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Darasbari Madrasah: An Intelligent Structure of Bengali Sultanate Architecture

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Abstract
Darasbari madrasah is the unique and intelligent architecture that prevails in the northland of the ancient city of GAUR. This is one of the two madrasas in Gaur and Pandua. The other Belbari madrasas is known to have been erected by Sultan Alauddin Husain Shah at Belbari on the Indian side of Gaur-Lakhnawti. The Darasbari one has been clearly identified by the discovery of the foundation plan after excavation of the site and the finding of the inscription within the debris recording its erection. The Sultanate Architecture of Bengal is filled and dotted with mosques. From the individual to the complex setting Sultanate mosque is embedded with its own identity and stylistic integrity. The construction technique, building materials, local influence, formal expression and lastly spatial meaning shows the royally and brilliances. It is however Darasbari madrasah is a remarkable educational institute just near at Darasbari mosque, the madrasah building is stimulating with the planning organization, axiality, spatial enactment and mediaeval structural solution. Analysis of form, space and structural meaning are the focused area in the research paper. A detailed field survey was incorporated to secure the construction and other parameters. The study paper will be analyzing the missing part of the structure including the roofing outline. Detailed drawings have been prepared to execute the whole process of conjectural mapping and regeneration.

Keywords: ancient city, individual and complex setting, course of action, local recourse and materials, Sultanate Architecture, mosque architecture, mediaeval structure, conjectural restoration, intelligent architecture.

1.0 Introduction:

In the mid-seventies Darasbari remove the confusion if there were one or two madrasash built by Sultan Alauddin Husayn Shah (1493-1519) in the city of Gaur-Lakhnawti or that if the mosque discovered by Sayyid Ilahi Baksh in 1876 A.D. was the same or a separate building from the madrasah. An inscription tablet now set upon the enclosure wall of a mosque to the north-west of English Bazaar police station , known to archaeologists and historians from the end years of the nineteenth century, led to the assumption that this inscription recording the erection of a madrasah by Alauddin Husayn Shah(1493-1519) in 907 A.H./1502 A.D. might refer to the vast ruins at Belbari to the northern end of the Chhota Sagar Dighi on the Indian side or that it could refer to the present madrasah, still unknown but current among thoughts that there must have been a madrasah at Darasbari as the name signifies a place-name with the existence of a 'lecture hall,' the meaning of the word Darasbari. The discovery clearly states that there were two madrasahs - one at Belbari and the other at Darasbari, the first one described in the inscription as an 'excellent madrasah' (al-madrasa -al-slmrifa) and the present one as a 'picturesque and magnificent' madrasah (al-madrasa -al-ltrtifn al-jamila) built after two years in 909 A.H. (1504 A.D.), and that the masjid and madrasah at Darasbari were two separate structures. The sighting of the two madrasas are significant from two points, it re-confirms the theory that Alauddin Husayn Shah(1493-1519) was a great patron of art and letters, and that he wanted an even development of the city in the north as well as in the south (fig : map of Gaur). The discovery of an enclosed area by moat to the south of the masjid and madrasah, locally known as Sawdagar Badshar Dhipi and the scattered ruins all around suggest that this part of the city was one of the most thickly populated areas, and certainly much developed. In the enclosed area it is likely that there was a separate residence of the Sultan besides the one at the main citadel now in the Indian side or that it was the palace of the new city built by the Ilyas Shahi Sultan Shamsuddin Yusuf Shah (1474-1481).

1 Husain, ABM. (ed), 1997. Gawr-Lakhnawti, Dhaka

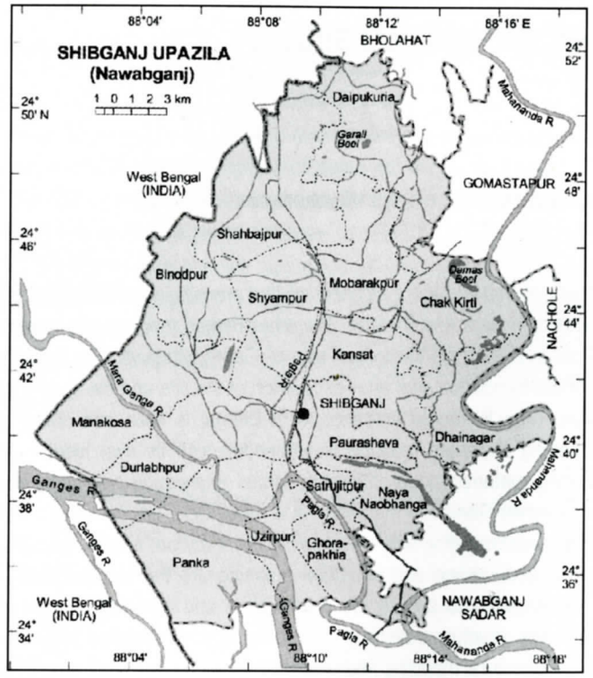

Fig 1: the map is showing the study area and Shibgonj

The Madrasah at Darasbari is situated in mauzalhoshpur, Union Shahbazpur, Thana Shibganj and District N'awabganj. It stands, as has been stated above while locating the Darasbari Masjid, about a kilometre to the south-west of the Kotwali Darwaza and about half a kilometre from the Chhota Sona-Kotwali Road. The Madrasah is situated between two tanks on its east and west, the latter is larger and separates the Madrasah from the Masjid which lies to its west. The discovery was made by the accidental find of the inscription tablet in 1973 A.D. during brick piracy by local men. On information the Department of Archaeology, Government of Director in charge of administration at Dhaka. According to the inscription the Madrasah Bangladesh, took its custody, and the inscription is now lying in the room of the Assistant was erected by Sultan Alauddin Husayn Shah in 909 A.M. (1504 A.D.).

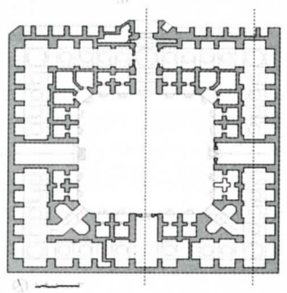

Fig 2: plan of a Khan or caravanserai

Primary data was collected from the site. Detail documentation of technical drawings prepared for the thorough study. A detail analysis and identification was formed to secure the architecture as the vernacular religious structure.

