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Design and Organic Development Patterns of Community Mosques in Bangladesh

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Abstract: Community Mosques are built by the collective effort of ordinary people. The mosques usually have a humble beginning. Once a nucleus is formed, as if a seed has been planted for a large *Juma-Masjid* to grow. Numerous community mosques grow spontaneously all over Bangladesh making it the most dominant mosque typology in the region.

The paper initiates with an introduction to community mosque and shows how it responds to a variety of critical aspects. A historical overview traces its development vis-à-vis other mosque typologies. Two case studies explain the genesis of community mosque and its sequence of development followed by a generalisation on the design and building process. Dilemma associated with its architectural value judgement is discussed as the designs do not subscribe to conventional architectural canons. Design concepts are propagated through the collective consensus of the community and interpreted through local architectural language. It is a kind of mould in which typical character of the society is cast, hence it serves as a powerful social symbol.

Finally the paper focuses on its participatory design process — an approach currently sought in new design methods to attain more responsive design solutions. The community mosques are vivid examples of such an approach. Those are viable examples of an interactive design process deeply rooted in local culture expressed though a live and endless process of design.

Introduction

Community mosques spontaneously grow all over Bangladesh[1][1], with the initiatives and patronage of the local people as a symbol of their devout spirit and spiritual dedication.[1] The idea of setting a mosque involves a range of activities like identifying a site, designing, financing, management, construction and maintenance, etc. Community performs all those activities by collective contribution

[1] Bangladesh is part of Bengal region dominated by Muslim population, where 85% people follow the religion of Islam. Britain invaded Bengal in 1757 and gradually occupied the rest of India ruling the subcontinent for two hundred years. At the end of the British rule India was divided into two states India and Pakistan on the basis of religion. Pakistan was established as a Muslim state comprising two major regions a thousand miles apart: West and East Pakistan. Bangladesh emerged as an independent nation after the liberation war of 1971 socio-cultural and economic emancipation. Now, Bangladesh is the third largest Muslim country in the world by population.

and direct participation. Hence, the people in the community take great pride in their mosque. Eventually those mosques serve as a socio-cultural symbol of the respective societies.

The generation of community mosque follows a fairly uniform process of physical development, though the end results are always distinctly different from one another. The development pattern of a community mosque is termed 'organic' as it has the resemblance with the germination of a large spreading tree from a small seedling. Sometimes local people also assume the responsibility of very old mosques as their trustee for subsequent development following the same genetic code of community mosque. Such mosque initiated and developed by the potentials of local organization absorbs and reflects the socio-technical attainments and aesthetic preferences of the community. Therefore, to the people the building of a community mosque is not an end in itself but a means to represent an identity of the self - both in the product and the process.

Community mosque has its intrinsic pattern of development distinct from other mosque typologies built under the official, institutional and private patronage. In terms of sheer quantity it far outnumbered any other type of mosque. Beside the dominance of number, the community mosques have profound significance in socio-cultural and architectural context. Architecturally it absorbs the current complexity of the modern developmental context subsumed in the traditional and local vernacular vocabulary. Each mosque in its maturity presents a passionate experiment of popular building art emerging out of local technical ability and physical reality. The importance of the community mosque however, is not confined to architecture, but encompasses the whole realm of activities associated with its design, construction, management and maintenance. In addition it plays a significant role in the overall community life and living. It addresses many design issues that show its interactive relations with the contemporary society and culture. The community mosque as a modern vernacular design responds to a variety of critical aspects, which are as follows:

- Responsive to changing need of the community.
- Carry the legacy of traditional building craft.
- Prescribe piecemeal growth pattern adjusted to resource availability.
- Innovative in admixing local and modern technology.
- Respectfully preserve different stages of physical development.
- Follow a democratic process in design.
- Inspire community participation in its growth and maintenance.
- Encourage voluntary contribution in terms of ideas and resources.
- Enhance community pride as the custodian of the mosque.
- Serve as a symbol of the community.

Community Mosques in Historical Perspective

As a new building type, mosques appeared in Bengal at the beginning of the thirteenth century AD, with the advent of Muslim rule in the region. Ever since, numerous mosques developed spontaneously as rudimentary shelters to enable the spreading Islam in a wider geographical area. Those mosques were also built with community participation with leadership or patronage of some pious individuals. Therefore, the concept of the community mosque had its beginning with the inception of Muslim society in Bengal [2,3,4] (Fig 1). In other words, community mosques can be considered to be the oldest mosque typology in Bengal. It would not be wrong to assume that the difference is very little between the growth pattern of community mosque of the earliest time and the present. Absence of historic evidence of such community mosque makes it difficult to arrive at any conclusive assumption.

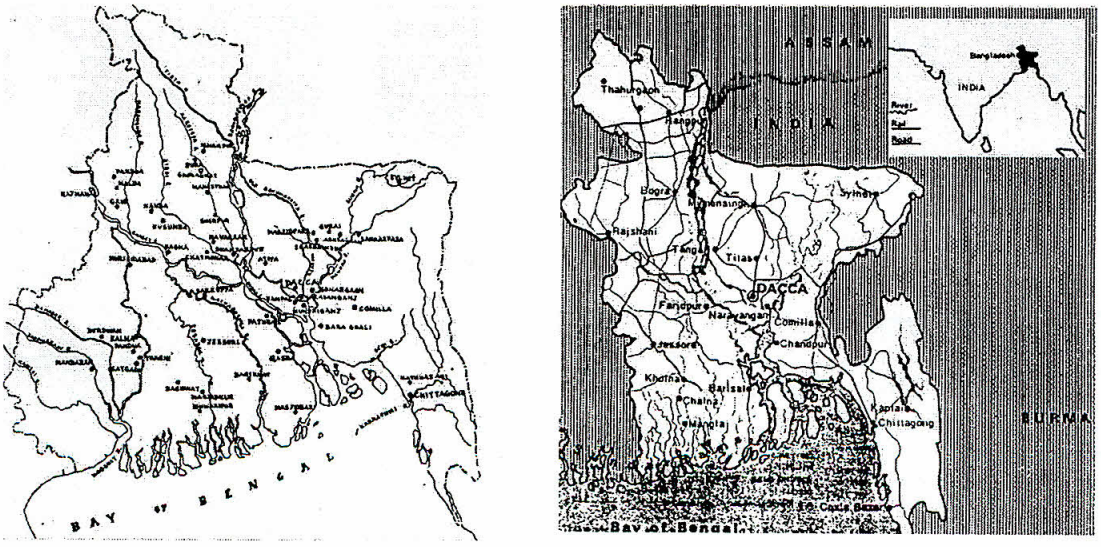


Fig. 1: Maps of Bengal and Bangladesh.

Historical evidence of the mosque architecture in Bengal appears from fifteenth century onwards. The period of refinement of mosque architecture begins with the Sultanate period in thirteenth century and continued till the end of Mughal era in the mid eighteenth century [5]. The advent of British colonial rule restrained the pace of growth and development of mosque, while only the community mosques indiscreetly carried the legacy of the past. It played an additional social role of uniting the community to counter the oppression of the colonial power against the Muslim society.

Mosques always served a significant socio-cultural purpose in any Islamic society besides it essential religious intent. It acted as a symbol of society. Mosque architecture symbolically carried the massage of Muslim unity and brotherhood at the same time reflected the uniqueness of each Islamic society [6]. Therefore, a sustained effort is observed in every era to attain an ideal model of mosque architecture in all regions. The mosque architecture that developed in the early Islamic period of Bengal during the Sultanate reign is unique in style and character compared to those in rest of the Indian subcontinent. Two remarkable differences are found; one is the application of brick as the major construction material and the other is the use of terracotta decoration as surface ornamentation. Distinct formal features are the hemispherical dome directly mounted over the roof without any drum and the gently curved cornice or parapet (Fig 2). Mosques were built with massive walls supported with octagonal corner turrets and composed with pointed arched openings within a single free-standing building [7]. In addition to these there are other differences in layout, scale, proportion, space, openings, and structure.

