প্রতিবেশ Protibesh

ENVIRONMENT

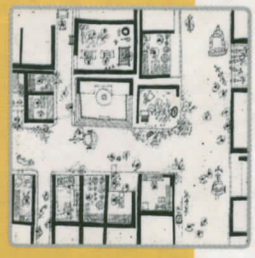
Journal of the Department of Architecture, BUET

JULY 2008

Volume 12 No. 2

History

Urban Planning



Housing

Conservation

Bangladesh University of Engineering and Technology, Dhaka

Protibesh
ENVIRONMENT

Journal of the Department of Architecture, BUET

Protibesh is a peer-reviewed research journal published by Department of Architecture, Bangladesh University of Engineering and Technology, in January and July every year. Protibesh, meaning environment, aims to provide a forum for publication of original research and scholarship, for better understanding of the different aspects of and intervention in environment of urban and rural settlements. Protibesh is committed to act as a catalyst to bridge theory, research and practice in the broad field of Architecture.

ISSN

1812-8068

Publisher

The Publishing-cum-information wing
Directorate of Advisory, Extension and Research Services.
Bangladesh University of Engineering and Technology, Dhaka.
www.buet.ac.bd

Printer

Usha Publishers
127/1, Lalbagh Road, Dhaka.
Phone: 8610581 0152348768

Protibesh © BUET
July 2008, Volume 12 Issue 2

Contents

REVIEWERS

Protibesh © BUET
July 2008, Volume 12 Issue 2
pp. 3-4

Editorial

Protibesh, the research journal of the Department of Architecture of BUET, accepts the papers focusing Architecture and allied disciplines and presenting ongoing research work in home and abroad. The Editorial board tries to transmit the invitation for papers to a wide range of researchers and professionals. Now a days Protibesh is being recognized by the young researchers as a prosperous outlet to dissipate their own contributions. From the board of the Editors we have tied a big group of scholars and academicians with us as reviewers. The quality of the papers reflects their great contributions to Protibesh. This has established a trend of scholarly writing from the platform of Protibesh and we are thankful to our authors as well as to the reviewers. Moreover, the members of the Board and the other members of the Publication Committee are taking the stress to maintain the quality and timing of this publication in spite of many limitations. We are grateful to BUET authority for their continuous support to this great venture.

This issue of Protibesh consists of six papers. Among these two papers focus on Conservation issues, one on Environmental research, one on Housing and other two on Planning aspects. The first paper tilted "Preventive Maintenance Strategy of Bara Katra," by Mohammad Sazzad Hossain, discusses on some steps of architectural conservation necessary for a historical old structure of Dhaka. The paper mainly focuses on a maintenance plan aiming the sustainable existence of this dilapidated structure. The paper describes the social, historical as well as physical aspects of the outstanding structures of Bara Katra. After a thorough first hand observation of the existing buildings, the author tries to asses the required strategy for the conservation of the project in the light of local environmental, socio-political and economic perspective. Finally it takes the challenge to set a specific strategy for preventive maintenance of Bara Katra. Although the suggestions are more or less common in nature, the wealth of this paper is in its systematic approach for conservation study. It also took a practical way which is very much regional in type and practical in style. The originality of this paper, particularly, is the study and analytic part, which is worthy of any sort of real attempt for conservation of this historic structure in Dhaka.

The second paper titled "Observations on Performance of Commonly Used Shading Devices in Tall Office Buildings of Dhaka", by Anisur Rahman and Dr. Khandakar Shabbir Ahmed, explains a simulated study on the shading devices which are popularly used in the climatic context of Dhaka. The paper is a part of M.Arch research and has a great value for its originality. It has initially characterised the type of shading required for the tropical climate of Dhaka, next it has described the popular solutions available in reality. Finally it made a performance evaluation of six types of typical solutions with computer aided simulation programme: ECOTECT. The results show that depth and spacing of overhangs as well as depth, spacing and angle of vertical fins have significant effect on shading performance. Authors suggest that the modification of these parameters may make the shading devices effective in different orientations at the desired periods.