Extensive literature review conducted during the research. Photographs were taken and sketches were prepared to evaluate the formal expression and the spatial pattern and proportion.
There are references in historical literature and in inscriptions about the construction of madrasah by the conquerors and sultans, but the form it took remained uncertain. What we have in the present madrasah-is a number of living rooms around a courtyard -a sort of a Khan (caravanserai) , a slightly larger room in the qibla side for individual or group prayers and a central structure in the middle of the courtyard the purpose of which could only be conjectured. The variation might have been due to the architectural origins of the madrasah of different regions and for the climatic conditions. The earliest of the madrasah as separate institutions from mosques developed in Iran and Central Asia where the character is said to have been influenced by the local architecture with iwan as its ingredient elements and other accessories of Buddhist monastic establishments. Each of the known madrasah of this region either at Nishapur or later at Baghdad was furnished with these features which were almost inevitable as adjuncts.

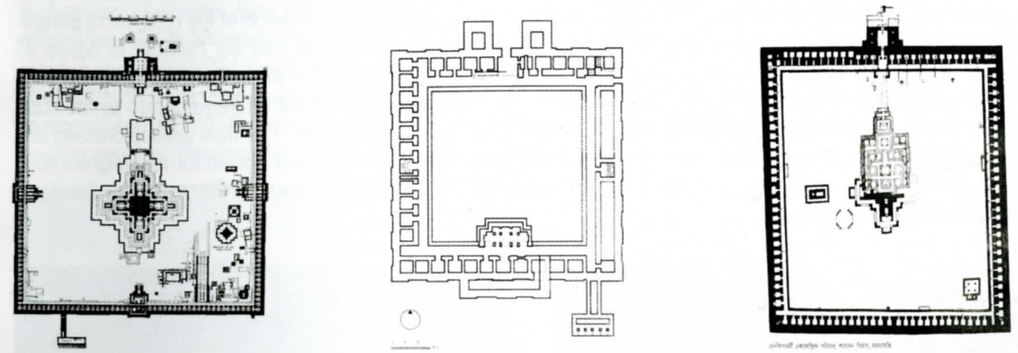

Fig 3: The diagram of Vihara and Paharpur, Sitakot Vihar & Moinamoti Vihara respectively

Instead of planning a single building, indications are that all were separated here in smaller buildings to perform their own individual functions. Hence was the necessity of a separate mosque, but nearby, and other adjuncts inn which because of their secular character lost the reason of existence. That the Bengal madrasah was influenced by local Buddhist monastery architecture as for example in Paharpur or Devaparvata (Mainamati) is perhaps without any doubt. The planning is almost the same - a row of rooms around a paved courtyard. The difference, the existence of the central shrine and other stupas within the courtyard of a monastery was unnecessary because of the existence of a congregational mosque nearby and the transformation of a west-side room for wakt prayer. But the place of the central shrine was filled up by a structure, whose purpose, although remains uncertain is perhaps in the case of the present madrasa was a lecture-room and library(fig 32). A madrasah besides being a dormitory must have lecture rooms and libraries within its structure. In the case of the madrasah at Darasbari the lecture rooms remaining absent in the planning of the side rooms, the central structure must have served the same purpose along with the keeping of books within it. This is a suggestion , and without the discovery of evidence against it, it should be reasonable to accept the building as such. The structure is however, regarded as an ornamental pavilion within the courtyard garden, as was also the case in former days, then the madrasah in question was no more than a lodging house or a caravansarai, one of the characteristics of earlier madrasah which formed a complex by the mosque, the lodging house and other accessories together were named as madrasa.

2.0 Influences in Madrasah:

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2 Khanor caravanserai: most typically a caravanserai was a building with a square or rectangular walled exterior, with a single portal wide enough to permit large or heavily laden beasts such as camels to enter. The courtyard was almost always open to the sky, and the inside walls of the enclosure were outfitted with a number of identical stalls, bays, niches, or chambers to accommodate merchants and their servants, animals, and merchandise.

3 Husain, ABM. (ed), 1997. Gawr-Lakhnawti, Dhaka

Bengal's Sultanate madrasah was obviously influenced by the local climate. The monsoon shapes the whole built-form in such a shape. Courtyard is the strength of the Bengal's rural house. This analogy was adopted by the craftsman of the madrasah. Wide and open vast paved (stone or burnt brocks in square shapes) courtyard partially raised because of the rain and other water clogging, consciously surrounded by the cells or rooms to serve for the security and accommodation. The institution had the notion to keep the architecture in an introvert mode. This gives the uninterrupted environment to the pilgrims. Influence, context and desire fulfilled the madrasah structure in a context specified manner. On the other hand the rooms are directly opened to the paved courtyard mentioning stone door seal to prevent water and other moisture. During monsoon rain without the iwan or the verandah (cloister) diving rain was cut off by the thickness of the huge mason wall. Because the door (wooden) was set at the inner flash of the room so a deep clear cover is managed due to the mason wall's thickness, this is a proposition (fig 30). The roofing style is another phenomenon to justify the influence; the central tiny structure was roofed with curved chouchala (suggestion), as installed on the central liwan of Choto Sona mosque. The four side was posted with turrets having four enhancing toped blind cupola with multi-face. Probably the façade had the bands of corbelling tires and the north-south façade was ornate with perforated jail opening. This curve reed hut roofing style is the interpretation of the rural hut of Bengal. this tiny structure used to function as the lecture hall cum library. The lecture hall had the capacity to house 23 persons/pilgrims. So all the students were not probably allowed to gather in the tiny hall except scheduling. The brick is the major construction material in this structure. The wall, dome, pave, and other infrastructure were built by the burnt brick. Huge tank used to excavate to collect mud as the row materials for the structure. This mud used to dressed and keenly burnt and brick was produced. The huge excavation transformed into dighi, tank served for the neighborhood facilities. So in terms of generating a structure Sultans supported the community like a way. Influence can develop a 'Purpose-Built Structure in Islam'.