Historians have classified the Sultanate mosques according to their ground plan into two broad categories as Square type (Fig 3) and Rectangular type. The square type may be roofed with a single dome or multiple domes depending on the volume of the building. The rectangular type is further classified according to number of aisles parallel to the mihrab wall inside the mosque. The higher the number of aisles, the larger the size of the mosque. Single, double and triple aisles are commonly found.[8,9] There is only one exception, the *Sait Gumbad Masjid* in Bagerhat, comprising of seven aisles. Considering its uniqueness and architectural significance in Bengal, the International Heritage Council has placed this mosque in the list of protected buildings. [10]

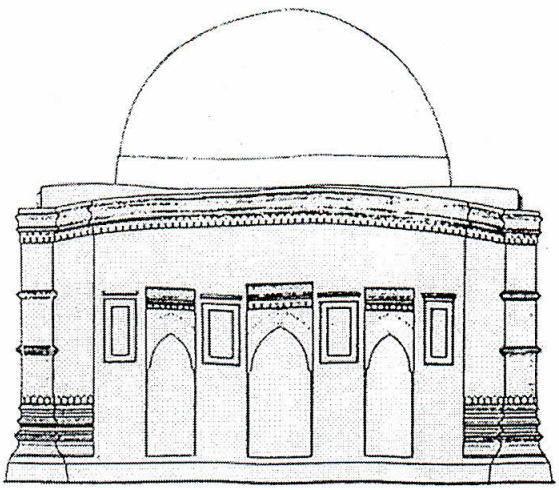


Fig. 2: Typical form of *Sultanate* mosque.

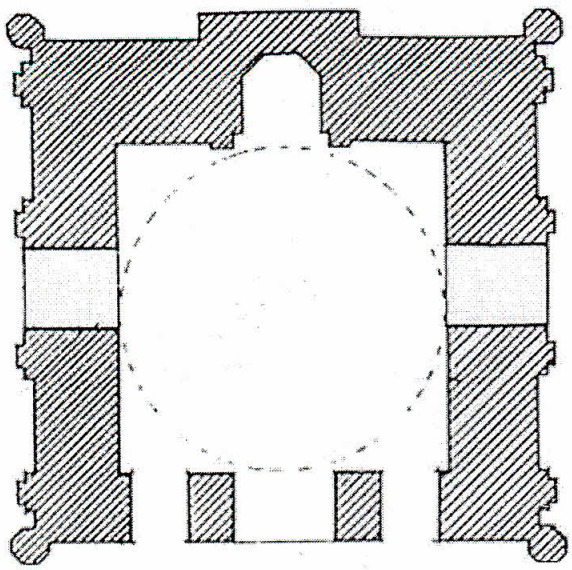


Fig. 3: Plan of single domed square type *Sultanate* mosque.

Mughals were prolific builders. Their architectural contributions in the northern India are splendorous of the world. Architecture of Mughal mosque had been perfected through years of experimentation in northern India[11]. They carried their distinctive style to other regions. However, their contributions in Bengal were much subdued in scale and magnificence. Yet in the panorama of the flat landscape of rural Bengal spotted with thatched huts even those humble Mughal mosques must have appeared monumental in those days.

The Mughal mosques in Bengal show greater diversity in form and layout corresponding to Sultanate mosques. Brick continued to be the major building material but the wall thickness reduced substantially as the Mughals had the advanced knowledge of the geometry of load distribution. In surface delineation plastered panel decoration replaced the terracotta ornamentation of earlier times. The domes attained added height with the use of drums placed over the roof and the domes terminated with a finial on top. The size, shape, number and disposition of domes widely varied according to size and layout of respective mosques. The corner turrets appeared like dwarf minarets crowned with kiosks. The drum on the roof and the parapet were adorned with merlon decoration, a typical ornamentation of Mughal Architecture (Fig 4). These two mosque typologies developed in Sultanate and Mughal period may be referred as classical models of mosque architecture in Bengal. Apart from their differences they had many similarities. Both the mosque types are brick built having arched openings, stands as a single entity in free relationship with nature, visually stout in shape with octagonal corner turrets and crowned with one or more domes.

The existence of the two classical typologies over the centuries largely contributed to the popular local image of mosque architecture. The existence of numerous poor copies of those mosques spreading all over Bengal suggests their persistence as a lasting regional model. Even now those are still being copied completely or partially. After two hundred years of colonial subjugation India was divided along the religious boundary of Muslim and non-Muslim population. The part of Bengal dominated by Muslims initially became a province of Pakistan in 1947 and later in 1971 became an independent nation, the Bangladesh.

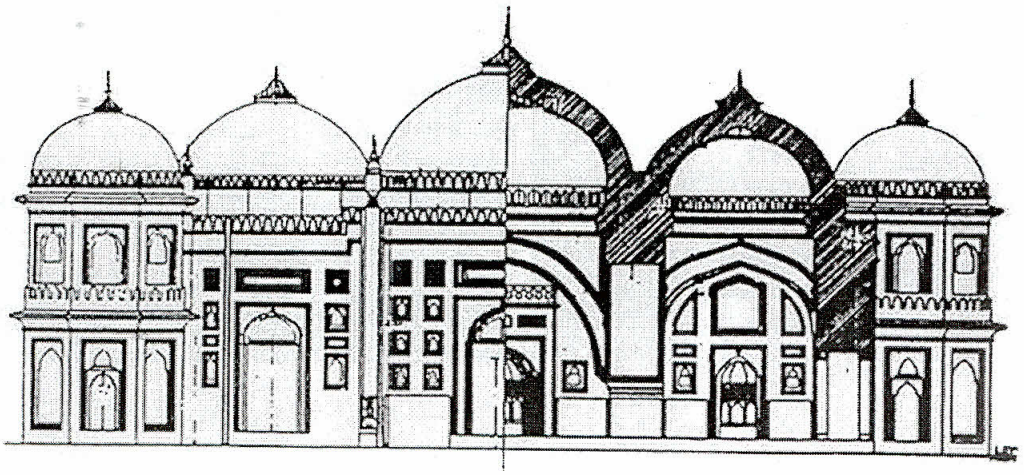


Fig. 4: Section and Elevation of Sat Gumbad Mosque; showing architectural characteristics of Mughal Mosque.

In the post colonial rule there was an emerging socio-political will to establish a self-expression and image of Islamic republic. Mosque architecture thus ushered into a new era with renewed vigor and aspiration. In this stage new material, method and technology of the twentieth century was available and professional designers were also available to contribute new ideas. It is curious to notice that the new designs dramatically disassociated with the traditional architectural trend. Swept by the idea of modernism the designers were inspired to develop new images of mosque architecture based on the vocabulary of new material and techniques ignoring the prevailing models as the theme of the past (Fig 5). The possibilities of reinforced concrete and brick cladding had been exploited for novelty of form and shapes to attain a new language of expression in mosque design. The focus of the new designs was to attain variety and diversity by experimenting with the new as well as established popular images (Fig 6). The expression of the new era was to avoid or overcome bonds of any fixed image and uniformity of mosque design.

Community mosques virtually remained out of the grip of the professional intervention. Professionals were skeptical about the scope of their involvement in such design problem. On the other hand the client i.e. Masjid Committee had apprehension and financial constraints in involving professional help in design unless there is a pressing demand for complex structural solution. However, the design was swayed by the professional concept of the new generation of mosques. The idea of freedom in design has been exploited to its optimal level in community mosques. Common people were encouraged and enlightened by the professionals and the media, that the variety of mosque design is not only possible but a prevailing reality. A great variety of mosque typologies exist in the Islamic world spanning over a wide geographic region. There is no prescribed model or universally acceptable design to follow, yet there are some locally identified symbolic elements that distinguish a mosque from other building types. Pursued with this basic knowledge an enormous variety of community mosque flourished, each one is distinct from the other making a complete reversal of the traditional concept of sublime uniformity that dominated the classical mosques. Community mosques are normally characterized by their humble and unpretentious quality and exist in harmony with their surroundings.(Fig 7) This trend persisted for a long time and is still persisting in many places other than those in metropolitan areas. A dramatic change in shape, size, volume and character of community mosques had been observed since the end of the seventies. The changes were more pronounced in significant locations of the cities.

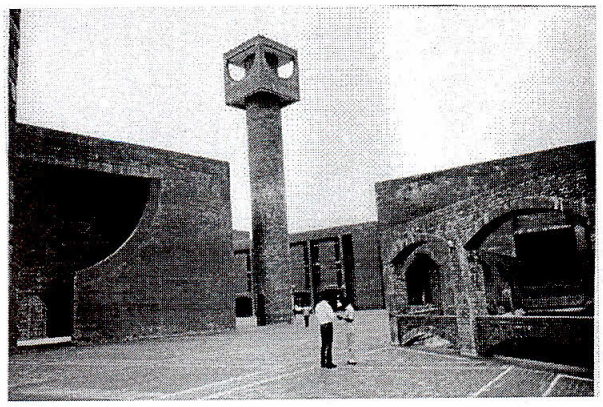


Fig.5: ICTVTR Mosque, Gajipur, application of basic geometric form in mosque architecture.

