that any meaning relate to these ornamental patterns. Many artists and architects from the Muslim world have concluded that the reason for this intense development of artistic forms was raised from the religion itself, as Islam rejects all forms of visual art and display. Therefore, the patrons and artists at the time had to discover some new ways of introducing contemplation within their buildings/mosques. This form of ornamental decoration deserves the highest appreciation for its presence in the mosque as it transforms the space by projecting the two-dimensional linear art into three-dimensional space with varying visual depths.

17 Ibid P 173
18 Ibid P 173
Mosque architecture concentrates all its attention towards the ornamental decoration which transforms the space within the building and adds value to the whole monument. This tradition grew and developed to a stage where even inscriptions were ornamentalised with interlacing foliage. Large range of these ornaments could be found over the whole Islamic era, varying on the geographical location of the architecture.\textsuperscript{20}

The three main types that expressed the ornamental decoration in architecture were the geometry expressed in two-dimensional pattern work, vegetal elements that blurred the boundaries of inscription and pattern and the third category was based on individual techniques of these motifs which varied geographically.\textsuperscript{21}


\textsuperscript{21} Ibid. P 195
5.0 Literature Survey

5.1 Influential elements:

“I am not attracted to straight angles or to the straight line, hard and inflexible, created by man. I am attracted to free-flowing, sensual curves. The curves that I find in the mountains of my country, in the sinuosity of its rivers, in the waves of the ocean, and on the body of the beloved woman. Curves make up the entire Universe, the curved Universe of Einstein.” Oscar Niemeyer 22

The Digital forms of art and architecture attracts many students today to explore and push forward the unseen and the unthinkable. Over the last twenty years with the development of technology and software we are able to produce designs and forms that previously would have been impossible to translate onto paper. But at times this really limits our thinking to our limited knowledge of software. Many buildings that are published in magazines are futuristic designs focusing their attention towards getting inspiration from objects that really test abilities of the software. These buildings produce aesthetically pleasant images but lack the practicality of spatial layout. 23 On the contrary, some published designs produce pleasant practical spaces along with an eye for beauty. Designers like Ali Raheem, and SOM reflect practical aspects in their buildings and therefore create future possibilities. 24

5.2 On Beauty:

Describing beauty and the reasons for what makes something more beautiful is a very sensitive subject and has been since humans could recognize beauty and its relationship to us. Beauty varies between disciplines like the fine arts, architecture, natural beauty and the beauty reflected from the divine proportions. However, the core relies on similar ideas of proportion which makes one object more appealing than the other. We generally base our opinions on aesthetics of an object on a very calculated analysis of how the object seems appealing to us, may it be in the form of art, or music, even nature. And so, the underlining idea is that something that seems beautiful to one person may not be to another, perhaps due to one having previous knowledge of the object. A building may be beautiful to its architect and to the client but the inhabitants might have a different opinion based on functionality, relationship to surroundings and their previous knowledge of beautiful buildings. A painting might be worth millions for the artist and the customer but to someone who does not have the same emotional relationship with the painting would disagree. However, the divine proportions seen throughout nature and living beings somehow fall into the category of ultimate beauty where nothing could be added or subtracted to make it more appealing to us.

It is a general belief that historical architectural forms needed to be a representation of certain set proportions and ratios and these should reflect the proportions of the human body. This is a demand that became universally accepted on Vitruvius’ authority. "As man is the image of God and the

22 Oscar Niemeyer, “The curves of Time, the memoirs of Oscar Niemeyer”, (London Phaidon Press Ltd,2000), P 3
proportions in architecture have to embrace and express the cosmic order”. 25 Do our buildings and arts need to follow these proportions to create objects that surround us? Some experts have translated these proportions for others to follow and recreate these proportions for humans to occupy yet this is ignored and current technology takes precedence over proportions of practicality.

Alberti in his ten books on architecture declares that beauty and ornament are two major factors in defining aesthetic appearance of a building and therefore beauty is defined through binding together visual elements so that nothing could be added or taken away. 26 Alberti further explains that beauty is expressed through the proportional relationship of the object to make it worthy of achieving visual perfection. Achieving such proportions would declare perfection in aesthetics but even nature rarely manages to create something of ultimate perfection. 27

Alberti paid special attention towards the embellishment of architecture with the use of columns. He defines columns as, “a row of columns is indeed nothing else but a wall open and discontinued in some places”. We are far from following this theory, as architecture today treats the column as merely a structural figure within the building, and we rely on this to provide for the loading and in most cases it is hidden within the walls or the architecture of the building. For Alberti the use of columns was the ornamental of the building that enhanced the aesthetic appearance of the building. This idea may be more appealing in theory than practice, as Alberti himself could not solve the difficulties of the perfect blend of columns and walls. 28

On the contrary, Edmund Burke developed opposing ideas to Alberti. His criteria for beautiful forms was that they must be small in scale with visual smoothness displayed in the gradual variation of lines and colour representative of the fragile delicacy of the object. 29 He strongly argues that proportion has very little to do with the beauty of an object, we can compare two different animal species that display opposite but beautiful proportions in their bodies, shape, colour and act, yet they can be equally as beautiful.

