THE GRID IN CLASSICAL ISLAMIC URBAN DESIGN AND ITS APPLICATION IN MODERN PLANNING

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Foreword

During my stay at FES, I have gravitated towards understanding the role of religion in planning. Being born and raised a Muslim, it was important for me to understand whether or not traditional Muslim communities influenced their urban environment and if so in what manner. I had heard about the great historical cities of Al-Medina, and Al-Fustat being beacons of inspiration and beauty in the Islamic world but lacked an understanding of Islam's role in determining their spatial pattern. This question is at the heart of my thesis, as I have tried to connect my two interests of religion and urban design into my Plan of Study. In the process of my research, I came across the concept of the grid in classical Islamic urban design and was able to address all of my objectives by comprehensively studying its development from a historical perspective and its applications in a contemporary Canadian context. In doing so, I am able to write this Major Paper.

It should be noted that the construct of Islamic urban design and in extension Islamic cities has already received a great deal of scholarly attention, which has led to the topic being debated and philosophical inquiries made about its very nature. My attempt here, however, is to tackle the subject from the perspective of sacred space (the central mosque) in order to gain an understanding of how it influences the urban environment of Muslim communities, as stated within the components of my Plan of Study. By examining the historical development and contemporary applications of the grid in classical Islamic urban design, I was able to do so in my major paper research. My learning objectives under component 1, "The Grid in Classical Islamic Urban Design" are to understand the origin of the topographic framework exhibited in early Islamic settlements by reconstructing the morphology of the first known Islamic city. Component 2, "Sacred Space in Islamic Cities", has objectives related to identifying how the Islamic institution of the central (*jami*) mosque influenced the spatial patterns of early Muslim settlements. Component 3, Cultural Planning, focuses on the relevance of the mosque-based neighbourhood, a reccurring feature in classical Islamic urban design, in contemporary Canadian planning practice as it relates to community building and religious placemaking. In doing so, I was able to explore the historical development of the grid in classical Islamic urban design and discuss the importance of one of its main reccurring feature (the mosque-based neighbourhood) within a contemporary Canadian context.

Overall, this paper is a result of time, effort, and hard work that spans over a year. I feel it achieves the goals set forth in my Plan of Study but more importantly, it highlights, however briefly, the importance of religion in daily urban life. I can only hope readers may recognize this importance as well, if not from this work then at least from their visits to the few old quarters left in the Muslim world.

Abstract

This paper, reconstructs the earliest urban environments in which Muslims lived with a particular focus on the central (*jami*) mosque. The term *Jami*, according to Mohmmed Makki Sibai, is a derivative from either the Arabic verb *jama*, which means 'to gather,' or from the Arabic proper noun *juma* which means Friday (1987:8), implying in both instances a place where people pray. Yet in early Islam, the central (*jami*) mosque was more than just a communal prayer space, it was the "veritable hub" (Collins, 2011:17) of the community, addressing their social, political, and educational needs, as I will repeatedly highlight below. Through a morphological analysis of the early Islamic cities such as Medina, Al-Basrah, Al-Kufa, and Al-Fustat, I assess the spatial influence of the central (*jami*) mosque in early Muslim settlements. Specifically, I analyze the institution's influence on the orientation of neighbourhoods, layout of streets, and location of the marketplace. In doing so, I highlight the socio-religious significance and importance of the institution for not only the traditional but contemporary Muslim communities as well, who seek to replicate the mosque-based neighbourhood design feature, in the Canadian urban landscape.

Acknowledgments

I would like to express my gratitude to the two most influential people in my life. My mom and dad. They have been a constant source of love, support, and encouragement throughout my life and I pray will continue to be, well after I graduate.

I would also like to thank my advisor Peter Timmerman who was patient enough to let me ramble on about religion and the environment while sharing with me intriguing stories on hot summer days.

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Introduction

Given the realities of globalization and mass migration, a plurality of different religions and cultures now permeate the urban landscape of North America. In the city of Toronto, the vast majority of communities no longer represent a single sociocultural and ethnoreligious tradition but rather, an array of diverse religious identities, beliefs, and preferences. In 2011, the National Household Survey found that after Christianity, 21.1% of Toronto's population identify with a particular world religion such as Islam, Hinduism, Judaism, Buddhism, Sikhism and Zoroastrianism ('NHS', 2011). Followers of these religions have contributed towards religious placemaking in the city by "carving out sacred niches" (Mazumdar & Mazumdar, 2013: 222) for themselves. Through the creation of sacred spaces, religious institutions, and support systems (Mazumdar & Mazumdar, 2009:308), religion has added to the richness of Canadian urban life. Thus, as a major factor shaping urban society (Mazumdar & Mazumdar, 2013:222), religion should not be ignored but rather be acknowledged and engaged within the realms of urban planning and design for the following two reasons discussed in this paper.

First, throughout human history, religion has been an instrumental force in city formation and urban development (Mazumdar & Mazumdar, 2013:222). This study which focuses on a morphological analysis of Middle Eastern cities in the 7th century, reveals that religion and in particular Islam, was a significant factor in the planning of early Muslim cities. The Islamic institution of the mosque which was the focal point of the entire city, influenced the orientation of streets, location of markets, and the structure of neighbourhoods in reference to itself. Thus, cities in the east were "indicative of the centrality of religion" in daily urban life (Mazumdar & Mazumdar, 2013:222).

Second, due to the increase in global migration, new immigrant groups have formed religious institutions to not only facilitate and maintain a religious lifestyle, but to build, form and sustain a sense community (Mazumdar & Mazumdar, 2009:307). Such a phenomenon is tied to concepts of sense of place, place identity, place meaning, and place attachment, which can best be described in terms of religious placemaking and community formation (Mazumdar &

Mazumdar, 2009:307). Spaces of worship such as Sikh Gurdwaras, Hindu Temples, Buddhist Pagodas, and Muslim Mosques are seen by their respective adherents as "profound centres of human existence" (Relph, 1976:43) that impart a deep sense of collective meaning and sentiment (Lofland, 1998:212). They not only possess the capacity to help anchor an individual (Cooper Marcus, 1992:88), and give stability (Brown & Perkins, 1992:280) but more importantly, provide a sense of belonging (Fullilove, 1996: 1516) in an unfamiliar and new social world.

Thus, it may be said that the historic role of religion, in structuring the design of cities and neighbourhoods, is remerging, as migrant families in Canada are contributing towards the creation, personalization, and use of sacred spaces. In this regard, when attempting to address the planning concerns surrounding the various religions in the city of Toronto, a 'religious sensibility' is required (Mazumdar & Mazumdar, 2013:235) which involves at least a basic understanding of religious values, beliefs, practices. The development of a religious sensibility can help planners to recognize the urban implications of different religions that proliferate the city. Religions are diverse, and there exists within them fundamental differences in terms of worldviews, organizational structures, modes of congregation, celebrations, and ritual practices (Mazumdar & Mazumdar, 2013:237). When learning about how different religions may affect land use patterns and urban public spaces, specifics about different religions are important.

For the religion of Islam whose adherents constitute 8.2% of Toronto's population (NHS, 2011), a religious sensibility may be derived from understanding its historical urban tradition that still informs the overall form and function of Muslim neighbourhoods in the contemporary world. From the 7th up until the 14th century, Islamic societies carefully planned magnificent gardens, courtyards, palaces and entire cities in reference to a sacred space known as the *Jami* (congregational) mosque (Zeghlache, 2011:618). The religious institution was the guiding element in all planning related matters as it addressed the community's spiritual, social, and political needs (Spahic, 2014:241). The mosque served as the cornerstone of classical Islamic urban design for the earliest Muslim communities but moreover, provided them with an opportunity to practice, express, transmit, and ultimately live their faith for generations in urban environments. Thus, knowledge pertaining to the historical role of the *Jami* mosque in the urban

environments of early Muslims may be of significant benefit for city planners who are either engaged or will be engaged in proposals that involve Canadian Muslim communities.

In researching my major paper, I identified several key texts to draw upon in order to gain an understanding of the morphology, topography, spatial pattern, layout, and or grid that was found in classical Islamic urban design. Especially useful were Paul Wheatley's book titled, *The Places where Men* Pray (2000) and Jafar A. R. Zamel thesis titled, *Islamic City: The Emergence Development during the Early Islamic Period* (2009). Both texts display the central (*Jami*) mosque as a culturally relevant, dynamic, and engaging force in Muslim history, contributing towards a distinct and unique spatial pattern. Such a pattern, developed by the Prophet Muhammed ﷺ himself, persisted for the first four centuries of Islam in Arabia and parts of East and North Africa, which both texts focus on.

In the early Islamic era between 622-650 C.E/1-30 A.H, the institution was instrumental in shaping and directing the entire layout of early Muslim settlements. A morphological analysis of places such as Al-Medina (622), Al-Basrah (636), Al-Kufa (precursor of Baghdad, 638), and Al-Fustat (precursor of Cairo, 641) which will be the focus of this paper, explicitly highlight such a phenomenon. Beginning with Al-Medina, the grid in classical Islamic urban design will be reconstructed and shown how it served as a model, replicated in the subsequent development of new Muslim communities known as garrison town (eg. Al-Basra, Al-Kufa, and Al-Fustat) in Iraq and Egypt.

By providing a morphological analysis of the earliest Muslim settlements in human history, this study seeks to inform and educate planners and policymakers on the relationship between Islam, land use, and the use of urban space (Mazumdar & Mazumdar, 2013:222). In doing so religious placemaking in the city may be facilitated, thereby helping to foster, build, and solidify a sense of community amongst Canadian Muslims.

Literature Review

Given the complex nature of the topic, studies pertaining to Islamic urbanism have tended to be interdisciplinary (Hameed, 1991:10), incorporating a broad field of intellectual inquiry. Its different aspects such as morphological structure, social class, mercantile network, political form of governance, and relevant legal-theological literature have been thoroughly researched and analyzed (Hameed, 1991:11). As such an understanding of Islamic urbanism has gradually developed, periodically changing and evolving with each new study.

Yet, this wasn't always the case. Initial research into the Islamic settlements began by Oriental scholars such as Jean Sauvaget, the Marcais brothers, Brunschvig, Le Tourneau, among others (Abu-Lughod, 1987:158). Although these scholars initiated the first phase of study and established certain ideas and themes, their approach was extremely simplistic and reductive. Solely based on the observations conducted in a handful of cities during a specific period of time: the primary location was North Africa and Syria; the time period was the late nineteenth and early twentieth century, or as sociologist Abu-Lughod succinctly puts it: "pre-modern Arab cities on the eve of Westernization (1987:155), a theoretical model of the Islamic city emerged. Along with such a model came many recurrent themes and ideas that would gradually appear in subsequent works on the Islamic city (Goddard, 1999:13).

The lack of a conceptual framework resulted in the Islamic settlements being presented as a simple and reductive "model of outcomes rather than one of processes" (Abu-Lughod, 1987:172). Such a model emphasized Islam being intrinsically linked with city life, and thus, in essence, an urban religion (Goddard, 1999:13). With reference to certain historical, Quranic and Hadith narrations, early scholars justified such claims by insisting that Muslims could only properly fulfill their religious obligations in an urban environment. Even though such an idea is in direct contradiction with history, as some of the earliest converts to Islam were Bedouins who

not only embraced but practiced the faith living well outside the city limits (Hameed, 1991:21), it nevertheless became an accepted fact.

Such a line of inquiry was taken even further into the domain of comparative studies where it was contrasted with European society (Brown, 1986:73). The Islamic settlement were examined not within themselves but through external comparative standards. Primarily carried out by Georges Marçais, but hinted at by Max Weber, a comparative dichotomy between the Muslim and Western Christian city was proposed. The comparison not only reinforced the notion of the West versus the (Islamic) East but also implied that the Western world was inherently progressive and the Eastern one essentially backward (Goddard, 1999:21). Von Grunebaum's article, which summarizes all of the observations, theories, and conclusions made by previous Oriental scholars on the Islamic settlements has very strong undertones of this very assumption. With references to Greek, Roman, and "Hellenistic" cities found on every page (Goddard, 1999:31) there is a strong sense of general praise for classical civilization and contempt for Islamic society (Goddard, 1999:31). This dominant and common assumption amongst Oriental scholars can be found in the following sentence of Von Grunebaum's article titled, "*The Structure of the Muslim Town*": "The Islamic town did not represent a uniform type of civilized life as had the Greek or Roman town" (Grunebaum, 1955: 142).

Such remarks are not surprising though, given that the research was undertaken in the nineteenth century during the colonial expansion of the French and fundamentally driven by military and political interests (Hamaouche, 2009:218). Early oriental scholars preoccupied themselves with the descriptive manifestations of urban form at the expense of broader and arguably more important socio-economic and political questions of society (Hameed, 1991:16). This view reinforced the notion of Orientalism as being a school of interpretation whose material happened to be the Orient (Said, 1978:197). Although such studies have contributed to forming a prescriptive image of Islam, they nonetheless represent the first stage in understanding the evolution of the Islamic city, and therein lies their value.

It wouldn't be until the latter part of the 20th century that the traditional model of the Islamic city would be called into question. Initiated by scholars from fields outside traditional

oriental studies such as geographer Eugen Wirth, historian Oleg Grabar, anthropologist Dale Eickelman and sociologist Janet Abu-Lughod, the stereotypical French model of the Islamic city was not only critiqued but revised (Goddard, 1999:40). Such scholars proposed new approaches and methodologies in understanding and representing cities in the Muslim world (Goddard, 1999:40). They argued against the "bottom-up" and "organic" essence (Bigon & Ross, 2020:53) of Islamic cities, in light of evidence that suggested the practice of "top-down urban planning". Observable in the early town plans of Islamic settlements which featured orthogonal grids, such scholars concluded that the "practice of top-down orthogonal city planning" was indeed present in the early period of Islam (Bigon & Ross, 2020: 55). Moreover, the practice was not "derived from the Hellenistic-Roman tradition" (Bigon & Ross, 2020:55) even though it may have occurred after the collapse of the Roman empire, but rather, "developed empirically, on the ground, as the need for planning arose" (Bigon & Ross, 2020:55).

By mainly focusing on the planning processes involved in the formation of the Islamic city, the inquiry shifted from merely describing its physical form to understanding the interrelations and interactions amongst its residential, commercial, and religious components that helped shape the city's urban fabric (Hourani, 1970:11). Hourani and Stern highlighted that individuals in Islam are not only part of universal community of believers, but belong to a local Islamic community as well. Thus, "residents shared identity, commitment to a place and a way of life in which religious institutions provide the central organizing theme" (Abrahamson, 1996:2) of the city. The containment of planning processes within the broader topographic framework of Muslim communities allowed for a more complex and nuanced understanding of Islamic urbanism to develop (Hourani, 1970:11). This is an understanding that still exists today and one that will be touched upon throughout this paper.

Methodology

In 1960, an American urban planner and author by the name of Kevin Lynch introduced the idea of a city's legibility in his work titled, *The Image of the City*. According to Lynch cities depending on their urban elements have the ability to be conceptualized in the form of mental maps. Some cities are more legible than others. Although his study involves contemporary

American cites, the methodology can still be applied to early Islamic cities which were, by their very nature, organized in terms of centres, direction, and domains (Wheatley, 1976:357). Due to the fact that these components are strikingly similar to Lynch's, they can be easily translated and applied to his respective methodology.

The following five components delineated by Lynch will be used to analyze the morphological development of early Islamic cities

1- Pathways. Responsible for directing motion, this element looks at how the streets, roads, and alleyways in which people travel arrange space (Lynch, 1960:47).
2- Edges. Responsible for preventing motion, this element addresses the linear components that form the boundaries of cities, including walls, buildings, and railway cuts (Lynch, 1960:47). Edges can be real, perceived, manmade, and or natural (Lynch, 1960:47).
3- Districts. Medium to large parts of the city that share similar characteristics such as style, spatial form, topography, and urban fabric (Lynch, 1960:47).
4- Nodes. Large areas that serve as the focal point for the city, neighborhood, and district (Lynch, 1960:47).
5- Landmarks. Unique points of reference in the city such as buildings, signs, and even mountains (Lynch, 1960:47).

It is important to note that the morphological analysis of early Islamic cities according to Lynch's five components will repeatedly reveal the importance of the 'node' in classical Islamic urban design. Meaning, which the author describes as practical and emotional value (Lynch, 1960:8) was embedded with and communicated to the people of Islamic cities (Zeghlache, 2011:610) through this particular urban element. Thus, it will be important to explore the symbolic role of the *Jami* beyond simply categorizing it as a node in early Islamic settlements.

In this chapter, I discuss the urban design history of Al-Medina, Al-Basra, Al-Kufa and Al-Fustat in an attempt to discover how early Muslim societies planned and designed their urban environments, in a manner conducive to their religious needs and requirements.