The third paper published here is titled as "Community Participation in Urban Heritage Conservation" by Dr. Mahbubur Rahman and Debashish Nayak. The paper extends discussion on conservation theory as well as the practices. However, the focus is on Community Participation as the conservation strategy, which as development tool is relatively recent and it is increasingly gaining grounds. The paper actually takes the opportunity to report the experiences gathered in Ahmedabad, India. It also cited some experiences in Dhaka. The reviewers took it as an interesting topic much like a case study on an experience. It has finally come up with certain strategies through active participation of the stakeholders. Different levels of participation were also discussed in due course. Among those 'Heritage walk' is the most important one which could be a routine work to ensure conservation of historic cities with direct participation of the community themselves.

The fourth paper in the list is "Living beyond the Bound: A Human Rights Perspective towards Habitat of a Refugee Camp" by Yasmin Ara. The author took the advantage to elaborate her first hand observations in the light of existing guideline of human rights. The style followed here is somewhat informal. Although similar descriptions have already found in the presently published writings, this paper seems unique in its idea which took a definite viewpoint here to assess the living condition of the refugees in Dhaka. It has in depth observation of the physical as well as social aspects of living in the Geneva camp. However, the issue discussed here has attained certain rigor with the analysis of the present situation in relation to different treaties and covenants of human rights and housing rights. It is felt that time has come to take necessary steps to strengthen the destitute community living in Dhaka where humanity is being stressed out.

Protibesh tried to welcome the planning issues as architecture and planning are interrelated. The last two papers focus on planning strategy for 'School Safety' and 'Sustainability of Development'. In this series the fifth paper is titled as "Planning for School Safety: A Case Study of Earthquake affected Bagh Town in Azad Jammun and Kashmir, Pakistan" by Prof. Dr. S. Shabih-ul-Hassan Zaidi. Recurrent issues like earthquake has now recognised as a part of planning cities and rural areas. This paper is unique in its observation as the author took the opportunity to describe his sole experiences after the earthquake in Pakistan in 2005. The severity of earthquake is illustrated here. The richness lies in the description with statistics as well as in writing. The author tried to summerize the strategies required to tackle the situations like Jammun and Kashmir. This year Pakistan again experienced major earthquake. This paper seems relevant to the planning prospects in this region.

The last paper is titled as "Sustainability of Development Trends in the Urban Fringe: A Case Study on North-Eastern Dhaka City" by Md. Shakil Bin Kashem and Dr. Roxana Hafiz. This paper focuses on a mechanism to appraise sustainability using Multi-Criteria Analysis (MCA) at the local scale of a city. Environmental, social and economical sustainability has been taken as Primary Tier Criteria of MCA. It was revealed through the study that the city is in a negative state of sustainability due to the high negative state of its environmental sustainability situation. Unplanned urban expansion promoted by wide scale of land filling and deforestation is causing the major damages to its environment. Through analysis of the results, this study proposed some actions that can promote sustainability in the whole study area. The study addressed the issue of sustainable development or sustainability is generating wider interest among the scholars and policy makers of both developed and developing countries.

This issue of Protibesh also published reports on two Events that took place in BUET organized by the Department of Architecture. First it describes Berger Awards Programme for Students of Architecture, BUET. Here the programme introduced by Berger, a leading paint company, is briefly described. It also includes the high lights of the award cycle 2006-2007, which was the first year of this programme. It mentioned the award winning projects and the key persons who led the programme in general. Secondly, Protibesh focuses on the KU Leuven - BUET Academic Exchange Programme, held in the Department of Architecture, BUET on 18 - 21 February 2008. 25 students of Masters Course from Katholieke Universetiet Leuven, Belgium and Wageningen University, Netherlands came to BUET as part of their academic programme. The Department of Architecture held a three day student - teacher interaction programme focused on Urban Design. This programme had different parts which are briefly described in this issue through the synopsis of the papers presented on the occasion. The pictures also show the events that took place. The department of Architecture always tries to hold such a level of academic events which ultimately boost up the academic environment as a whole.