At times we find things beautiful that have some relation to objects we have an emotional relationship with. Beauty could also be described as something that evokes a deep feeling of visual satisfaction, something that may cause some degree of love in us and something that blocks out all other senses. He further writes that perfection is not the cause of beauty. Major example of this is reflected in the female sex, displaying the idea of weakness and imperfection, yet women are generally considered to be a major representative of the idea of beauty. “Beauty in distress is much the most affecting beauty” 30

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30 Ibid. P 108.
The approach to my design project is more towards achieving visual aesthetics without the need for symmetry to emphasize the idea of proportional beauty. The free flowing digital forms emphasize the idea of continuity and the dissolved boundaries between the ceilings, walls and floors make it a reality. During the rise of Islamic architecture in the new regions of Arabia the most visually striking element applied to all buildings was infinity. The Holy book, Quran is a constant reminder of the qualities and abilities of the creator and the way this infinite knowledge is applied to architecture, especially in mosques by blurring the boundaries between solid elements and openness of the building, the structure and lightness of the building. The worshipper is caught between the illusion of reality and mystery that makes the mosque architecture succeed in the purpose of its building.

Figure 5.1 illustrates the knowledge of proportion that is applied to early mosque architecture to emphasize on the visual aesthetics that make the space acceptable and known as a space for prayer.

Beauty has always been appreciated and provoked in the Muslim world, but no major theoretical approach has emphasized this idea, unlike the Classical European world. The lack of arguments of aesthetic theory may be the very reason for the absence of accurate perception on the meaning and representation of complex geometry in Islamic art and architecture.

The ultimate form of beauty in Islam as a religion is always described to be the words of the Holy Quran that is the direct dialect from Allah and also the words and actions of the Holy Prophet Muhammad. Paradise is always described in the most beautiful scenarios that appeals to us as humans. In many chapters of the Holy book, beauty is evident in many life forms like the greenery of the forests that surround us and its visual comparison to paradise, the fluid yet rigid form of beautiful animals like horses and lions, the fragile nature of women and their physical being.
6.0 Precedent Survey
6.0 Precedent Survey

6.1 Sakirin Mosque, Istanbul by Zeynep Fadillioglu:

The modern mosque has been designed to accommodate the needs of present Islamic society. The mosque has a designated area especially for women instead of the usual ‘left-over’ small balcony spaces. The layout of the Mosque along with the chosen materials has proven this building to be a truly modern mosque for the modern human needs. The first female architect to have designed the mosque has moved away from the traditional techniques and materiality and used more modern materials like aluminium composite panels for the dome, two metal minarets 35m high, acrylic minbar and an asymmetrical chandelier also designed by a female artist. 31

Turkish Islamic architecture is generally based around the 16th century Ottoman Islamic architecture. The simplicity of the sleek ornamentation reflects on the modern use of materials like glass etching with Quranic verses. It makes the space visually very minimally ornamented although all those decorative elements still exist. The idea is to make the worshipper more connected with his/her sole purpose while keeping the space modern.

According to Professor Ali Kose, who studies the psychology of religion at Marmara University, traditionally women played a great role in mosques during the Prophet Muhammad’s days but this idea deteriorated over time. “Islamic societies, by time, have become male dominant societies, and this affected every part of life, and also affected the religion as well.” 32 Around the 12th century separate space for women within the mosque grounds was physically established and before that they could only pray inside the house. 33 This freedom was somehow lost over time under the social and cultural influences and some sects within Islam still do not appreciate the concept of a separate space for women within the Mosque grounds. Therefore this aspect creates its own importance in any contemporary mosque especially in the western world today. Providing a separate praying facility for women and allowing access to all areas within the mosque will be an important aspect of this project.