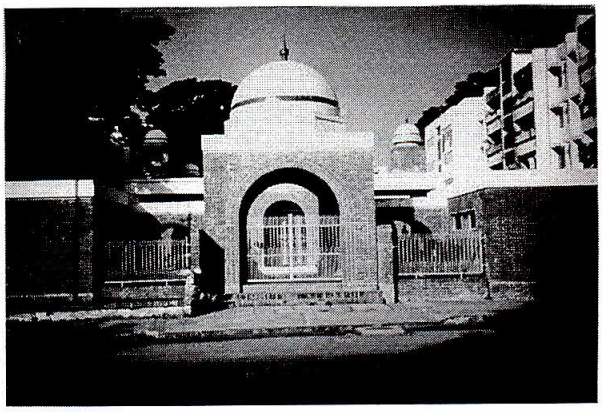


Fig. 6: BUET Mosque, Dhaka, designed through reinterpretation of traditional symbols

Two important factors inspired those changes; first is the building boom of the late seventies and second is the availability of financial support for mosque development. The buildings boom not only raised the density if building in urban area but the height of surrounding build-form as well by adding more floors, contributing to an increase in population in the community. This placed a higher demand for prayer space in local mosques. Moreover, for the purpose of identity an increase in volume of the existing mosques deemed necessary as those were being obscured by the overwhelming new developments around.

The government policy of declaring Bangladesh as an Islamic state in 1975 ushered a new era of Islamic co-operation and brotherhood. As a consequence Bangladesh received generous economic support from the oil rich middle eastern countries. In the subsequent period considerable national and international funds were made available for mosque development and improvement. In the capital city of Dhaka several community mosques attained a massive volume in shape and an imposing scale, dominating the surrounding areas as a landmark. All those mosques have a long history and followed a uniform sequence of additive development over a long span of time. The traces of subsequent layers of development are retained in many of those mosques. This piece meal pattern of growth juxtaposed with different layers of development forging a controversial mix and match is the hallmark of community mosque design.

Genesis of Community Mosque

Community mosque may originate in three different ways. First, a group of people may begin to pray regularly in a vacant land adjacent to their house or workplace and eventually claim the land as a place for religious rituals. Second, a person may donate a piece of land or build a mosque dedicated to the community to fulfil a personal spiritual desire. Third, an existing mosque built much earlier may be taken up by the community for renovation, enlargement and maintenance to suit the present needs. In the first case the development begins with demarcation of the occupied land and placing a rudimentary bamboo or mud structure for prayer. Those structures are north-south elongated as the West is the general direction of *qibla* in all over Bangladesh. When a person donates land or shelter for a mosque the initial stages of development are similar. In cases of old mosques adjusted to the present requirements may have a different beginning according to community priorities, yet the general development pattern of the community mosque is followed in the subsequent stages. It is curious to note that the size of privately built old mosques in Bangladesh can be as small as to accommodate only four persons including the Imam.

Erecting an enclosed shelter is an invariable part of the primary phase of development due to prevalence of monsoon climate in which rain is expected almost all over the year. The shelters are usually located close to the western boundary of the site keeping space on the east for further development. In rural setting the mosques were located near to some pond or stream that provided the water for ablution. In urban areas, well or tube-well was the sources of water located within the site prior to availability of piped water supply.

The inevitable first extension in community mosque is a veranda on the eastern side. The veranda was not a regular feature of old mosque yet it exists in some as an exception. The veranda has many significant applications. Psychologically it provides a transition zone into a sacred space; climatically protects the door ways to the prayer hall; physically relates indoor outdoor spaces; aesthetically generates a sense of entry; and socially acts as a sheltered place for mutual interaction. In most instances the accommodation for Imam or *Muezzin* is found within the Mosque premise. In addition a *Maktab* is customarily run that is the school for religious teachings of the children . Therefore, other secondary structures also add up to the mosque premise. Internally, the prayer hall grows east ward along the central axis of the mihrab. The main prayer hall extends encroaching upon the veranda space and a new veranda is replaced on further east in each stage. However, the mihrab may shift its location for centrality if there is a lateral extension of the prayer hall. The central axis rarely coincides with the entry to the mosque premise from the street.

Permanency of the mosque structure is always a priority in the development process. Generally the mosque premise is filled with various types of structures; permanent, semi-permanent and temporary. A gradual change in structures from temporary to permanent material can be observed in the intermediate stage of the development. The transition from temporary to permanent construction starts with the main prayer hall, then followed according to the importance of the structures (Fig 8).

It is usually easy to persuade the surrounding landowners to sell or donate their land for the expansion of the mosque. Community mosque besides their regular religious role extends social, economic and educational services to the people. Structures for supporting facilities like *madrasa, maktab, hujra khana,* along with ablution and toilet occupy the peripheral areas of the site. In urban locations, shops become an inseparable part of the of community mosque. This is deemed to be an essential requirement to make the mosque self supporting at least in logistics and maintenance. In later stages the built-up area consumes entire site as a consequence of additive development schemes. Obvious next development takes place in the vertical direction. A desire for extensive ornamentation of facade and interior spaces can be observed in the matured stage of development. Other identifying features of the matured stage is the addition of one or more minarets and elaborately decorated gate structure (Fig 9). However, the matured stage does not imply that it has reached the final phase of completion, since the development process is endless, they rarely have any terminating point. It is significant to note that in every stage there is a visible effort not to nullify the earlier improvements and preserve as much as possible in any addition or alterations. Therefore, the mosque retains the traces of cumulative history of the development process within its ensemble.

Origin and Growth Pattern

It has been mentioned earlier that three types of community mosques can be distinguished on the basis of their origin. The first two types have a very similar pattern of development, only that one starts from the scratch on a vacant land and the other from a donated land with or without structure. In the first case the pressure of public sentiment usually assures the right to the land. These mosques can be classified as the originating from nucleus. The third type begins with a different pattern of development as it originates from an old mosque. Genesis of the two basic community mosque types has been discussed in the following case studies.

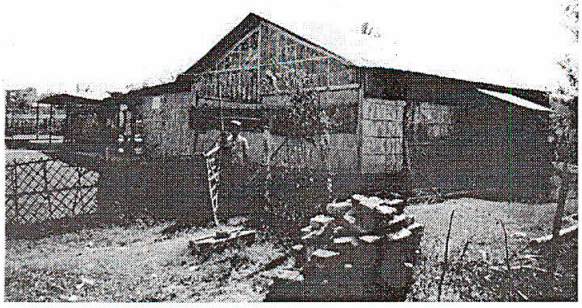


Fig. 7: Humble and unpretentious beginning of a community mosque.

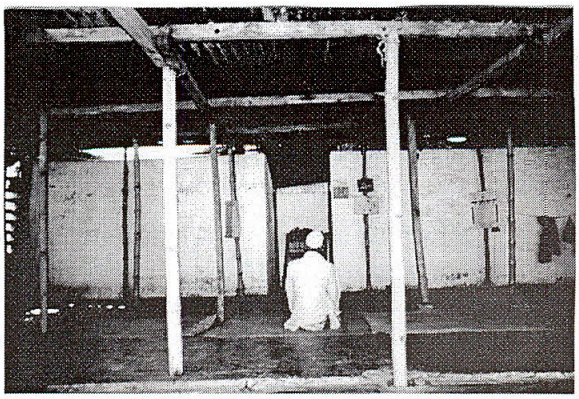


Fig. 8: First step towards permanency of a community mosque – the *qibla* wall built with brick under the tin roof.

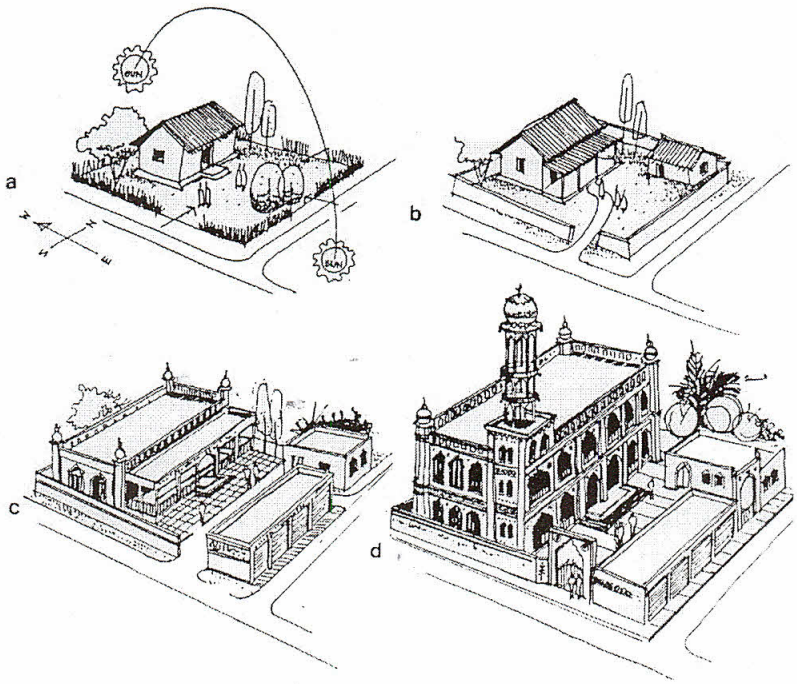


Fig. 9: Typical sequence of growth of community mosques.