Editors: Dr. Farida Nilufar, Dr. Nasreen Hossain and Mahmudul Anwar Riyaad
Department of Architecture, BUET, Dhaka-1000, Bangladesh

Protibesh © BUET
July 2008, Volume 12 Issue 2
pp. 5-14

Preventive Maintenance Strategy of Bara Katra

Mohammad Sazzad Hossain
Architect,
3/2, Block-F, Lalmatia, Dhaka-1207, Dhaka, Bangladesh
E-mail: Design_theme@yahoo.com

Abstract
The paper proposes architectural conservation of historic *Bara Katra* in old *Dhaka* and a maintenance plan for its sustainable existence in the present urban landscape. Bara Katra is one of the two significant and similar *Mughal* structures, used as Caravan Sari in *Mughal Dhaka*. The artifact is in a dilapidated condition. The main objective of study of this paper is to ensure proper restoration for revitalization of this *Mughal* heritage and to protect the monument from decay and damages. The paper will highlight on historical values, architectural documentation, damage survey, causes of decay and form of submission. Finally it will focus on the degree of interventions and a maintenance plan within an institutional framework. Preventive maintenance strategy is recommended as an intermediate guideline to sustain the *patina of age* and aesthetic quality of the heritage building. A contextual action plan is recommended within a legal framework to allow community participation to manage transformation and prolong the life of the heritage-building.

Key words: Preservation, Restoration, Adaptive-reuse, Maintenance plan.

1. Preamble

Bara katra is situated at the southern part of *Chawk*[1], on the bank of the river *Buriganga*. It is a magnificent edifice of grand scale and one of the most important historic remains of *Mughal* period in old Dhaka, a city which is more than 400 years old. The heritage building is enlisted as protected monument by the Department of Archaeology, Bangladesh. The foundation of the building was laid in1644 AD by *Abul Qasim*, Chief Architect of the *Mughal* prince *Shah Suja* (Dani, 1962).It was located strategically to be used as caravan sari to promote trade and commerce through the river with the city. The study is carried out as a desk-top research including review of literature and through an observation of the historic area. The architectural drawings & photographs in this paper are valuable documents of the historic building. The paper may serve as useful initial report for Architectural conservation of the artifact as it includes the recent condition of the structure, site & surroundings. Moreover the suggested maintenance plan may act as a useful guideline to protect the building from decay and damages. The objectives of the study are as follows:

- To suggest possible ways to recover the whole property for conservation,
- To prevent decay and manage transformation of the existing ruin and to propose restoration on the basis of authentic documents, thereby to prolong the life of the cultural heritage,
- To keep it in use and to integrate the artifact with the urban fabric ,
- To set a maintenance plan for sustainable existence of the heritage building, and
- To use cultural heritage as a means of economic development.

As significant remains of *Mughal* period the artifact is considered for its historic values. It was a landmark for the old city when approached from the river. The people of *Dhaka* has got great respect for the historic structures. The caravan sari is recognized as a magnificent piece of *Mughal* architecture in the region. The heritage building can be used as a cultural resource to revitalize the economic base through promotion of tourism at the area. The artifact has got use value and it can play a significant role as an important urban element through proper integration within the existing urban tissue. One of the two written inscriptions found in *BaraKatra*, declares that the foundation was laid by its builder *Abul Qasim* in 1644 A.D.

1.1 Social Dimensions

The Prince, Shah Suja endowed the property *(Waqf)* in 1646A.D for the comfort of the way farers to the city, the 22 rooms of the buildings were declared for shops to meet the maintenance expenses of the property with the income from those shops (Taifoor, 1956). In 1765 *Nayab-e-Nazim* of Dhaka used the building as his residence. *Charles D'oyele (D'oyele,* 1822) mentioned that local poor people had occupied the building. One of the major constraints to conserve the building is the complex landownership pattern. The south and west wings are used as mosque and *madrasa*, named *Jamiatul Husainia Ashraful Ulum Madrasa*. The trustee board, appointed by the Department for *Waqf*

estates looks after the mosque and *madrasa*. Central enclosed space is filled with informal settlements. The rest of the ruin is occupied by different parties for different use as shops, residences and warehouses. The *dispersed form of submission*[2] leads to a lack of commitment to invest in proper maintenance. Department of Archaeology, Dhaka City Corporation and *Rajuk play* important role besides the trustee board and other actors.