Modern Mosques like the Sakirin Mosque in Istanbul are such a great example of creating peace within the general society by acting like a symbol of unity. Integrating both Eastern and Western views reduces the conflicts and differences and hatred towards each other through compromise and fairly understanding opinions. 34

6.2 Shah Faisal Masjid, Islamabad by Vedat Dalokay:

The design was originally submitted for the competition for the Kocatepe Mosque in Ankara, Turkey. The design of this mosque was innovative and modern and it was accepted by the local councils. The construction had to be stopped at the foundation level because it was highly critiqued by the conservatives for its modernist look. This design was later modified and submitted to an international competition for the Shah Faisal Mosque in Islamabad, Pakistan. The mosque was completed in 1986, and still receives critique from the general public and from officials but it is also widely accepted for its majestic beauty. The mosque can accommodate 74,000 worshippers inside the main prayer hall and up to 200,000 in adjoining grounds. It is known to be one of the largest mosques in the world.

The shape of the mosque reflects the design of the Ka’aba in Mecca. The eight-sided concrete shell is inspired by the cubic shape of the Ka’aba and Bedouin’s tent, anchored by four slender minarets inspired by Turkish architecture. The main space of the mosque consists of a large courtyard, main prayer hall, porticoes, lecture hall and library. 35

The mosque is accepted by many for its scale, beauty and functionality, but on the other hand it is still widely criticised by many for the unconventional exclusion of the dome. Many believe that due to the long history of South Asian Islamic architecture and the typology of a mosque, the public finds it hard to respect the building as a mosque. 36

The mosque is a real life example of the ‘modern movement’ for Islamic architecture and its response. It reflects on the use of modern materials and construction techniques and the advancement in structural technology, yet respecting all ‘symbolic’ elements of a mosque.

The Brasilia Cathedral (1959 – 1970), Brasil, by Oscar Niemeyer:

His buildings and landmarks were a reminder that architecture is also about the very human functions of imagining, of responding to the beauty and mystery of the natural world. 37

Niemeyer’s interior spaces are inviting through linking them to each other. These flowing spaces change through various containments and qualities of light. The distinction between floor, wall and ceiling is blurred between boundaries through subdued indirect lighting contrasting with the dark interiors. This puts the visitor in a newly conceived space dedicated to the function and spirit of the place. The entire spatial composition is fluid. He achieves fluidity throughout his designs with the play of light and shadow in all forms of architectural functions. The natural light creates a focal point within the building, giving purpose to the structure. 38

The Brasilia Cathedral reflects these ideas of spatial layout, the circular layout stands as an iconic symbol and sculpture for the capital city. These powerful, carefully crafted spaces impel a certain movement, a certain compelled effect such that the will of the architect is felt. 39

Brasilia’s Cathedral stands as a unique monument in the city. Its sixteen curving columns form one of Niemeyer’s most vivid and influential icons. These sweeping columns naturally lead the eye (and soul) upwards, towards the clouds, sky and beyond. The stained glass further breaks up the large volume of the space. The unconventional and modern plan of the church is reflected in the curved plan which breaks the traditional linearity of Christian churches with centrality of the space and also exposes the hidden elements within the church. He achieves this through curving the walls into the floor and ceiling that merges into walls and goes beyond the restricted boundaries of this conventional and defined building typology. The solid curved walls discourage the eye to wander beyond by creating discontinuous forms to provide a visual break.

During a brief informal interview he expresses his feelings towards the constantly changing cities affected by nature and the role of an architect to manipulate his designs to reflect on better life for mankind and that which reflects equality. He believes architecture arises out of technical and social projects and for architecture to be superior it must generate emotion and an element of surprise. In his later days he focused more towards the society and building for people. His futuristic ideas are based on this concept, where everyone will be equal because nature will force us to do so. There will not be any slums or palaces, everyone will be able to enjoy architecture as one. It is the architect’s duty to consider these issues. 40

His aim was to integrate fine arts with architecture. Many painters and artists of the time were commissioned to work on his buildings to create a more appealing look and to enhance his architecture. The art and architecture both complement each other through his architecture.

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38 Ibid.
39 Ibid
40 Youtube, Interview with Oscar Niemeyer, accessed on April 7, 2014, https://www.youtube.com/watch?v=57CJGnf6z8Y
Curves are an important aspect of his designs, the ultimate satisfaction of the design is achieved through creating a feeling when the viewer looks at it. People are surprised with complex shapes that are different and that combines the art of architecture and the visual arts. His belief is that unless it is essential for the architect to work in straight lines they should not do so, because of the advancement in technology anything and everything is possible.  

Another inspiration towards architecture was through appreciating a women’s beauty and the divine perfection reflected in a women’s physical body. Beautiful shapes can be derived solely from this idea.