Beginning with Medina, I identify the socio-religious importance of the central (*Jami*) mosque in the daily lives of Muslims and its spatial implication. As previously mentioned, the mosque historically served as an essential focal point (Damgaard & Walmsley, 2005:01) for Muslim communities and thus as a node according to Lynch's methodology (Lynch, 1960:47). "Life in its economic, social, religious, and political aspects was ordered around this central Mosque" (Zeghlache, 2011: 614). Gradually the institution not only became one of the "principal defining feature of urban life in Islam" (Damgaard & Walmsley, 2005:01) but the ultimate reference point for organizing the spatial layout of the entire settlement (Zeghlache, 2011:615). As a node in the urban environment, the central (*Jami*) organized districts, dictated edges, and integrated paths in relation to itself.

I conclude that such a spatial pattern exhibited in Medina sparked a "substantial and coherent" (Wheatley, 2000:266) Islamic urban design tradition that was mimicked and replicated in the subsequent Islamic societies of Al-Basra, Al-Kufa, and Al-Fustat (Zeghlache, 2014). In doing so, the Islamic urban design tradition established, developed, and maintained the ritual practices, congregational prayers, and ceremonies of the newly formed Muslim community (*Ummah*) in a highly diverse ethnoreligious landscape (Wheatley, 2000: 267).

Al-Medina

The origin of classical Islamic urban design can be traced back to the religious landscape of 7th century Arabia. At the time, the Prophet Muhammed ﷺ was calling people towards a conception of monotheism which challenged the political and economic power of the Meccan oligarchy (Wheatley, 2000:20), because of their grounding in mostly polytheistic institutions. His teachings primarily appealed to poor desert Arabs who had been systematically oppressed in Meccan society due to their lack of tribal prestige and social standing. As Muhammed's followers gradually grew in numbers to substantial to ignore, he "provoked much hostility" (Frishman & Khan, 1994:19) from the Meccan elite who had resorted to different forms of persecution in an attempt to deter people from accepting Muhammed's message. After 10

consecutive years of oppression, discrimination, and abuse, the Prophet was forced to flee Mecca and establish a new sanctuary for the early Muslim community in 622 C.E/1 A.H.

Approximately four hundred and fifty kilometres north of Mecca, the region of *Yathrib*, an oasis in the Arabian Peninsula rich in date palms and groves, was chosen to serve as a place of refuge for the Muslim minority. Within a span of a decade the area experienced an urbanization process that transformed the entire pre-existing nomadic settlement into a highly complex and structured urban environment. Known as the city of the Prophet (*Medinat-Un-Nabi)* from then on, the spatial arrangement which may be characterized as "Islamic" served as a blueprint in the subsequent establishment of Islamic cities well into the 9th century (Saoud, 2001:2).

Prior to its transformation, however, the locality of *Yathrib* lacked a clear central urban focus (Wheatley, 2000:24). Consisting of several distinct and dispersed clan settlements belonging to various warring tribes, numerous defensive fortified towers occupied the landscape (Wheatley, 2000:24). Intended to serve as temporary shelters for a population engaged in seasonal skirmishes, decades of chronic socio-political insecurity left these defensive towers to function as permanent residences (Wheatley, 2000:24). With the arrival of the Prophet at the beginning of the 7th century, both the landscape and socio-political atmosphere drastically changed.

It is important to note that the Prophet's entrance into Yathrib had urban implications in and of itself. Described as an important, festive and joyous occasion in Islamic history, the Prophet's entry sparked celebratory chants, long-anticipated reunions, and an overall communal sense of accomplishment. Yet amongst joy and cheer, inhabitants of Yathrib began to vie with one another in seeking to house the Prophet. Considered an honour in of itself, the discussion had far greater geospatial repercussions than social ones as the area chosen would not only serve as the Prophet's permanent residence but would then become the city's core (Spahic, 2014:243; Zamel, 2009:52).

It was at this decisive moment in Islamic history that an animal would serve as a metaphysical mediator in the development of sacred space (Zeghlache, 2011:615). The location

where Qaswa, the Prophet's she-camel, would choose to settle became the site of the central mosque (*Masjid-An-Nabawi*). Construction of the institution soon began afterward with elements perfect for adapting to the hot weather conditions and topography of the region (Saoud, 2001:4).

At first, the structure which was built with a combination of palm fibers, branches, clay, and mud only consisted of a wide-open prayer area; but as the spiritual, social, and political needs of an ever-expanding Muslim community grew so did its form and function (Al-Tabari, n.d. as cited in Zamel, 2009:59). The mosque was periodically expanded, modified, and changed in order to address the spiritual and socio-political needs of a dynamic and vibrant community. At times in its history, the institution served as an administrative unit, a learning centre, a place for medical treatment, a detention and rehabilitation centre, a welfare centre and a place for recreational activities (Omer, 2014:241). The mosque's multifunctional nature (Omer, 2014:241) allowed for life's economic, social, religious, and political aspects to be quite literally organized in and around it (Zeghlache, 2011:614).

Given that such activities were often supervised by the Prophet himself, it would only be reasonable that his living quarters be in close proximity to the Mosque. In particular, that they be located against the outer side of the eastern wall (Figure.1). It is interesting to note that this choice set a precedent for successive Caliphs and rulers to position their official residence next to the *Jami* mosque (Omer, 2014:241). Although the initial rationale behind such an arrangement was accessibility, transparency, and responsibility to the people (Omer, 2014:241), the placement of the residence soon became a symbol of authoritative socio-political power within the region. Thus, the origin of early administrative cores found within Islamic cities of Al-Basra, Al-Kufa, and Al-Fustat can be tied back to this mosque-residence arrangement made by the Prophet in Medina.

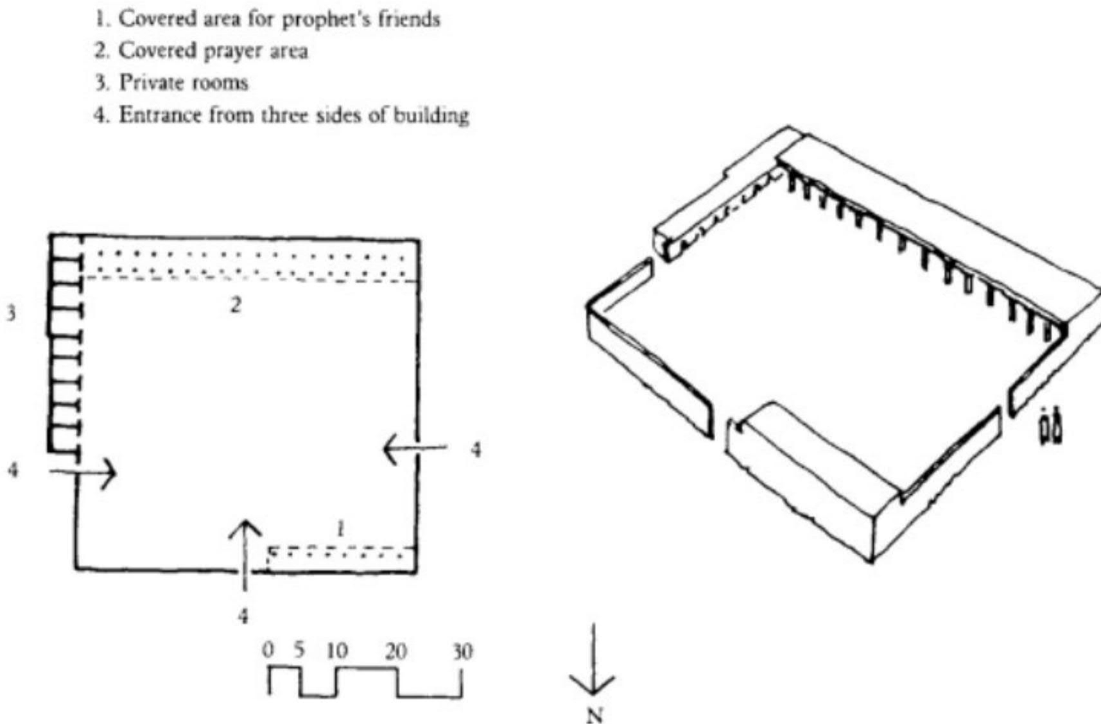

Figure 1. Plan and view of Prophet's mosque/house during the period 623-638 C.E (Creswell, 1989).

The overall form of the *Masjid-An-Nabawi,* provided early Muslims a basic understanding of the different features of a standard and 'official' mosque (Frishman & Khan, 1994:30) (Figure 2). Other than the residential feature, three other primary elements were derived from the Prophet's modest and simple mosque that would be incorporated to some extent in the design of subsequent central (*Jami*) mosques. These features included a courtyard (*sahn*), covered prayer hall or sanctuary (*haram*) oriented towards the *qibla* wall, and a pulpit (*minbar*). The square courtyard (*sahn*) was often "a demarcated space partly roofed and partly open to the sky" (Frishman & Khan, 1994:33). The sanctuary (*haram*), however, was an area covered with a portico (*zulla*) serving as the designated place of prayer. The sanctuary (*haram*) had to be facing the *qibla* wall which was in the direction of Mecca. Attached to this wall was the pulpit (*minbar*), a platform usually made of wood with a small set of steps intended to be the place from where the Imam could deliver his Friday sermons (*khuttba*) from (Frishman & Khan, 1994:26). Overall, after the establishment of *Masjid-An-Nabawi*, a "central courtyard surrounded

by porticos (*zulla*)" (Frishman & Khan, 1994:80) oriented towards a *qibla* wall became the ideal and universal plan for official mosques.

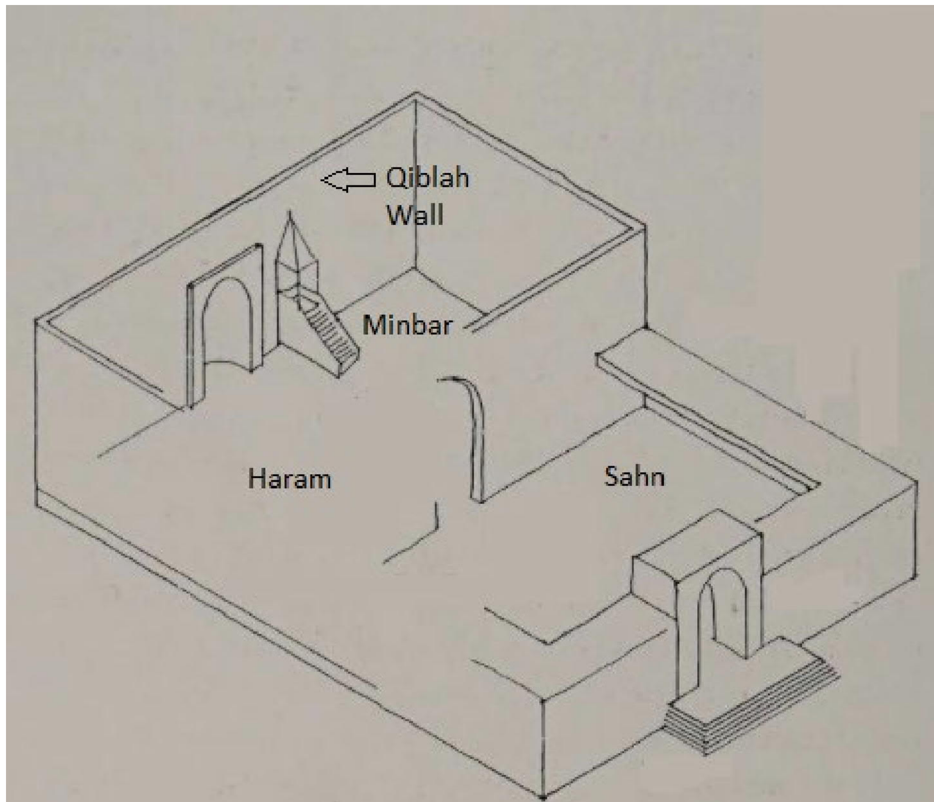

Figure 2. The standards components to the central (*Jami*) mosque in Early Islam (Frishman & Khan, 1994:33)

Yet, beyond its simple architectural form, the mosque was instrumental in influencing, directing, and managing the spatial layout of the Medina (Zeghlache, 2011: 615). Regarded as an "essential focal point" for the Muslim community (Walmsley & Damgard, 2004:1), residential quarters, pathways, and the marketplace were all systematically planned in reference to the Islamic institution (Mazumdar & Mazumdar, 2013:223). The overall design of the Medina indicated the "centrality of religion in urban life" (Mazumdar & Mazumdar, 2012:222).
Thus, by methodologically analyzing and detailing the organization and integration of core urban elements around the mosque, an understanding of the topographic framework in classical Islamic urban design may be acquired.

The residential quarters (*khittat*) were the first urban elements to be planned around *Masjid-An-Nabawi,* early on in the settlement's development process (Omer, 2014:248). Given that there were "no natural hindrances such as steep hills or completely infertile lands" (Omer, 2014:243) in the surrounding area, the residential areas (*khittat*) could be freely planned and evenly dispersed around *Masjid-An-Nabawi* with a high degree of regularity (Omer, 2014:243). Such a distribution, which was recommended by the Prophet himself (Omer, 2014:243), allowed for the early community to live at roughly equal distances from *Masjid-An-Nabawi* (Omer, 2014:243) so that when the call of prayer was given from *Masjid-An-Nabawi*, the sound would permeate each and every quarter (Zamel, 2009:53).

In terms of their composition, the emerging residential quarters were similar in style, spatial form, and topography (Omer, 2014:249) and can thus be categorically defined as 'districts' (Lynch, 1960: 47). In totality, they were composed of approximately 230 to 330 houses, barely extending a few hundred meters in each cardinal direction (Omer, 2014:248). The size, shape, and overall form of these houses was dictated by different socio-religious, environmental, and pre-Islamic architectural factors. Although there is a lack of textual evidence about the exact form of early homes in Medina, reports indicate that residential units in early Islamic settlements, were generally low-built structures (Ismail, 1972:115) achieving a high standard of what we know today as passive and or green design; design techniques used to maximize climatic efficiency without the use of mechanical devices. Such a form would have been capable of naturally cooling, ventilating, and aesthetically diffusing light while being resilient to the natural forces of the harsh desert region.

The next urban element to gradually take form and define the urban landscape in relation to *Masjid-An-Nabawi* was that of pathways. The newly formed quarters were interlinked with one another through a network of secondary streets that branched off of a few primary roads (Zamel, 2009:64). These primary roads which served as the main communication networks of the city began from the Prophet's mosque and led in virtually every direction (Zamel, 2009:64). Westward from the mosque, a road reached a landmark known as the Mount Salā; another southward, reached an old settlement belonging to the tribe of Uday bin al-Najjar (Zamel, 2009:64), and to the north, one led to a burial ground of referred to as al-Quba (Omer,

2014:240). The newly formed street system not only linked the contemporary and historic areas of the city but facilitated its transformation from a collection of scattered defensive towers into a cohesive and coherent urban environment.

The final key element to be highly influenced by the mosque was the marketplace (*souq*). In an attempt to centralize the *souqs* in one location rather than leaving them dispersed in and around residential quarters (Uthman, 1988:57), the Prophet designated that the city's main market be situated in close proximity to the Mosque (Omer, 2014:251). His intention to do so may have had to do with fostering a sense of exclusivity (Whealey, 2000:50), ethical economics (Zamel, 2009:251), and convenience. After it had been established, the central marketplace was an open area without any formal structures or demarcations, a place where merchants and sellers could set up shop on a first-come, first-serve basis (Zamel, 2009:109).

As can be inferred from the description of Medina provided above, the mosque played a key role in influencing the overall spatial pattern of the city by structuring core urban elements in reference to itself. The spatial arrangement allowed the earliest Muslim community in human history to not only practice their faith and but to establish their identity in the "ethnoreligious kaleidoscope of the Middle East" (Wheatley, 2000:267). As subsequent Muslim communities formed throughout Arabia, the blueprint of Medina would continuously serve as a model to be replicated.

<u>An Introduction to Early Islamic Settlements</u>

Within a few decades after the death of the Prophet Muhammed ﷺ 632 CE/11 A.H (Wheatley, 2000: 40), the Arabian Peninsula and parts of East Africa experienced an unprecedented urban transformation (Bigon & Ross, 2020:54). Muslim armies, composed of "not only soldiers but entire tribes, with women and children and livestock" (Bigon & Ross, 2020: 54) and thus, families, created new cities "*ex nihilo*" (Djaït, 1986:345) and in "rapid succession" (Bigon & Ross, 2020:54), near the ancient ruins and old centres of the Byzantine and Sassanid empires (Wheatley, 2000: 269; Whitcomb, 2012:619). Referred to as *amsār* (cantonments) (Wheatley, 2000:40), these garrison-towns which "followed the same process of genesis" (Akbar, 1988:82) formed in and around the regions of Egypt, Persia, and the Levant, with the

immediate aim of housing tribesman engaged in campaigns (Bigon & Ross, 2020:54; Wheatley, 2000: 267)(Figure 3).