1.2 Physical Dimensions

According to Rennel's Map (1779) "Bara Katra" enclosed a quadrangular courtyard with structures at its four sides. There were two gateways at the north and the south. The southern part was 223' long along the bank of river Buriganga. At the Middle of the riverfront, there was a three storied entrance and series of two storied structures at both of its sides, ended with two octagonal turrets. D'oyele (1822) described the building as magnificent in good shape. Dani (1962) and Taifoor (1956) described the structure widely. The following descriptions can be drawn from these authors:

The southern wing of the building is planned in a grand scale and is embellished with all the features of the imperial Mughal style. It consists of a strong built three-storied gateway in the middle of the arm, the remaining portion being two storied and bounded by prominently projected octagonal turret. A tall alcove rising up to the second story reduces the mass of this projection. Its underside is decorated with plastered network. At the angle can be seen slender tall minarets and the wall surface in between is relieved with plastered panels showing a variety of forms including four-centered, cusped, horse-shoe and flat arches. The windows of the third storey open above the apex of the alcove. Under the alcove opens the main arched doorway which leads into the guardroom, and further we pass through two successive archways into an octagonal domed hall, the ceiling of which is neatly plastered and bears various net-patterned and foliaged designs. Beyond this hall the archways repeat themselves and we are brought to the inner side of the Katra. On this inner side steps are provided that lead to the second storey. The two storied structure resolves, on either side of the gate, into a row of five barrel vaulted room on the ground floor and the living rooms with a continuous verandah on the upper. Similarly the upper floors of the gateways are furnished with living rooms. The different storeys are demarcated by blind merlons carved in plaster. The corner turret is in three stages. They are hollow and can be approached from the subsidiary structures. The space within the turret is quite sufficient to accommodate a person. (Dani, 1962) Originally the approach was from the riverside and hence the riverfront is most dominant part of the building.

The dense settlements around the artifact have resulted in visual obstacle. Inadequate space around the structure restricts proper lighting and ventilation. The narrow road network doesnot permit vehicular access. Due to unplanned development and high land value proper urban space for public gathering could not be provided. The narrow street known as "Bara Katra Lane" has run through the gateway, created by the remaining ruins. The open to sky space enclosed by the structure is mostly occupied by newly built structures that are used as residence, shops and warehouses. The riverbank has now moved away which was once very close to the structure. Moreover land filling in the area has set the ground level above the plinth of the existing ruin. Except the southern wings with gateway all other part of Bara Katra has almost disappeared. There are traces of walls and foundations of east and west wings standing with the newly built residences at east and madrasa at west side. The wings with entrance on north side have completely disappeared but the southern wings still exist as ruin with some alternation as a ruin. Addition of newly built toilet and ablution spaces on the terrace of first floor has been made. Some tin shaded structures are also added on the terrace of second floor. Though the building has small openings of traditional Mughal style ample natural lighting was ensured by increasing the number of windows. In the ground floor and staircases most of the openings are sealed that prevents the access of natural light.

1.3 Construction Technique and Material

Some of the Mughal structures around the site were studied to understand the construction method of Bara Katra. Local people and technical people were also consulted towards this end.

Soil Condition: The upper layer of the soil up to 10' to 12' deep is hard but the second layer is not as hard as the upper layer. The next two layers of sand and clay alter number of times but hard rock is found at 400' depth.

Foundation: It has a masonry foundation that is wide and deep enough. These structures of Mughal period were structurally over designed that ensure structural safety.

Materials: Small bricks from local clay were used in the Mughal buildings of this area. Shell lime mixed with brick dust in 1:1 ratio is to get used as mortar. Mixture of coarse brick dust and shell lime in 1:1 ratio was spread over the uneven

brick surface and rammed by bamboo sticks then lime water was dispersed over this 1.5" to 2" thick layer. Mixture of sand and fine brick dust in 1:9 ratios were mixed with lime in 1:1 ratio for another 1/8" thick layer. Lime wash: Shell were burned and meshed into powder and kept wet to get paste that was strained and mixed with blue pigment to achieve bright white color. But an unidentified material was also used to achieve adhesive quality. This ultimate product was used over the plaster inside instead of color.

Floor: Mixture of brick chips, brick dust and lime in 6:3:1 ratio was laid over the clay tiles set on the rafter (2"x2"with 10" gap between two rafters) placed over wooden beams then it was rammed. The finishing layer was laid over the first layer with addition of garlic, molasses, tamarinds, and betel nut with the mixture to make it damp proof. The finishing layer was well rammed to make it highly watertight (Hossain, 2006, b).