Originating from Nucleus: The following case studies are based on an academic survey on people built mosque. It was conducted in 1985 by the students of architecture, Bangladesh University of Engineering and Technology, (BUET), Dhaka. The study recorded history of gradual development of twenty-five community mosques initiated by ordinary people. The mosque known as *Matir Masjid*, is presented here as a typical model of community mosque originating form nucleus. It initiated in 1914 from a pristine hut donated by a person named *Sheik Abdul Gani* from his homestead to be used for congregational prayer. At that time it was located in the outskirts of the Dhaka city, and now it is situated well within the metropolitan area in a locality called *Malibagh Choudhury Para*. The hut was made of mud, and so it was named *Matir Masjid,* which means mosque of mud. It was probably the

outer house of the rural dwelling called *Kachari Bari*, commonly used for male guests and conventionally oriented outward. It had a thatched roof and a veranda on the east. A pond was located on the northern side for the purpose of ablution. It remained in the same physical state for a considerable long period. Appreciable change was noticed in 1962, when the plot was defined with a rectangular enclosure, the pond was filled, so a tube well and rudimentary toilets were provided in the south-east corner and another small hut was placed along the northern boundary. Entry to the plot was located on the east and south.

Significant initial changes in *Matir Masjid* occurred between 1973 and 1980. The mud structure was replaced with a permanent building, much larger in size along with a veranda on the east. The building had a flat roof with four corner turrets to have a symbolic expression of mosque. A large circular tank was built on the south east with the availability of piped water system for ablution (Fig 10). Toilets shifted to north-east corner. A number of shops were added along the southern boundary. Two temporary structures erected on the east and north side to function as hostel and *Hujra khana*. The developments in 1980 and onwards focused on enlargement of the main mosque and converting the supporting secondary shelters into permanent structures. The earlier veranda became a part of the main prayer hall and so it was laterally enlarged to match with the length of existing prayer hall. A new veranda was added protruding into the central space defined by the surrounding structures. Ablution tank retained its original position and the toilet facilities were improved. A square shaped storage space was added next to the mihrab. The main entry to the mosque premise remained on the south and a secondary entry on the east. Extensive improvements were made in the interior spaces with ornamentation and applications of finer finish materials. During the initial study in 1985 the mosque was still passing though its secondary phase of development (Fig 11). The external symbolic elements of the matured stage like the domes, minarets and gate structures, etc., were yet to be added and there was preparation for upward development to avail more prayer space. A major change was observed in 1988 inspired by a generous donation from the President of the country amounting two hundred thousand taka equivalents to US$ 5000.00. This prompted the initiation of the final phase. Within the first half of 1988, two bays was added in the ground floor built with R.C.C. Structure replacing the tin shed veranda. Two more bays to be built later in the space presently occupied by secondary structures on the east. Eventually the entire site will be engaged.

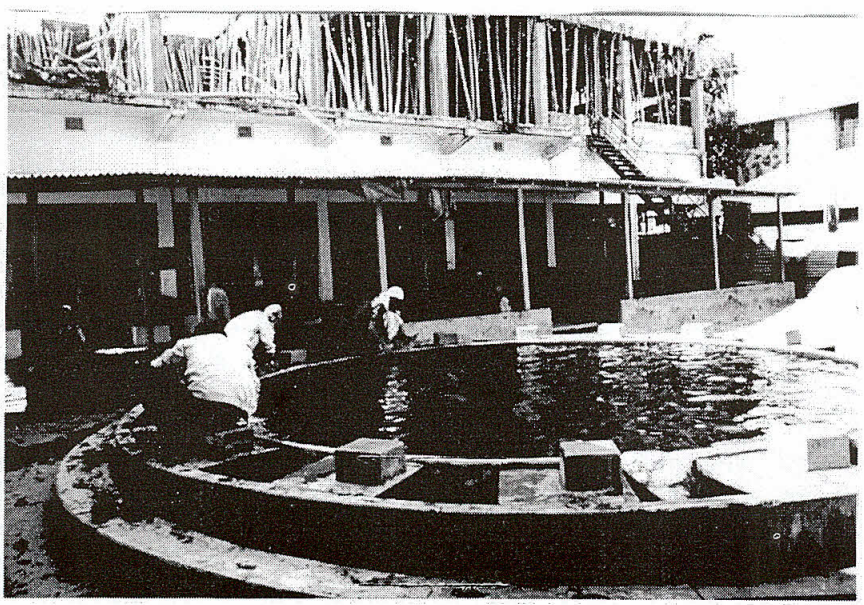


Fig. 10: Ablution pool of *Matir Masjid*, a significant feature of the *sahn*.

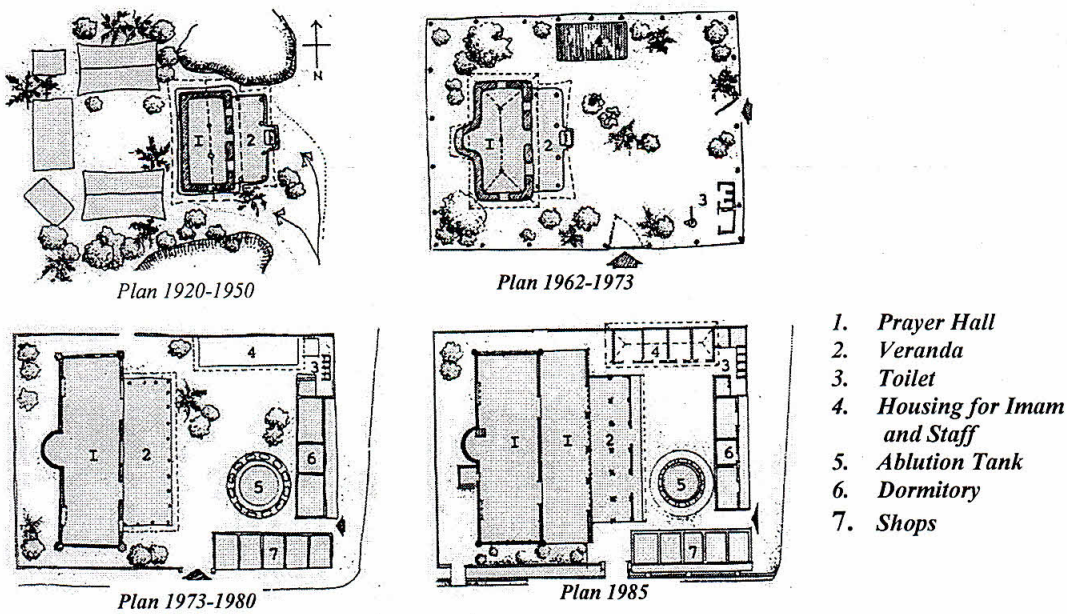


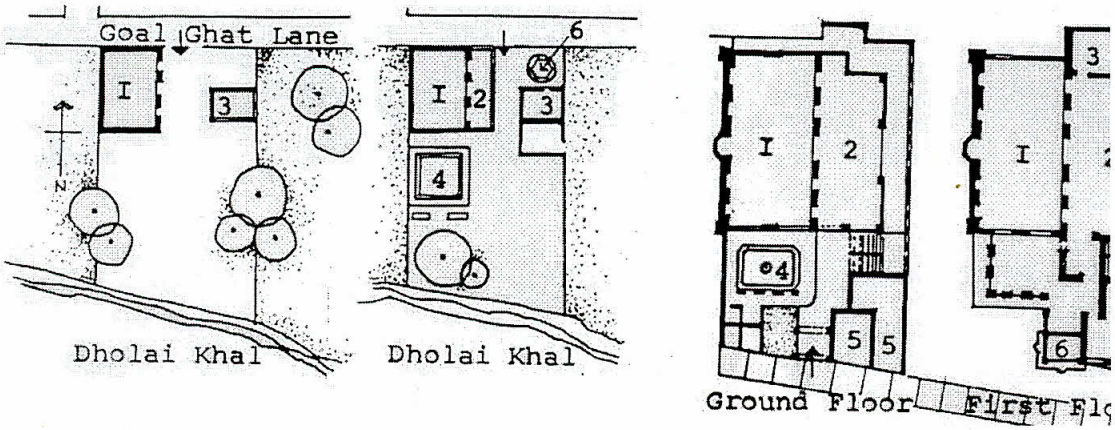
Fig. 11: Chronological development of *Matir Masjid* (1920-85).