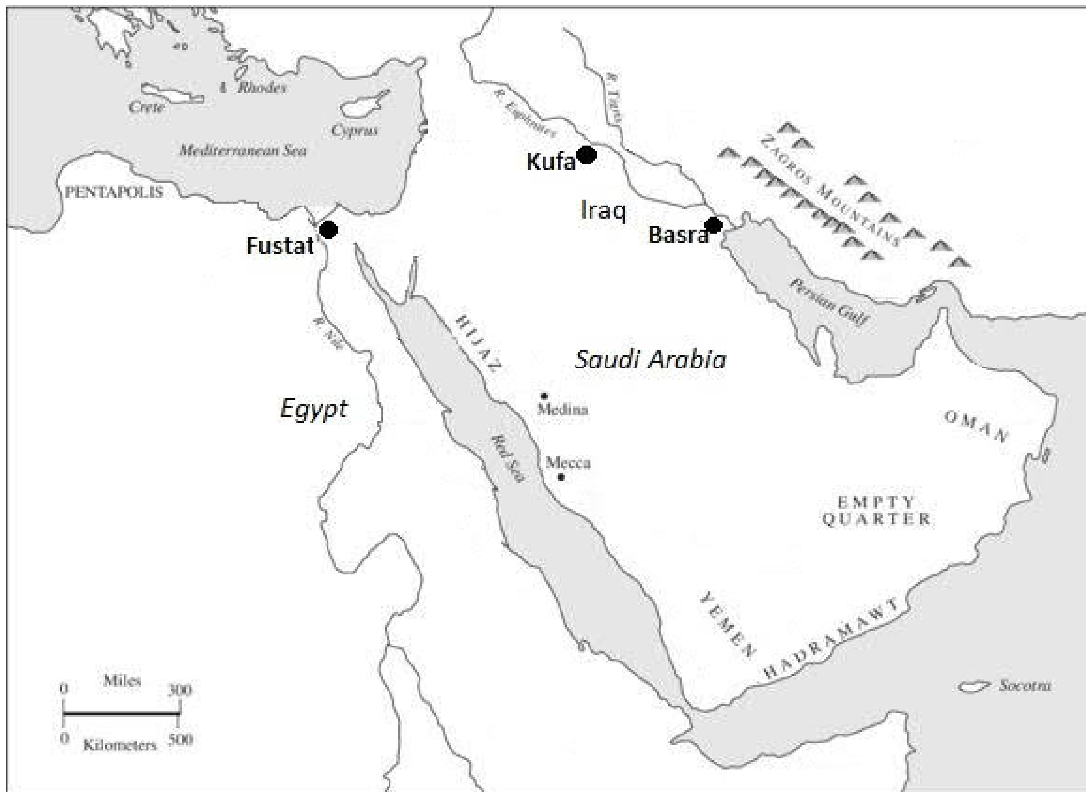

Figure 3. Geophysical location of the *amsār*. Adapted from Howard-Johnston (2017).

Due to the circumstances in which these settlements were established in and their initial purpose, they have historically been passed over in silence (Hillenbrad, 1996:79), reduced to chaotic "labyrinths" and "bottom-up organic developments" (Bigon & Ross, 2020:53) shrouded in temporality and impermanence (Bigon & Ross, 2020:54 ; Hillenbrad, 1996: 80; Wheatley, 2000: 268). Yet, as "archaeological inference and textual interpretation" (Wheatley, 2000: 268) suggests, their planning and development involved the practice of what can best be described as "top-down orthogonal city planning" (Bigon & Ross, 2020:53). Such evidence, shared amongst recent scholarship, suggests that the *amsār* were planned from the beginning as "permanent cities" (Bigon & Ross, 2020:54), intended by their founders to serve as large, populous, and vital urban centres (Wheatley, 2000: 60). A valid theory in many respects, especially when considering that the *amsār* would eventually evolve into "complete metropolises" (Pellat

1986:1086) within the span of decades, attracting migrants, merchants, and pilgrims (Pellat, 1986: 1086) from all over the early Muslim world.

Moreover, the practice of deliberate and strategic top-down planning (Bigon & Ross, 2020:53), can be inferred in the *amsār's* early town plans (Figure 4 & 5), which mimicked the spatial layout of Prophet's city in every respect. The implications of such a phenomenon, indicates that a clear, "substantial and coherent" (Wheatley, 2000: 266) classical form of Islamic urban design (Bigon & Ross, 2020:53 (Hillenbrand, 1999)) was present in the early period of Islam (Bigon & Ross, 2020:54), encapsulated and crystalized in a cohesive grid plan (Bigon & Ross, 2020: 54). The empirical development (Bigon & Ross, 2020:54) and chronological establishment of core urban elements and their principal locations in close proximity to the *Jami*, repeatedly gave rise to an "orthogonal framework" (Wheatley, 2000:268) that first emerged in Medina. As such, a brief morphological analysis of each *amsār* is in order.

Emerging in what is today known as Iraq and Egypt, the original topographic framework of Al-Basrah, Al-Kufa (precursor of Baghdad) (Hillenbrand, 1999:76), and Al-Fustat "(precursor of Cairo)" (Bigon & Ross, 2020:54) will be assessed in the following pages. This assessment, which will begin with the geopolitical circumstances in which each *amsār* was founded in, will primarily be concerned with retracing the chronological establishment of core urban elements and identifying their principal locations in reference to the central (*Jami*) mosque. In doing so, I will be able to not only reconstruct a "credible picture" (Hillenbrad, 1996:79) of the internal layout of each *amsār*, but more importantly highlight the significance of the mosque as a salient feature in the urban environments of early Muslims.

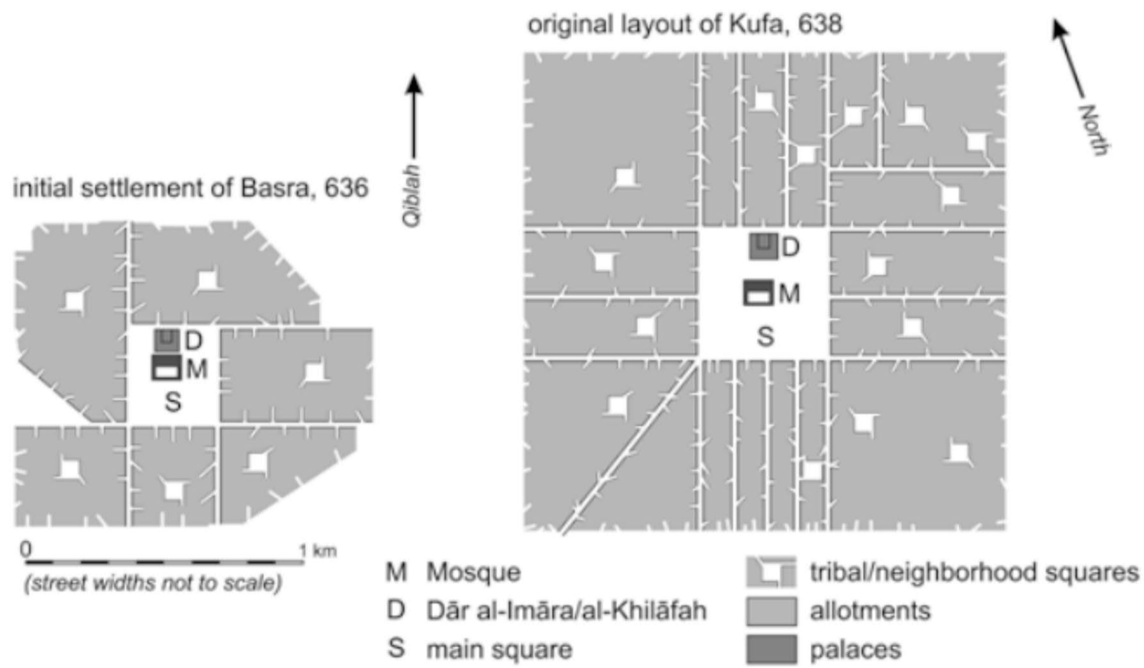

Figure 4. Reconstruction of the initial layouts of Basra and Kufa (Bigon & Ross, 2020:55).

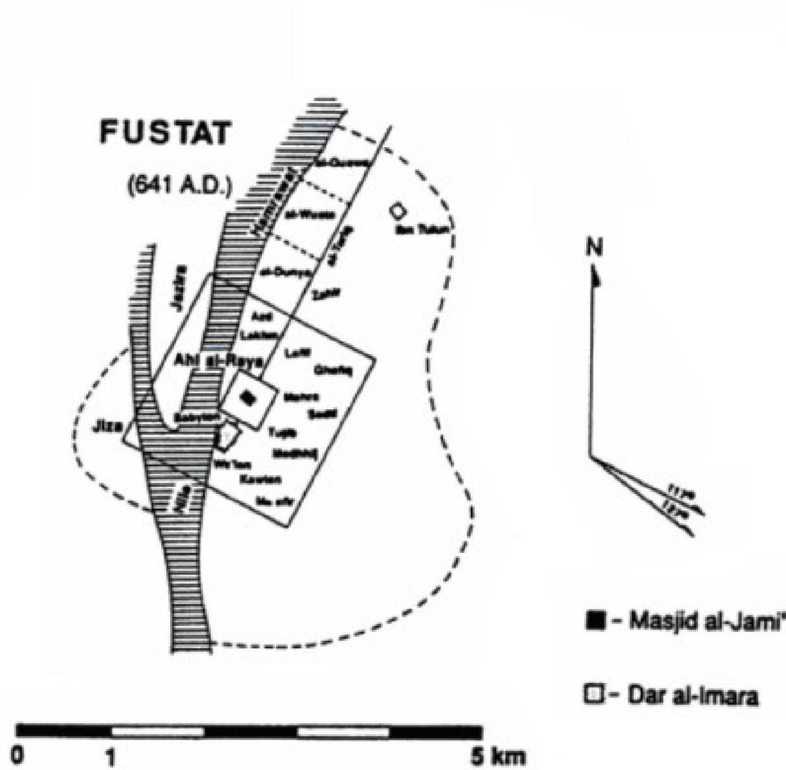

Figure 5. Early town plan for Al-Fustat (Whitcomb,1994 as cited in Hillbrand,1994:78).

Al-Basrah

Although early reports on the founding of Al-Basrah are conflicting (Wheatley, 2000:42), mainstream tradition suggests that the settlement was established in either 637/16 or 638 C.E/17 A.H as a military camp, by army commander Outba bin Ghazwan (Al-Mas'udi, n.d.:357-358 as cited in Wheatley, 2000:42). According to this widely accepted set of historical events (Wheatley, 2000:42), a Muslim army camped in and around seven abandoned villages (Wheatley, 2000:42) after defeating Sassanid forces, near the northeastern tip of the Arabian Peninsula (Al-Balādhurī, n.d.: 347 as cited in Wheatley, 2000:42), in modern-day Iraq. The original settlement covered an area of approximately six miles and was strategically situated between the two rivers of Tigris (*Nahr Maqil*) and Euphrates (*Nahr al-Ubullah*) (Al-Yaqoubi, n.d.:323 as cited in Wheatley, 2000:43).

From the outset the centre of the cantonment, an open space fenced off and demarcated with reeds, was left for the establishment of the *Jami* mosque and a governor's palace (Al-Balādhurī, n.d.: 346 as cited in Wheatley, 2000:43). According to early Muslim sources, the mosque assumed a permanent form in 670 C.E when it was be rebuilt entirely from brick (Frishman & Khan, 1994:80). Similar to the form of *Masjid-An-Nabawi*, Basrah's central (*jami*) mosque simply consisted of an open courtyard (*sahn*) and covered prayer hall (*haram)* in which five rows of stone columns had been erected to support a "teak" roof (Frishman & Khan, 1994:80). The only added addition being a pebble floor "intended to counteract dust" (Fisherman & Khan, 1994:80) and hence a widely used feature from then on. Over time, the institution would adopt the function of the Prophet's mosque as well, becoming the focal point of the entire community (Zamel, 2009:68) with an expansive institutional role.

It should be noted before beginning a detailed morphological assessment of the Al-Basrah, that the exact locational principals of the settlement are not well known (Wheatley, 2000:263). Given the lack of both archaeological evidence and literary sources, reconstructing an accurate and "credible picture" (Hillenbrand, 1999:79) of Al-Basrah is difficult. Nonetheless, limited accounts describing the early layout of the settlement may still be explored, interpreted, and complemented with the urban design precedence set in Medina and replicated in the

subsequent cantonments of Al-Kufa and Al-Fustat for which there is a lot more information available.

In terms of the residential quarters (*khittat*), it is clear that they clustered around the central mosque, in an organized manner (Wheatley, 2000:263)(Figure 6), most likely on the basis of old, pre-Islamic tribal structures (*'asabiyya*) (Djaït 1986:347) that persisted well into the early period of Islam (Bigon & Ross, 2020:55). The importance and relevance of such tribal institutions at the time must have had urban implications on the size, location, and governance of each residential area. With a total of five (Northedge, 2017:158) or six distinct residential areas (Bigon & Ross, 2020:55), their overall size and proximity to the central mosque may have been decided on the basis of tribal prestige, familial ties, and kinship, as would be the case in Al-Kufa (Wheatley, 2000:45). Nevertheless, the spatial arrangement of the residential areas in Medina, the *khittat* of Al-Basrah systematically concentrated around the central (*Jami*) mosque (Bigon & Ross, 2020:55).

Figure 6. The initial layout of Al-Basra (Whitcomb,1994 as cited in Hillbrand,1994:78).

Given that the purpose of the settlement was to "house an active army between on-going campaigns" (Bigon & Ross, 2020:54), the building materials utilized for the residences themselves would have been, "fragile and perishable" (Ismail, 1978:115) at best. Regardless of their "insubstantiality" (Ismail, 1972:115), however, the manner in which they were employed would have facilitated passive design techniques thereby allowing the housing units to achieve a certain degree of climatic efficiency and privacy (Ismail, 1972:115) in the arid desert environment.

Furthermore, unlike the residential quarters of Medina, the *khittat* of Al-Basrah had an added feature of a central public square. Depending in which quarter the public square was located, it either functioned as a communal stable, garden, cemetery and or point of assembly (Wheatley, 2000: 264), in accordance with the social "needs and internal politics" (Bigon & Ross, 2020: 55) of the inhabiting tribe. Although the functionality of the public square differed from quarter to quarter, one element remained constant; a neighbourhood mosque (Bigon & Ross, 2020:55). In each and every *khitta,* a neighbourhood mosque was situated in its central public square alongside one or two other public facilities. This small and subtle addition in the internal composition of residential of Al-Basrah would be mimicked in the subsequent Muslim settlements of Al-Kufa and Al-Fustat, and thus incorporated in the overall tradition of classical Islamic urban design.

In regard to Al-Basrah's pathways, a complex network of roads, streets and passageways were developed early on in the settlement (Wheatley, 2000:264). Given that the *Jami* was the first urban element to be established (Zamel, 2009:68), it's reasonable to assume that the institution would have influenced the overall course and direction of major roads to some extent. A plausible inference since Al-Basrah's main roads which were approximately sixty cubits wide (Wheatley, 2000:264), categorized as primary and lead in all four cardinal directions, radiated more or less from the central square. Furthermore, in certain parts of the settlement, specific paths, uniform in size and degree of importance, may have functioned less for movement and more as separators between residential quarters themselves (Wheatley, 2000:264), thus functioning as edges (Lynch, 1960:47) in the urban environment.

As the settlement passed through subsequent stages of urban development, the topographical subdivisions of Al-Basrah became clearer (Zamel, 2009:71-72). In the year 666 C.E/45 A.H, approximately thirty years after the camp was established, religious, administrative and service institutions, all in close proximity to the central mosque, crystallised (Wheatley, 2000:43) allowing the settlement to assume urban characteristics of a conventional city. Similar to *Masjid-Nabawi,* the central (*Jami*) mosque of Al-Basrah influenced the spatial pattern of the entire settlement by structuring core urban elements such as districts, pathways, and edges in relation to itself. The mosques spatial influence and socio-religious importance, logically necessitated that urban institutions be empirically planned in the central square, ideally next to the *Jami*, as their need arose (Bigon & Ross, 2020:53). Overtime, a treasury (*diwan*), prison, public bathhouse (*hammam*), and commercial area called the city of livelihood (*madinat-al-ruzuq*) would be incorporated in the central square, ultimately causing the *Jami* to become a multi-unit structure consisting of different socio-religious and economic components (Al-Tabari, n.d.:248-249 as cited in Zamel 2009:71).

It is important to highlight that from the outset, the decision to plan a commercial area next to the *Jami* was as a means of centralizing the marketplace. Rather than leaving multitudes of *souqs* scattered and dispersed throughout the settlement, a centralized area in close proximity to the mosque would have not only helped with concentrating trade and commerce in one convenient location but would have encouraged ethical economics. Most importantly though, it would have reinforced the central role of the *Jami* in daily urban life. Such an effort which can clearly be traced back to the Medinan planning model was likewise undertaken by the governing authorities in the settlements of Al-Kufa and Al-Fustat, which will be discussed next.

Al-Kufa

Al-Kufa was the not only the second Islamic city in history to demonstrate an orthogonal framework characteristic of classical Islamic urban design (Figure 7), but one that followed the urban trajectory of Al-Basrah in almost every respect (Zamel, 2009: 72). Both settlements which were initially intended for nomadic tribesman periodically engaged in battle with the Sassanid empire experienced the same pattern of urban development and growth (Wheatley, 2000:263).