41 Youtube, Interview with Oscar Niemeyer, accessed on April 7, 2014, https://www.youtube.com/watch?v=57CJGnf6z8Y

42 Youtube, Interview with Oscar Niemeyer, accessed on 7th April 7, 2014, https://www.youtube.com/watch?v=0krHxgYkzWM
Fig 6.12 Brasilia Cathedral façade

Fig 6.13 Brasilia Cathedral interior wall and ceiling
7.0 Design Brief

The overall size and functionality of the proposed project is derived from the existing mosque on the site that is currently serving the community. These spaces currently offer prayer space for around 600 people in the new mosque and 400 in the old structure of the building. The proposed project will offer prayer spaces for 600 people.

The main spaces and the required sizes are as follows:
- Male prayer hall: 330m²
- Female prayer hall: 330m²
- Crèche: 100m²
- Offices: 100m²
- Conference Room: 100m²
- Library: 200m²
- Ritual Washing area(Male): 100m²
- Ritual Washing area(Female): 100m²
- Male toilets+1 accessible
- 6x Female toilets+1 accessible
- Small storage areas for removable furniture etc.
- Separate entrance to prayer halls

Female Dining Facility: 150 m²
Male Dining Facility: 150 m²
Communal Kitchen: 100m²

Figure 7.1 illustrates the different spaces required by the community and the relationship of these spaces to each other.

Fig 7.1  Design Brief
8.0 Methodology
8.0 Methodology

The method used for the design process of the project was mainly pragmatic research through historical literature, site analysis and design brief. This method helped to resolve the rational aspects of the project such as the spatial organization and orientation of the important aspects of the building and site.

Another design approach that greatly impacted the design decision was the use of different media, like digital software and physical model making to achieve visually satisfying solutions to respond to the rational requirements of the project.
9.0 Design Process
9.0 Design Process

9.1 Concept Design

The very first approach to the design of the mosque was to understand how the spaces will be linked and connected to each other. It is very important to distinguish the different spaces within the building so that they clearly differentiate the private and public spaces. The figures below represent the first take on the site, dividing the different functions of the mosque to analyse the journey of the visitor. These concepts will develop further understanding of the importance of relationships of different spaces and help distinguish separation and connection in later design stages.

Figure 9.1: approaching the site from the long driveway, also shared by large trucks, the different functions of the building on the site are clearly defined as the visitor enters the site. The location of the building takes more visual precedence as the functions clearly distinguish themselves from each other. The dining facilities and offices makes the visitor feel welcomed as these spaces are on the periphery of the building thus, making them more communal and publicly accessible, while the main prayer space still acts like the core of the building.

Figure 9.2. Similar idea that spreads the site, but the office block will be separated from the dining facility, still keeping the main prayer area as the major focal point of the site.

Figure 9.3: Allows the visitor to approach the site on to a large welcoming entry space, clearly defining the entry for the visitor. However, the site profile is such that by pushing the building forward it creates dead and awkward spaces.

Another earlier approach to the design phase was to start diagramming the relationships between the different functions of the building (Fig 9.4 - 9.5) while keeping the private aspects as priority of the whole design. This will develop further later on to overcome the relationship issues with the level of privacy required between male and female spaces.
Fig 9.4 Diagram of the spatial layout section and plan

Fig 9.5 Spatial layout with site
9.2 Concept Design 2

The image below shows modelling with softer materials to be representative of the flow of spaces. Keeping the two large prayer spaces as the central support of the whole building, other spaces gather around the two large halls to enhance the visual importance of these spaces. Strips of paper that were joint together at one end were used in the modelling exercise to establish these very different spaces that will be part of one larger experience.

Fig 9.6 Paper models 1
Fig 9.7 Paper models 2
Figural decoration is forbidden within the mosque premises as a general practice in Islam. This encouraged an intense focus on the abstract ornamentation. The three main forms of decoration on a mosque are floral, geometric and epigraphic. They all serve the same purpose within the mosque architecture that is, to dissolve matter and to deny substantial masses. Floral patterns represent the richness of God's creation and refers to paradise. Geometric patterns create a play of multiple superseded levels that go beyond the set frame. These forms go back to the idea of infinity, representing the infinite nature of God's creation and his supreme being. Epigraphic decoration is the Arabic calligraphy within the mosque that represents the inscriptions directly from the holy book, the Quran, unifying the one language representative of Islam as a religion.

All forms of decoration are put together within the prayer halls of a mosque to create a serene environment for the worshipper. As mentioned in the earlier discussion, the importance of geometry in Islamic art and architecture takes precedence over all other visually appealing aspects of mosque architecture. The geometric patterns of rows and grids, the calculated placement of circles over squares and the infinite forms that are created from developing the relationship of these two primary forms. Fluidity is introduced with this method to dissolve the structure. The continuous calligraphic and ornamental patterns flow from carpets to tiles on the walls and to ceilings and domes, establishing seamless relationships and blurring the boundaries between the architectural elements and the ground.