Meanwhile, the construction of the first story begun in may 1991 and now all the existing floor area is roofed as prayer space. The mosque has a grand future plan. The first two bays that were built earlier with brick foundation will rise up to three floors, and the new constructed portions of the mosque provided with R.C.C. column foundation for six floors. An elaborate entrance facade has been designed facing the road on the east in the part of the plot waiting to be occupied by future extension. In the latest development work of *Matir Masjid,* professional structural designers were involved and that is clearly visible from the streamlined character of the facade unlike typical community mosques (Fig 12). However, the additive sequence of development, which is the hallmark of the community mosque, is easily perceptible in its ground floor layout. At present, the mosque accommodates three thousand people in each Juma prayer, out of which two thousand provided inside the mosque and the rest on the roof top. On Eid days more than 5000 people congregate and they are forced to occupy the adjacent roads to pray. The ever increasing need for prayer space compelled by the growing density of community population will keep the pace of construction and expansion going till its limits are exhausted. Eventually, the humble mud hut of the *Matir Masjid* would turn into a massive and imposing mosque, and its name will remain a tale to tell.

Case studies of two other community mosques initiating from a nucleus are illustrated here to exemplify the uniformity of their sequential growth. The progressive developments of *Bait-al Noor Juma Masjid* (Fig 13)and *Zindabahar Juma Masjid* (Fig 14)are shown in plan in three different stages. *Bait-al Noor Juma Masjid* originated in 1860 within a small mud wall structure. It was located on the north west corner of the plot. The entry was from the *Goal Ghat Lane* on the north. On the south side there was a cannel known a *Dholai Khal.* The second phase of development begun in 1940, when a veranda on the east and an ablution space on the south was added and a miner was constructed at the north-eastern corner of the plot. After 1976, all the exiting structures were demolished to make room for the present mosque which covered the entire plot. Meanwhile, the cannel was filled up and a wide city road the North-South Road was constructed over it. The new road became a major thoroughfare which prompted a demanded for a new entry on the south. Eventually, the main entry is shifted to the south side from North-South Road. The entrance gate and the miner of the mosque is composed together into a composite structure to serve a dual purpose of identity and entry from the new road.



Fig. 12: Present state of *Matir Masjid* showing the beginning of the final phase.

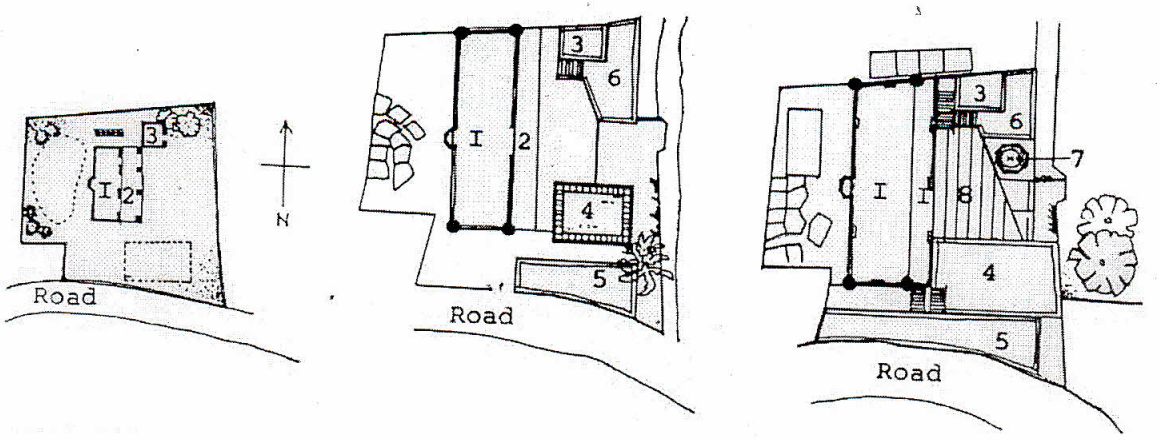


PLAN (I 860) **PLAN (I 940)** **PLAN (I 976)**

1. Prayer Hall 2. Veranda 3. Imam's Quarter 4. Ablution Tank 5. Shop 6. Minaret

Fig. 13: Chronological development *Bait-al Noor Juma Masjid* (1860-1976).

Zindabahar Juma Masjid was founded in 1956 by a local leader named *Haji Md. Khalilur Rahman*, who donated the land and the cost of the initial structure. Original structure was semi-permanent in nature built with brick wall and tin roof. A permanent roof was constructed in 1962over the main hall and a veranda was added on the east. Two years later a *Madrasa* (Fig 15) was built along the *Zindabahar Road.* The upper floor was constructed in 1972, while the veranda in the ground floor was also taken in as a part of the main prayer hall. Construction of the miner begun in the following year. The main entry was placed in the middle along the qibla axis flanking the miner and ablution pond. Subsequently, the ablution space was covered with a roof and the miner was ornamented. Other than the *sahn* in the middle the entire plot is now being occupied by permanent structures (Fig 16). Profuse ornamentation and surface decoration of the mosque imply that it has reached its matured state of development.



PLAN (I956) PLAN (I964) PLAN(I972-84)

1. Prayer Hall 2. Veranda 3. Imam's Quarter 4. Ablution Tank 5. Madrasa 6. Shop 7. Minaret 8. Sahn

Fig. 14: Chronological development *Zindabahar Juma Masjid* (1956-84).

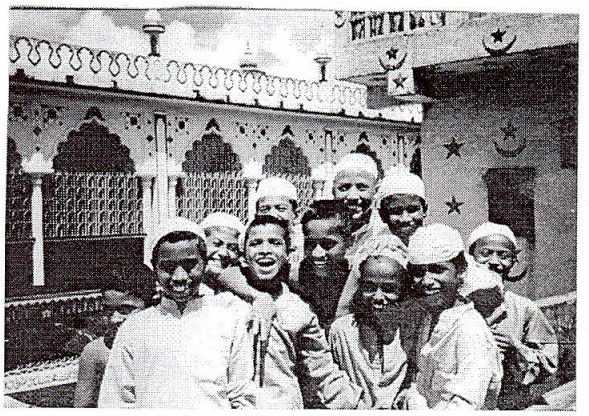


Fig. 15: The students of Madrasa, *Zindabahar Juma Masjid.*

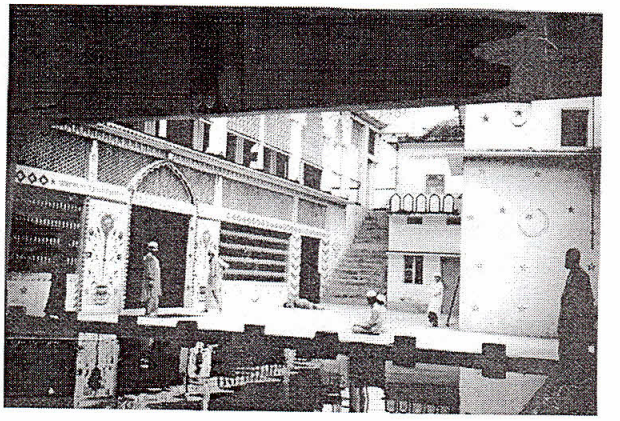


Fig. 16: The *sahn* and ablution pool of *Zindabahar Juma Masjid.*

Originating from Old Mosque: This case study is taken from the post-graduate research at BUET conducted by one of the authors. The mosque is located at 38, *Aulad Husain lane* of old Dhaka and well known as the *Islam Khan Ki Mosque*. It was built by Islam Khan in 1610-13 AD, the first Mughal Governor of Dhaka.. Now, this is considered to be the oldest surviving Mughal mosque in the city [12]. However, at present the local people is looking it after as their community mosque.

The original mosque structure had three domes, the central dome was much bigger than the other two. (Fig 17) The mosque was rectangular in plan measuring in 10.4m by 4.3m .The main prayer hall was divided into three bays with two lateral arches (Fig 18]. The *qibla* wall on the west had three *mihrabs* corresponding to three main doors on the eastern facade. On northern and southern side there were single doors. The facade was without plaster and corner minarets were not decorated. The unpainted domes placed over octagonal drums were a reminiscence of the past. It established a linkage between Mughal and Sultanate style by its stark simplicity, and at the same time marked the beginning of a new

era of mosque architecture in Bengal. The mosque had been repaired, renovated and extended several times by the local people. Thus some of the original features of the mosque was retained but the rest were over shadowed by the subsequent extensions and renovations. As usual the first phase of extension was from the eastern side with the addition of a veranda. The veranda had a flat roof supported by rafter and purling and its walls had less thickness than the walls of original structure. There were five semicircular arched entry doors to the veranda on the east and single arched openings were made on the north and south side. The interior of the mosque was decorated with colourful paints. Ceramic tile decoration applied in the high skirting having a thick boarder all around. The layout of floors in the main mosque and the veranda was made with terrazzo finish in similar pattern.