With the introduction of new construction materials (Zamel, 2009:71), an influx of migrants, and an overall close proximity to the Euphrates trading routes (Djaït 1986:345; Pellat 1986:1086) both Bedouin-styled camps evolved into a well-established, prosperous, and secure cities by the end of the 7th century. They would come to be regarded as rival cities during this period of time (Wheatley, 2000:42).

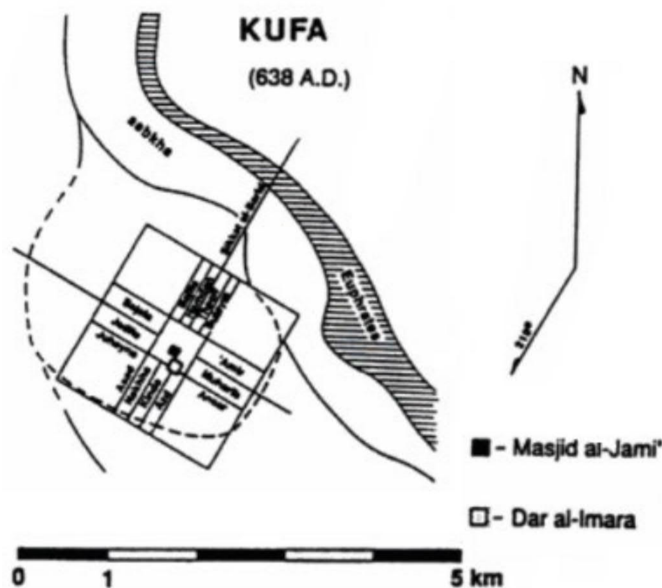

Figure 7. The grid plan of Al-Kufa (Whitcomb,1994 as cited in Hillbrand,1994:78).

The only difference between the two settlements was that the development process of Al-Kufa was much more gradual and hierarchical (Wheatley, 2000:47). Unlike the development of Al-Basra which was based on mutual consultation and local agreement between inhabitants (Akbar, 1988:86; Wheatley, 2000: 263), Al-Kufa's was much more systematized as it had an appointed planner named Abu al-Hayyaj (Wheatley, 2000: 264). The army lieutenant was tasked with directing the overall development of the settlement in accordance to the recommendations provided by a council of tribal clan leaders' (*Ahl al Raya*) and as some reports suggest the second Caliph Umar himself (Wheatley, 2000: 264). Matters related to planning in Al-Kufa were thus much more bureaucratic as they had to be mutually agreed upon by the state-appointed planner, council members and the Caliph. It should be noted that Al-Kufa's topographical evolution remained faithful to the town's original and early plan laid out by such parties (Djaït 1986:364). A plan which I will analyze below.

The city of Al-Kufa, “a creation *ex nihilo*” (Djaït 1986:345) was established sometime between 635/13 and 640 C.E/14 A.H, east of the Euphrates River (Wheatley, 2000:45). Although the settlement had an appointed planner responsible for guiding and directing its overall growth (Wheatley, 2000:264), the planning, and development of the *Jami* was left in the hands of the army commander named Saad ibn Abi Waqqas (Wheatley, 2000:48). In following the planning precedent set in Medina and replicated in Al-Basrah, Saad reserved the centre of the cantonment, an open central square (*sahn*) roughly two bow shots in length and demarcated by a ditch (*khandaq*) for the establishment of the chief mosque and a governor’s palace (Al-Balādhurī, n.d.:274-276 as cited in Wheatley, 2000:48). The central square was to become the focal point from where the whole encampment would branch out from (Djaït 1986:346) and thus function as a node (Lynch, 1960:47). It is interesting to note that unlike the Medinan planning model, development was explicitly forbidden inside this central square and thus in close proximity to the mosque, as I will discuss below.

Within a span of three decades, the simple mosque would be reconstructed and significantly enlarged (Frishman & Khan, 1994:80). Rebuilt by brick and square in shape, the mosque would come to consist of an open central courtyard surrounded by porticos (*zulla*) intended to serve as prayer halls (*haram*) (Frishman & Khan, 1994:80) (Figure 8). Numerous rows of magnificent and extraordinary stone columns were dispersed within the prayer halls, which approximately measured 15 meters in height (Frishman & Khan, 1994:80). Reports relate that the mosque had incorporated design elements found in “Sassanian palace architecture” (Frishman & Khan, 1994:80), to assume its monumental architectural form (Djaït 1986:346).

After the principal locations for the *Jami* and governor’s palace had been established, Al-Hayyaj apportioned plots of land to different tribes around the demarcated central square (Wheatley, 2000:264)). The size and location of these residential allotments (*khittat)* depended on the “political and demographic importance” (Bigon & Ross, 2020, p. 55; Wheatley, 2000:45) of the respective “tribe they were to be settled by” (Bigon & Ross, 2020, p. 55). The tribes that maintained a closer position to the central square and in extension to the *Jami* held a higher degree of social prestige and political prominence compared to those that were farther away

(Wheatley, 2000:45). Such a socio-spatial phenomenon may be due to the fact that tribal institutions in Arabia retained their influence after the advent of Islam and into the early period of Muslim history (Akbar, 1988:85).

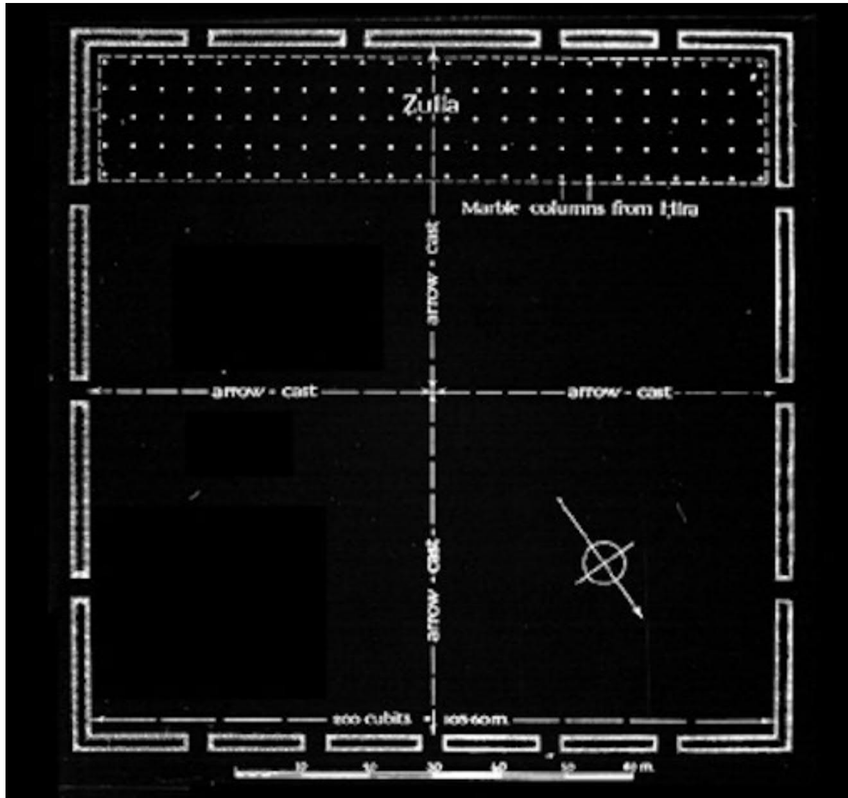

Figure 8. Plan of the *Jami* mosque in Kufa (Creswell, 1989)

Within the “urban whole” (Ismail, 1972:115) of the *khittat*, however, a variety of individual dwelling units were developed, each varying in size, shape and form. Built with fragile materials according to passive design techniques and Islamic prescriptions of privacy (Ismail, 1972:115), the blueprint for some housing units in Al-Kufa may have been derived from residences commonly found in the Mediterranean area at the time; “the house with central court or patio” (Ismail, 1972:115). A valid notion when considering that the central court, seamlessly integrated within the structure of the house and equipped with either a fountain and or a tree, would have offered the residential inhabitants of Al-Kufa a “tranquil and cool atmosphere” (Ismail, 1972:115) compared to the scorching streets outside. Furthermore, during different parts of the day and year, the same courtyard could be used as an open space maximizing natural air movement thereby facilitating a cool airflow to different parts of the house (Ismail, 1972:115).

Incorporating such a feature in the early house-plans of Al-Kufa is plausible as it would have been consistent with the passive design and private form of residential units in early Islamic settlements (Ismail, 1972:115).

Even though the tribal allotments functioned as distinct and independent administrative wards (Bigon & Ross, 2020:55) owned and controlled by the particular clan inhabiting them (Akbar, 1988:82), their internal structures were remarkably similar. At the centre of each quarter was a public square containing "a neighbourhood mosque" amongst other public facilities such as markets and or cemeteries (Bigon & Ross, 2020:55). It is important to highlight that the institution of the mosque was not only the focal point for the entire settlement but for individual neighbourhoods as well (Figure 9).

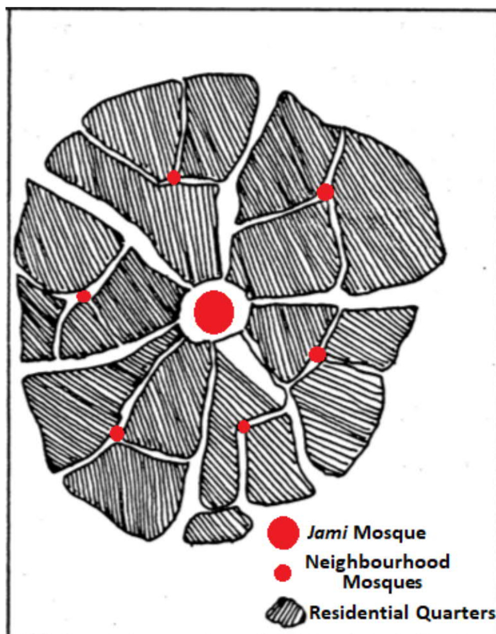

Figure 9. A visual representation of the mosque serving a as a focal point for Muslim communities (Hameed, 1991:69)

The wards were separated by straight wide avenues (*manahidj*) radiating from the central square (Djaït 1986:346). They served not only as edges (Lynch, 1960:47) but as vital pathways in the settlement's communication network which was composed of other streets differing in size, direction, and degree of importance (Djaït 1986:346). With the avenues being "forty cubits wide" (Wheatley, 2000:246), pointing in every cardinal direction (Bigon & Ross, 2020:56) and

possibly categorized as primary roads (Zamel, 2009:72), they played an instrumental role in linking the entire settlement into one cohesive urban environment.

Furthermore, when analyzing the commercial activity of the city, I find the reason as to why Saad, the military commander, prohibited residential development in the open square (Al-Tabari, n.d.:2489 as cited in Wheatley, 2000:246), may have been his attempt at encouraging and facilitating the role of a centralized marketplace early on in the development process. Unlike the planning efforts undertaken in Al-Medina and Al-Basrah which sought to centralize the marketplace after numerous irregular, scattered, and dispersed *souqs* had already emerged (Zamel, 2009:73) Saad may have sought to establish a central marketplace from the very outset. Yet, regardless of the founder's intentions, the urban development trajectory could not be controlled (Wheatley, 2000:269) as individual markets within the residential began to flourish and encroach the central square suggesting that the governor's limited control, "was soon whittled away in favour of the personal interests of powerful individuals back by their tribe" (Bigon & Ross, 2020, p. 56).

Overall, the topographic framework of Al-Kufa which consisted of numerous residential areas (districts) structured around a central square (node), defined by avenues (edges) and integrated by paths, was not disrupted during the settlement's transformation into a city (Djaït 1986:364). In each and every stage of urban development, the principal locations and primary functions of core urban elements established early on in the settlement were maintained (Djaït 1986:364). As the tents in residential quarters became permanent brick houses, and the central (*Jami*) mosque assumed a royal architectural form (Djaït 1986:363), the original layout of the early geometrical, open, and airy settlement persisted throughout Al-Kufa's evolution (Djaït 1986:364).

Al-Fustāt

The final *amsār*, discussed in this paper, to exhibit the spatial patterns found in classical Islamic urban design, was Al-Fustat. The settlement, established under the Caliph's order in 641 C.E., was fortified by a range of hills to the east, the Nile River to its west, and a historic Greco-

Coptic Babylonian Fortress to its south (Kubiak, 1987:176). The settlement's strategic location gave it significant military, administrative, and mercantile advantages (Zamel, 2009:75) from the outset, which may have played a key role in its urban evolution. An urban evolution similar to the one experienced in Medina, Al-Basra, and Al-Kufa (Zamel, 2009:80)

The foundations of the encampment which were laid down by the city's founder 'Amr ibn al-'Ās (Zamel, 2009:75), began with the construction of a central (*Jami*) mosque (Jomier, 1991:958). Named after 'Amr, the *Jami* was intended to serve as "the nucleus of the permanent settlement" (Hillenbrand, 1999:80). Initially a quadrangle structure (Wheatley, 2000:49), the mosque was modest in both form and dimensions. In totality, it measured seventy-five by thirty feet, equipped with a low roof, pebbled floor, and a pulpit (*minbar*) (Wheatley, 2000:50). The structure lacked plastered walls, a minaret, internal decorations, and a proper orientation towards Mecca (*qibla* wall) (Weahtley, 2000:50), components that would later be added as the structure evolved with the passage of time (Jomier, 1991:958). Directly adjacent to the mosque was the personal residence of ibn al-'Ās known as the *Dār al-Raml* and across it a small narrow road leading to a government house (Wheatley, 2000:50).

Similar to the Prophet's mosque (*Masjid-an-Nabawi*), the *Jami* in Al-Fustat played a multifunctional role. At times, it served as a council chamber, courtroom, post office, and a rest house for travellers (Jomier, 1991:958). The socio-religious significance of the institution attracted thirty-five to forty-nine residential quarters (*khittas*) around its immediate vicinity (Kubiak, 1987:71; Guest n.d.:83 as cited in Wheatley, 2000:265). Unlike the size and location of the *khittat* in Al-Basrah and Al-Kufa which were decided on the basis of old tribal structures (Wheatley, 2000:45), the residential quarters of Al-Fustat were conditioned by the Islamic legal system (*shariah*) (Bigon & Ross, 2020:56). The adoption of a new socio-political force in the planning and development of Al-Fustat not only marked the diminishing power and influence of the pre-Islamic tribal institution, but more importantly the rise of a legalistic framework that would come to play a vital role in the formation of neighbourhoods (*ḥāra)* in the subsequent Islamic cities (Hakim, 1986 as cited in Abu-Lughod, 1987:164).

Yet, regardless of the new prevailing socio-political force, the spatial dynamic of the residential quarters in Al-Fustat remained the same as the previous two *amsār*. Several hundred housing units, constructed from a combination of stone, reed, clay, and palm trees (Kubiak, 1987:75) were organized in pockets (Kubiak, 1987:176), around the Jami mosque, in a concentric and semi-circular manner (Figure 10) (Kubiak, 1987:176). The vast uninhabitable landscape surrounding the settlement (Kubiak, 1987:71) greatly impacted the manner in which these original *khittat* could be arranged because of the inconsistent geographical terrain. Nevertheless, they gravitated towards the Jami mosque and as the development slowly matured, became key sites of intensification (Wheatley, 2000:50). This encouraged social unity amongst the Muslim, Jewish, and Coptic communities, who worked together to carve out a more permanent home after a sense of security and safety permeated the region (Kubiak, 1987:74; Zamel, 2009:81).

The overall form, shape, and size of the residential units erected in each *khitta* would be representative of such a social cohesion. The indigenous Coptic community and immigrant Yemeni tribes, in particular, both had developed traditional forms of architecture that were incorporated in the early dwelling units of Al-Fustat (Guitart, 2014:169; Ismail, 1972:115). The Coptic's vernacular architecture, characterised by simple yet "magnificent vaults and domes" (El-shorbagy, 2001:34) was easily adaptable to the Islamic requirements of modest and low-built houses in early Muslim settlements. Yemeni architecture, however, was an anomaly as it involved the construction of lofty residential apartments (Ismail, 1972:115). According to medieval writers, apartment houses could be found in some of the residential districts of Al-Fustat that consisted of a high population density (Ismail, 1972:115). Five to seven stories high and equipped with roof-gardens (Ismail, 1972:115), the residential apartments would have nonetheless incorporated passive design techniques while maximizing privacy factors.

Furthermore, early reports indicate that the internal disposition of residential areas was fairly simple and uniform (Kubiak, 1987: 73). Similar to the internal spatial organization of the residential quarters in Al-Basrah and Al-Kufa, the *khittat* of Al-Fustat were no different. Each consisted of a central public open square which housed a neighbourhood mosque (Jomier, 1991:958) and depending on the quarter's specific social need (Bigon & Ross, 2020:55), other

public facilities such as communal animal enclosures, cemeteries and or small lots of fertile land used as gardens and or areas of cultivation.

