Terracotta Mosque of Bengal:  
Making dialogue with Colour and Light

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ABSTRACT
Bangladesh in the land of river. Globally it is known as ‘riverine country’. The land is fertile, new land evolves due to siltation and that is the precious worth to the countrymen. The country enjoys the tropical climatic responses all the year round. Six seasons makes Bengal’s land, air, water and people so diversified and colourful. Colorful with different culture and tradition. Historically Architecture of Bengal is unique in its style and also structures are intelligent. That made sense to understand, our predecessor built the magnificent architecture in this fertile land. The bright sunshine mould our historical remains detailed with prized ornamentation and practice. Sultanate mosque of Bengal is no exception from it. This Royal Sultanate Mosque Architecture has bloomed to full extent with its entity and eternity. We smell the fragrance and grace of these architectures that are renowned globally and named The Bengal style. Clay became the prime construction materials of this region and ultimate product came out with terracotta bricks and decorative external cladding. Terracotta panels and friezes, used as surface decoration on brick buildings, are Bengal’s remarkable contributions to the sum-total of South Asian art. It has been told before that main interest of making detail on facades is the inspiration of having bright sunlight. Clear sunshine which is coming from the hemisphere negotiate and motivate the Sultanate mosque’s marvelous terracotta elaboration with red screen, sometime porous and engraved with modular small thin bricks. The light, texture and colour create the ‘rhythm of spontaneity’. The quality of light, shade and shadow impulses the entire red terracotta mosque with magical ray of luminance both for the interior and exterior surface. Bengal is scattered with varieties type of terracotta mosques and they are identical in patterns. The study will try to focus on the quality of light that plays uncommon feature guided by orientation, morphology and settings of mosques. Colour and texture of superstructure that creates dialogue with the shininess and continue drama with nature. The study will also try to identify the shadow pattern, vocabulary of spatial dimension enhanced by flashing and material incorporation on the pavilion type structure as well as the on the mosque. Finally the paper will try to explain the figure-ground pattern of shade-shadow in different situation of sun-path and the impact of lighting on mankind.

Keywords: riverine country, tropical climatic responses, culture and tradition, intelligent structure, historical remains, ornamentation, terracotta, Royal Sultanate Mosques Architecture, rhythm of spontaneity, the shadow pattern, pavilion type structure, figure-ground pattern, colour and light.
1. INTRODUCTION
Bengal is precious for its beautiful Mosque Architecture. Starting from the Pre-Mughal period the mosque of Bengal achieved inherent style by being belong to the Deltaic locality. Land, water, bright sun shine-climate, vernacular meaning makes the mosques unique. The major construction materials of ancient Bengal was the clay and transformed later burnt or kin burnt bricks. The quality of the soil is compact and still suitable for the bigger construction as well as valid for the rural house form. Explaining sincerely Terracotta bricks and cladding became the ‘climate responsive’ building materials for the region, stated from the Shompur Vihara1-Buddhist Monastery (circa 781-821) at Paharpur (Fig. 1) before Mughal era terracotta plaque and bricks enriched the history of art and architecture of Bengal prolifically. It is however those terracotta plaques of Bengal also elaborated the shiny history of our predecessors as well as our socio-economic consequences. Bengal’s beautiful tiny mosques have no exception from it. The reappearance of the practice of using carved bricks in the ornamentation of the architectural monuments dates from the 14th-15th century, in the early Muslim period. The difficulty of obtaining stones in this deltaic country forced the Muslim builders to depend more and more on bricks (Hasan, P. 2007) and hence in the work of decorating such buildings, the age-old terracotta art was utilized. The terracotta panels adorning the Muslim monuments depict designs of abstract, geometric and floral patterns only. Terracotta panels were extensively used on Muslim buildings; the exquisite floral and geometric carvings replacing the animal and human figures of the earlier times. The Anatolian and central Asian technique of the Turkic world, which had its own age-old tradition of the art, enriched terracotta decorations on Muslim buildings. The Sultanate mosque of Bengal built by the terracotta bricks and cladding plaques essaying the modest and simple life of Muslim Bengal. Especially the color and the detail of terracotta all over the facades becomes the ‘witness canvas’- for connecting past and present. The bright sun-shine falls into the rich ornate terracotta surface and synchronize with light and nature, which have the impact on human mankind. This king of mosque architecture is going be disappeared by the pace. So it is necessary to retain those treasuries of the mosque as it is.

