A UNIFIED ARCHITECTURAL THEORY FOR ISLAMIC ARCHITECTURE

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Abstract
This research aims to identify criteria for sustainable design solutions to meet the needs of Muslims today. Under the theoretical framework of Nikos Salingaros’ Unified Architectural Theory, design needs and strategies derived from Islamic knowledge and values are identified and used to inform principles for building typologies, location, and movement between buildings. Green building technologies in line with Islamic values and examples of sustainability promoting policies are analyzed and used to further develop design strategies. The findings include a theoretical model that proposes the essential design criteria for appropriate architecture for the Muslim world. This research is relevant for architects designing for Muslims, who have a duty to create housing appropriate for their particular needs and cultural context.

Keywords: Unified architectural theory; design theory; sustainable design; Islamic design; culture

INTRODUCTION
Over 1.7 billion people, about 22% of the world population today, claim Islam as the guiding force within their cultural context. Of the total Muslim population, 97% are found in the developing regions of South and Southeast Asia, the Middle East and North Africa, and Sub-Saharan Africa (Pew Research, 2011). Throughout the Muslim world, a push towards modernization in the last 100 years has left little room for thoughtful consideration and application of climactic concerns or architectural heritage of the region. Architectural development was driven by the desire to either be in step with modern architecture on the side of Muslim architects or have modern architecture be cloaked in the decorative elements of Islamic heritage. Both of these extremes meant that the true spirit and heritage of Islamic architecture was neglected (Galdieri, 2002). The resultant surface approach to design reduces Islamic architecture to details that can be stuck on the surface of any building, undermining the opportunity for buildings to reflect solutions that are representative of how Islam shapes the intended functionality of that building.

On a grander scale, the quest to understand and provide for the needs of Muslims today is the quest to find practicable solutions to political, sociological, and even intellectual dissonance that has occurred due to colonialism and other power struggles that have challenged the construction of cultural identity. As Mohamed Arkoun (2002, p. 7) writes, “we must recognize that the built environment in contemporary Muslim societies is under the influence of a generalized ideological bricolage which can also be described as semantic disorder”. This semantic disorder or presence of competing building languages in combination with the disconnection between culture and the built environment requires a reinvigoration of the discussion about core principles of Islamic life that necessitate design solutions, historic technologies developed to address these, and new technologies that can be brought to bear on developing solutions. These considerations must form the core of an architectural curriculum in Muslim countries and be part of assessment criteria used by architectural oversight bodies (Benkari et al, 2011).
Hassan Uddin Khan (1982, p.15) writes, “when we finally find an intellectual basis for looking at this housing and defining our guidelines in those terms, then we will be able to create an architecture that is appropriate for Muslims, each in his own country”. To address this question of finding an intellectual basis for defining housing guidelines, we can look to the Unified Architectural Theory posited by Salingaros (2014). According to Salingaros, modern architecture focuses on the form language, disassociating from the historical pattern, while traditional and adaptive architecture focuses on the pattern language and evolves the form from there. Here, pattern refers to how people interact with buildings through how they live their lives, and form is defined as “geometrical rules for putting forms together” (Salingaros, 2006, part 1). Salingaros offers a means of measuring whether a form language adapts to local context, and thus verifies his theory through its measurability. Developing Unified Architectural Theory further, this research works from the premise that both pattern and form are derived from Islam for Muslims. As the research shows, pattern comes from the particular needs for privacy and sustainability that comes from Muslim scripture and form comes from sacred geometry principles which help develop comfortable spaces.