Communication in the settlement was assured by two radial roads that ran parallel to one other before diverging in opposite directions (Figure 3) (Kubiak, 1987:72) (Figure 11). Beginning roughly at the *Jami* mosque, both roads managed to connect the entire settlement through a systematic network of secondary streets (Kubiak, 1987:72). The first of which, started at the bank of the Nile before diverging southeast towards the cemetery, gave access to the entire southern district of the settlement as it overlapped with four secondary streets in the area. Not much is known about the latter road, but evidence suggests that it extended northwards from the *Jami* mosque with a network of secondary streets branching off it into the northeast section of the settlement (Kubiak, 1987:176). The two main directions for the roads were west which lead to the Nile river and the other, determined by the position of the *khitta*, towards the *Jami* (Kubiak, 1987:72).

Furthermore, reports demonstrate that public baths (*hammams*) and a marketplace were also introduced, in close proximity to the *Jami,* very early on in the settlement (Wheatley,2000:50). A total of three small bathhouses, situated in the central square, were planned, developed, and built within the first twenty years of the encampment's establishment (Wheatley, 2000:50). In regards to the marketplace, much like the previous planning efforts exercised in the Medina, Al-Basrah, and Al-Kufa, there was an attempt to centralize various scattered *souqs* in one location, adjacent to the Jami mosque (Wheatley, 2000:50). Even though a *souq* was established next to the *Jami* which functioned as the main marketplace, smaller, localized *souqs* still persisted throughout the neighbourhood central squares in residential quarters as they had been established since the camp's inception (Wheatley, 2000:50).

Such was the original layout of Al-Fustat which consisted of residential areas ordered around a *Jami*, interspersed with pathways, and diversified by landmarks. Based on my research, such a topography would have contributed to an early town plan featuring an orthogonal grid (Bigon & Ross, 2020:53). An orthogonal grid, characteristic of classical Islamic urban design,

that would have facilitated Al-Fustat's gradual urban transformation into a fully functional metropolis in less than four decades (Jomier, 1991:958).

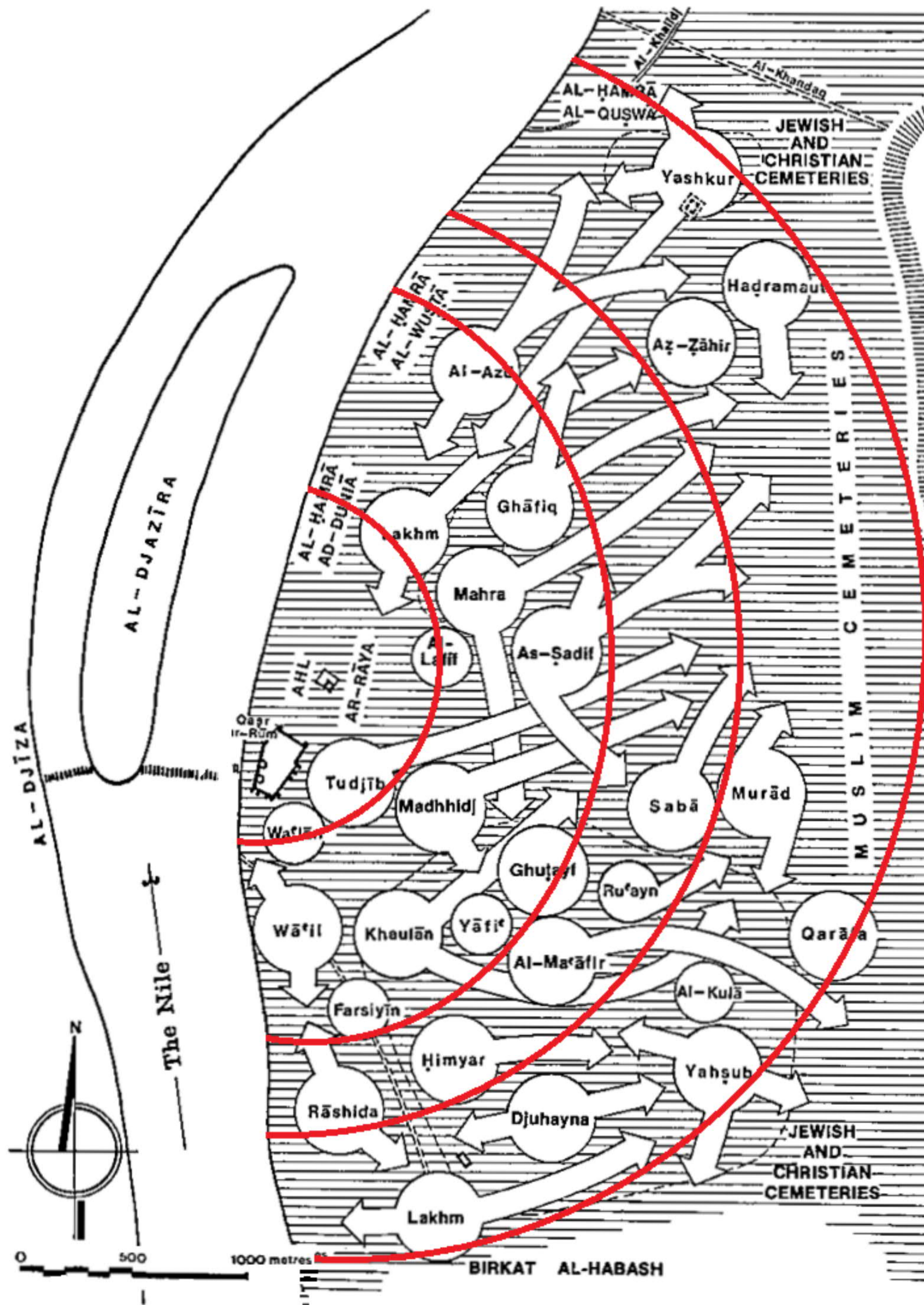

Figure 10. Multi-Tribal Quarters arranged around the *Ahl-al-Raya* which was next to the *Jami* mosque (Kubiak, 1987:176).

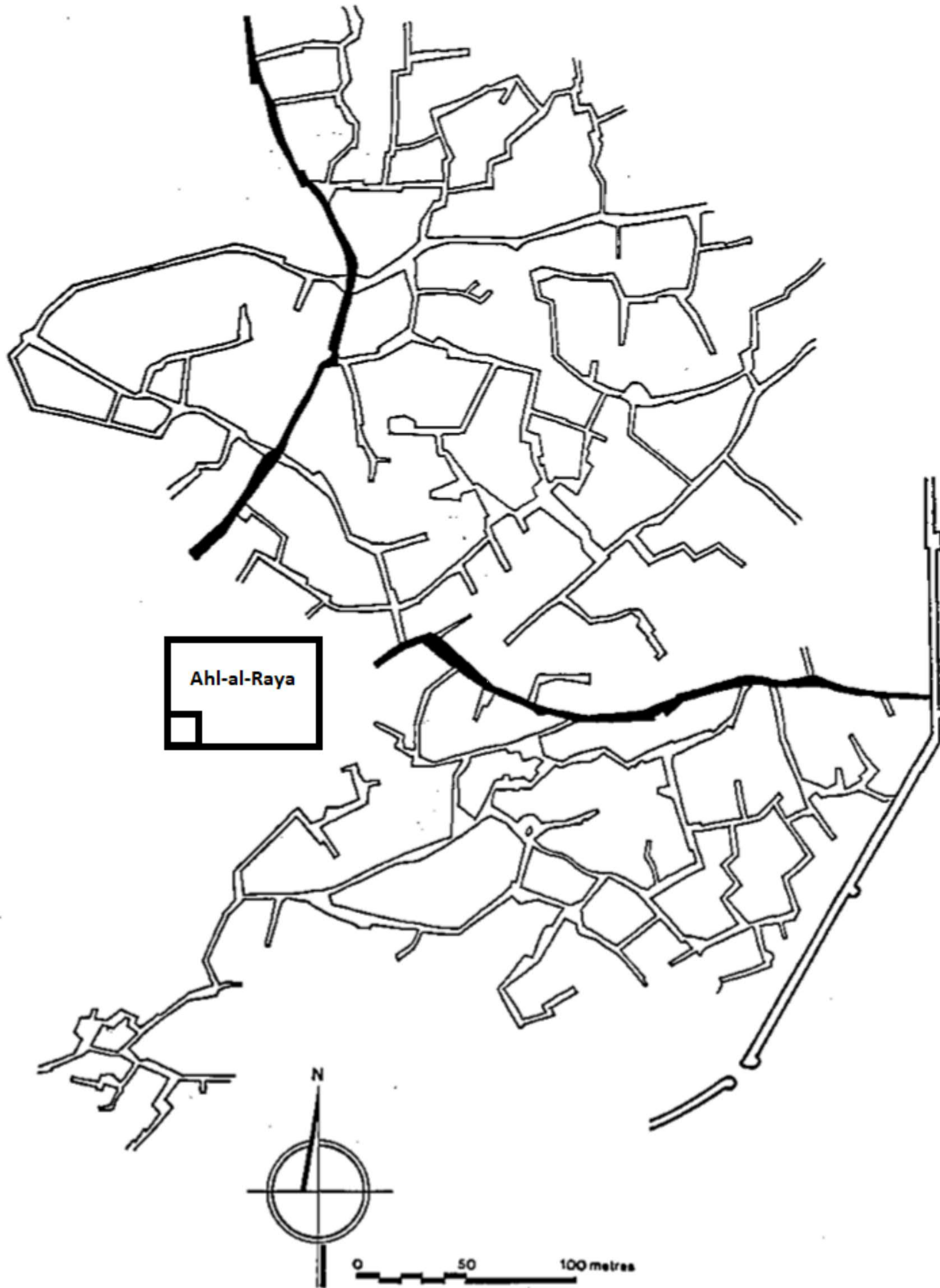

Figure 11. Al-Fustat's street network excavated by Ali Bahgat (Kubiak, 1987). The two bold black lines represent the main roads.

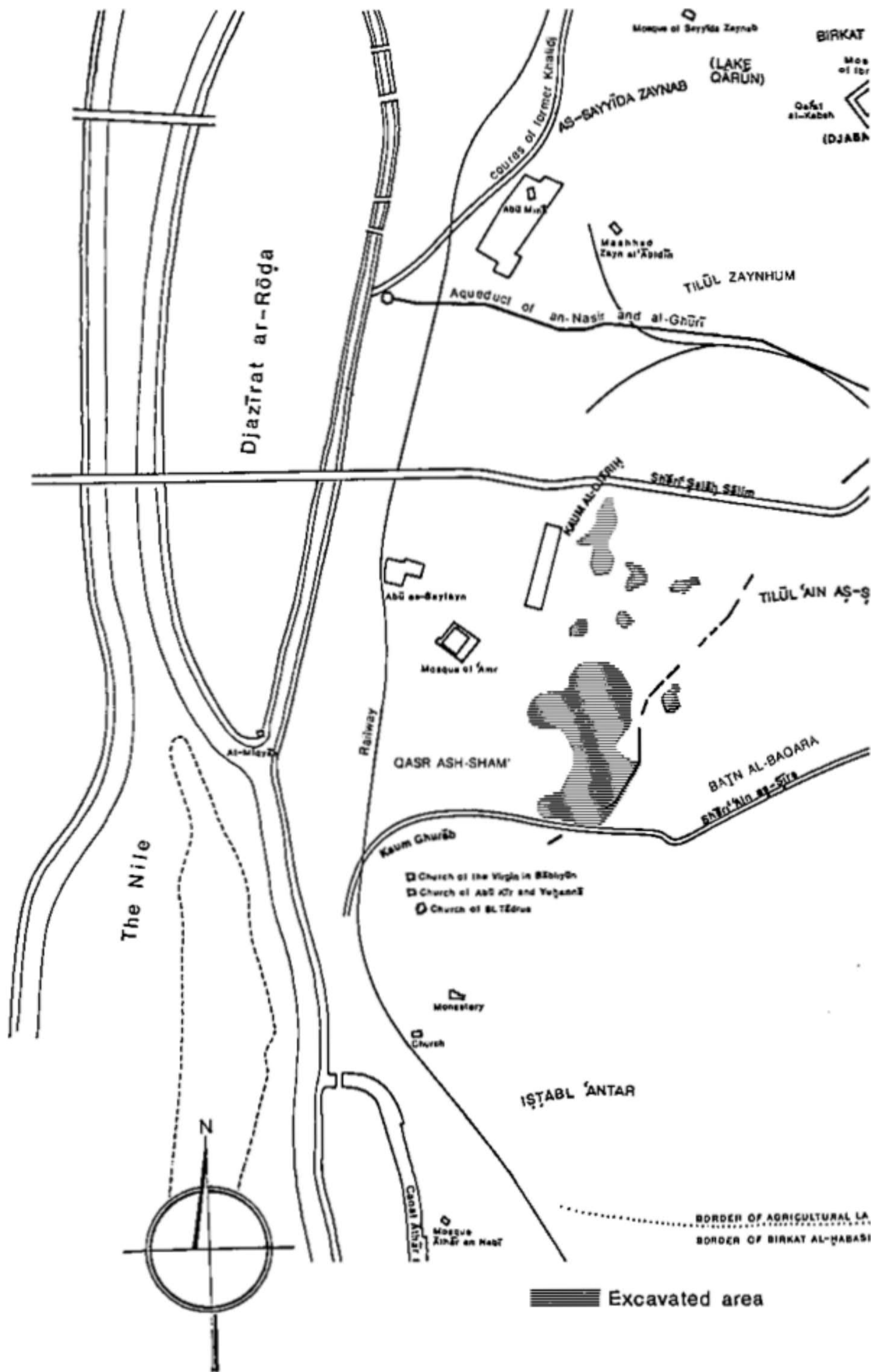

Figure. The excavated site wherein the original layout of the settlement lies (Kubiak, 1987).

The Socio-Spatial Progression of Urban Spaces in Early Islamic Settlements

Thus far, this paper has focused on the chronological development, principal locations, form, and function of core urban elements in early Islamic settlements from solely a morphological perspective. In doing so, a key component has been glossed over that historically defined core urban elements and in extension urban spaces in early Muslim communities: social relations (Hameed, 1991:71). Since the establishment of Al-Medina, the core urban elements of the house, neighbourhood (*khitta*) and central (*jami*) mosque (Sardar, 1984 as cited in Hameed, 1991:74) dictated a social "progression of space from private to semi-private and, then, to public" (Hameed, 1991:71) domains in a hierarchical manner. In the following section, I will attempt to retrace such a socio-spatial progression of Al-Medina, Al-Basrah, Al-Kufa, and Al-Fustat, collectively, in order to reconstruct a complete picture of the urban environment in which early Muslims lived (Hillenbrand, 1991:80).

The socio-spatial progression of urban spaces from private to semi-private and then to public, begins with the smallest and most private unit "within the urban whole" (Ismail, 1972:115) of the early Islamic settlement; the home. Due to behavioural norms of segregation, Muslim dwellings required the "highest level of privacy" (Hameed, 1991:75) and thus, incorporated certain design features to curtail unintended visual exposure. Such features included high walled roof-tops (Hameed, 1991:76), concealed courtyards (El-shorbagy, 2001:35; Ismail, 1972:115) as in the case for Al-Kufa and Al-Fustat (Figure 12) "inward-facing rooms" (Memarian & Brown, 2003: 188) and "grilled bay windows" (Noe, 1980:74) (Figure 13). Oftentimes than not, such features simultaneously served to maximize factors of privacy and climatic efficiency.

Figure 12. An early courtyard house in Al-Fustat (Fathy, 1986:63 as cited in El-shorbagy, 2001:35)

Figure 13. Typical streetscape in Islamic settlements (Hakim, 1994:110). Note that all windows are concealed behind a grill.

Beyond the private domain of the house, the semi-private interspace of residential roads lay. Consisting of intricate cul-de-sacs, narrow pathways, make-shift alleys, bent corridors and dead-end roads (Alizadeh, 2014:143; Hameed, 1991; 81) (Figure 13), the complex street system in early Islamic settlements was solely intended for and designed by the extended families who inhabited them (Hameed, 1991:79). As such the road network, functioning as a "transitional passage" (Alizadeh, 2014:143) between the private and public realm, served as a protected semi-private area under the care and control of immediate neighbours (Alizadeh, 2014:143; Hameed, 1991:80) "within which kin-like responsibilities (and freedom) govern"(Abu-Lughod, 1980:8). The intricate design of the residential road system which may have been deliberate, allowed for communal socialization (Saleh, 1997:171), economic exchange and if need be collective religious rites (Ismail, 1972:117) to occur while deterring any outsiders from entering (Hakim, 1986, as cited in Hameed, 1991:81).