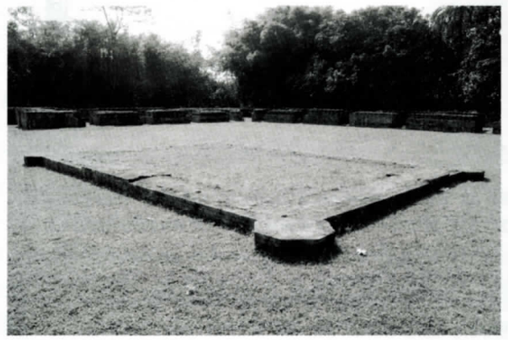


Fig 4: tiny lecture hall is in the middle of courtyard

Fig 5: the madrasah is associated with a waqt mosque

Fig 6: the entry pinnacle with polygonal side is embedded with cladding and ornamental floral motif

Fig 7: courtyard and rooms/cell

4 Chouchala: is the vernacular roofing system, this kind of chala roofing is usual practice in Bengal since delta evolved.

The functional criterion applied to a typology of mosques yields, in addition to separate structures for daily, congregational and community prayers, such other types as memorial, tomb, shrine and cemetery mosque as well as the monastic mosque, and one other type almost equal in importance to the jami the madrasah, or collegiate mosque. The problem in Islam is that nomenclature is never other than confused and different categories overlap. Not only did the madrasah plan ultimately furnish a model for the monastic mosque at an earlier stage of its development may have influenced the plan of the first madrasah. This was in Khurasan whence the new plan was to embark on a carrier of conquest, revolutionizing society and architecture alike.

3.0 Madrasah in the Islamic World:

Education was always closely connected with worship, and from the beginning mosques could be used for both prayer and instruction. The two functions eventually diverged, however, and the result was the collegiate mosque, or madrasa. Its plan, which seems to go back to the houses of Khurasan (fig 08), a historic region that covered parts of modern day Afghanistan, Tajikistan, Iran, Pakistan, Uzbekistan, and Turkmenistan, Khorasan Province of Iran, subsequently divided into: South Khorasan Province, North Khorasan Province, Razavi Khorasan Province, resembles the Iranian mosque layout illustrated in the plate , a rectangular courtyard with an iwan in the center of each side. Teaching takes place in the iwan, and students' lives in the cell arranged along the intermediate walls. For an example the restored Mustansiriyya (fig 10) in Baghdad, an archetypal madrasah without pulpit or minaret (the minaret here belong to another mosque). Designed as a university and not as a place of worship.

Fig 8: isometric view of the madrasah Mustansiriyya in Baghdad

Flg 9: view from the courtyard

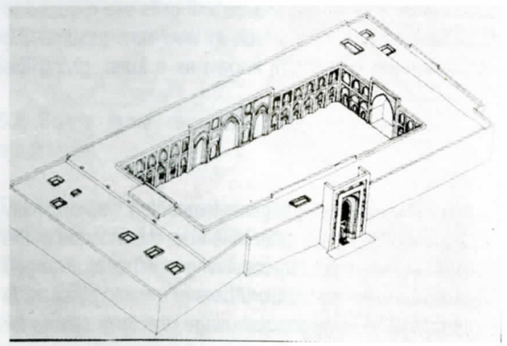


Fig 10: restored view shows the glory of the madrasah

Fig 11: A water channel running through the courtyard (fig 05) connects the madrasah with a caravanserai maintained in perpetuity by the religious endowment

5 Lorentz, J. Historical Dictionary of Iran. 1995 ISBN 0-8108-2994-0

The most sumptuous of Iranian madrasah is the Madrasah-i-Shah at Isfahan, a Royal Foundation dating from 1712-18. This view shows the corner of the larger courtyard devoted to students' accommodation. A water channel running through the courtyard (fig 11) connects the madrasah with a caravanserai maintained in perpetuity by the religious endowment.

A madrasah courtyard can be viewed as a scenario with the façade broken at intervals by the huge axial iwans in which the rhythm of the rows of small iwans culminates, since they describe the same outline but on contrasted scale. The relationship in which they exist to each other is also modified by the very different spatial relationship that obtains between them and such accents as minarets and domes. It is not surprising that the new invention soon eclipsed the less spectacular jami, even on its own ground, the liturgical.

The f st madrasah were simply the houses of the teachers, where after the idea was reproduced on a monumental scale appropriate to the Seljuq Empire whose needs the new installation was intended to serve. The great vizier, Nazim-al-Mulk, who was the real ruler of the empire during he reign of Malik Shah. Khurasan witnessed the birth of a structure combining pragmatism and beauty to a degree seldom seen. The relationship in which they exist to each, other is also modified by the very different spatial relationship that obtains between them and such accents as minarets and domes. It is not surprising that the new invention soon eclipsed the less spectacular 'jami', even on its own ground, the liturgical.

Madrasas built by the Seljuqs of Rum are both simple and multiple. A three-iwan version resulted in the T-plan mosque, which was standard for the early Ottoman period and was superseded only by the centralized, dome-dominated mosque that emerged in Edirne (the Serefeli Mosque) and then triumphed in Istanbul. A gradual evolution is discernible even at the Bursa stage. This sense of power is the first impression to be conveyed by a Seljuq building,
The standard Iranian mosque results from a fusion of the local 'kiosk' mosque, congregational in purpose, with the madrasah, collegiate in purpose; and to the product of this strange misalliance are added minarets and dome. The dome surmounts the kiosk, to which the qibla iwan now forms a vestibule, and its importance is further emphasized by the addition of minarets at the side. Whatever its functional drawbacks when adapted to congregational purposes (visibility of the imam in an Iranian mosque being practically nil), aesthetically the emended madrasa is a vast improvement on the hypostyle jami, which at best never had more articulation than that imparted to it by an axial aisle higher than the aisles to either side.

The Timurid development of this hybrid proved incomparable, producing in Transoxiana, Iran and India buildings that have no peer. The axially-planned Mughal mosque is derivative from the Iranian mosque but differs from it in details. Three, sometimes five, pyramidal arranged domes replace the single dome of Iran; the minarets return to the corners of the building to define the entire composition with an emphatic vertical accent; the two tiers of cells are reduced to single-storey porticoes whose low profiles throw into high relief the centre iwans, which in their turn assume the function of entrance gates; and finally the whole is elevated on a tremendous plinth, known as a kursi, giving the mosque a monumental character unsurpassed elsewhere.