**Research Methodology**

This study offers applied research aimed at producing sustainable design strategies for residential construction in the Muslim world today. Existing research has done much to identify sources of building codes in Islamic Scripture (Akbar, 1988; Hakim, 2006), applications of this code in history (Hakim, 2006; Ardalan et al, 1973; Marçais, 1928; Bianca, 1994), the environment and Islam (Abdul Haleem, 1999; Fazlul et al, 1999; Foltz et al, 2003; Izzi Dien, 1997), spirituality in architecture (Lawlor, 1982; Salingaros, 2014; Khan, 2015, 2013), sustainable architecture in Islam (El Wakil, 1981b; Fathy, 1986), and Islamic heritage and cultural continuity (Khan, 1982; Serageldin and Shluger, 2001), but these areas of research are rarely synthesized to develop real guidelines for architects today. Ultimately, this research aims to help architects and planners evaluate new residential developments and design appropriate solutions to house Muslims today. To this end, the research employs a qualitative and interpretive methodology, a combination of literature review, analysis of revealed doctrine, and examples of successful applications of sustainable practices. These will be used to identify design strategies that are derived from Islamic knowledge and values that shape different building typologies, their location, and the movement between them. Green building technologies are identified and discussed in context to the design strategies, while related examples of green policies will offer insight on how sustainable policies can be implemented in the Muslim world.

**REVEALED DOCTRINE CONCERNING PATTERN IN THE BUILT ENVIRONMENT**

The source of sustainable design as articulated for this research is revealed doctrine; what Allah and his Prophet (SAAS)¹ has said that helps to shape design decisions. Passages from the Qur’an and sayings from the Prophet (SAAS) that relate to design decisions, as well as the derived rulings based on those teachings are examined. To help structure the discourse, three major spaces in the urban fabric are defined: homes, streets and the placement of building types that shape movement within a community. These design principles have been developing for hundreds of years and still have currency today (Hakim, 2006).

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¹ SAAS here means Salallau Alayhi wa Salaam or “Peace and blessing be upon Him”, an honorary invocation Muslims give upon hearing the Prophet mentioned.
Home: The mini mosque

Homes can be looked at as the second most important typology in the community after the mosque. Allah has said about the mosque, “The masjids are for Allah, so do not invoke anyone along with Allah” (Al-Qur’an 72:18). In other words, its function is to be a safe place for people to worship Allah; and worship, of course, is paramount: “We did not create jinn and men except to worship Us” (Al-Qur’an 51:56). Homes share an analogous function to the mosque, but on a smaller scale. Homes are to be safe, clean, and protect its inhabitants from harm while doing no harm to others.

Home environment: Respect for site, safe and healthy materials

In order for a home to be “safe”, as envisaged in the Islamic paradigm, it must respect the environment in its site placement and building materials. Allah orders mankind not to commit abuses on the earth by saying, “Eat and drink from the provision of Allah, and do not commit abuse on the earth, spreading corruption therein” (Al-Qur’an 2:60). He also says, “And do not seek corruption in the earth; for God likes not workers of corruption” (Ibid, 28:77). To add to this awareness of how important it is to not spread corruption, the Prophet Muhammad (SAAS) said, "He who cuts a lotus-tree [without justification], Allah will send him to Hellfire" (Abu Dawud). He also said that animals are worthy of protection, saying "There is a reward for serving any living being" (Al Bukhari, 1997). From these teachings, it is clear that protecting the environment is a duty, and in doing so there is a reward. Architect Hassan Fathy (1986, p. 5) wrote regarding the responsibility of the architect:

“He is introducing a new element into an environment that has existed in equilibrium for a very long time. He has responsibilities to what surrounds the site, and, if he shirks this responsibility and does violence to the environment by building without reference to it, he is committing a crime against architecture and civilization.”

Home design: Privacy through windows, doors, and courtyards

From the teachings of Allah and his Prophet (SAAS), we have both direct and indirect guidance around construction. Concerning the protection of privacy, Allah says, “O you who believe, enter not into houses other than your own until you have asked permission and have properly greeted those in them” (Al-Qur’an 24:27). The ways a person can enter and observe what is happening in someone’s house are by looking through the windows or doors of the house. Allah also commands believers, “Say to the believers that they should lower their gaze and guard their modesty” (Al-Qur’an 24:30). Inspired by these teachings, major design strategies for homes have been developed in the Muslim world, such as the interior courtyard and the bent entrance.