The next phase of extension of the mosque was on the east and south sides. The extension on the eastern part was up to the edge of the road to accommodate a hall room in front of the veranda. This hall was roofed with reinforced concrete resting on three round pillars in the middle and rectangular pillars along the outer wall. However, the pillars were not aligned with the openings of the veranda. On the south side a large water body with a fountain in the middle was built for ablution (Fig 19). This deemed to have been inspired by the Mughal mosques of north Indian where such fountain is a standard feature of the *sahn*, the central court. Along the southern boundary wall a toilet and a series of urinals were placed awkwardly. Two street front shops flanked the two ends of the southern boundary. In course of time another floor was added extending over almost entire area of the site sparing only the roof of original mosque with it's three domes (Fig 20). A flight of stairs was added outside the original mosque next to its southern wall. To put an upper floor, a pillar was placed which

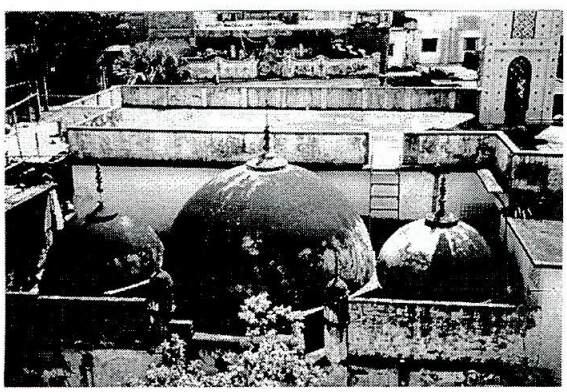


Fig. 17: *Islam Khan Ki Mosque*; shows old domes behind the new mosque structure and the new minaret on the flat roof.

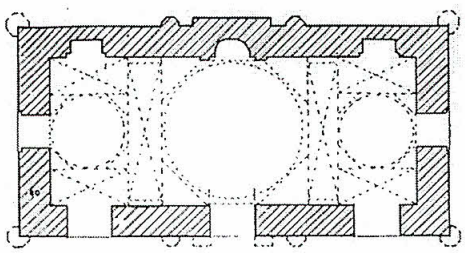


Fig. 18: Original Plan, *Islam Khan Ki Mosque.*

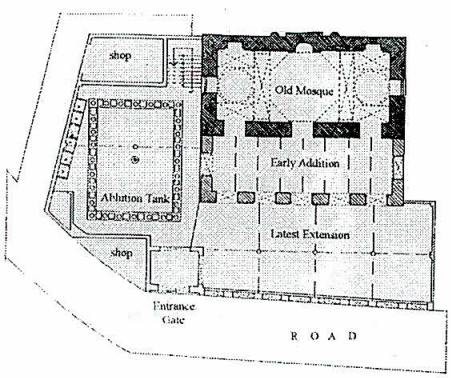


Fig. 19: *Islam Khan Ki Mosque*, existing ground floor Plan.

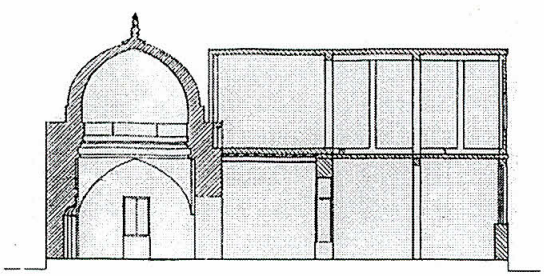


Fig. 20: *Islam Khan Ki Mosque,* section showing old mosque with dome, and its link with a new tow-story structure.

is oddly located in the middle of the ablution fountain. In the upper floor a large irregular prayer hall developed along with two cubicles for the accommodation of *Imam* and *Muezzin* inside the mosque. At this stage of extension a new wall built on the west completely hidden the domes behind it. Due to the upward extensions of newly built portion the original domes of the old mosque went out of sight from the front. Now the domes are only visible from the upper stores of neighbouring houses on the western side. A minaret was added later on the flat roof top of the extended portion. It was made visible from the road to serve as a symbolic element of the mosque in places of the domes (Fig 21). Moreover, extensive surface decoration was applied with broken glass ornamentation locally known as *chini- thukri* work. The veranda and the outer facade of this extended portion is embellished with *chini-thukri* ornamentation with crescent, star and floral motifs. In the latest renovation work the window openings are made with pointed arch in ground and first floor. Arched openings and *chini-tukri* ornamentation both have religious connotation in the local context. A gate was specially designed with fluted arch and projected curvilinear eaves (Fig 22) to emphasize the entry in an otherwise flat facade without any recess or projection, rising from the edge of the road.

Islam Khan Ki Mosque is now overshadowed by the densely built surrounding commercial area filled with medium rise structures. It is indeed very difficult to identify the mosque from a distance as it is hardly visible. The present site of the Mosque is fully covered with structures following the trail of regular development pattern of community mosques. It has reached its matured state of development, and it's only future option is upward extension. The original prayer hall still remained intact like an old tree trunk, while the other prayer halls have branched off from it.

It is curious to note that the fate of the oldest and the first testimony of Mughal mosque in Dhaka still surviving in the hand of the community. It carries the legacy of the past and the pride of the present community. It is an assimilation and juxtaposition of desires and aspiration of the past and the present. The mosque structure carries a tangible history of inspiration, association and contribution of an Islamic society living around the mosque over a long period of time. It is like going forward into the past when one moves from the entry to the old prayer hall at the other end.

A similar example of transformation of a historic mosque into a community mosque is the *Narinda Bara Masjid*. Recent constructions of this mosque totally engulfed the original structure of the historic *Binat Bibi's Mosque* developed on the same site. *Binat Bibi's Mosque* was a pre-Mughal mosque and considered to be the earliest surviving Muslim religious building in Dhaka city [13]. It was built by *Musammat Bakht Binat*, daughter of *Marhamat* in 1457 AD [14]. Originally the mosque structure had a square chamber measuring 3.65 x 3.65 meter, having octagonal corner towers and crowned with a single hemispherical dome. There was no plaster on the walls. The original mosque was altered and renovated many times. A similar square shaped structure was plugged to the south in 1932 [15] forming a double domed rectangular building. Subsequently, the walls were plastered, earlier parapets were straightened and new veranda were added on the east and south. A major extension and renovation was done in1962 [16] when the mosque extended on the west. The *mihrab* wall of the original structure were pulled down to be a part of the extended portion (Fig 23). The old *mihrab* was replaced by a new one on the extreme west wall of the new building. A star shaped water body with a fountain for ablution was added to the back of the mosque beyond the *qibla* wall. In 1985-86 two more floors were extended keeping the double domes sandwiched between two floors [17,18] (Fig 24). As a consequence of upward development the domes may have been hidden within the building but the idea was not to obscure them. It is important to note that the domes were preserved1 deliberately as a reminiscence of the past within the expansion program of the mosque. It expounds that the community acutely values the linkage between the past and the present mosque and that have propagated such a solution within their technical and economic means. It also presents an ongoing social dilemma - how to retain the valued symbols of the past and come to terms with undeniable realities of the present.

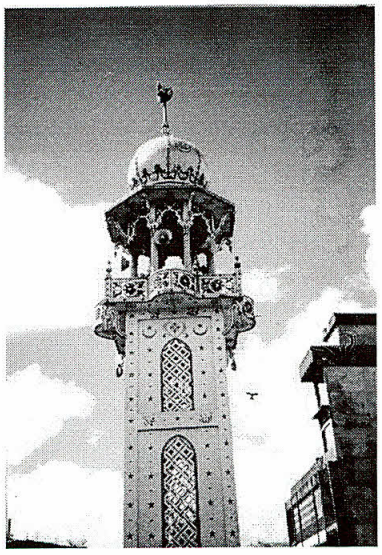


Fig. 21: The decorative minaret, *Islam Khan Ki Mosque*, Dhaka.