4.0 Madrasah & Contextuality in Bengal: An Evolution

The name 'darasbari' literally is a place for learning which indicates that a madrasa (religious institution) was originally attached to this mosque. A low mound was discovered during excavations about a quarter mile from the mosque in the neighboring village of Ghoshpur. It revealed the foundations of a 169' square madrasa consisting of 40 cells arranged in four wings around a 123' square inner courtyard. Madrasah derived from an Arabic word darsun meaning lesson, is a Muslim educational institution, a centre for studies, teaching, research etc. In its popular usage, the term stands for an institution specializing in the teaching of the Arabic language and Islamic studies. The primarily stage of madrasah is called Maqtab or Nurani Madrasah or Furqania Madrasah ('Furqan' is derived from Al-Furqan). The primary education centres giving lessons on reading and reciting the Holy Quran is known as Darse Quran. Usually the local mosques serve as the centres for primary education for boys and girls of nearby families. The imams and muazzins of local mosques work as teachers.

In Islam, Madrasah education started from the first word of the divine revelation, iqra or 'read'. The first schooling of madrasah education started at the house of Zaid-ibn-Akram in the valley of the Safa Hills , where the Prophet (S.) himself worked as a teacher and some of his early followers became his students. After hijra, a madrasah, namely the Madrasah Ahle-Suffa was established on a site adjacent to the east of Prophet's mosque at Medina. Ubada-ibn-Samit was the teacher there. Abu Huraira Mu'az-ibn Jabal (R.) and Abu Zar Gifari (R.) were among the students. The syllabuses of early madrasahs included the Qur'an, hadith, farayez, primary healthcare, genetic science, and tajwid. In addition, horse riding, war skills, calligraphy and physical exercise were also included. The first phase of madrasah education continued for about 100 years from the day of nubuwat to the end of the rule of the Umayya dynasty.

So Bengali Sultanate madrasah perhaps evolve from the historical references of earlier establishment of Buddhist Vihara, with the alignment of the fresh growth of madrasah and collegiate mosque retaining in Persia. Previously known as the Khurasan style. The influence takes wing next to the Iranian mosque with rectangular courtyard where madrasah was served by the iwans and Cairo mosque with series dome appearance amalgamate the fresher meaning for the south-east Asian Muslim Sultanate madrasah. And finally the ancient Buddhist residential institute or Mahavihara and its sense turned into the traditional architecture for the residential Muslim institution or madrasah. So the combination of the North and South Khurasan madrasah complies a great role for evolving the Bengali Sultanate Madrasah obviously Buddhist rchitecture and the Mahaviharas became the iconic perception for the physical organization as well as for the morphological profile.

5.0 Some facts regarding the organization of the madrasah:

The Darasbari madrasa, according to the inscription , was erected in 909 AH (1504 AD) by Alauddin Husain Shah. However, its existence was revealed only in the seventies of the 20th century when the site was excavated and the plan fully exposed. Its discovery has removed the confusion between the location of the madrasa and that of the Belbari madrasah, erected two years earlier. Belbari is one of the two madrasas known to have been also erected by Sultan Alauddin Hussain Shah at Belbari on the Indian side of Gaur-Lakhnawti.

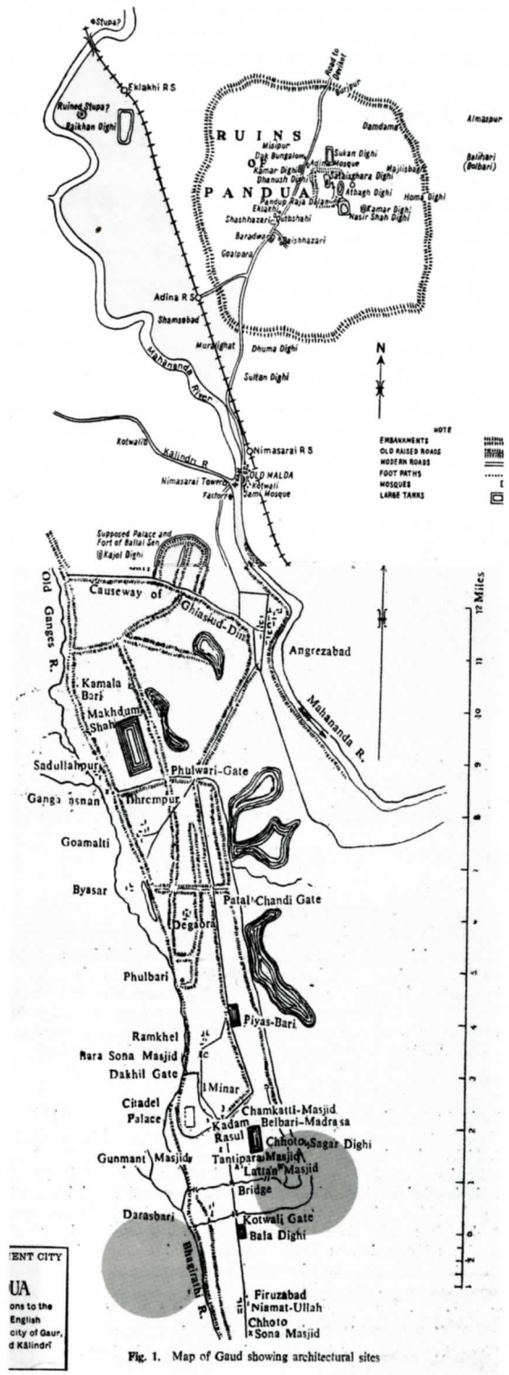


Fig. 1. Map of Gaud showing architectural sites

Fig 12: map of Ancient Hazrat Pandua and Gaur

6 Husain, ABM. (ed), 1997. Gawr-Lakhnawti, Dhaka
7 [ABM Husain]

The Darasbari one has been clearly identified by the discovery of the foundation plan after excavation of the site and the finding of the inscription within the debris recording its erection. But the Belbari madrasa (the origin of the name is uncertain) is yet to be discovered, although a vast quadrangular site at the north of the Chhota Sagar Dighi (fig12), generally known as 'Bhita of Chand Saudagar', has been identified by Cunninghum to be the actual spot of the Madrasa. The nature of the site, together with the inscription removed from the place but now 'set up on the enclosure wall of a mosque north-west of the English Bazar police station', testifies to its existence there. The inscription records the Madrasa as al-madrasa al-sharifa (excellent madrasa) to be distinguished from that at Darasbari which has been described as al-madrasa al-jamila (picturesque and magnificent madrasa). According to the inscription, the Belbari madrasa was erected in 907 AH (1502 AD). Although its site has not yet been cleared up, we can assume that it resembled in plan and construction the Darasbari madrasas the standard type of madrasas known to us from other examples in India and the Middle East.