2. OVERVIEW OF TERRACOTTA IN BENGAL ARCHITECTURE
Ornamentation is a characteristic feature of Muslim architecture all over the world (Sayed, 2006). It forms the heart and spirit of Muslim monument by the flashing sunshine. Muslim ornamentation is not only a surface art; it is a structural element as well. Structural element like prndentive, squinches, stalactites, arches, brackets, domes and even the materials of construction itself add to be

Fig.1
Paharpur Buddhist Monastery at Bogura

Fig. 2
Decorative terracotta Mehrab of Darasbari mosque, Gaur.

Fig. 3
Rich ornamental terracotta panel from Rajbibi mosque.

1 Shompur Môhabihar in Paharpur, Naogaon, Bangladesh (25°1’51.83”N, 88°58’37.15”E) is among the best known Buddhist viharas in the Indian Subcontinent and is one of the most important archeological sites in the country. It was designated a UNESCO World Heritage Site in 1985.
aesthetic quality of structures. The Mosque architecture of Bangladesh has a wide variety of surface ornamentations, terracotta plaque, stone carving, decorative plaster, stucco work, glazed tile and Chini tikri. The terracotta panels and friezes in brick buildings are remarkable Bengali contribution to the South Asian or the Indian art.

Absence of stone in this deltaic country forced Muslim builders to depend solely on bricks. The use of clay extended to decoration as is evident from the decorative terracotta plaques. The foremost purpose of these terracotta plaques in the early period was to break the monotony of the austere plain walls.

The art of terracotta was in practice in ancient Bangladesh. It continued from the earliest through early medieval to Islamic medieval and even continued to mid-nineteenth entire to Hindu monuments. Traditionally terracotta plaques depicted stories. During the pre-Islamic phase, the stories were of Hindu and Buddhist gods and goddesses but the plaques also documented day today life of common people. The terracotta panels adorning the Muslim monuments depict abstract, geometric designs and floral patterns only, replacing the animal and Human figures of the earlier times. Since day was available almost everywhere in Bangladesh, it is likely that the terracotta plaques were made at the building site. The mihrab niches itself has copious decorations. The kibla wall is symbolic of therefore, they were the cynosure of the congregation and hence received the most attention in ornamentation and embellishment.

According to the production process (Sayed, 2006), terracotta ornamentation may be classified into two broad groups the group terracotta and the individual terracotta. The group terracotta is a composite formation made up of a number of individual plaques each impressed with a segment of the whole design but constituting the whole when joined together. The constituents of the group have no independent identity of their own, and as such, are meaningless. They are placed either as a vertical panel on the outside walls or on the tympanum of the mihrab or as vertical panels flanking the mihrab or in the curved wall in the mihrab niche. Ornamentation of tympanum is basically floral derived from local tradition and the panel in the outer surface has typical chain and bell motif in the centre and framed with a cusped arched niche bordered by two pillars. Tympanum above the central mihrab niche (Fig. 3.) of the Darasbari mosque and the vertical panel of Rajbibi mosque (Fig. 4.) are the examples of group terracotta. The individual ter-
Terracotta are independent pieces and are used both as part of a total design or in isolation. They may have a single motif or more than one motif. To this type, belongs the lotus or the rosette or the abstract form of a palmate, branch of a plant or the alternate rosette, lozenge and diamond. They are placed usually in the horizontal string course, as freeze or band run all around the outside façade, in the topmost part of the spandrel of an arch, indene horizontal mouldings of cornice or in the turret. Use of terracotta ornamentation started to decline during the hiatus following the Afghan invasion (1538-75) and was totally discarded under the Mughal rule in Bangladesh. The Mughal preferred chun surki mortar as plaster decoration for their buildings. However, it continued to be used, albeit, in a very limited way in mosques till the end of the 17th century. The glory and the strength it had once enjoyed was no more; Terracotta was a dying art. In the 16th century Sri Chaitanya Dev started the Bengali Bhakti movement which marked a revival in Hindu temple building in Bengal. Terracotta motif got anew lease of life and continued to be used in ornamentation of temples. Terracotta broke the barrier of the two religion religions. To some degree terracotta unified the two religions and even reduced the cultural difference between them giving birth to a regional style of ornamental art.