The interior courtyard allows sunlight and air circulation into the home without exposing the private life of the house to people passing on the street. When it is unavoidable to have a window that faces the street, mashrabiyas (or latticed screens) can go over the window. Mashrabiyas have different patterns formed by adjusting the size of the spaces between and diameter of the balusters have the following functions: “(1) controlling the passage of light, (2) controlling the air flow, (3) reducing the temperature of the air current, (4) increasing the humidity of the air current, and (5) ensuring privacy” (Fathy, 1986, p. 47). Also, raising the window above eye level is used as another solution. The bent entrance allows people to open their door and enter the house without exposing the inside of the house to people passing on the street.

These design strategies allow the home to comply with the teachings of Allah and his Prophet (SAAS). They also reinforce the Prophet’s (SAAS) statement that “there should be neither harming nor reciprocating harm” (Al-Muwatta, 1982). In the context of home design, harm is when someone outside can observe private behavior inside the home. Those who do look without permission can be punished without recrimination. The Prophet (SAAS) said: “He who looks into the homes without the occupant’s permission, and they puncture his eyes, they have
no right to demand a fine or ask for punishment.” The Prophet (SAAS) also said, “Do you know the rites of the neighbour? You must not build to exclude the breeze from him unless you have permission” (Ibn Adi, 1938). This saying from the Prophet (SAAS) along with the others that we mentioned inform policies that help shape the built environment within the Muslim community. For example, Saydi Umar (RA) ruled on a case in which an upper floor addition had a window that overlooked the neighboring property. Umar requested that someone step on a bed and look through the window; if he saw what was in the neighbor's house, the window should be sealed (Akbar, 1988, p. 225-6). Ibn Wahb (d. 813 AD) applied the same rule to doors (Ibid, p. 95). The location of the windows and doors is therefore a major design decision that can determine whether or not a home complies with Islamic principles of privacy.

**Home conservation of resources: Don’t waste water, energy, or materials**

Beyond the external privacy concerns, there are also prescriptions for the internal environment that have an effect on the external environment and other building typologies. For the external environment, a crucial understanding is that the earth was given to man as a trust. Allah says, “Indeed, I will appoint upon the earth a vicegerent” (Al-Qur’an 2:30). The common understanding is that man should behave as a representative of the way of Allah on earth, implying that man is a reflection of what he was created to represent. The way of Allah is to act according to Allah's will and maintaining Allah's limits. For example, he says “Eat of their fruit when they are in season, and pay their due upon harvest day, and waste not, for God loves not those who waste” (Al-Qur’an 6:141). Here it is clear that wasting resources is displeasing to Allah, and the Prophet (SAAS) said, “Do not waste; do not use more water than you need” (Ibn Majah 1, p. 34). To help prevent the home from wasting energy, windows and doors should be put in areas that will help reduce the energy use of the home while still performing the appropriate functions. The sun can be used to help cool the home through evaporation and provide energy through the use of solar panels.

**Street: Size and provision for waste management**

Instruction around the minimum width and the behavior of the street also comes directly from the Prophet (SAAS). Concerning the width, he said “If you have a dispute about the limits of the road make it seven cubits and then build” (Al-Bukhari, 1997). Seven cubits is about three meters, approximately the minimum width of one lane according to the National Association of City Transportation Workers (2016). This statement helps to provide a starting place for street organization. Umar b. al-Khattab advised in relation to organizing the streets in towns being founded in modern day Iraq, that “main roads (be) thirty cubits, and those in between twenty; lanes [aziqqah] seven, and the alley [fiefs’] width or length sixty cubits” (Akbar, 1988, p. 85-6). This can be looked as the foundation of the movement within the Muslim city which creates a semi-private, semi-public, and public layout that can still be seen today in cities like Fes, Algiers, Tunis, and Damascus.