6.0 Describtion of the Madrasah:

The Darasbari madrasa is square in plan, each side measuring 55.50m. It consists of forty rooms, each measuring 3m a side, constructed around an open courtyard measuring 41.5 m square. The mosque attached to this madrasa is in the middle of the west-side rooms which are a little larger than the others, measuring 4.9m a side enhancing Mehrab orientation. The mosque had three gateways, one each on the middle of the east, north and south sides. There are the ruins of a structure in the middle of the courtyard. Its identity is uncertain but it could be a library-cum-lecture hall or a

Fig 13: series of room alog with the courtyard

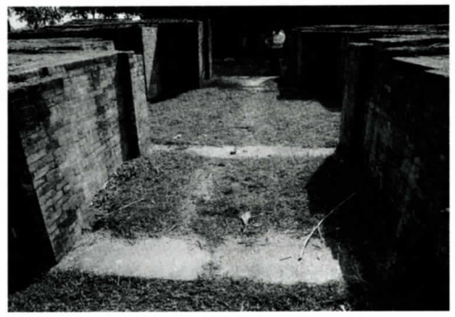


Fig 14: entrance hall area

Fig 15: construction technique and the cladding brick

8 In architecture, a quadrangle is a space or courtyard, usually rectangular (square or oblong) in plan, the sides of which are entirely or mainly occupied by parts of a large building. The word is probably most closely associated with college or university campus architecture, but quadrangles may be found in other buildings such as palaces. Most quadrangles are open air, while a few have been glazed over often to provide additional space for social meeting areas or coffee shops for students.

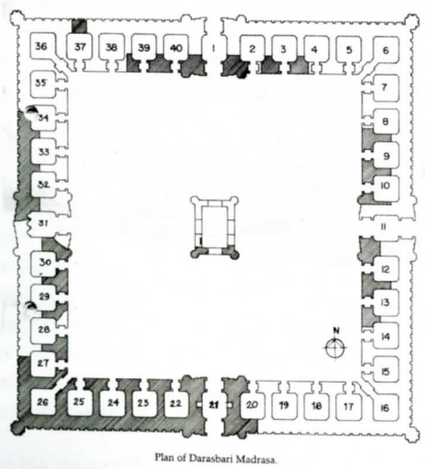
9 Gawr-Lakhnawati : A. B. M. Husain, Asiatic Society of Bangladesh, M. Harunur Rashid (Book, 1997)

(A huge collection of terracotta plaques found during excavation (1973-75) is now preserved in a room of the Guest House, Directorate of Archaeology, near the CHHOTA SONA MOSQUE.)

On the other hand Bengal was experienced in Gaur Darasbari Madrasah a unique structure. So it is obvious that ancient Bengal architecture primitively found a generic pattern for residential academic institutional generic type during the Buddhist period (Shompur vihara, Vasu vihara, Gokul medh, jogoddal, Shalbon vihara). The given examples have similarities to secure the characteristics of a vihara/monastery, such as courtyard, the shrine, ambulatory circulation, long verandah, cell, greater compartment with open terrace, services and entrance hall. So just after the Buddhist viharas in Bengal Sultanate Architecture refreshed with making of remarkable structures. The influence, context, materials, ornamentation, planning organization and most striking manners in the roofing treatment, which encompass the locality and its influences.

6.1 Planning organization of the madrasah

Buddhist people built their Mahavihara in a hidden part as well as in the remote side of the village/town. The intension of making this kind of architecture was to create the concentration on a point by the huge courtyard, introvert attitude and an academic-environment. The planning organization was bold square and coordinal axis diagramed, which compiles four coordinal center entrances, of which north was the main entrance complex. The madrasah has the character of introvert pattern. And observed before that it has the similarities with Buddhist monastery that reflects the residential institutional ground- figure. Same understanding has been done in the case of Darasbari madrasah, square plan configuring 182'X182' feet. The planning organization has the clear cordial axis orientation. Those end points created the three identical entrances including the in-house mosque. In the middle there is the evidence of having a



Plan of Darasbari Madrasa.

Fig 16: Plan of Darasbari Madrasah

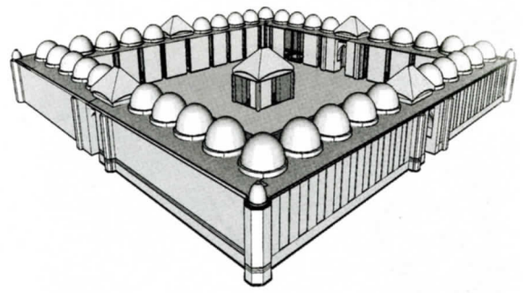


Fig 17: conjectural restoration of the Darasbari Madrasah

6.2 Three coordinal axial entrance and Gateway

It is however that the entire madeasah is associated with three projected gateway. The east side was the main entrance of the complex in a bigger shape. The entrance cubicle is paneled with alcoves. The stone bracketed plinth is

10 Definition of Mahavihara: mahavihara os the residential religious institution during the Buddhist period, mahabihara or the monastery is the identical architecture in Bengal as well as south east Asia.

stepped up from the ground. Especially the gateway has an elevation of having pinnacle on each side. A moderate pointed arch used for the entrance. All cells had a pointed arched opening towards the courtyard. The whole plan is matured with four corners polygonal turrets with terracotta ornamentation.

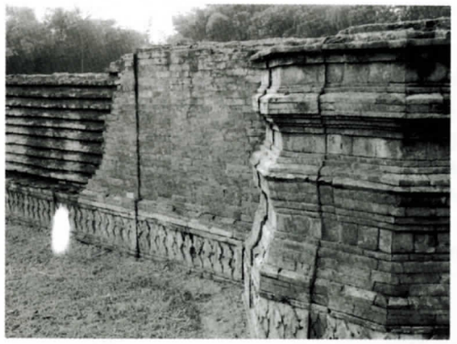


Fig 18: north entrance ruined façade of the madrasah

Fig19: façade is having recesses and offset

6.3 Facades

Today we can understand the structure by seeing, analyzing and compared to other contemporary structures; its plinth level is in a certain height. But it is obvious that the height of the façade of the madrasah was consisting of about 20'-0". The justification of the height could be analyzed from the bottom line of the structure. The plinth is recorded the height about 2'-0", respectively the façade at about 12'-0" and the domes are about 6'-0" height. The section shows the development of the ruin masdrasah. The entire façade is cladding with tiny thick and rectangular exposed brick. The plinth elevation is raised with floral terracotta decorative bands and having some equal plain bands embedded on the façade. The façade is exposed with terracotta brick and mouldings. The horizontal façade dominated with exposed bricks, it seems like once the whole facades were prominent with corner strong turrets, in middle the pinnacles and multi-domes for making roof.