The understanding of the significance of these patterns within Islamic architecture was the aim of this conceptual stage of the project. For this exercise I chose a pattern that was a representation of a typical geometric design (fig 9.11). Further analysis through drawing was established to enable different functions of the building to occupy these spaces. This exercise identified many planning issues that had to be resolved through the spatial layout of the mosque.
Fig 9.11 Creating spaces within the geometric framework

Fig 9.12 Layout of the spaces derived from the geometric pattern

Fig 9.13 Sectional diagrams of formation of spaces derived from geometric patterns

Fig 9.14 Diagram of sectional spaces

Fig 9.15 Diagram of sectional spaces

Fig 9.16 Sketch of the form of the minaret derived from the Arabic calligraphic script
The developed design will take on the strategies explored in the concept design stage and put together different concepts that have been explored to develop the design further.

The first response to the collective concept ideas resulted in a very linear design. The non-variable feature of the design is the Qibla wall and location of the mihrab which has to face 260.93(deg). This determines the direction of the building and therefore the entrance at the opposite end of the mihrab. This design allows for two large prayer halls, one for men and the other for women, both facing the Qibla. These halls provide an end to the journey for the visitor, both allowing for separate entrances. The office block and dining facility is completely separate from the main focus of the building, the prayer halls. This provides complete separation between public and private spaces.

However, this approach fails to develop any relationship between the two tasks. This also makes the threshold of the building more towards the private aspect of the mosque, which makes access and the relation of these two spaces a lot more difficult for the occupants. The steel ribs will provide for the structure of the building and also create large volumetric spaces that is expected of a place of contemplation.
Fig 9.20 Sectional diagram, relating the interior prayer spaces to the outside landscape

Fig 9.21 Steel ribs in cross-section

Fig 9.22 Steel ribs in cross-section; female prayer space at the mezzanine level and space at ground floor for men

Fig 9.23 Axonometric view of the two prayer spaces

Fig 9.24 Initial sketch of the large prayer hall
Figure 9.25 was the biggest breakthrough for the design process, which opened up many further opportunities for the design and the overall form of the design. This translates the linear form into more free flowing and organic form, creating blurred boundaries between the spaces. The curve of the line and its angle interprets the straight line and simplifies the shape further to allow for what is necessary, for example, the niche in the long wall that represents the mihrab transforms into a separate element and distances itself from the rest of the structure, giving it the status it deserves.

The form of the building also follows the same concept of the free flowing shape, representing the plan in three dimensional format. The structural steel ribs represent the hierarchy of the different spaces. The mihrab gets the highest status of all other spaces because that is the focal point of the mosque, where all worshippers face for prayers, physically and spiritually. The women's prayer hall follows the same form but it is lowered in elevation to allow the visitor to view other parts of the mosque as they approach the site (Fig 9.26). The women's prayer hall is located closer to the entrance to the site, which also allows easy access for women to enter their respective area. The separate children’s area that is also privileged with an outdoor garden, is also completely separate from the female prayer hall. It is common practice that mothers look after the children and if the mosque allows for a separate prayer area for women it becomes compulsory for the mosque to accommodate both mothers and children. However, it is important to provide separation between the area for mothers and children and the main prayer area for other women. This is so that the women’s prayer area gets equal status as the men’s in terms of the contemplation features to create an ideal space for prayers and self-evaluation regardless of gender.

The main issue with this concept is that there is no relation to the site boundary and the surroundings are detached. Once again the entry of the building is not well defined for the visitor. It is important to integrate the entrance for the private and public spaces for easy access to all spaces within the building. The separation of the children’s area to the women’s prayer hall is an ideal situation but functionality does not allow so. The women’s and children’s area have to be related or linked together for easy flow so that these spaces do not stand as two completely strange elements of the same architecture. The next stage would be to resolve all the raised concerns and develop the design further to include all other spaces outlined in the brief of the programme.

Fig 9.25 Linear spaces translated into fluid form
Fig 9.26 Ground floor plan

Fig 9.28 3d view of the plan: male prayer hall at the back, women's hall left and children's area on the right of the image

Fig 9.27 Elevation; Children's area

Fig 9.29 Cross-section structural ribs; Men's prayer hall to the left with women's hall on right
Design Stage 3 is a more developed stage from phase 2, keeping similar concepts for most spaces. The major difference in this phase is the 3m ground excavation to allow sufficient space for all the required functions within this mosque. This addition of another floor level enables the design to create more transition spaces that allows easy flow between the private and public spaces of the mosque. The ground level (3m below natural ground level) will house both dining facilities and office spaces. The washing areas will become a separate element between the ground floor and first floor levels. The first level drops 2m as shown in figure 9.33 represents the washing facility for men that is accessed through the flight of stairs and after going through the ritual process of washing you can enter the prayer hall. The idea here is to physically and mentally prepare yourself before entering the sacred realm.