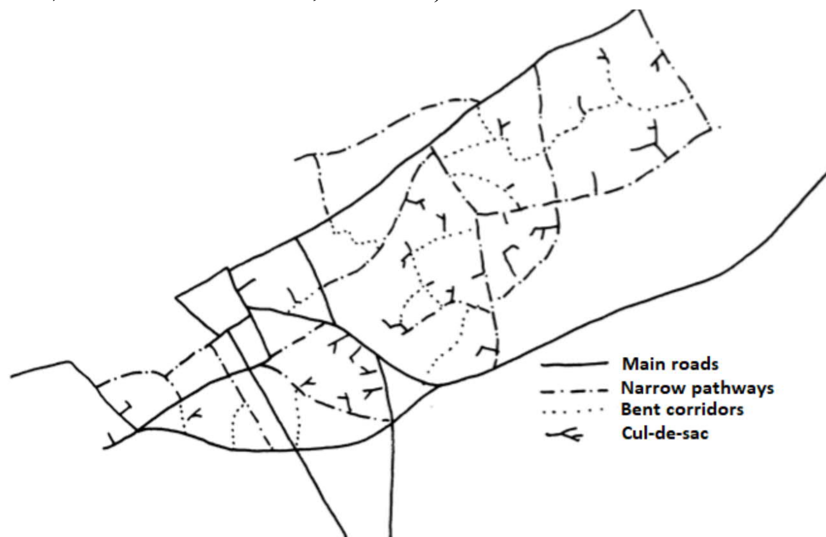

Figure 13. Semi-private road network within the residential quarters (Hakim, 1986:66)

The urban space gradually became more public as the residential roads merged with the settlements primary transportation arteries that led to the central square. Considered to be the busiest and most public part of the settlement, everything in the central square was clearly visible and meant to be seen (Gilsenan, 1982:171). The central (*jami*) mosque, main market (*suq*) and governor's palace were located in the central square and although the governor's palace may have been secluded and isolated from the bustling activity of daily urban life, the *Jami* and *suq* were certainly not. In terms of the *Jami,* the following description a gives a glimpse into the typical public activities that would take place in the institution during the early period of Islam: "Open by day and night it served as a popular meeting place for townsmen; a forum for the dissemination of sacred knowledge and secular opinion; a venue for creative interaction amongst special interest groups; and the preferred stage for a variety of entertainers" (Wheatley, 2000:235). Right in front of the *Jami* was the settlement's principal retail centre (*suq*). In the case of Al-Basrah, the main market was referred to as *Sūq Bāb al-Masjid al-Jāmi* and was visited by a variety of different businessmen such as "wine and flour vendors, butchers, money changers, booksellers, makers of slippers, retailers of textiles" (Wheatley, 2000:245) throughout the week (Figure 14). The myriad of goods and services provided facilitated a complex commercial land-use pattern to emerge in which only the most respected economic activities could be found near the mosque (Hameed, 1991:86). The spatial progression of commercial activities descended from bookstores, carpet shops to smiths, cobblers, and food stalls (Hakim, 1986 as cited Hameed, 1991:86) (Figure 15).

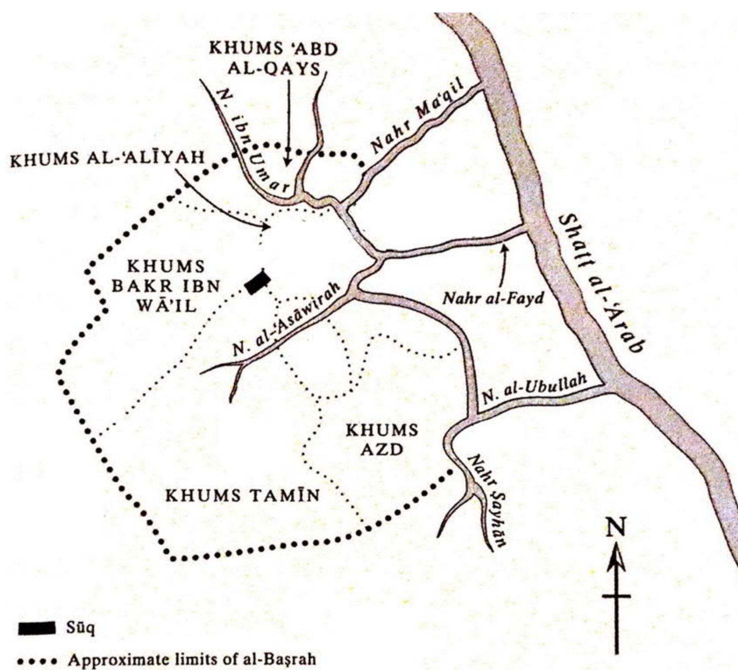

Figure 14. The principal *suq* of Al-Basrah in the the 10th century (Wheatley, 2000:245).

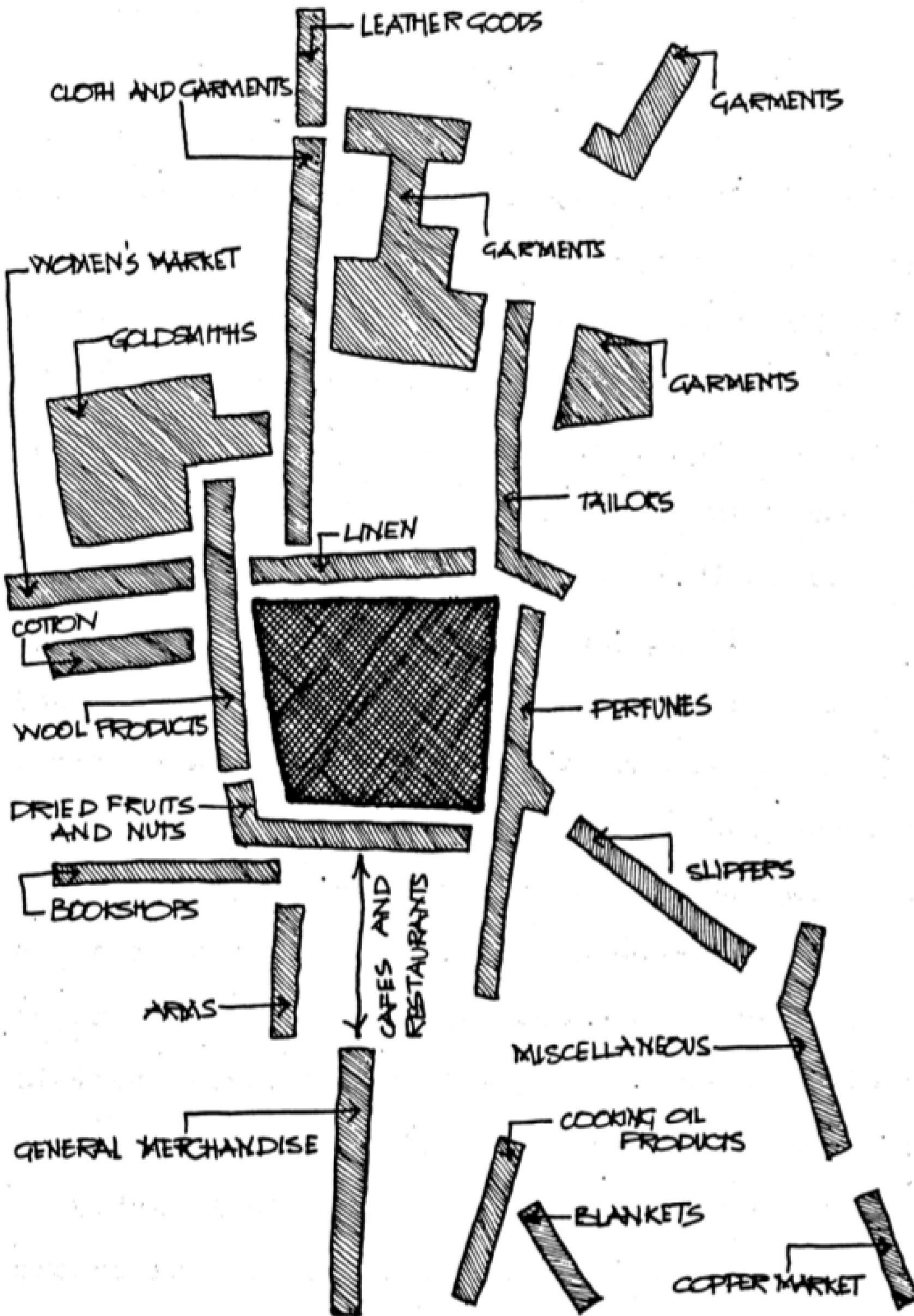

Figure 14. The spatial progression of commercial activities at the *mosque-suq* complex (Hakim, 1986:85)

Apart from housing commercial and religious activities, however, the central square was also home to "clowns, jugglers, conjurers and story-tellers, especially at night, and was the scene for much political gatherings and uprisings, public executions and public funerals of distinguished people" (Ziadeh, 1953 as cited in Ismail, 1972:119).

As can be discerned from the socio-spatial progression, the totality of physical space in early Islamic settlements was of three types; private, semi-private, and public. With each space corresponding to three core institutions of the house, neighbourhood, and mosque (Sardar, 1984 as cited in Hameed, 1991:74), urban spaces in Muslim society were intimately tied to a particular form of social organization (Lapidus, 1969 as cited in Hameed, 1991:73) (Figure 15).

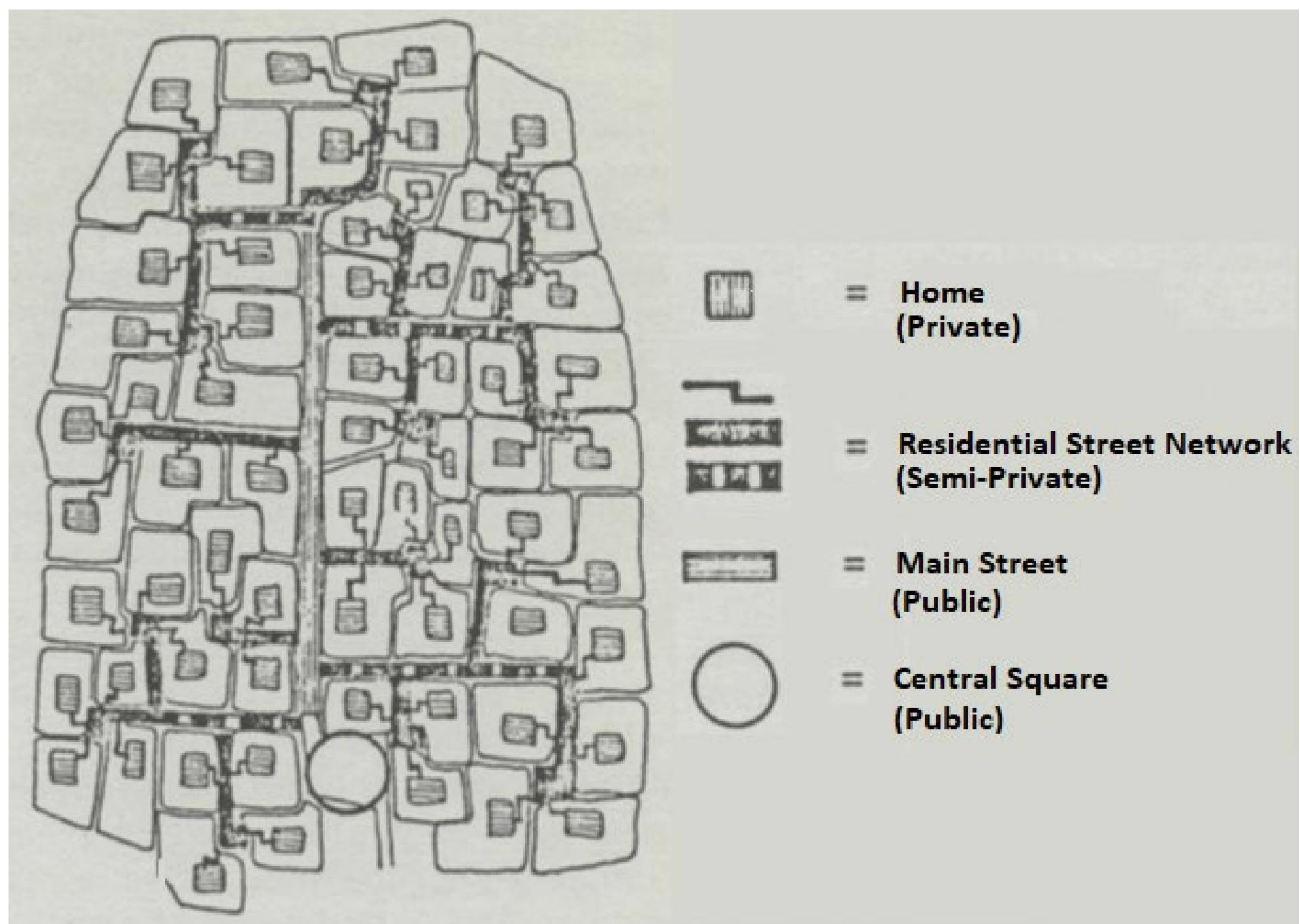

Figure 15. The socio-spatial progression of early Islamic settlements. Adapted from Belkacem (n.d. as cited in Abu-Lughod, 1987:8).

Closing Remarks on Early Islamic Settlements

When coming back to the morphology of early Islamic settlements, it becomes clear that the early town plans of each *amsār* reconstructed in this paper featured an orthogonal grid pattern (Bigon & Ross, 2020:54). Their emergence and development, arising from a top-down urban planning tradition, marked the inception of a topographic framework that would flourish in parts of the Middle East and North Africa continuously evolving, until reaching its zenith in the round city of Baghdad, also known as the Abbasid Baghdad of Al-Mansur (Hillenbrand, 1999 :76) (Figure 17). At the heart of such a topographic framework was the *Jami* mosque, serving as a central node in the urban environment, the institution organized districts, dictated edges and integrated paths in relation to itself. With the "entire urban scheme" (Bigon & Ross, 2020: 55) spatially revolving around the *Jami,* the grid in classical Islamic urban design was representative of the importance and centrality of religion in the earliest of Muslim communities.

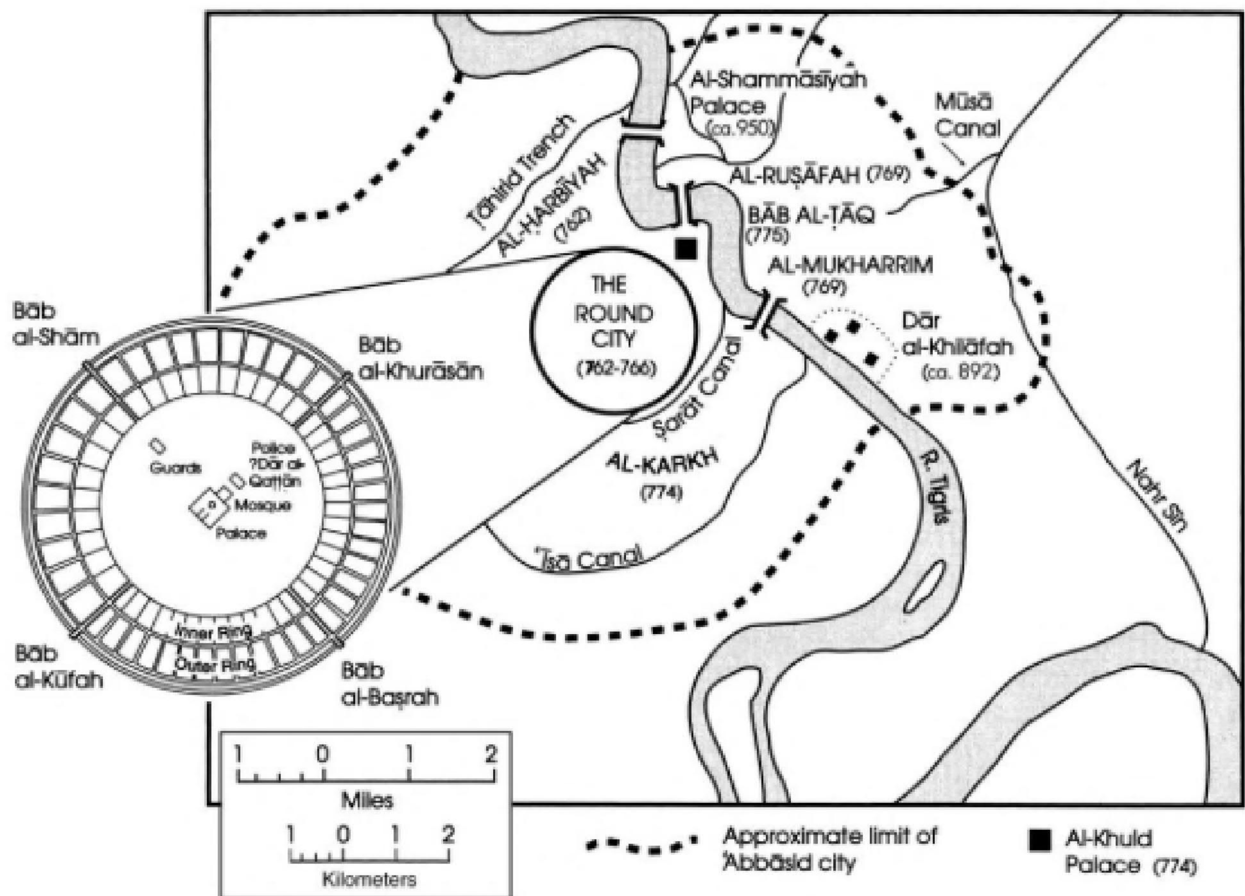

Figure 17. The central square of Baghdad in the 8th century (Lassner, 1980:186-187 as cited in Wheatley, 2000:271)