Fig 20: gigantic turret with horizontal corbelling

6.4 Turrets and pinnacles

Sultanate architecture is associated with various elements and constituent. Turret and pinnacle is one of the two elements. Sultani mosque in Gaur is bracketed by turret, the turrets used in the other structure also; the Darasbari madrasah is containing polygonal gigantic turrets. These turrets are cladding with terracotta bricks. Simple tired corbelling are added like the horizontal bands makes each turret decorated. The detail corbelling was done through the linear facing bricks. The moulding was done by the special designed moulding bricks to secure better craftsmanship. Special type of motif of terracotta with floral designed was added at the bottom of the turret's base, the shaft of the turret is banded with horizontal mouldings and at the top probably cupola finial crowned on it, like chotosona mosque

and Bagha Mosque. The pinnacles are well decorated as the same manner as the turrets were finished. Exactly the same design in a miniature form to enhance the ceremonial gates of the three sides.

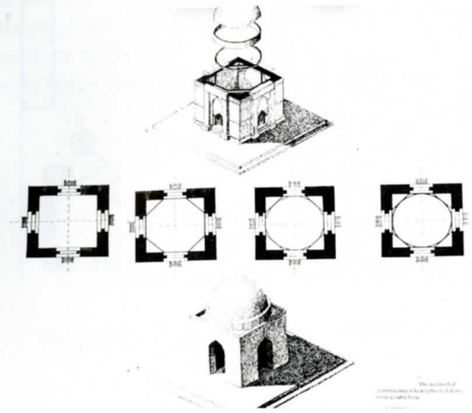


Fig 21: principle diagram showing the construction of dome in a single cube chamber

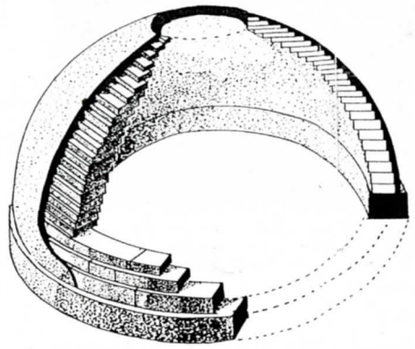


Fig 22: construction of domical roof

6.5 Roofing treatment Course of Construction and over all expression (with suggestion)

Particularly the madrasah's upper structure is completely destroyed. The organization of massive thick walls, the construction technique, climatic situation, craftsmanship, contemporary structures of the period reflect the roofing style in a multi-domed manner. The Sultanate architecture is enriched with its innovative roofing style; stating from the enormous Adina mosque to the other sultanate structure in Gaur (1375-1559 AD. structures in between this time span) the treatment of façade and roofing behavior remain same. However the wall cladding materials derived with innovative black-basalt stone (used in Choto Sona masjid, kushumba mosque) instead of terracotta brick works. The Darasbari madrasah erected on 909AH (1504 AD). The major construction technique of this time span reflects the structural 'outline'. An 'outline' by which we can understand and assume the character of the structure. The justification of the analysis is provided in the pictographic form. During the Sultanate period people of the land especially in Gaur built their rustic hut with curvilinear figural character for the physical reality. This physical reality exists for thousands of years in the Delta of Bengal. So dochala and chouchala became a 'presence in place', the roofing style of the sultanate architecture is bold to its own idiom. Dome construction was better-known to the local mason to carry out the whole construction, that is why in the roofing system of the mosque is dominated and combined with the chouchala/dochala with the association of hemispherical dome.

In the case of Darasbari madrasah hemispherical Multi-dome roofing (repetitive) with drums to be the outline of the roof. Perhaps this hemispherical dome construction is sophisticated and the basic 'structural theme of strength' is the compressive configuration, which always threatened by the seismic impact. In 1897 massive earthquake cause disappearance of the precious roofing. On the other hand, flat roof, shallow vaulted roofing and barrel shape vault were experienced on the massive or moderate mosques during the particular time span. Enormous number of examples were studied to identify the other roofing style prevailed in Bengal. Adina mosque, Gunmant mosque, Dakhil Darwaza and the tomb of Fath Khan are quite dissimilar in roofing.

Fig 23: a view of Qudam-e-rasul and Farah Khan mausoleum

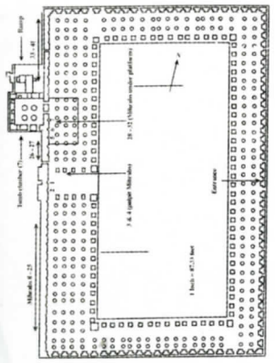


Fig 24: plan of Adina mosque

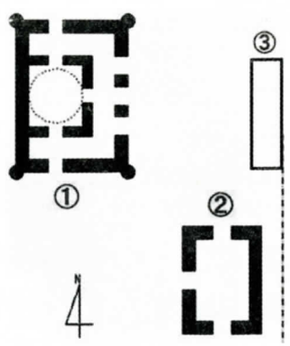
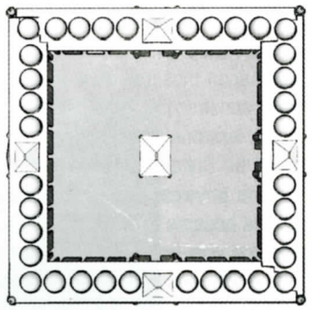


Fig 25: Qudam-e-rasul and premises

The central part of the Adina mosque's liwan was at one time a very impressive pointed vault over the 70' deep. It spanned over a distance of 34 ft and was supported at either end or walls perforated with five arches. The apex of the vault was at height of over 50ft above is now more in ruins to be of discernible architecture. The Gunmant mosque was consisted of a hall 140X60 ft. designed much like the Adina mosque sans the cloister and the central vault. In the case of Dakhil Darwaza the Saluting Gate the central space was topped with barrel vault or the dome. Lastly Fath Khan in Building his own tomb near the Qadam Rasul abandoned all the subtle techniques of his predecessors. Instead he erected an in Toto imitation of the Bengali Hut completed with the curvilinear thatch roof all built in the brick and plaster. His effort too proved to be not in vain. Another exception happened with the Masjidbari mosque (1465-74), in Patuakhali. The fore-room or the iwan was roofed with linear chouchala vault.