2. OBJECTIVE OF THE STUDY
The objective of the study is aimed to identify several terracotta congregational mosque of Sultanate Bengal. The spatial meaning along with ornamentation of terracotta, its impact on the human-mind, climate, environment and relating the shade-shadow pattern, these are the study matter of the research. How light and colour synchronize with the precious maqsura screen/façade and what are the forces that elaborate the historic terracotta mosque in an ‘alive meta-morphology’. Data and relevant information were collected from the neighbour of the Historic mosque area. Bases on the statement and related data a ‘profile of impression’ on Terracotta Mosque elaborated on the research topic. Another objective of the research is on the spatial impact governed by the climate and bright sun shine weather.

3. METHODOLOGY OF STUDY
General Approach:
Analysis, documentation and identification programme of terracotta mosques, require an extensive physical survey, to assess the existing, impact on human mind and demand of the locality and broader area of influence. Due to the constraints of time, finance and manpower, such an extensive survey was not possible in the study area, however, after a wide-ranging reconnaissance survey, some representative pockets of areas of mosques were selected for further survey, a limited questionnaire survey was also carried out among the local residents of the selected study areas.

Study Process:
\(a\) A detailed literature survey was done to set a framework for the analysis of development.
\(b\) \(i\) the study was done over several neighbourhood mosque of the ancient city of GAUD and KHALIFATABAD to make an inventory of spatial quality and impact caused by the light and colours like:
- Pattern of hierarchy and statement of spaces;
- Pattern of prayer hall façade and fore room (iwans) façade;
- The buildings and its morphology and
ii) Data were gathered on the changing pattern and quality of light and colour cast on the mosque prayer hall.
c) Analysis and identification were done in two stages i.e.
i) Description of the study area with an emphasis on the determinants of terracotta mosques mentioned in b) above.
ii) How people (of the study area) interact with each other and with their surrounding was observed.

4. COLOUR AND LIGHT ON TERRACOTTA MOSQUE: ITS DETAILS AND IMPACT ON HUMAN MIND
It is established before that Bengal had its own structural and architectural stylistic vocabulary. Buddhist and early Hindu architecture had some strong references making spectacular architecture in this deltaic land. Terracotta plaque is one of the earliest references that became matured with the flow of time. And time came for the Sultanate period to interpret in the pavilion like building. It should be noticed that both Hindu and Buddhist structure are more spiritual in spatial value, on the other hand mosque has the quality to allow light and ventilation in a broader manner, as well as a structure is in-filled with light and shininess, like a playful pavilion. The intelligent adaptation of terracotta on the mosque structure with new profile of image which is appreciated and unique. The detail of the terracotta will be analyzed later. Another force on the delta is needed to be mentioned is the clear hemisphere with bright and sunny-light. It is obvious and for sure people of this region experienced in making detail on the structure, strongly that terracotta cladded on the mosque surface reflect the structure’s intelligence.

So light is powerful to build magnificent structure on the Gaur land. Though the mosque is a religious building having the quality of pavilion, it never became monotonous for its terracotta embedded decoration, but evolved as a jewel box in the nature. Sultans built these mosques as a qualification for the society, to show, retain, and to promote Islam in the delta region.

-Hierarchy and statement of spaces in the terracotta mosque:
Morphology of the terracotta mosque in Bengal is simple. The flat land structure makes our terracotta architecture fascinating and symbolizing. The outer façade as well as the western façade is heavily decorated with terracotta and these motifs (terracotta) are well proportionate and context specific to appreciate the social, religious and economical situation of that time. Front screen maintaining the exposed red-tinged surface with series of plaques. The structure achieves the height more then about 27’ (approx: twenty seven feet) and the smoky grey multi-domes are crowned over the decorated west façade, shapes an inviting volume to get into the mosque interior (Fig. 6). This `red-tinged’ decorated façade is purely elaborated with precious terracotta works and creates an illusion in between the vertical and soft-flat green surface. The bright sunshine synchronizes with exposed red-tinged surface and blush the wealth of devout structure.