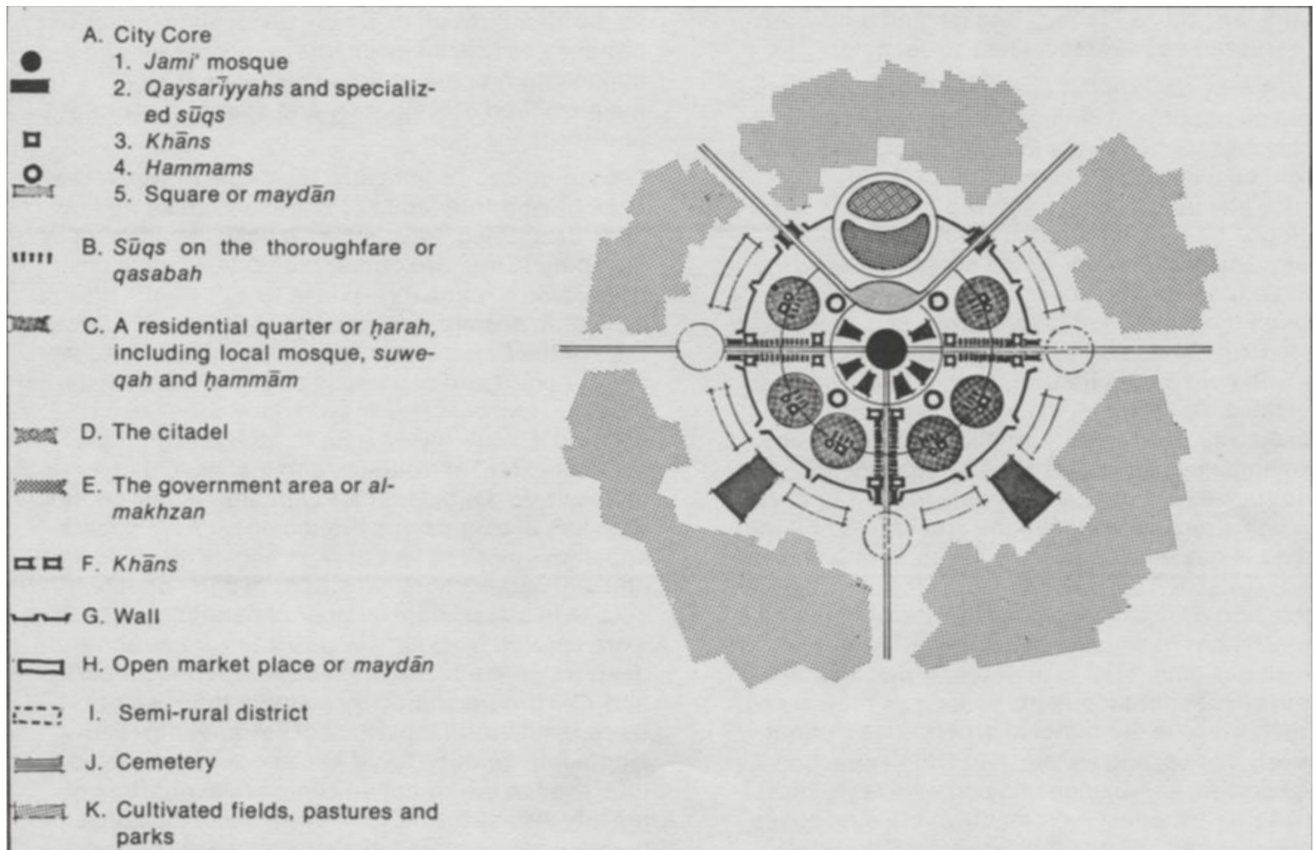

Figure 18. An approximate representation of the *Jami's* influence on the spatial pattern of Muslim settlements. (Ismail, 1972:120)

The Role of Sacred Space in Islamic Urban Design

The socio-spatial importance of the *Jami* mosque in early Muslim communities may point to two forms of symbolism related to the conception of centrality in Islam (Zeghlache, 2009:609). The first has to do with the cosmological notion of *Axis Mundi,* whereas the second form is concerned with the theological concept of divine unity (*tawheed).* In regards to the first, according to different religious traditions, certain places on earth are considered *Axis Mundi*: that is the perceived center of the world (Zeghlache, 2009:612). Although this notion may be tied with the holy Ka'ba within the city of Mecca in Islam (Zeghlache, 2009:612) (Figure 19), for Muslims outside the confines of the holy sanctuary, the *Jami* would have functioned in a similar respect (Zeghlache, 2011:615). With the central mosques spatially influencing the physical

dynamics of the entire community and being the spiritual focus for the faithful, regardless of when and where it may have emerged in the first found centuries of Islam, the institution gradually took on the role of becoming the 'world' in virtually every Muslim settlement.

As mentioned, the second form of symbolism that may be tied to the socio-spatial significance of the *Jami* is an Islamic concept known as tawhid (oneness) (Zeghlache, 2011: 614). Although the term carries with it a theological concept of divine oneness, in this particular case it may refer to an "organizing principle which transforms multiplicity into unity" (Zeghlache, 2011:614). The central location and multifunctional and role of the Jami mosque allowed for seemingly distinct, separate, and immensely complex elements of society to telescope and coalesce in a sacred space. Punctuated with the call to prayer five times a day, the daily lives of Muslims in all their complexities and uncertainties were organized around the *Jami*.

Applications of the Islamic Urban Design Tradition in Canada

This study has examined the historical role of the central mosque in the development of the grid in classical Islamic urban design. The morphological analysis of the earliest Muslim settlements from the mid to late 7th century has revealed that traditional Muslims spatially planned their communities around the *Jami* (Bigon & Ross, 2020:54). The mosque served as the ultimate focal point for the entire settlement, influencing all other urban elements such as residential areas, marketplaces, and street systems in reference to itself (Zeghlache, 2011:614). The grid plan of early Islamic settlements which has been etched into the collective memory of the entire Muslim community (*Ummah*) is re-emerging in the Canadian urban landscape as the form of Mosque-based neighbourhoods. Canadian Muslims who seek to maintain a religious lifestyle have formed enclaves in the suburban areas of Mississauga, Vaughaan, and Scarborough in a spatial manner reminiscent of early Islamic settlements. The following chapter will detail how the three projects of Shalimar, Peace Village, and Nugget Mosque not only replicate the grid plan of classical Islamic urban design but contribute to religious placemaking and community formation in the greater Toronto area.

Muslim Enclaves and Neighbourhoods

Before beginning an analysis of the three contemporary Muslim communities it is important to highlight their urban existence as religious enclaves. Religious enclaves may best be understood as urban pockets within a city, in which most if not all the residents belong to a single religious tradition (Mazumdar & Mazumdar, 2013). In these enclaves "religious structures, institutions, and services" (Mazumdar & Mazumdar, 2013:225) may spatially be planned and developed in a manner to support a religious lifestyle. This phenomenon holds true especially for Muslim enclaves that seek to establish mosque-based neighbourhoods, derived (in)directly from the early period of Islam. Below are three examples of Muslim mosque-based neighbourhoods that follow the grid plan in classical Islamic urban design, each in their own right.

Shalimar International Housing Corporation Inc.

The Shalimar International Housing Corporation Inc. can best be described as a Muslim enclave deliberately built around a *Jami* mosque in the municipality of Mississauga. Named after the Shalimar garden complex in Pakistan and built in 1997, the overall planning and design features of the faith-based community closely mimic the spatial layout of early Islamic settlements, discussed in the previous chapter. The community's fifteen townhouse units are arranged with a high degree of regularity around a mosque and public town square. With the Shalimar mosque being roughly located in the centre of the community, the spatial patterns of the Shalimar complex are evocative of early Muslim settlements in which residential areas (*khittat*) were clustered around the central (*jami*) mosque in a systematic manner (Figure 20).

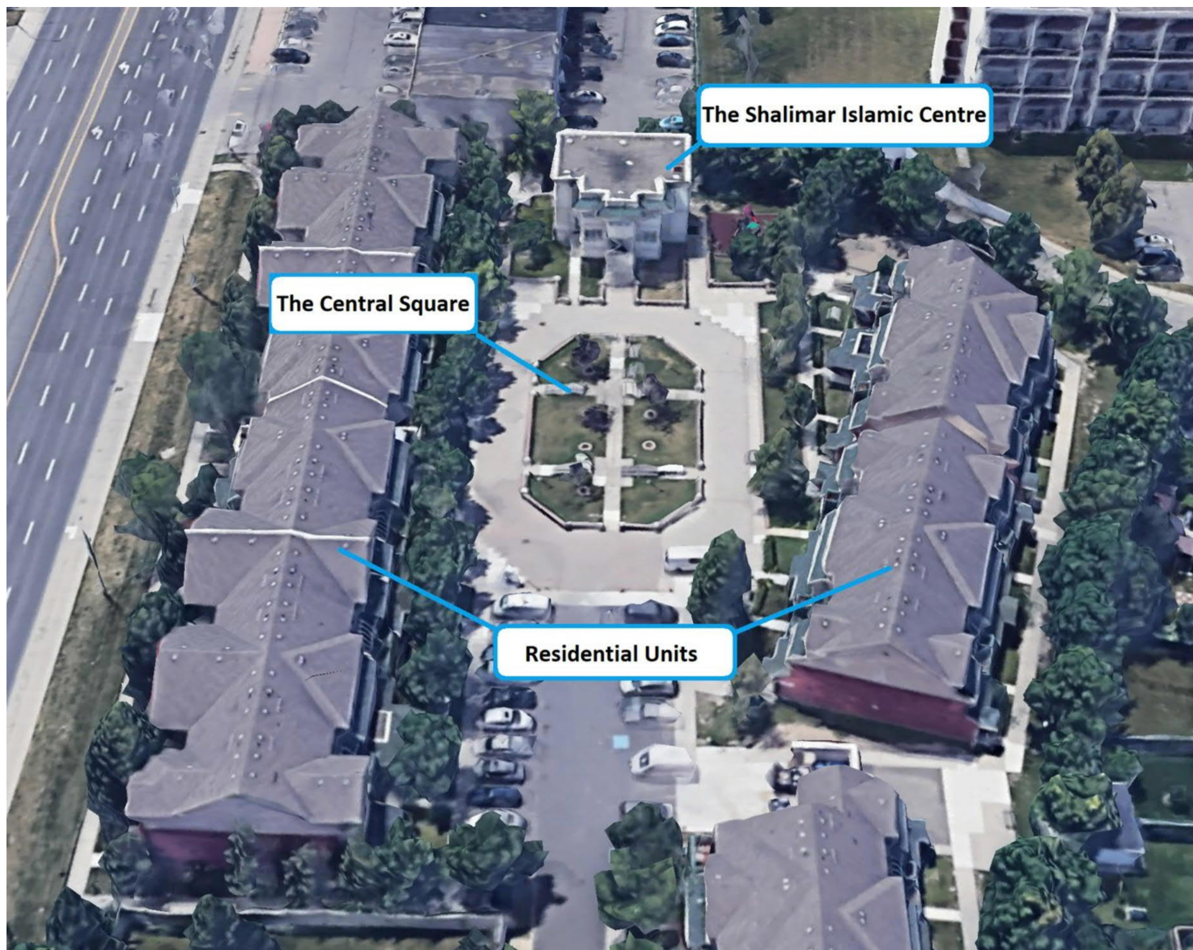

Figure 20. A satellite image of the Shalimar International Housing Corporation Inc. (Google Earth, 2018)

Similar to the multifunctional role of early central (*jami*) mosques, the Shalimar *masjid* is a multi-purposed building that also operates as a community centre. The three-storey structure which consists of a large prayer hall in the basement, a community hall, kitchen and manager's office on the main floor and classrooms on the third floor, serves as a focal point for not only Muslims in its immediate vicinity but from neighbouring areas as well. Shalimar attracts Muslims from nearby subdivisions who all gather to eat, pray, and socialize with one another under the same roof. Both the spatial form and socio-religious function of the mosque-based neighbourhood can be traced back to the early period of Islam.

Moreover, the formation of Shalimar corresponds to an enclave creation process known as "instant community" (Diamond,2000:84). Identified as one of three processes by which

religious communities form, “instant community” refers to the phenomenon in which a religious enclave is planned and developed according to the vision of a “single individual, developer, corporation, or group” (Mazumdar & Mazumdar, 2013:226). In the case of Shalimar, the religious enclave was conceived by a single group known at the time as the Peel Multicultural Commission.

Peace Village

Peace Village is yet another Muslim community found in the greater Toronto area that is a mosque-based neighbourhood. The *Jami masjid* called the Bai'tul-Islam Mosque serves not only as an anchor (Townsend, 2007) but as the focal point for the Peace Village community (Shah, 2002:57) located in the city of Vaughn (Figure 21). The Mosque which was constructed in 1992 sparked the residential development of approximately 265 semi-detached homes surrounding it. Similar to the multifunctional role of the Shalimar Mosque, Bai'tul-Islam operates as a place of worship, school, a recreational facility, and a community centre offering children's programs, women's study groups, and community support services. Given the central role, importance, and significance of the mosque in Peace Village, a parkland, high school, and a commercial plaza (Shah, 2002:57) were planned and developed in close proximity to the religious institution. (Agrawal, 2008)

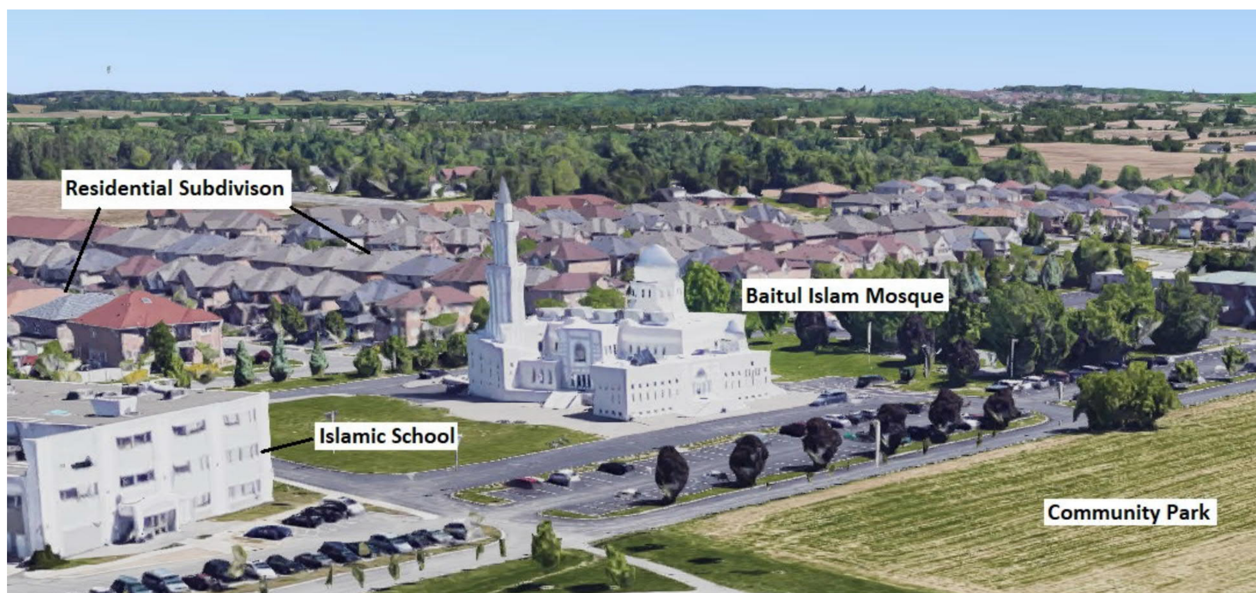

Figure 21. A satellite image of Peace Village with current support services (Google Earth, 2018)

As such, the influence of Bai'tul-Islam on the spatial layout of the community is significant, to say the least. The geophysical location of residential areas, 'marketplace' in the form of a plaza, and other social services in close proximity to the mosque is a phenomenon derived however unintentionally from the Islamic urban design tradition. Moreover, the development of Peace Village is highly reminiscent of the growth experienced in early Muslim settlements as it only occurred after the first urban element of the *Jami* had been established.

In this regard, the formation of Peace Village may correspond to a catalytic community creation process in which an institution serves as a catalyst in attracting people to live in close proximity to it (Mazumdar & Mazumdar, 2013:226). Similar to the socio-religious importance of the *Jami* in early Islamic settlements, the significance of Bai'tul-Islam sparked the development of an entire subdivision resulting in the creation of a Muslim enclave around a religious focal point.

<u>Nugget Avenue</u>

Nugget Mosque which is located at the intersection of Nugget avenue and Markham road serves as the central (*jami*) mosque for a small Muslim community in east Scarborough. The faith-based community is primarily concentrated in a few streets of modest single-family homes, all located within a half-a-kilometer radius from the central mosque (Agrawal, 2008:45). The three-story religious structure which was built in 1991 contains "a prayer hall, library, gymnasium, mortuary, Islamic school classes, and meeting rooms, cafeteria, and 200 parking space" (Agrawal, 2008:45). In this respect, the mosque not only functions as a place of worship but also as a community centre hosting sporting events, study circles, community meetings, summer camps, and lectures (Agrawal, 2008:44) for the broader Muslim community.