Probable roof plan of the DARASBADI madrasah (1504)

Fig 26: Probable roof plan of the DARASBADI madrasah (1504)

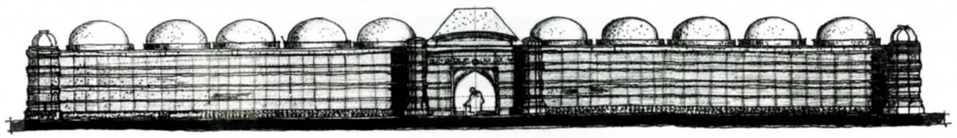


Fig 27: Suggestive Elevation of madrasah, showing the roofing treatment.

Now come up with the case of Darasbari madrasah overselling course of brick in the corners confirm that each wing had nine hemispherical domes supported Bengali corbelled pendentives. The central aisle was a single hall with three arched openings each on the north and south side. There were no oversailing courses of brick here; instead, there are traces of lateral arches, indicating that the central aisle was covered neither by hemisphere domes, nor by a long barrel vault as in the Adina mosque in Pandua of West Bengal. similar lateral arches are seen in the central aisle of chotosona masjid, nearby and similar vaults, with in an addition one to cover the central bay of the verandah.

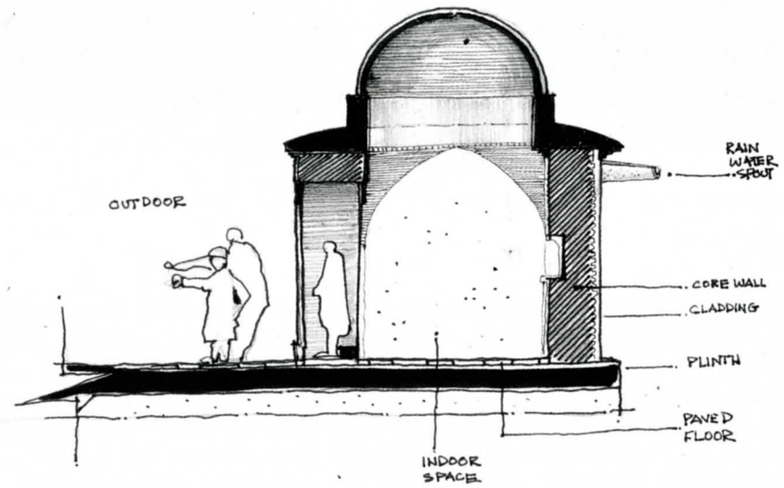


Fig 28: room opens to courtyard

Darasbari madrasah is no exception but having the series of hemispherical domes with drums underneath cubical chamber. A simple and bold constructional approach for the mass roofing.

6.6 Cell or chamber:

The Buddhist Monastery both in Paharpur and other viharas are having the same spatial manifestation, Darasbari madrasah is exception with only except the verandah or the cloisters. The cell or the rooms in Darasbari madrasah is about 144 sqft (approx) which is an average case found in the Buddhist Vihara. So some kind of standards used to implement making those rooms and cellas. The height of the room is a missing data in the madrasah. The highest wall retain, about the ground is 5'-0" (approx). But the study of roofing treatment is a strong reference to clarify the height of the rooms. The length and the width of the room is squarish (almost square), about 12'-0" so the height of the squarish room should have the same dimension as for the length and width. The entire room is having a cubic space volume integrated with the dome height. The dome has a circle at about 12'-0" and the radius is to upward is 6'-0". Then the entire height of the room comes at 18'-0". The room has the panel and recessed works in two walls. The corners are treated with corbelling. The structure does have the DPC course. The room has a single door way, which provided only a single arch way to come out to the courtyard (paved).

Fig 29: a spot section is elaborating the proportion, scale and other parameters of the room and indoor outdoor relationship

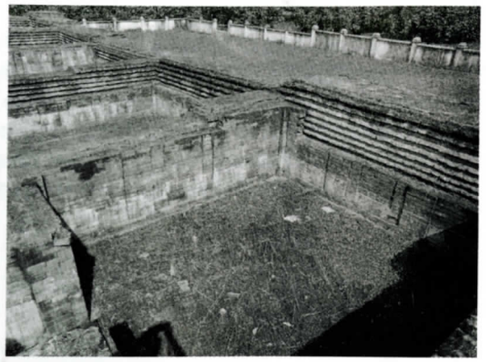


Fig 30: courtyard and the tiny structure

6.7 Courtyard :

Courtyard is the fundamental element and spirit of mind of the people of this region, starts from the domestic structure to the public and religious buildings in many ways courtyard was added and functioned as the space of livingness. Darasbari madrasah is aligned with the courtyard containing a tiny structure at the center. The courtyard (fig 32) is of a gentle proportion with façade surrounded. Probably the paved courtyard was surrounded with screened pointed arched opening. The courtyard is raised off from the ground, 2'-0" approximately was the raised dimension. The Madrasa was surrounded by a 3'-6". thick perimeter wall which ran round the site at a distance of 40'-0". From the structure wall. This boundary wall has been traced at two points in the east for a length of 9'-0" and 4'-0" respectively. Parts of the inner and outer courtyards were found paved with lime plaster finishing. It is likely that the entire courtyards were similarly paved. This is evident from the discovery of an arched tunnel 6.6" broad at bottom and 10" in height below the partition wall of the rooms between rooms 23 and 24. This tunnel in the body of the wall under the floor level must have served to drain out rain water from the courtyard area. The outer pavement was traced on the north, in front of the northern gateway for a length of 24'-0", and near the south-eastern corner tower of about the same length. It is likely that there were ancillary buildings within this outer courtyard. The gateways led to the middle of the west and east tanks.