About behavior in the street, the Prophet (SAAS) emphasized cleanliness, saying, “Avoid three things accursed: excreting in streams, thoroughfares, and in the shade” (Abu Dawud, 2008). Since “thoroughfares” here refers to the roads, the hadith pertains to one’s behavior when using the streets, which are public assets. He also said, “If a man is walking in the street and finds a branch of thorns and removes it, then God will thank him and forgive him” (Ibid). Cleanliness is a quality that is close to Allah which we can understand from the Allah’s statement “Truly, Allah loves those who turn unto Him in repentance and loves those who purify” (Al-Qur’an 2:222) and the Prophet’s (SAAS) statement, “Keep yourselves clean as Islam is clean” (Ibn Habban, 1949). He also said, “God (be praised) is good and loves goodness, clean and he loves cleanliness, generous and he loves generosity, perfect and he loves perfection, so clean your *fina*” (Al Tirmidhi). The term *fina* means the outside property between the home and the street.
According to Imam Malik (711-795), this area is owned by the abutting property owner. The second caliph Umar proclaimed that the *fina* belongs to the house owner whether it was on the front or the back of a property (Akbar, 1988, p. 109-10) (See Figure 1). To help the community comply with the instructions from the Prophet (SAAS), spaces and streets must be designed in ways that make trash collection and recycling, for example, easy and thus compliant to cleanliness.

![Figure 1. Exterior fina of the homes in relationship to street (Source: Author's Drawing).](image)

**Community: Easy access to mosques, markets, and schools**

The third realm of the built environment involves other building typologies that make up and serve the community. The word that is used to represent community and the infrastructure that supports the community is *medina*, an Arabic word created from the root letters *mim*, *dal* and *nun*, whose derived words refer to civility and decorum. The word *medina* contains an implied concept of order that governs the infrastructure of the community. For a community to be considered to be a *medina* there are specific typologies that should exist within the community. Hakim (1988) quotes from Marçais’ 1928 article “Islam and Urban Life” that “Malik, the father of the Maliki School of law, recognized a Mesjid al Jami - the mosque in which the Friday noon prayer and Khotba is undertaken - only in those settlements which had a *Suq*” (p. 57). This implies that there are three basic typologies. First, the Masjid where the Friday *khutba* is given implies that there must be someone with the appropriate knowledge to perform the *khutba* correctly as the Prophet (SAAS) did. Second, there must be a market (*Souq*). The third typology is the home, which also implies that there are streets to connect the different typologies to help people move through the spaces.

An additional aspect related to the shaping of the community is found in Surah al-*Jumu’a* when Allah says “O ye who believe, when the call is proclaimed to the prayer on Friday, hasten earnestly to the remembrance of Allah and leave off business, that is best for you if you but knew. And when the prayer is finished, then you may disperse through the land” (Al-Qur’an 62:9-10). It can be deduced that because of how the verse speaks of the relationship between the place of prayer and the place of business, it is important that these two spaces have a clear and easy flow between each other. This can be seen in most Islamic cities and they are looked at as the heart of the overall community (Hakim, 2006, p. 69; Bianca, 1994, p. 36).

**PATTERN AND FORM FROM SUSTAINABLE STRATEGIES APPROPRIATE FOR MUSLIMS**

As was found in the previous discussion on scripture related to design, conservation of resources is a central tenant of life for Muslims. This section addresses home solutions to prevent waste in the three topical areas of water, food, and energy by citing existing examples where this has been effective and correlating it with its related scripture.
Water: Prevent waste

Water is considered one of the most important components of life. Allah says, “Allah has created every [living] creature from water” (Al-Qur’an, 24:45). He also says, “He who made for you the earth a bed [spread out] and the sky a ceiling and sent down from the sky rain and brought forth thereby fruits as provision for you” (Al-Qur’an, 2:22). This verse speaks about both direct sustenance from water through drinking it and indirect sustenance through eating plants and animals. In another verse Allah says, “We have sent the fertilizing winds and sent down water from the sky and given you drink from it. And you are not its retainers” (Al-Qur’an 15:22). The portion of the verse, “And you are not its retainers,” is a reminder that water is not personal property. The Prophet (SAAS) said, “On the day of resurrection God will not consider or support and will make a man face severe torment who had access to water in a thoroughfare and denied it to passers-by” (Abu Hurairah). All of these statements illustrate how important it is to protect this resource.