The overall proximity of the residential area to Nugget Mosque is an underlying reason of the increasing Muslim population (Agrawal, 2008:45). Reminiscent of early Muslim communities, the Muslim residents of east Scarborough have sought to locate themselves close to a mosque in order to maintain a religious lifestyle. This has contributed to a "proliferation of institutional support structures and services" (Mazumdar & Mazumdar, 2013:225) around

Nugget *masjid* such as an Islamic school, halal restaurants, and a Muslims clothing store. The "Islamic identity imprinted on the landscape of this neighbourhood" (Agrawal, 2008: 45) can be seen as a form of religious placemaking that structures, defines, and ultimately gives meaning to the Muslim community of Nugget Avenue.

In terms of exhibiting the spatial patterns characteristic of classical Islamic urban design, the Nugget community does so yet in an extremely disconnected and fragmented manner. Unlike the Muslim communities of Peace Garden and Shalimar in which the *Jami* was located directly within the Muslim neighbourhood, the location of Nugget Mosque in a commercial area well beyond the residential area of the Nugget community signifies a clear break from the Islamic urban design tradition (Figure 22). In this instance, the inability to (re)create a mosque-based neighbourhood stems from the city's decision to prohibit the development of religious institutions in residential areas due to prevailing economic and commercial interests. This comes as a challenge for religious communities that are formed according to a grassroots movement in which a group of families move into an existing neighbourhood (Diamond, 2000:77). Thus, For Muslim communities who seek to (re)create a mosque-based neighbourhood, the only viable methods to do so are the 'instant' and 'catalytic' community formation processes that Shalimar and Peace Village followed, respectively.

Figure 22. An aerial image depicting the 'break' from traditional Islamic urbanism (Google Earth, 2018)

Formation of Muslim enclaves

Yet, regardless of whether or not the contemporary Muslim communities of Shalimar, Peace Village, and Nugget Avenue replicate the tradition of Islamic urban design precisely, the collective community's desire to create and maintain a neighbourhood more or less centred around a *masjid* cannot be ignored. The impulse to do so represents a collective sentiment shared amongst all Muslims. A sentiment that seeks to recreate a sacred past, preserved in the Islamic urban design tradition. In doing so, the planning and development of Shalimar, Peace Village, and Nugget can be seen as a form of religious placemaking and community building amongst immigrant Muslim families in the greater Toronto area.

Religious Placemaking and Community Building

Religious placemaking involves creating spaces that have the capacity to foster a sense of attachment, devotion, and spirituality within people (Mazumdar & Mazumdar, 2004:387). Imbued with conceptions of the sacred, these spaces oftentimes serve as "profound centres of

human existence" (Relph, 1976:43) that have the "capacity to evoke that which is special" (Mazumdar & Mazumdar, 2012:258). In Islam, such a space is not limited to the *Jami* mosque but may extend to the neighbourhood wherein the "rhythm of life is regulated" (Mazumdar & Mazumdar, 2013:225) by Islam and thus becoming a deeply meaningful, significant, and important space for Muslim communities.

A phenomenon beginning with the Prophet of Islam, the planning and design of mosque-based neighbourhoods such as Shalimar and Peace Village can be seen as attempts made by contemporary Muslims to remember and relive their collective past. The nostalgic impulse to (re)create sacred spaces on the basis of a Prophetic planning model can be seen as expressions of an Islamic urban tradition engraved within the "collective memory" (Halbwachs, 1992:52), identity and history of Muslim communities. Thus, religious placemaking in Islam, not only "reflects and shapes people's understanding of who they are as individuals" (Brown & Perkins, 1992:280) but as members of a larger group "whether a family or neighborhood" (Orum & Chen, 2003:11) or as in this case an *Ummah* (global Muslim community).

Given that the Muslim enclaves of Shalimar, Peace Village, and Nugget avenue are predominantly composed of and built by first-generation south Asian immigrants, these mosque-based neighbourhoods play an important part in defining and structuring their communal identity. This is an important point to highlight especially when considering that leaving home for many can cause feelings of environmental deprivation (Mazumdar, 1992:691), displacement, place loss (Milligan, 2003:381) and placelessness (Relph, 1976:43). Muslim enclaves in this respect provide "stability and security" (Brown & Perkins, 1992:280) act as "material anchors" (Cooper Marcus, 1992:88) and become "symbolic life lines" (Hummon, 1989:207 (Hummon, 1989)) and spiritual "fields of care" (Relph, 1976:37) for immigrant families who have been ushered into a new and unfamiliar world. Mosque-based neighbourhoods have the potential to mediate the "alienation, pain and stress" caused by "transition and transplantation" problems (Mazumdar & Mazumdar, 2004:74). The importance of these spaces in helping immigrant Muslim families to develop a sense of community cannot be and should not be understated.

Conclusion

In this paper, I have sought to answer how exactly Muslim communities influence the overall design and use of their physical urban environments. By focusing on the Muslim institution of the central (*Jami*) mosque, I was able to reconstruct a topographic 'image' of the earliest Islamic settlements which revealed a recurring urban design feature that can best be described as a mosque-based neighbourhood. The urban phenomenon, encapsulated within the grid plans of classical Islamic urban design, allowed faithful Muslims to practice, express, transmit and ultimately live their faith in urban environments for generations.

The earliest Muslim settlements to be morphologically analyzed from the perspective of the central (*Jami*) mosque, in the first two chapters of this thesis, were Al-Medina, Al-Basra, Al-Kufa and Al-Fustat. Emerging in the early Islamic era, between 622-650 C.E/1-30 A.H, each settlement was assessed according to Lynch's methodology outlined in his book titled, *The Image of the City*. The spatial pattern exhibited in Al-Medina, the first Islamic city to be established, was indicative of a classical form of Islamic urban design, the 'heart' of which was a mosque. The urban element which was established by the Prophet himself played a key role in influencing the orientation and location of entire neighbourhoods, primary streets and the central marketplace in reference to itself (Zeghlache, 2011:615). Much has already been explained about the form and function of the "classic *jami* mosque" (Ismail, 1972:117) in the previous chapters. To briefly reiterate, however, the multifaceted "religious entity" (Ismail, 1972:117) operated as a culturally dynamic and socially relevant institution, effectively addressing the growing spiritual, socio-economic and political needs (Spahic, 2014:241) of the newly created Muslim community. The Prophets mosques (*Masjid-An-Nabawi*) incorporated both religious and secular activities within its walls (Wheatley, 2000: 235) thereby playing a significant and important socio-religious role in early Islam. As such it served as an "essential focal point" (Damgaard & Walmsley, 2005:01), "nucleus" (Hillenbrand, 1999:80), "hub" (Ismail, 1972) and "core" (Wheatley, 2000:330) of the city. In architectural terms, *Masjid-An-Nabawi* consisted of a prayer hall (*haram*), *qibla* wall, and a pulpit (*minbar*) (Frishman & Khan, 1994:33).

The second chapter analyzed the spatial layout of subsequent Muslim settlements to immediately proceed Medina known as the *amsār*. Although, Al-Basra, Al-Kufa and Al-Fustat, initially all began as and cantonments (*amsār*), each gradually developed into complex and intricate urban environments assuming the political, religious and social characteristics of prosperous, stable and well-established cities (Wheatley, 2000:268 ; Zamel, 2009:122) that can still be found in modern-day Iraq and Egypt. The first urban element introduced in all three settlements was that of the central (*Jami*) mosque. Serving as a central node in the urban environment, the institution organized districts, dictated edges and integrated paths in relation to itself. Throughout the settlements of Al-Basra, Al-Kufa and Al-Fustat, this paper consistently revealed how the residential areas (*khittas*) were more or less clustered around the *Jami* with some degree of regularity (Kubiak, 1987:176; Wheatley, 2000: 263; Zamel,2009:68), the main roads led to the mosque in virtually every cardinal direction (Bigon & Ross, 2020:56), and the marketplace (*souq*) was without exception, always in close proximity to the socio-religious institution (Zamel, 2009:73).

Furthermore, the topographic reconstruction of the *amsār* revealed that the internal composition of the residential quarters consisted of a neighbourhood mosque (Bigon & Ross, 2020:55). A constant feature, located in each and every autonomous tribal ward, the mosque was not only the focal point of the entire settlement but of individual neighbourhoods as well thereby reinforcing the notion of the institution's underlying importance and significance in early Islamic settlements.

The analysis of early Islamic settlements then shifted to retracing the progression of urban spaces from private to public domains. In doing so, this paper built on the core urban elements to be repeatedly analyzed throughout the four settlements, by describing their form and function in relation to the social organization of Muslim society. To summarize, the domestic home, considered "the most private and sacred space in the city" (Hameed, 1991:71) in early Islamic settlements was a low built modest structure, constructed from local materials, incorporating certain passive design features intended to combat the harsh desert climate and maximize factors of privacy (Ismail, 1972:115). Understanding the trilateral Arabic root word for house; *sakīnaah* meaning serenity and or tranquility, may explain why homes in early Islamic

settlements were built in such a manner. In a harsh and barren desert environment punctuated with toilsome work, sporadic warfare and seasonal commerce (Ismail, 1972:115), the home (*maskan*) ultimately served as a place of respite for Muslim families as thus was oriented inwards, towards the courtyard and away from the street (Noe, 1980:74), made open to the calm blue sky, and cooled by the element of water (Ismail, 1972:115). The self-contained and peaceful dwelling offered a tranquil and serene atmosphere in contrast with the outside world through incorporating certain design features that were "indigenously developed and suited to the cultural and geopolitical climate" (Abu-Lughod, 1987:175).

Beyond the confines of the home lied the semi-private domain of cul-de-sacs within the residential areas (*khittat*) (Hameed, 1991:71). Given that the *khittat* operated as independent administrative tribal wards in the early period of Islam, implicit ownership responsibilities were attached to this space (Abu-Lughod, 1980) leading to the creation of intricate pathways in form of narrow alleyways and bent corridors (Hassan, 1972 as cited in Hameed, 1991:71) designed by and for by the residents of the particular *khitta*. Furthermore, as a transitional passage and thoroughfare between the private and public realm (Alizadeh, 2014:143), a level of privacy was maintained in the urban space to allow for communal socialization between the multiplicity of extended families who inhabited the space (Hameed, 1991: 78).

As one moved towards the city's central square in which the *Jami* mosque, governor's palace and central *suq* were located, the space became increasingly more public (Hameed, 1991:73). The public square, where religious, commercial, and social activities were intimately interwoven together on a large urban scale (Hameed, 1991:73) represented a space in which "by definition everything is visible and seen" (Gilsenan, 1982:171). As such, the area was the "busiest and most public part of the city." (Hameed, 1991:83). Overall, the socio-spatial progression of Islamic settlements revealed that the urban spaces of the home, neighbourhood (*khitta*) and central (*jami*) mosque were interlinked with the private, semi-private and public domains.

The chapter on early Islamic settlements concluded by attempting to derive symbolic meanings of sacred space in classical Islamic urban design. The symbolic meaning of sacred

spaces, write Sanjoy and Shampa Mazumdar (2004:387), can be discerned from their design and architectural aesthetics that subtly reflect a certain "disposition" "ethos" and "worldview". In this respect, the planning and design of early Muslim communities around the central (*Jami*) mosque may have reflected a cosmological and theological form of symbolism related to the Islamic conception of centrality. In regards to the first, the theological notion of oneness (*tawheed*) may have been represented in the *Jami's* capacity to centralize seemingly distinct, separate, and immensely complex societal elements. On the other hand, the cosmological idea of *Axis Mundi* may be related to the *Jami's* ability to serve as the physical and spiritual focal point for the Muslim community. In both forms of symbolism, the Islamic conception of centrality, embedded within the design of Islamic cities, is discernible.

The second half of this paper focused on the urban applications and social implications of creating mosque-based neighbourhoods in a contemporary Canadian context. Three existing Muslim communities located throughout the Greater Toronto Area were assessed according to the spatial layout of Islamic settlements in classical Islamic urban design. In analyzing each community, this research highlighted how Islam still plays a central role in the lives of Canadian Muslims who seek to (re)create neighbourhoods "complete with religious institutions, sacred spaces and support services" (Mazumdar & Mazumdar, 2009:308). Thus, Muslim enclaves have emerged in which a central (*jami*) mosque has gradually become the focal point for entire communities. Communities who have sought to emulate Prophet in all matters including the urban.

Due to the emphasis placed on Islam throughout this paper, pre-existing economic, institutional, and urbanization trends have been largely ignored. Factors such as these must have affected the development patterns experienced in 7th century Arabia, to some extent, regardless of Islam's arrival. It would be interesting to identify, assess, and quantify their impact in order to accurately weight the role of Islam's influence on the urban development of medieval cities. Another avenue of research that can be explored from this paper is a comparative analysis between the Hellinistic-Roman and early Islamic urban traditions. Given that the practice of top-down orthogonal city planning was continued by the Muslims after the collapse of the Roman empire (Bigon & Ross, 2020:53), it would be fascinating to compare and contrast the patterns of

urban development in both civilizations to assess whether or not religion was a driving force. Lastly, another direction this research could follow is an analysis of sacred and profane spaces within modern diasporic Muslim communities. How do modern Muslims immigrants, transplanted into a new social world, navigate between tradition and modernity, between the central (*Jami*) mosque and the suburban residential neighbourhoods they choose to live in? How does this a spatial dichotomy and tension impact and influence the role of religion in the lives of modern Muslims living in the west? In laying out the traditional and modern forms of Islamic urbanism, a rich set of questions can be developed and explored for future research.

For planners, designers and policymakers working with Muslim communities, understanding how religion, in particular, Islam impacts long-standing planning concerns related to land-use policies, the location and design of religious structures, use of public space and position of neighbourhoods (Mazumdar & Mazumdar, 2013:224) can be extremely important. When planning supportive environments for Muslims, the recurring urban design feature highlighted throughout this paper and embedded within the collective consciousness of Muslims of the mosque-based neighbourhood can be used a model. By facilitating the development of such places, planners can not only make the city more inclusive but more importantly allow Muslim residents to continue their tradition of "sharing an identity, commitment to a place and a way of life in which religious institutions provide the central organizing theme" (Abrahamson, 1996:2).

Furthermore, knowledge pertaining to Islam's spatial requirements and design features can also help dispel stereotypes, biases and prejudice oftentimes associated with the idea of a mosque. Various concerns often raised by constituencies that are at odds and even conflicting with the core tenents of the faith can be resolved through engaging in meaningful discourse that is grounded in factual knowledge. In this respect, religious education for planning professionals can be a means of facilitating an equitable and inclusive planning process especially during public participation meetings (Mazumdar & Mazumdar, 2013:234).

Although this study cannot replace the phenomenological experience of Islam that can only be had by immersing oneself in the religion's rituals, activities, sacred space and

celebrations, this study can nevertheless serve as a crutch. Learning about the Islamic tradition requires a unique religious sensibility and perspective (Mazumdar & Mazumdar, 2013:235). Not one of religiosity or religiousness but one that engages faith as a highly meaningful and important aspect in the lives of its followers and in extension the residents of a neighbourhood or city (Mazumdar & Mazumdar, 2013: 235). In discussing the morphology in classical Islamic urban design, this paper has sought to impart a religious sensibility of Islam while highlighting the significance of the mosque in the daily lives of ordinary Muslims.

Evaluating the role of religion in the city planning may seem questionable, especially when considering the sociopolitical realities of secularization (Mazumdar & Mazumdar, 2013:222) in Canada. Yet given Islam's ability to influence, impact and transform neighbourhoods and public spaces into sites of "creative religious expression" (Mazumdar & Mazumdar, 2013: 222), the faith is once again influencing urban landscape. Hence, it may be beneficial to assess the role of religion and in particular of Islam in planning.

THE IMPACT OF THE MOSQUE IN ISLAMIC URBAN DESIGN

THE PROPHET'S MOSQUE

MEDINA
622 C.E.

The city of the Prophet (Medinat-Un-Nabi) had a spatial arrangement which was defined by a mosque-neighbourhood urban feature. This served as a blueprint in the subsequent establishment of Islamic cities well into the 9th century.

JAMI MOSQUE

BASRA
638 C.E.

The first urban element introduced in the city of Basra was the Jami Masjid. Similar to the Prophet's Mosque in Medina, the mosque was to be the focal point of the entire Muslim community with residential neighbourhoods gravitating towards it.

MOSQUE OF KUFA

KUFA
640 C.E.

Said to be the sister city of Basrah, Kufa's development followed the Medinan planning model that attracted residential areas around the central mosque with some degree of regularity.

MOSQUE OF AMR

FUSTAT
641 C.E.

The first masjid to be established on the continent of Africa, the Mosque of Amr greatly impacted the manner in which the neighbourhoods were arranged; namely that they were organized in a concentric semi-circular manner around the mosque.

SHALIMAR MOSQUE

MISSISSAUGA
1995 C.E.

A Canadian Muslim community whose urban design follows the urban pattern established in Medina. Similar to the multifunctional nature of the jami masjid which historically served more than just a place of worship so to does the Shalimar masjid function as a multipurposed building.

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