Fig 31: Assumption and probable elevation of the tiny lecture hall

6.8 Central tiny pavilion -its settings and context

A lecture-room and library as suggested above, also bordered with octagonal turrets at the four corners and occupied the centre of the courtyard. It is completely destroyed and survives only in its scanty foundation courses.

The plan of the structure was rectangular measuring 25'-0" by 18'-0" externally, and its walls were 2'-6" thick. The structure probably had a chauchala roof.

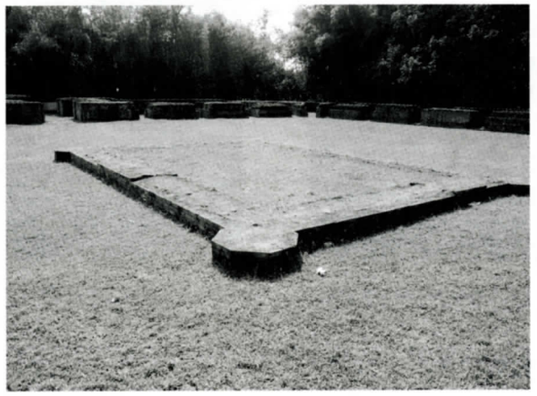


Fig 32: the hall was bracketed by turrets

The central structure must have served the same purpose along with the keeping of books within it. This is a suggestion, and without the discovery of evidence against it, it should be reasonable to accept the building as such. It the structure is, however, regarded as an ornamental pavilion within the courtyard garden. On the other hand another interpretation could be excelled. The vernacular house form is generally associated with courtyard. The courtyard is the place where inhabitants spend most of the time. This quad often seated with 'Dheki Ghor' or granary processing hut. A hut occupied by the women at the center of the courtyard. So the setting is more contexts specific for the elaboration of the tiny structure.

6.9 Spatial characteristics of the madrasah

Space was prolonged and shaped during the ancient time with specific philosophy. The Buddhist used to make their space dramatic with light and shadow. Sometimes they created a vast and grand scaled space through achieving height. Lights was so tracked and focused to the hypostyle hall to illuminate and result comes out with spiritual environment. So the central shrine of the Buddhist Vihara used to have this kind of environment. The hostel room or the cells were the cubic spatial profile with huge courtyard . so the central shrine is in the middle of the courtyard and providing message to the pilgrim.

The Hindu, the House of God is another spiritual house. Where people come to offer to the divinity. the language of the spatial environment partially accommodate the God's housing. Garva-Graha is a single chambered room or the vestibule. Which has a ornamental east side entrance. On which shikara or other stylistic element of architecture crowned. But the single chamber was darken and mysterious. So the devotees can concentrate on their offering. A temple's nucleus is the Garva-Griha and the other parts are engaged with public functions. The Christianity came out with light with colors. They usually gather in a nave space which is having an unusual height. At the same time the glazing used for lighting designed with stained or colored glass. So the spatial quality guide the pilgrims to step towards the God development.

Islam is filled with enlightened mind. So the mosque is associated with series of openings entitled pointed arch. Light is the focused meaning of presence of peace and prosperity of a Muslim. So the same thing happened in the case of the madrasah. The madrasah is filled with vast and frown of light. For the students of the madrasah which were actually meant find the Allah form the nature. So the spatial sequence was simple indeed to focus the learning process by learning the nature and the tiny structure always kept reminding to the musulli (pilgrims) for learn.

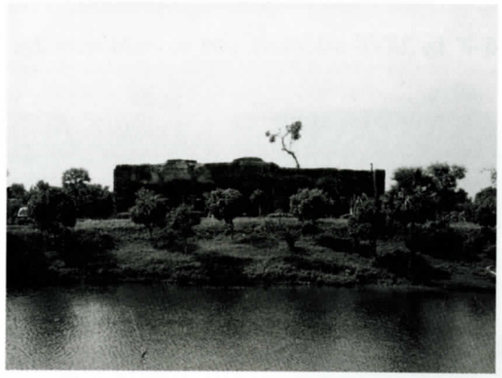


Fig 33: a view from the madrasah towards the Darasbari Mosque

Fig 34: huge Dighi

6.10 Large tanks and spatial sequence

It is obvious that the large tanks were excavated for the betterment of the neighbourhood, as well as for the village people. Purpose built structure has a sustainable meaning that we found during the time of the Sultanate Architecture. The lifted earth used for the construction of the mosque and madrasah. The mud brick was manufactured and then keenly burnt for the enveloping. So this kind of large tank has impact on the micro-climatic issue.

7.0 Bengali Sultanate Madrasah: an overview

The Deltaic region of Bengal is dotted with Buddhist stupa-vihara, Sultanate Mosque and other Local manner with different influence, which is a resourceful development to haul up the traditional and cultural legitimacy of Bengal. Different locality settled with various form of Architecture. The temple of Bengal has genuine and stylistic self-explanatory appearance. The form of the structure of temples mainly derived from the local manners. Individual temple settings in the remote end created the rural skyline identical. The same thing was happening with the mosque of the sultanate and mughal. Both the complex and individual development helped to secure the architecture site specific. Especially for the Sultanate mosque the complex manner was rare but sometime mosque was associated with the tomb or the madrasah (Darasbari). Though the madrasah function was occupied in the mosque but in the case of the Darasbari it is exception. A huge tank separates the mosque from the madeasah. This is the sole architecture that developed for the specialized function during the Sultanate period, Elaborated and dedicated for only academic and institunal aim. Darasbari madrasah is the example for the complex setting of pre-mughal era. The architectural meaning of the structure could be termed with massive public structure with series of domed roofing (specified before) and corner engaged turrets, the entry was once focused with projected façade and arched was with turrets development. The east entry door was little bigger than the other common domes. Entirely the madrasah structure is a shallow height development in respect to the mango garden, high density mango trees were the influential setting of the madrasah. It is noticeable that the bricks were built by the excavated earth of the large dighi or tank. Both the madrasah and the mosque eventually built by the excavated earth made bricks. Darassbari madrasah is the intelligent architecture in Gaur as well as in Bengal. The building could be named as the 'purpose-built structure'. May be the architecture was mandatory for the particular phrase of time. So its characteristics, notion, functional clarities, central tiny lecture cum library hall, coordinal approach, paved courtyard, climatic responsiveness and lastly the roofing treatment had an unparallel development during the particular period of span.

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