Introduction

'Regionalism in Architecture' is a concept of architectural design based on such determinants as the Culture, the Climate and the Resources. In the early days of civilisation, architecture was very much regional in character because it evolved purely in response to these regional determinants. The history of civilisation shows that over centuries man developed through trial and error a fine tradition of region and culture-specific architecture which still persists in the rural habitats in different parts of the world. In contrast to that the urban centres, following the technological revolution, came under the onslaught of the so-called 'International Style' with its utter disregard for the socio-cultural and environmental contexts. Consequently urban centres all over the world experienced arbitrary and indiscriminate activities of 'form generation' which tended to perpetuate the erroneous notion that a building as an artifact was an end in itself. In fact architecture is essentially a means to certain ends and it has such far reaching social implications that it may well be conceived as a social phenomenon. In rural Bangladesh, the patterns of pastoral heritage evolved through countless generations and affected the evolution of the traditional house form. The traditional house form in rural Bangladesh, thus, offers a fine example of an essentially culture and region-specific social product.

Location, nature and climate

Bangladesh is located approximately between the 20°N and 27°N latitudes and the 88°E and 93°E longitudes. The landscape is basically a flat delta plain formed by the confluence of two mighty rivers, the Brahmaputra and the Ganges. It is also criss-crossed by numerous other rivers and rivulets with over one-third of the country flooded every year. In such a...
landscape, the abundant waters forced the settlements to be poised on high ground stabilised and enriched with the lush banana plantation, numerous other fruit trees and rich vegetation.

The climate of the region is warm-humid. The Mean Maximum Temperature during the Summer and the Monsoon months starting from March and continuing up to October varies between 29°C and 32°C. The rainy season begins with the advent of the Monsoon in June and lasts until October. More than 70% of the annual rainfall (as much as 2000 millimetres) is received during this period. In the Winter months, from November to February, temperature may occasionally fall below 7°C or 8°C but the Mean Minimum Temperature remains in the region of 12°C to 15°C throughout the Winter months.

**The rural housing scene**

House building in rural Bangladesh is a seasonal event which is usually completed before the onset of the Nor-wester and the arrival of the Monsoon and carried out in periods of low agricultural activities after harvest and rice planting. The act of homesteading starts by creating a ‘land’ or a ‘mound’ for the house which is gradually stabilised and enriched with vegetation. On this stabilised ‘mound’ the first house structure is built. The homestead is then gradually enlarged by adding new structures, creating ponds, tanks, canals and drains. These are the ecological bases of the house and they also play significant roles in ensuring privacy by creating barriers from the next homesteads and thereby generating the loose distributed settlement pattern.

*Rivers and rivulets of Bangladesh.*
Generally speaking, the traditional rural houses in Bangladesh are fairly well adapted to the local culture, environment and resources but nonetheless they also suffer from serious deficiencies. The traditional rural dwellings are usually small, insanitary and suffer from the absence of many of the basic amenities of daily life. Owing to the very low incomes, employment and severe poverty that prevail in the rural areas of Bangladesh, the rural populace has little choice but to continue to stick to the indigenous materials, methods and designs not only because of their low costs but also because of their familiarity and acceptability. A very pertinent question in this context can be whether the indigenous materials, methods and designs have the potential to be improved and adapted to meet the growing needs of tomorrow. This paper discusses this question through a review and analysis of the traditional rural house structure in terms of the form and the materials and the techniques of construction which have evolved to their present state over centuries.

The form and the materials and techniques of construction

A traditional rural 'Bengali House' in its basic form is a cluster of small 'shelters' of 'huts' around a central yard, locally called the 'Uthan'. The huts are usually single roomed, detached and loosely spaced around the central courtyard. Extensive landscaping is done to define the house in the larger landscaping and the surrounding environment. The house interior accommodates a number of different uses side by side.

The house is organised with respect to two broad categories of functions:

(i) The family functions i.e. the functions pertaining to the family itself such as sleeping, cooking and eating.

(ii) The formal functions i.e. the functions pertaining to the family as it reacts with the larger community such as socialising and receiving visitors.
These two functions separate the house into two distinct parts, the ‘inner house’ and the ‘outer house’ respectively. The culturally defined social codes, customs and norms recognises two distinct domains in the house namely, the ‘female domain’ and the ‘male domain’ which correspond with the ‘inner house’ and the ‘outer house’ respectively. Privacy in a house with respect to male and female is maintained in different ways in addition to the physical separation of the two domains. These include behaviour pattern, wilful avoidance and time zoning. Hence the boundary between the male and female zones are flexible and varies according to time, period and occasion. In the traditional houses in rural Bangladesh, distinction between the ‘inner house’ and the ‘outer house’ is also made on the basis of their functional as well as their symbolic values. Spaces with the functional values remain in the inner house and those with symbolic values prevail in the outer house. Religious beliefs seem to exert decisive influence in certain aspects of the house form. Thus Muslim house structures are normally laid out following the cardinal directions so that it is convenient to establish the direction of the Qibla (i.e. the ‘Kaaba’) for prayer. The direction of the Qibla also determines the orientation of the sleeping mats and the toilets which in turn affects the organisation of the spaces and their use. Unlike the Hindus, the Muslims do not identify particular places of ritual purity within the house or the homestead. The ‘shelters’ or ‘huts’ and the ‘open spaces’ or ‘yards’ receive varying degrees of importance depending on the hierarchy of their use only.