The Prophet (SAAS) emphasized how important it is not to waste water. When the Prophet (SAAS) saw Sa’d performing wudu and wasting water he said water can be wasted during wudu “even if you perform it in a flowing river” (Ibn Maja). Water can be misused even when there is an abundance of it, and even more so where it is scarce. Today, water recycling helps to protect homeowners from misusing water, because it takes the water that is used and cleans it for reuse. This can be done on a large scale such as with wastewater treatment plants (Ashghal, 2014), or limited to single home grey water recycling. Residential grey water recycling is safe and effective. Currently in the United States, for example, “there are eight million grey water systems with 22 million users. In 60 years, there have been one billion system user-years of exposure, yet there has not been one documented case of grey water transmitted illness” (Ludwig, 2006).

Waste management and composting: Reduce and reuse

How a city disposes of its waste is a major factor in how sustainable it can become. For all cities, dealing effectively with waste from new consumption patterns entails reviving rural practices of composting in an urban context, and instituting recycling collection systems. Caring for the earth is an edict from Allah who has said, “It is He who hath produced you from the earth and settled you therein” (Al-Qur’an, 11:61). Treatment of the earth can be seen as a reflection of how man treats himself. In order to correct the current environmental conditions, humans must change their own condition, for Allah has said, “Verily never will Allah change the condition of a people until they change what is in themselves” (Al-Qur’an 13:11). The spiritual cleansing implied by “change the condition” in this verse has both an internal and external reality, an internal rehabilitation, the external manifestation of which is an improved treatment and rehabilitation of our environment.

Composting food waste is integral to rehabilitating the environment, helping to replace the important minerals that food production takes out of the earth. This also helps to strengthen the earth for future generations, continuing the legacy of sustainability established by Prophet Muhammad (SAAS) who said, “Even if you fear that the Last Day has arrived, plant the sapling you hold in your hand” (Al-Bukhari, 1997). Therefore implementation of recycling trash and composting food waste can be seen as necessary to help reinforce Islamic values which advocate caring for the environment regardless of the situation. Cities like San Francisco and Oakland, both in California, USA, have adopted mandatory recycling and composting ordinances that require residents to separate their recyclables, compostables, and landfill trash. Comprehensive citywide recycling was pushed through legislation by the organization Green Cities California (GCC) whose mission is “to accelerate local, regional, national and international adoption of sustainability policies and practices through collaborative effort” (Green Cities California, 2013). Sustainable development can be achieved by educating the public and
providing infrastructure. Public infrastructure would include environmentally friendly design for homes and neighbourhoods and compost and recycling collection services.

**Energy: Solar, thermal mass, material selection, and strategic design**

In Islam, conservation of energy and use of clean energy is important. Allah says “And He hath made subject to you the sun and the moon,” (Al-Quran, 14:33). Allah gives explicit permission to use the sun to meet human needs and enhance the quality of life. Solar panels are designed to absorb the sun's rays and convert them into electricity or heating. The panels capture the sun light through a silicone system and transform it into direct current electrical power (One Green Home, 2013). They can be incorporated into neighborhoods in a number of different ways. For homes, they can create more shade for the roof and provide renewable energy for the homes. Each home within a neighborhood and its corridor can be connected to a local energy grid where the excess energy produced could power the adjacent non-domestic buildings and provide energy to light the streets. The repetition and connection of these neighborhood power grids can be joined and the excess energy produced can be used to power buildings in public spaces, such as mosques, schools, and markets. By introducing solar panels, a new industry built around their production and maintenance would also be created, helping to both free communities from dependence on non-renewable energy sources and increase community sustainability.

Reduction of energy consumption in the built environment can also be achieved through selecting appropriate building materials based on the environment of the site and reducing the use of the cars in the neighborhood. The selection of appropriate building material is vital in maintaining a comfortable temperature for the users of the building. The ideal temperature is from 68°F (20°C) to 78°F (25°C). To create this temperature inside a sealed building made of concrete and steel, builders rely on heating, ventilation, and air conditioning (HVAC) for up to 9 months of a year in areas of extreme heat in the summer and average temperatures below 69% in the cold season, such as the Arabian Peninsula (Weather Underground, 2013).