-Colour and light within the prayer hall facade and fore room (iwan) façade
The interior wall of west façade is highly decorated in a terracotta mosque. The mehrlab are elaborated with symmetric alignment. The center one is comparatively larger and dense with decoration of terracotta plaques. The mehrlab wall is ornate with `palm & parasite’, chain, vase, frame with multi-foiled arch, flag, leaves with curvilinear shapes
and flower like rose and others. These all motif are worked out on burnt bricks as cladding. So the vast interior west wall is engulfed by exposed red-tinged terracotta, while defused light is allowed both from north and south side. The illumines of lighting shows the glory of the red brick buildings façade during morning and late afternoon. The prayer hall/nave is vibrant with the nature and creates synchronisation with indoor and outdoor spatial environment through light and colour. The fore room (iwan) of a terracotta mosque in the transition for both mental and physical preparation (Fig. 7), however the fore room most often time is well off with lighting and reflecting ‘the ray of red’. So this space is nothing but providing human being a sense of enclosure before the prayer hall, as well as to learn from the nature, the enclosure that help to breath for generation.

-The buildings and its morphology
The Sultanate mosque could be small or large, square or oblong, with or without verandahs in front, plain or profusely decorated (Hasan, P. 2007), but they all had in common a remarkable uniformity of design and a set of characteristics that identified them as belonging to the same group. Several features familiar from the Islamic architecture of the central Islamic lands and north India re-emerge here; other are totally new. This new is the local climate and the context. The crisscrossed riverian flat land and monsoon climate shaped the morphology of the mosque in to a unique form. Usually a set character of a Sultanate mosque combined with brick construction, domes and the square domed unit, rectangular unit, curve cornice, engaged corner turrets/towers, mihrabs, doors and other openings, pond/tank (dighi), terracotta decoration, pointed arch, arched façade, corbelled pendentive and inscriptions. These characters are preciously accommodated committing contest and specificity. Indeed light, colour, topography and people are other elements to make a ‘totally new’ architecture in the delta land and they flourish as well like iconic architecture.

5. SHADE-SHADOW PATTERN ON TERRACOTTA SURFACE
Pattern development was derived by the craftsman ship in the locality; the basic practice was carried out for the thousand of years. Pattern of terracotta is the inherent characteristics of the Bengal’s Brick mosque; all terracotta was purposefully-built. The geometry of the mosque and its orientation (Fig. 8.) helps to create the environment with deep cut shade-shadow situation. And that shade shadow makes a pattern with surrounding, interior and facades. A red brick isolated structure has the power to shape order of light and shadow along with brilliant pattern. The mosque is a purpose-built building, the light, coloure, texture and the shade-shadow pattern creates the environ for the pilgrims. The vocabulary of the shade-shadow pattern (Fig. 8) and the illumines of lighting by terracotta red is motivating and ever fleshing for pilgrims.
6. ‘RHYTHM OF SPONTANEITY’- IN THE TERRACOTTA MOSQUE

Nature is bold, basic and ordered. Nature is multiform and having varieties. Bangladesh is tuned with monsoon climate and people observe the colour of nature during those days. Each Bengal’s mosque is the inherent-grown part of our landscape as well as the land form. It seems like the green plain land act as the base of the isolated mosque and on it the exposed red-tinged form evolves from the earth creates the symphony with nature (Fig. 11). The mosque is a very spontaneous space/ pavilion for congregation and gathering. This gathering is positive and helps to form society in a confined mode.

Historic building should have the quality of image making character, its value and relationship in spatial arrangement, nature of lighting and ventilation, sense of enclosure, material and construction and lastly how it act and communicate with human mind in the day light, concerning colour, shade & shadow pattern. It is the part of nature and there are so many spontaneous matters like light and shadow, colour and nature, climate and context and finally details of the facades conducts to be happening by the ways; these all phenomenon are the ‘belonged part’ of a religious building. These all phenomenal things are spontaneous to each other and move with rhythm; the rhythm that creates the canvas of a complete event.