The first floor consists of separate prayer halls for men and women along with a crèche for children and a library open to the public. Placing the library in front of all other functions separates the public and private entities of the project. The garden also became an integral part of this design stage. Traditional mosque designs demand a courtyard space within the mosque building to provide a buffer zone between the outside world and the prayer space inside. The outdoor garden becomes the courtyard in this design, as it offers visual prospect to the worshippers. The use of this garden/ courtyard space articulates the visual separation between the rustic context and the site, emphasizing the inclusive nature of the design.

One of the main concerns with this design development was the unresolved architectural forms of the building. As seen in the cross section (Fig 9.35), the main architecture supporting the two prayer areas fail to develop any relationship with the basement level. The two architectures formed with this design fail to integrate different functions of this design to function as a community centre. Another issue pointed out in the floor plan (Fig 9.37) is the openness and access of the ground floor level to the garden space. The garden occupies the north-west corner of the site whereas, the access out of the building is from the south-western side. Ease of access to the garden is important to integrate the garden space within the architectural form as it provides a pleasant experience for visitors.
Fig 9.32 Rib structure continued

Fig 9.33 Sketch of the male washing facility on the left with prayer hall 2m above, dining areas at basement level

Fig 9.34 Steel-rib structure; both prayer halls

Fig 9.35 Cross-section; Women’s prayer space towards the right male prayer space on the left of the drawing dining facilities below

Fig 9.36 Section; showing male prayer hall on top floor level with dining facilities at the basement level. The ground steps 2m for the male washing area.
Fig 9.37 Ground floor plan

Fig 9.38 Basement floor plan
Fig 9.39 3d image of the male prayer hall
It was important to integrate the different functions of the mosque design while keeping the visual and physical privacy between the male and female prayer halls and other spaces that need direct public access like the library. A traditional approach was taken to resolve these issues by creating a large gallery space as a female prayer hall that still has visual access to the miḥraḥ and to experience the large volumetric space from the main prayer hall (Fig 9.48). This approach allows more space for the public aspects of the mosque design like the library and office spaces. The dining space is also considered more of a public space because it allows people to come together as a community and creates a welcoming aspect for the general public (Fig 9.49). The dining space is directly accessed through the male hall and the separate entrance towards the left provides a separate entrance for women into their respective dining area. The entrances marked in the image create awkward competition between the real entry to the main space and function of the mosque (Fig 9.47).

Another major addition to this design stage was minarets to frame the building and to visually seal the edges of the fluid form. However, the shape of these minarets defines a more traditional design that takes a more practical approach than a symbolic one. These minarets currently allow access to the top, once again severing the traditional purpose of minarets to allow enough space for the call for prayer. A more appropriate approach to this feature would be to make the minarets more symbolic in nature that also follows the form of the building.

The structural ribs allow the cladding to fill in between the portal frames, while providing structural support to the first floor with a similar design approach. More of these ribs form another layer of structure outside the main structure to allow for the public or semi-public spaces (library at ground floor and crèche at first floor) that are separate from the main building yet visually seen as one.

Another important aspect to this design was to resolve the sharp corners of the site to allow the sensual and fluid form of the building to fit into its context. As discussed above, the garden space to the north end of the site adds visual appeal to the whole site as well as breaks through the run-down nature of the existing context of the site. Figure 9.43 was developed as a result to soften the harsh corners of the site to allow the garden to evolve from these sharp corners and form a smooth contour to the north-western corner of the site, so it allows the form of the building to comfortably adapt to its surroundings. This aspect was developed from an image of a digital model of a linear form that had to be modelled with a 3D printer and therefore required softer edges to establish smoother edges (Fig 9.42).
Fig 9.42 3D printed model of the form with sharp corners

Fig 9.43 Resolving the sharp corners of the site by creating softer landscape around the boundaries

Fig 9.44 Sketch of mezzanine level women's prayer hall

Fig 9.45 Sketch of ground excavation

Fig 9.46 Sketch of structural interlacing spaces
Fig 9.47 Front view

Fig 9.48 Cross-section showing mezzanine looking over the main prayer hall

Fig 9.49 Cross-section showing mezzanine level on the right with dining spaces below, dining space on the left

Fig 9.50 Cross-section showing dining space
Fig 9.51 Interior view

Fig 9.52 3D conceptual model

Fig 9.53 3D conceptual model plan
The form of the mosque is derived from the analysis of non-negotiable features within the mosque design.