Thermal mass can help reduce the amount of energy needed for the building to maintain a comfortable temperature with less reliance on these energy-reliant systems. Thermal mass is when the mass of the building provides “inertia” against temperature fluctuations outside of the building helping to maintain a comfortable environment inside. Hassan Fathy (1986) found that thermal mass using mud brick is a better solution than reinforced or prefabricated concrete to create a comfortable environment within a building. This was shown to be true through a 1964 experiment by the Cairo Building Research Center, where two small buildings were built, one from prefabricated concrete with 4 in (10 cm) walls and the other from mud brick with 20 in (50 cm) walls. The inside temperature for the prefabricated concrete building reached 97°F (36°C) when the temperature outside during the day only reached 82.4°F (28°C) adding about 15° degrees of heat higher than the temperature outside. Inside the mud brick building, temperatures reached only 73.4°F (23°C) which is within the human “comfort zone” (Ibid, p. 40). This shows that the mud brick building with 20-inch (50 cm) thick walls requires less energy to maintain a comfortable environment than standard concrete construction.

There are other materials that can be used to create thermal mass, such as straw bales which create a wall mass between 18-23 inches (46-58 cm) and rammed earth with walls between 12-24 inches (30.5-61cm). For countries with lime deposits and high heat, such as those on the Arabian peninsula, the most appropriate thermal massing building material is sand lime (calcium silicate) bricks which are made from lime sand and water. After formation, the bricks are then hardened in autoclaves under steam pressure at temperatures between 160°C and 203°C. Lime and quartz sand react to form compounds that give calcium silicate bricks their compressive strength (Making Sand Lime Bricks, 2012). This material can be used to create walls that are thick enough to create thermal massing. Because this material is natural to the environment, it will return to the earth in a clean way unlike concrete and steel rebar which are the predominant
construction materials in the Muslim world. Using locally sourced material has the potential to reduce the Muslim world’s dependence on concrete, providing more options for appropriate building materials while maintaining the pattern language of the region.

Another area in which the Muslim world can achieve greater energy efficiency is to reduce dependence on cars by designing all the major typologies that are needed for the community to function within a one-mile radius. This means that people can leave their homes and walk to the market, school, or green spaces within 20 to 30 minutes. A new city proposal that will be built outside the city of Chengdu, China does just this. Designed by Adrian Smith and Gordon Gill Architects (2012), it aims to accommodate 80,000 people, using 320 acres (1.3 km²). Laying out the city for people to be able to walk to get the things they need is not a new phenomenon within urban planning.

**FORM VIA SACRED GEOMETRY**

Shape and proportion affect our sense of order and wellbeing and are therefore an important element of design. In addition, shape and proportion can be measured and studied to help determine its appropriateness for different typologies (Salingaros, 2006). Certain proportions are repeated by Allah because they reflect the divine oneness and are a means of communication between the seen and unseen. Afdal al Din writes (in Nasr, 1968 p. 296), “The physical world is the symbol and image of the spiritual world”. Al Ghazzali adds (in Smith, 1944, p. 111), “The visible world was made to correspond to the world invisible and there is nothing in this world but is a symbol of something in that other world”. For mankind, these symbols are both natural and revealed, and have a transformative effect on hearts and minds. “Symbolic form, which are sensible aspects of the metaphysical reality of things, exist whether or not man is aware of them - man does not create symbols, he is transformed by them” (Ardalan et al, 1973, p. 5). Effectively, the symbolic is a means of communication that exists between the seen and unseen and has the power to shape our hearts and guide our thoughts and movements. Because of the power of this communication between these two dynamic realities, there is a need for guidance to help protect the one who shapes the physical world and to protect the physical world from the one who shapes it.

This guidance comes in the form of signs highlighted in the Qur’an, where Allah explains “Soon will we show them our signs in the (furthest) regions (of the earth), and in their own souls, until it becomes manifest to them that this is the Truth” (Al-Qur’an, 41:53). He directs us to look at the creation to see those signs by saying “He Who created the seven heavens one above another: No want of proportion wilt thou see in the Creation of (Allah) Most Gracious. So turn thy vision again: seeest thou any flaw?” (Al-Qur’an, 67:3). These verses are touchstones from which to derive decisions and choices that do no harm to the earth or humanity. From these statements, Allah is directing humans to look at the earth to help increase understanding of the self. The Prophet (SAAS) said, “He who knows himself knows his Lord,” (Al-Sakhawi) for knowing one’s Lord is the key to achieving the reason for existence.