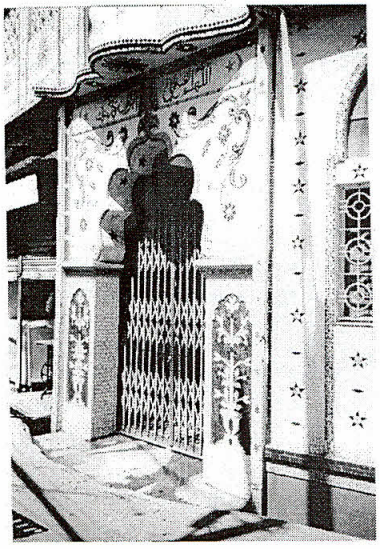


Fig. 22: Entrance door decorated with fluted arch, , *Islam Khan Ki Mosque.*

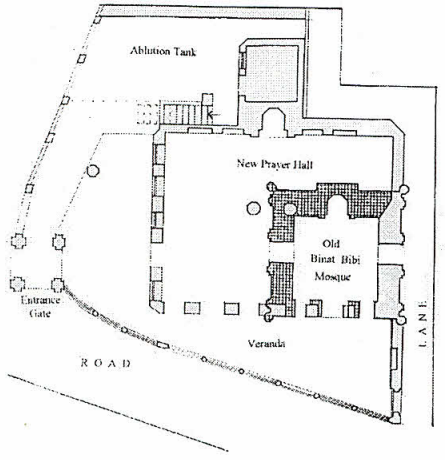


Fig. 23: Superimposed plan of *Binat Bibi* and *Narinda Bara Masjid.* The demolished portion is shown cross hatched.

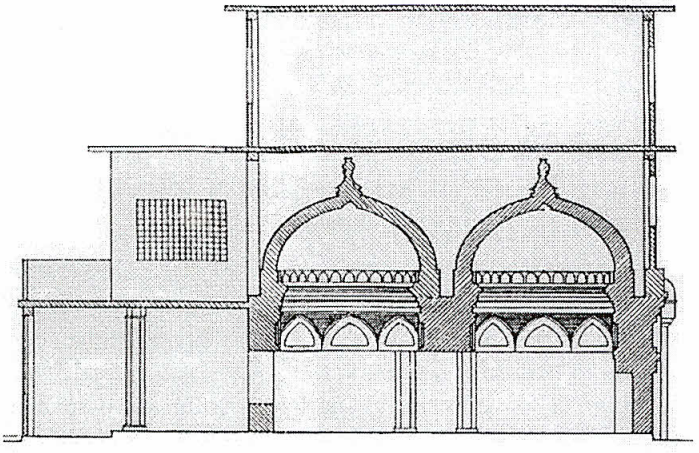


Fig. 24: Section showing the preserved domes of original *Binat Bibi Mosque.*

Design and Building Process

The case studies discussed above indicate a successive extension of prayer space over the time. The growing need for more prayer space primarily compelled by the increase of population density in the community. The limits of extensions are generally determined by the land and financial resources. As soon as the scope for horizontal extension was exhausted, upward extension became inevitable. However, the upward expansion of the community mosques are generally limited within first floor range besides few exceptions. When physical extension reaches its saturation point resources are channelled to decorative and symbolic elements like the addition of gates, minarets, domes, arches, parapet, railing and the like. It also involves investment on the interior and exterior finish materials, lighting, acoustical and mechanical feature and fixtures.

Layout: The layout of mosque shows a general emphasis on axial arrangement. In the layout the *mihrab* is oriented towards Ka'ba, Makkah in the west and the axis aligned to the direction of Ka'ba is referred as the *qibla* axis. The axis originates from the *mihrab* and extends eastwards connecting internal doorways to the main entry. The classical mosques of Bengal were designed with a symmetrical organisation along the *qibla* axis. In order to emphasise the axis at the entrance the doorways were always in odd numbers to have one door at the centre. The centrality is usually maintained in the initial design phases of community mosque developing form nucleus. In the later stages when additional land is procured the subsequent development is usually confronted with the problem of maintaining axial arrangement.

Community mosque develops with the intention to preserve and not to nullify any earlier developments. In some instances a kind of spiritual obligation can be observed in deliberate attempts to retain the elements appearing incongruous in the altered setting. Therefore, a problem of imbalancing the balanced is encountered in the design. Efforts are taken to manipulate the axis in internal organisation or at least to recognise the presence of the axis in the layout. The layouts of mosques ceaselessly mediate between the intermittent changes and the old layers of developments, thus leading to very complex layout designs.

Built-form: The facades of the classical mosques in Bengal were symmetrically balanced along the central axis. The trend was to follow the established models with limited variations. The buildings had easily recognisable formal shape and volume. Singular buildings were usually placed on the site in free relation with nature. Prominence was given to the central door and central dome with added volume, shape, size and decoration. Massive brick walls accorded a sense of permanence and dignity. Overall form was assertive in character and humbly monumental in open surrounding. Historians classified a specific type of rectangular Mughal mosque with three domes as *Shaistha Khani Style* [19]. The Mosque of Lalbagh fort in Dhaka is a well preserved and protected model of the *Shaistha Khani Style* (Fig 25). The style has been widely followed as an ideal model in the early stages of development of community mosque.

However, in the developed stages unlike the classical mosques the community mosques are formed with an assortment of structures often inconsistent with one another. The unity is derived only through proximity. Therefore, it is possible to generalize the sequence of development, but it is hard to make any generalization on the overall shape and form of community mosque. Each one is unique on its own right. This variation is partly contributed by the configuration of the site, partly inducted by the development of different stages and the rest nourished by the design bias of the community. However, community mosque within all its diversities and bizarre variety convey its spiritual content and encode the massage of a sacred place.

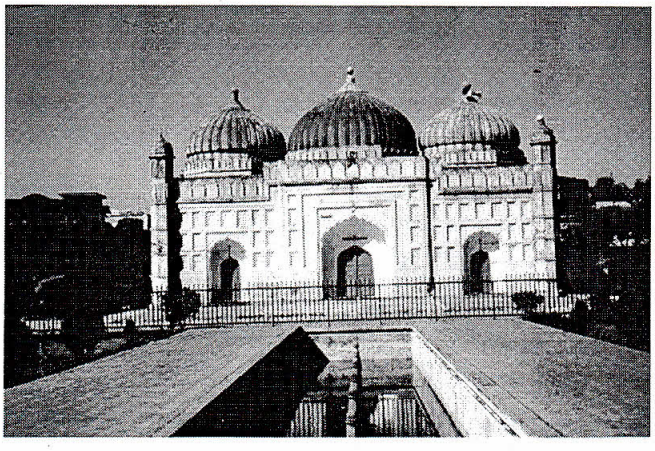


Fig. 25: Lalbagh Fort Mosque, Dhaka: a preserved model of *Shaistha Khani Style*.

Structure and Technology: The structural and technological possibilities of the modern era profoundly influenced the shape, form and character of community mosque both internally and externally. The prospects of reinforced concrete prompted a variety of structural options to manipulate the old and new built-forms. The plastic quality and tensile strength of concrete have been exploited in many ways in community mosque design particularly in appending symbolic elements conceived in later stages like minarets, domes and gates, etc. Those elements are usually added in the matured stage when surplus resources are available. Disproportionate minarets found to spring from anywhere in the building mass appearing as an obvious after thought. Exotic ideas like placements of an open umbrella or model of an airplane on top of the minaret are all made possible by the use of concrete.

The structural transition in nucleus type of community mosque begins with bamboo or mud structure, than moves to load bearing brick construction ending in post and lintel system of construction applying reinforced cement concrete. Those mosques that generate from old mosques have massive load bearing brick walls in the old structure and in the following stage structures are built with moderately thick brick walls. The final stage is usually marked by structures having very thin walls supported by concrete columns and beams. Similar transitions can be noticed in the roof structure that begins with either thatched roof or brick domes. The metal roof or lime concrete slab supported by rafter and purling is commonly seen in subsequent structures; and then in later additions either reinforced brick or concrete slab is used. Therefore, in the matured stage of development the community mosque presents a composite system of structure interwoven with a variety of vernacular and modern structural systems.

The forms of vernacular and classical mosques in Bengal possess an intrinsic quality to operate as a climate modifier. The layout in open setting, thickness of building envelope, internal height and volume along with the size, shape and location of openings collectively contribute to attain the comfort condition inside the mosque. While the community mosques rely more and more on mechanical ventilation as the possibilities of passive cooling and ventilation are exhausted in stages by subsequent developments. Ceiling fan and exhaust fans are commonly used, while the use of air-conditioner have not been noticed in any community mosque.

All community mosques now have piped water system for ablution and sanitary toilet facility. Electrical lights have become essential requirements even in day times. The poor source of natural light is the result of segmental growth. The mixed use of fluorescent and incandescent light in the interior echoes the mixed use of form and patterns in the mosque. Public address system is commonly used for performing prayer and *Adhan,* the call for prayer. Open display of loudspeakers hoisted on minaret or pole is an inseparable visual image of the contemporary community mosque.