The historical building does have the order and diversity in stylistic attitude, as the monsoon or the tropical season. Sultanate mosque has the same chronology as the nature has, it meant this amalgamated with nature, this architecture basically built by terracotta bricks and morning shining light blesses the entire mosque surface like a ‘box of jewel’ in nature. On the other hand afternoon hemisphere light glow and brightening, the terracotta mosque becomes focused and detailed comes up on the nature, and lastly the dust has the light to wrap-up the soothing and humane environment dark-off before the next bright morning.

Rhythm of Spontaneity in Bengal’s brick mosque is nothing but the combination of living heritage and nature (Fig. 11). Nature is polite and takes care of the antiquity. This relationship is somewhere in between the fantasy and reality. Colour and light is insipirable elements to rethink and to revive the Sultanate terracotta mosque.

7. SUMMERY

*Thick wall, Terracotta Ornamental Series Mehrab and Nature comply the over all spontaneity*

a. **Thick mason wall and lighting sensitivity:**
Scientifically thick brick mason wall helps to retain prayer hall cool. So temperature has the quality to manipulate the lighting condition. Lighting gets the quality of comprehensiveness and has the sensitive impact on human mind. That is why space for the prayer remains restful and spiritual climax.

b. **Locale-hue:**
A terracotta mosque is the place for the people of the region and becomes familiar only when it looks as ‘locale-hue’. ‘Locale-hue’ is nothing but the colour that is experienced by the local people in their everyday life, so mud and clay when turns into terracotta brick the hue or the colour remain almost same. The lime pining thin layer of coating when
execute on the facade that has the quality to rebuild the façade colour just about the same as the clay hue. These results a very native impact evolves on the human mind, building with belongingness. So colour has the quality to make human mind intimate and friendly.

c. Living canvas and terracotta details:
The detail of the terracotta is nothing but elaborating the social lifestyle, household materials, granary, floral motifs and decoration along with trees and other plants development and lastly rose and lotus are very common in terracotta. These series of elaborative terracotta are so seen and contextual for the neighbour. Meanwhile light has the quality to carry out the whole reddish façade in a living canvas for the human being. It is however for the pilgrims to receive the architecture with the quality of colour and light.

d. Climate and craftsmanship:
Climate and craftsmanship justify our local architecture in identical approach; it is not very unusual for the terracotta mosque also. The influences of the indegenious manner mould our Sultanate Architecture in unique shape. The interpretations of local meaning in to the mosque architecture were impressive. Use of *chouchala* vault, *dochala*, curve cornice, turrets, convex roofing plain, and interior reed hut shape vault and series terracotta brilliantly secured the legacy.

e. Intellectual morphology and relationship:
But behind this intellectuality it is noticeable that the bright sunshine, climate and craftsmanship shaped the rhythm of spontaneity for the people. The morphological analysis has the clear understand with light and narrate integrated relationship.

f. Clear hemisphere and formal appearance:
Lastly nature and land form govern the formal appearance along with colour, texture and clear hemisphere to create masterpiece in each remote and localize area. At the same time human being were also attracted by the glory of its luminance and terracotta colour.

g. Witness- canvas:
Other then these all terracotta mosques are attractive and help to build strong connection between past and present.

h. Profile of impression:
Over all appearance of a congregational mosque is massive and tendency to gather and collect huge people. In that case terracotta mosque is no exception to show the purpose built structure.

8. CONCLUSION
So the impact of terracotta mosque facades on the human being is a composite stimulation of viewing, thinking and sense of religious adaptation. The elaboration of craftsmanship gives the literal meaning of grandness and powerful sense of the structure. Viewing this brilliance architecture human mind find rest and stability in to the structure, only because of the splendid terracotta pavilion. Religious meaning in the mosque is traditional, people comes to say their prayer, prayer with lots of hope and expectation, prayer with neighbour and families make the social integration, the color and light provides the those moments and events through it. Colour and light is fact and fabulous situation for the terracotta mosque. This intention has the great role to unified different cases in one story, in one tune.