Through geometry, which means “measure of the earth” (Lawlor, 1982, p. 6), many connections are made between man and the natural world, one of which is the proportion with which physical forms are created, known as the golden proportion.

The Golden Proportion is a constant ratio derived from a geometric relationship, which, like π and other constants of this type, is irrational in numerical terms. In a sense, the Golden Proportion can be considered as supra-rational or transcendent. It is actually the first issue of Oneness, the only possible creative duality within Unity (Ibid., p. 46).

This Golden Proportion also can be looked upon as the foundation on which the natural world is built and continues to develop. Through it, a harmony and physical rhythm continues to manifest, protecting it from any flaw, hence Allah’s statement, “So turn thy vision again: seest thou any flaw” (Al-Qur’an 67:3)? From these sources are two realities that will help guide the design
process; the laws of Geometry that are the foundation for physical beauty, and the divine Knowledge from Allah and his Prophet (SAAS). With these two realities, an environmental balance can be developed that will enhance the existing life patterns.

It is useful to examine some examples of architecture that have used the two realities mentioned to help shape their design dimensions. Hamdy house in Cairo, Egypt, built by Abdel Wahed El-Wakil in 1978 is one such example. El Wakil said that “because of the nature of the volume, considerable use of geometry and arithmetic proportions, such as the Golden Section, was made in order to give intelligible scale and proportion to the composition of spaces” (El-Wakil, 1981, p. 58). It is clear from the floor plan how he used the Golden Proportion to help organize the space. He also applied divine knowledge in relation to protecting the privacy of the homeowner from passersby. He did so by placing the windows above eye level and orientating the house around an interior courtyard enabling the inhabitants to move freely, enjoying the outside and inside spaces, all the while protected from onlookers passing by.

Another example can be found in Jami Mosque in Isfahan, Iran, finished in 1367, which is described as follows:

“The curvature of this interior is such that a pentagon is generated between the sides of the equilaterals and the produced arms of the re-entrant angles. Since it is the property of the pentagon that is perpendicular from the apex to the base is divided at its Golden Section by a line joining the remaining angles.” (Pope, 1965, p. 1008, in Ardalan et al, 1973, p. 23)

The pentagon “reveals the relationship of √5 both with the number 5 and with the fivefold symmetry of the pentagon” (Lawlor, 1982, p. 36). Lawlor also mentions,

“The Golden Proportion generates a set of symbols which were used by the Platonic philosophers as a support for the ideal of divine or universal love. It is through the Golden Division that we can contemplate the fact that the Creator planted a regenerative seed which will lift the mortal realms of duality and confusion back towards the image of God.” (Ibid., p. 46)

The Golden Proportion is also used in the tomb of Imam Ali Badar al-Qarafi (completed 1310) in Cairo, Egypt. With these examples we can see two realities: first, the divine Knowledge from Allah and His Prophet (SAAS) and second, the laws of Geometry that are the foundation for divine beauty that inspires the souls of witnesses.

The effect of the use of the golden proportion in these buildings is in stark contrast to attempts by Le Corbusier in his Unité d’Habitation and Neufert’s Bauentwurfslehre which both claim to use the golden proportion and mean. As Frings (2002) points out, contrary to letting sacred geometry have a guiding influence on their work, “in fact, Neufert and Le Corbusier seem to use the Golden Section as a way to embellish their own subjective artistic creation by theory and ratio” (p. 31).

In practical application today, the golden ratio can be used in sizing building floor plans, facades, and master plans for residential developments. Its basis in human and natural scale helps ensure that the form fits into the overall human patterns of existence, and by expressing a link to the infinite in a finite form, the space will help its occupants connect to their creator, the very purpose of life for Muslims around the world.