The mihrab in the overall design is accented to create the visual hierarchy as you travel through the mosque. The journey or ascent within the mosque is organized by the narrative of light which played a crucial role in the organization of these spaces. The demanding challenge was to integrate all mosque functions together yet provide visual and physical privacy for men and women. Light enters through the garden and is filtered through the screens within the walls to illuminate the prayer halls and dematerialize the volume of the space to provide a serene atmosphere to the worshipper (fig 9.66).

The main mosque area is framed with minarets on the north-eastern and south-western side of the site. These symbolic features distinguish this building and offer its unique dynamic and elevating character. The liquefied form of the building dematerializes all sense of formal structure by emerging from the ground.

Translucency is introduced in the front of the building giving an open and welcoming feel to the mosque. Different functions are separated through the ascending and descending nature of the building. The journey inside the mosque was interpreted from the design framework of a typical private dwelling of a Muslim household. In this framework the private spaces are separated from the public spaces through a journey of narrow and wide spaces that allow the visitor to instantly distinguish the adequate boundaries. Figure 9.54 represents the public spaces that occupy the front of the dwelling. Keeping these spaces closer to the entrance eliminates the need to enter private spaces of the dwelling. This framework helped with the spatial layout of the mosque design as there was a necessity to create boundaries due to the multiple purpose use of the mosque building. The initial sketches (Fig 9.55) of this design phase emphasize on the fluid and sinuous nature of the design, while integrating different functions of the mosque. The religious regulations define the frame of the design and within this frame the needs of the community are achieved.
The mosque is entered at the ground floor level, where further three entries allow the visitor or the worshipper to enter and follow the required path (refer fig 9.60). The walkway towards the right side of the entry allows the visitor to enter the library that will be the most public aspect of the design. Keeping it translucent and visible to public will allow people to enter the building without hesitation and will open further possibilities of dialogue. This entry also allows the visitor to access the gallery space to view the garden. The male entrance to the garden is through the prayer hall.

The female and male entries are towards the left of the library entry. It is necessary to architecturally distinguish the different entries without the need of signage as typically done in many mosques. The metal wall (fig 9.65) separates itself visually and structurally from the rest of the building and this rustic looks follows through to the male entrance and washing areas, visually enhancing the separation between the male and female areas.

The stairs leads the visitor towards the washing area and then to the male prayer area. The washing area is also illuminated with screens within the wall to allow light to enter the space without compromising the privacy of the space.

The female prayer hall is entered through the large space with two flowing sets of stairs (fig 9.60). One takes you up to the prayer area and the crèche for children and other takes women to the dining hall that has direct access to the outdoor garden space. The female foyer also incorporates the female washing areas and toilets.
Fig 9.57 Diagram of the layout of spaces

Fig 9.58 Site plan
Fig 9.59 Basement Floor plan
Fig 9.60 Ground floor plan
Fig 9.61 First floor plan
Fig 9.62 Cross-section AA

Fig 9.63 Cross-section BB
Fig 9.64 3D image of front entrance

Fig 9.65 Image of male entrance
Fig 9.66 Inside the prayer hall
9.9 Material Selection:

Space frame:
Space frame is used as the unconventional structural elements of the building. It also provides most of the seismic and wind loading of the building, without the need for interior support columns. 43 This is an important aspect of the design to eliminate columns to create free flowing larger prayer spaces without any visual impediments. Space frame is an ideal structural support for this project as it provides the structure for the building without the need to separate the aesthetics. Curtain wall glass elements provide weathering to the building between the two space frame components.

Glass Fibre Reinforced Plastic (Polymers):
Known for its light weight and low maintenance qualities is used as a cladding material. 44 GFRP was used throughout the Heyder Aliyev Building by Zaha Hadid in Baku. The material was used mainly for its self-cleaning and low maintenance qualities. Due to the site location being in close proximity to oil refineries and in constant contact with general pollution it was necessary for the building to have a low maintenance material for its cladding, especially considering the scale and form of the building. GFRP can also be used for a variety of aesthetic components in buildings like domes, fountains, sculptures, columns etc.

Weathering steel:
Also known as Cor-Ten steel, introduces visual excitement with the progression of time. The layer protecting the surface of the metal regenerates itself under the influence of weather. 45 Weathering steel will be used at the entrance of this design project, which is in strong contrast with the white GFRP cladding. The strong visual contrast translates the building to the visitor by separating the entrance from the rest of the building.