Ornamentation: Conventionally the ornamentation or decorative elements were inspired by those in classical typologies. Surprisingly, only the terracotta decoration (Fig 26) ceased to exist which was the hallmark of traditional building craft in Bengal. The popular surface decoration of the present time that replaces terracotta is the *chini-thukri* (Fig 27) work, a surface ornamentation with broken glazed tiles. It was inspired by the Mughal mosque ornamentation and eventually attained a spiritual connotation in association with mosque architecture. The other elements like the marlons, panel decoration, arches, dwarf-minarets, turrets, cupolas, floral patterns, fruit motifs are commonly applied in all community mosques. Though the use of calligraphy is found in the inscriptions of the old mosques, its application is rare in the decoration and ornamentation of a community mosque. A passionate desire for ornamentation can be felt from the spontaneous use of lucid forms and pattern in surface decorations. It is important to note that inspiration of ornamentation comes from diverse sources. In one instance it was reported that the facade was copied from a photograph of a Russian mosque. Observing the application of a wide variety of decorative elements, it appears that those were chosen and intermixed freely from the entire palette of decorative designs in Islamic architecture. Either for poor copy or unskilled craftsmanship those decorative designs attain a local character and soon become a part of familiar architectural imagery, transmitting spiritual appeal.

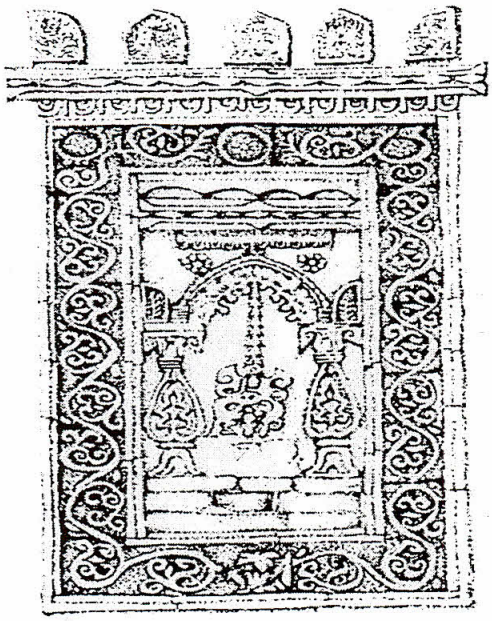


Fig. 26: Terracotta decoration, the hall mark of traditional architecture of Bengal.



Fig. 27: A panel of '*chini-thukri*' decoration *Zindabahar Juma Masjid.*

Architectural Dilemma

The shock of synthesized disorder of community mosque design can be unnerving, especially when it is judged against the modern architectural vision of streamlined image of building. Such an evaluation would categorize community mosque design as debased urban vernacular or local cliches. Nevertheless, such architectural anomaly is particularly apparent to the trained eye of the architects who have acquired a different vision from theirs learned background. While the professionals consider the morphological characteristics of community mosque chaotic and incongruous, the locals find those mix and match appealing and impressive. Therefore, the architect's idea of formal clarity is as confusing to the locals as the implanted complexity of community mosque to the architects. Hence the aesthetic validity only comes in question when contradicting standards are applied in the judgement. In modern design the inner complexities are hidden behind straightforward facade, whereas in community mosque the straightforward use of spontaneous ideas brings the complexity into the surface. Its provocative architectural statement ignoring conventional rules of building composition is flared by a candid expression of blunt honesty.

Even now the building artisans called the *ustagars* (master masons) approach the mosque design with the lessons of folk tradition and limited knowledge acquired from the media and photographic illustrations. The limitations of site, previous developments and inspired aspirations of the mosque committee dictate them. The complexity of the design problem multiplies in each stage of development. Each solution requires potentials to absorb future adjustments in a dynamic equilibrium. It also involves a new way of perceiving the spatial order in every stage along with the derived meanings of the spaces in changed setting. In the design of community mosque *less is more* was never in the agenda, rather *to do more with less* was the driving desire. Instinctive solution applied in absorbing new and often conflicting ideas sometimes lead to controversial ways of juxtaposing form, shape, pattern, volume, etc. Attempts of asserting uniqueness is also marked while inducting consumer oriented mass-produced elements like aluminum door and windows in design. Many of such

idiosyncrasies of the design can be professionally challenged. Yet it should be understood that the design is not derived in a superficial way, but in exercise of all the local strength and creativity in building art and craft. It is an honest expression of collective persona, the most complex and meaningful repository of the culture.

Curiously enough, such architectural activities have been ignored so long as being the examples of local building craft of secondary significance. Professional designers distance themselves from such design endeavour considering those naïve, crude and devoid of creative content. Whereas, the new design methods are exploring possibilities of participatory design process to attain more responsive designs. The community mosques are live examples of such a design approach. Those are viable means of an interactive design process deeply rooted in local society and culture. They may appear naïve and crude but unequivocally creative, yet unpretentious in nature.

An Interactive Design of Timeless Quality

The Bengali Muslim society as a whole is imbued with the notion that "*Allah would build a house in paradise for those who built a Masjid*", and so they profusely contribute to mosque building. There is a visible agreement among people in growth and development of community mosque for passionate socio-religious attainments. It is rooted in the pervasive culture of Bengal. Islam transpired in the region through the ages by the Ascetics, *Dorbesh, Pirs*, Fakirs, Saints coming from distant places assimilating in the local society and culture. The Bengali Muslim society was shaped by diversified and often conflicting cultural, political and religious forces and ideologies percolating from within and outside. The philosophy of life and living continually adjusted according to the changes in socio-political and religious notions. Never did it lose the site of the past nor it wiped out the traditional values but ceaselessly tried to absorb and modify in order to retain the intrinsic social milieu. The community mosque with its exotic formal characteristics is a physical manifestation of this social tapestry. It echoes the dichotomous society where diversity exists in harmony. In other words its architecture ambience is an inspired social experiment expressing an un-synthesized collective vision.

In community mosque several components of a multidimensional equation are reaching for answer. Created through a collective enterprise, pursued with religious idealism and mediating with social subtleties, it sustains an unending endeavor of people. Within its well intentioned and widespread desire, resource constraints, realities of market place, naiveté of techno-professional understanding altogether contributes to the metamorphosis of form and content of community mosque. All ideas synthesized into a malleable architectural form in a dynamic relationship, provoking a dramatized expression of the culture-architecture infusion. It is a promising architectural cult waiting to be rediscovered and reinterpreted.

Finally it is curious to note that the growth pattern of community mosques follows the oldest mosque in Islam, the Prophet's mosque in Madinah. That had a similar modest beginning with a rudimentary shelter and eventually became the largest mosques in the world fostered by royal patronage. The mosque underwent several changes and modifications over the centuries and its development process is also endless. Numerous community mosques in Bangladesh are much humble in scale, yet expresses such an apt desire to expound the local spiritual dedication with equally enriched intent following a similar growth pattern.

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أنماط التصميم والتطور العضوي للمساجد المحلية في بنغلادش

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الدمام، المملكة العربية السعودية

ملخص البحث: يتم بناء مساجد الأحياء عن طريق الجهود المتضافرة للسكان. تبدأ المساجد عادة بداية متواضعة، ولكن بعد تكوين هذه النواة، تتحول مع مرور الزمن إلى مسجد جامع. تنمو تلك المساجد المحلية بطريقة عفوية في شتى أرجاء دولة بنجلاديش جاعلة إياها من بين أكثر دول الإقليم احتواء لنوعيات متعددة من المساجد. تبدأ الورقة بمقدمة عن مساجد الأحياء وتلقي الضوء على كيفية تعاملها مع عدد من الجوانب المهمة. وعن طريق مراجعة تاريخية يتم تتبع تطورها بطريقة مقارنة مع فئات المساجد المختلفة, ثم تشرح نشوء المساجد المحلية ومراحل تطورها عن طريق حالتين دراسيتين. يتبع ذلك طرح صورة عامة عن مساري التصميم والإنشاء. كما تتناول الورقة معضلة ترتبط بموضوع الحكم على القيم المعمارية حيث لا تنسجم مع طرز التصميم المعماري المتبعة. ويتم نشر الأفكار التصميمة عن طريق الاتفاق المشترك بين السكان والتي يتم ترجمتها من خلال اللغة المعمارية المحلية. وهي بمثابة القالب الذي يشكل النمط السائد للمجتمع، وتبعا يخدم كرمز قوي للمجتمع.

أخيرا، يركز البحث على مسار التصميم الذي يتسم بمنهجية تعتمد على المشاركة من قبل السكان، وهي منهجية يتم الاعتماد عليها حاليا لتحقيق حلول تصميمية ناجحة. وتعتبر المساجد المحلية أمثلة ساطعة لهذه المنهجية التي تعكس مسارا تصميميا متداخلا تمتد جذوره في الثقافة المحلية من خلال مسار تصميم حيوي لا نهائي.