**ADAPTABILITY TO PLACE**

In applying the design strategies pulled from Islamic scripture and developments in sustainable building practices that dictate the pattern or way people interact with space and sacred geometry as the source of geometrical rules for putting forms together to a specific place, it is necessary to add consideration of the region. According to Salingaros (2006), regional considerations are both part of the form language in that they “arise from available materials” (p. 1) and are a consideration when combining form and pattern in his adaptive design method. Here we differ, finding through sacred geometry that proportion is not affected by materials, although materials
themselves do play a role in adaptive design. Design for place is the result of the combination of form, pattern, and regional sensibilities to meet the needs of people. For example, Figure 2 shows interior courtyards, a specific pattern cropping up in different regions with different climactic conditions; Northern Morocco on the left and Egypt on the right. The details reflect the different regional sensibilities of the two locations. For Morocco, the language relies on Zilig tiling, which covers the floor and extends up the wall. Wood lattices and doors and plaster work complete the look. For Egypt, the language of carved stone and stone lattices is used to beautify the spaces. Tiles are used for the floor only and wood lattices and doors are finishing touches. Decorative arches and columns are used in both examples, but they are expressed differently. For Salingaros (2014), this design language can be studied using the *Unified Architectural Theory* form language checklist and he posits that complexity correlates with its level of regional adaptation. From this, it is clear that careful study of regional sensibilities should be made and used to inform the language of the finished product.

**CONCLUSION**

This research provides architectural guidelines and policy suggestions rooted in the Qur'an and Sunnah that can have an immediate and lasting effect on the built environment in the Muslim world. The findings are in keeping with *Unified Architectural Theory*, which articulates that architecture must be in keeping with form and pattern languages in order to create truly adaptive architecture. By showing how the embedded knowledge found in revealed doctrine and the teachings from the Prophet Muhammad (SAAS) is part of a Muslim’s universal pattern language and how Allah’s creation provides guidance for the form language, it posits that this guidance is relevant in leading communities toward a sustainable future. These design principles are critical in helping to revive Islamic knowledge with regards to its ability to help shape the built environment. Islamic architecture goes beyond surface details and penetrates to the heart, not only of the overall community layout, but also the specific typologies that come together to form the layout.

The design strategies extracted from the Qur’an and Sunnah are adaptive and can be applied to any region in the world to help produce Islamic architecture that is appropriate for that...
regional climate and its culture. The four elements (See Figure 3) used to help guide the design process for Islamic architecture are therefore:

- **A.** The divine Knowledge from Allah and His beloved Prophet (SAAS) (i.e. pattern),
- **B.** Sustainable strategies and technologies appropriate for the site (i.e. pattern and form),
- **C.** The laws of Sacred Geometry (i.e. form), and
- **D.** The regional sensibilities which include the environment, aesthetics, materials, and historical influences on the people in the region (i.e. adaptability).

Figure 3. Elements of Architectural Design Guidance in Islamic Architecture (Source: Author).

This guidance includes the following design functions:
- Protecting the privacy of inhabitants through window placement, use of bent entrances and window screens
- Encouraging pedestrian movement through the community
- Including the community building typologies of mosques, homes, educational facilities, and markets within easy access of each other
- Building in waste and water recycling facilities, including composting
- Conserving energy through the use of local building materials, building orientation, and building design, making use of natural site features.
- Using geometry to shape the design to maintain a human scale
- Incorporating cultural norms and perceptions of beauty

By detailing adaptive Islamic principles, this research aims to facilitate more discussions in the architectural design community of all faiths and provide guidance for the creation of oases of order and peace among the semantic disorder of our time. The absence of projects utilizing these principles has led to the antiquation of Islamic architecture, when in fact, as the research confirms, it has a vital role to play in future development. Projects based on these principles provide a means for Islamic communities to develop built environments that reinforce and strengthen their faith while creating living infrastructure that can adapt to future generations.

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Muslim (1956). *Sahih Muslim (5 volumes)*. In M. 'Abd al-Baqi (Ed.). Cairo, Egypt.


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