The role of climate in shaping the traditional house form in rural Bangladesh appears to be less deterministic compared to such other factors as the culture, the available resources, the social codes, customs and norms. The introvert layout of the house around the inner court might appear not to be suitable in the warm-humid climate and yet this is the pattern that has evolved through time in this region. The adverse effects of the sun on the huts with wrong orientations are considerably reduced because of the low height of the house structures, their projected roof overhangs and the availability of abundant vegetation for shading the house structures. The porosity of the rural house structures, the inherent coolness of the shaded mud walls and the insulating capacity of the thatch roof contribute to the excellent thermal character.

The construction of the rural house structure may be discussed with reference to the major elements namely, the plinth, the walls and the roof. The plinth is almost always made of rammed earth on which the superstructure of the house will stand. Except in the case of mud houses where the walls are built over the foundation trenches, the plinth is the first element of

Climatic design characteristics Porousness of the structure facilitates air movement, projected roof overhangs offering sun and rain protection, inherent coolness of the shaded mud walls, excellent thermal character of the thatch roof.
the house structure that is to be built. The walls of the traditional house can be of two basic types, the mud walls and the bamboo and reed walls. Mud walls are thick and monolithic while the bamboo or reed walls are formed in panels. These panels are fastened to the structural framework made of quality bamboo poles or timber logs erected vertically on the periphery of the plinth and tied together with horizontal cross members. The roof structure is framed in bamboo, the members being tied together with ropes or G.I. wires forming close rectangular or square grids. The roof slopes at an angle, usually on each of the four sides to facilitate the flow of rainwater and reduce the risk of a leaking roof. In some cases, to reduce the cost of roofing, the roof is sloped only in two directions along the shorter span. The roof frame is then covered on the surface with a thick layer of thatch woven carefully and skillfully completing the basic form of the rural house structure in Bangladesh; a structure that has all the ingredients of a regional architecture.

Discussion and Conclusion

The review and analysis so far of the design, materials and methods of construction of the traditional rural house form in Bangladesh clearly establishes its regional character. The indigenous materials, methods and designs have the potential for improvements to meet the growing needs and it seems that these offer the only viable choice for development of the rural habitats of Bangladesh from the viewpoints of both the cost and the performance considerations. Two examples from the study of Rural Housing in Bangladesh by M.P. Chisholm of Newcastle-upon-Tyne University U.K who spent about two years in Bangladesh in 1976-77-78 may provide an insight into the appropriateness and potential of the traditional rural house structure. On the cost aspect of the traditional house structure, Chisholm writes that the cost of an American camping tent (4.8 metres x 4.8 metres Stg £160/1978) used in the 1970 cyclone affected southern Bangladesh was the equivalent in cash terms of a bamboo thatched house together with two cows and a plough in Bangladesh. On the performance aspect, Chisholm writes that in Kamalgang in the district of Sylhet, two Dutch volunteers, Dirk and Nel Frans and their newly arrived baby preferred to live in a traditional thatch house after a few modifications such as a concrete plinth and security mesh on windows and they had much better night’s sleep and consequently they were in a much better physical condition than the rest of the team living in the nearby masonry (pucca) houses. The actual cost of their traditional house even with modifications approximately equalled the cost of the constructional improvements to one pucca house. From the review so far it has also been seen that the geometric ‘form’ or ‘design’ of the traditional rural Bengali house is introvert in layout and consists of small detached ‘huts’ around a courtyard which exists as an extension of the indoor living areas of the huts which are characteristically inadequate. The courtyard not only maintains a direct and convenient functional relationship with the huts around but it also provides for seclusion of the women folk from the passers-by and male visitors. Further it responds well to a number of activities such as outdoor cooking, paddy thrashing and grain drying, which are characteristically common in the life of an agricultural community in rural Bangladesh. These functions can be performed conveniently and with a sense of security in a protective courtyard layout. These advantages were considered more important than the disadvantages of poor orientations and the irregular and haphazard growth of the rural settlement pattern induced largely by the courtyard layout pattern. It is interesting, however, to note that many of the conditions dictating a courtyard form for the traditional rural house in Bangladesh are in the process of change. The rural women folks, for example, are gradually coming out of their seclusion through such programmes as mass literacy, family planning and women’s cooperatives. Agriculture is being
organised on a cooperative basis eliminating the need of a courtyard for every house for paddy thrashing and grain drying. Moreover, paddy thrashing is now done using locally made small mechanical devices which do not require large spaces. The traditional joint and extended families are also being transformed into nucleated families. All these are perhaps indicative of the possibility that the traditional courtyard layout may eventually be transformed in favour of a more appropriate layout, maybe a linear one, which will not only conform better to the socio-climatic requirements but which will also ensure convenient and efficient layout of utility services and better utilisation of land. The geometry of the house structure may remain basically unchanged although the size may be increased and the interior may be sub-divided into more than one space and utilities added.

It is unfortunate that architecture, as we know it, does not serve the vast majority of the populace who live in the rural areas. This is a common concern not only in Bangladesh but also in most developing countries with vast rural populations. Various ideas have been discussed from time to time for extending the role of the architect over the rural settlements. It is now widely believed that formal architectural education, as we know it, cannot be appropriate for the rural scene, even if we supplement the present curricula with enough of a rural bias, for the simple reason that such architects cannot be attracted to the rural scene because of the lack of economic opportunities commensurate with their expectations and professional standing. A viable alternative is perhaps to create a different type of architect to be drawn from the rural scene and educated and trained exclusively in the rural contexts. The required investments for such an education and training can be much less and consequently the level of expectation of economic returns from the practice of the profession can also be much less. It is believed by many that such ‘para-architects’ or whatever they are called, can make tremendous contributions towards the social and environmental improvement of Third World countries.

If ‘Regionalism in Architecture’ has to be more than a mere slogan, then architecture, in the Third World countries in particular, must concern the overwhelming majority of the populace who live in the rural areas.

All photographs courtesy of Mohammed A. Muktadir