43 Habitats construction accessed on March 19, 2014
http://www.habitatsconstruction.com/Space-Frame.html
44 GFRP accessed on March 18, 2014,
http://www.strombergarchitectural.com/materials/gfrp
45 Corten steel accessed on March 18, 2014,
http://www.ajmarshall.com/corten.htm
10.0 Conclusion

Selected practical examples designed by contemporary architects were discussed. The framework from these examples emphasize the different techniques used to incorporate traditional elements with contemporary mosque designs.

For the design aspect of this project, the previous analysis created a momentum for the development of spatial relationships between the public and private spaces within the mosque. Throughout the research project, the main architectural design challenge was to merge the traditional and symbolic elements of a typical mosque within the contemporary framework of the project. It was important to explore more traditional forms of typical mosques to distinguish the negotiable features from the essential characteristics of Islamic architecture.

Through continual explorations of visual and physical privacy, the project ties together many techniques to achieve practical solutions to the most challenging task of this project, to allow for separate space for women to pray and become part of the whole community. The developed final design demonstrates an approach that integrates the non-negotiable features of mosque architecture and the contemporary design approach that provides preliminary architectural alternative to the distant traditional methodology of Islamic architecture.

Very few studies focus on the architecture of Muslim communities. Therefore, this absence creates a gap in the untold histories of these communities and raises questions about the real value of the past.46 This opens up future research and design possibilities for similar projects that focus on the approach of how these communities function in the western world. Moreover, how architecture allows future generations to understand the essentials of Islamic architecture and the objectives behind the traditional forms and characteristics of religion imposed within the architecture of the building.

Asserting religious identity in the form of architecture is difficult especially in the developed countries where accepting Islam as a symbol of peace is impossible and therefore a traditional form of Islamic architecture indicates enforcement of traditional ideas towards the developed societies. Therefore, it is essential to introduce contemporary architectural solutions that incorporate traditional concepts that do not send a message of territorial invasion in order create a coexisting environment for peaceful dialogue.

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Final Presentation
site plan

early concepts

north garden

lower ground floor 1:200

upper ground floor 1:200

mezzanine floor level 1:200
early concept  

male washing area  

female washing area
11.0 Appendices
11.0 Appendices

11.1 Other typical mosques examples:

This section aims to analyse some existing mosque plan layouts, to help understand relationships of different spaces within a mosque and to establish hierarchy of these spaces and their relationships with each other.

Fig 11.1 The Mosque at King Khaled International Airport; Plan and sections
Fig 11.2 Qiblatain Mosque in Madina, Saudi Arabia

Fig 11.3 The new mosque and Islamic cultural centre in Rome, Italy
Fig 11.4 TEK mosque in Ankara, Turkey
11.2 Other concepts

Fig 11.5 Concept testing software

Fig 11.6 Concept testing software
Adhan: summons to prayer
Ahmadiyya: an international revival movement within Islam founded in 1889
Allah: Arabic word for God
Bedouin: group of people, part of a predominantly desert-dwelling Arabian ethnic group traditionally divided into tribes
Bilal: one of the most trusted companions of the Holy Prophet Muhammad
Caliph: title of the ruler of the Muslim community
Friday prayers: Congregational prayers Muslims hold every Friday, just after noon
Imam: leader, especially prayer leader
Ka’aba: is a cuboid building at the centre of Islam’s most sacred mosque, Al-Masjid al-Haram, in Mecca, Saudi Arabia.
Madina: city in Saudi Arabia, holds sacred status in religious texts
Masjid: district mosque
Mecca: city in Saudi Arabia, holds sacred status in religious texts
Mihraab: niche whether concave or flat indicating the Qibla
Minbar: pulpit (pronounced mimbar)
Mosque: place for prayer for people of the Islamic faith
Muhammad: founder of Islam, Muslims consider him to have restored the original teachings of Adam, Noah, Abraham, Jesus and other prophets
Qibla: direction of prayer. Also synonymous in some contexts with mihraab
Quran: the central religious text of Islam, which Muslims believe to be a revelation from God
Ummayyad dynasty: the first great Muslim dynasty to rule the empire of the Caliphate (661–750 ce)
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12.0 References:

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13.0 List of figures
13.0 List of Figures
Fig 1 (pg 1) Cross section through site showing neighbouring factories and proposed project.
Fig 2.1 Bait ul Futuh Mosque London
   Reproduced from http://www.panoramio.com/photo/17328302
Fig 2.2 Green Mosque Holland
   Reproduced from http://www.ahmadiyyamosques.info/2013/01/ahmadiyya-mosque-almere-netherlands.html
Fig 2.3 Ahmadiyya Mosque Kenya
   Reproduced from http://www.ahmadiyyamosques.info/2012/01/ahmadiyya-mosque-nairobi-kenya.html
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