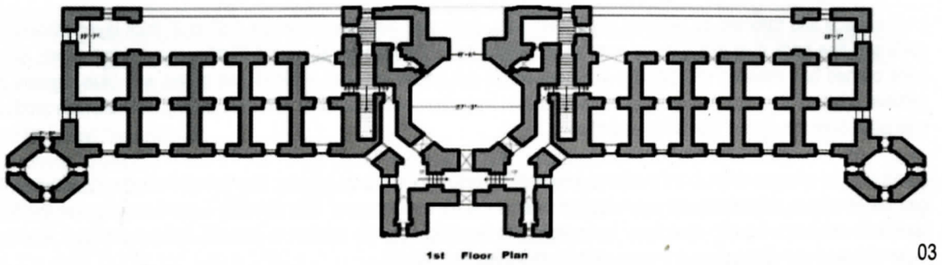
2. Documentation

Continuous documentation is an urgent issue for architectural conservation of Bara Katra as literatures, early photographs and other recordings are not available. Moreover there is no record of complete architectural survey that provides detail drawings of the north wing. Rennel's map, incomplete survey-drawings (1947) by the Department of Archaeology, historic descriptions, Charles Doyele's sketches on Dhaka and some other photographs of 50s' and 60s' can be taken as source of information .

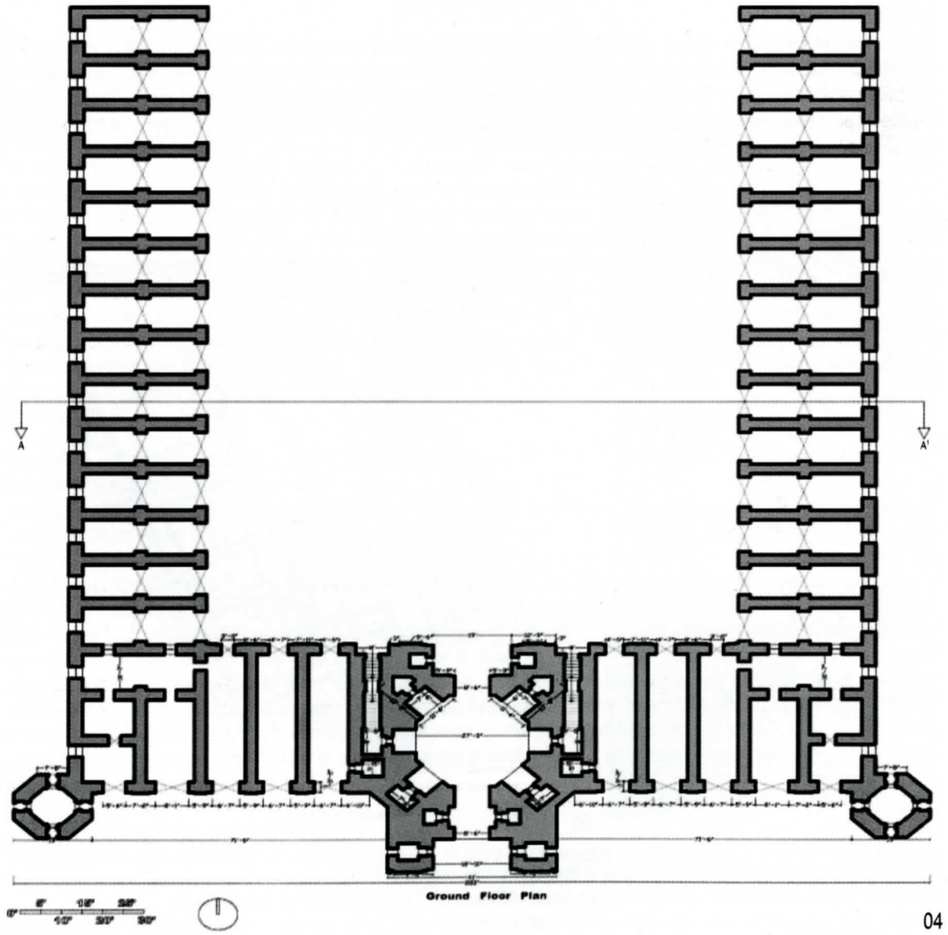
01

02

Figure 01: Inscriptions on the Northern gateway of Bara Katra, now lost (Taifoor1956)
Figure 02: Property line marked to acquire for Bara Katra, 1958 (source: Dept of Archaeology, Bangladesh)

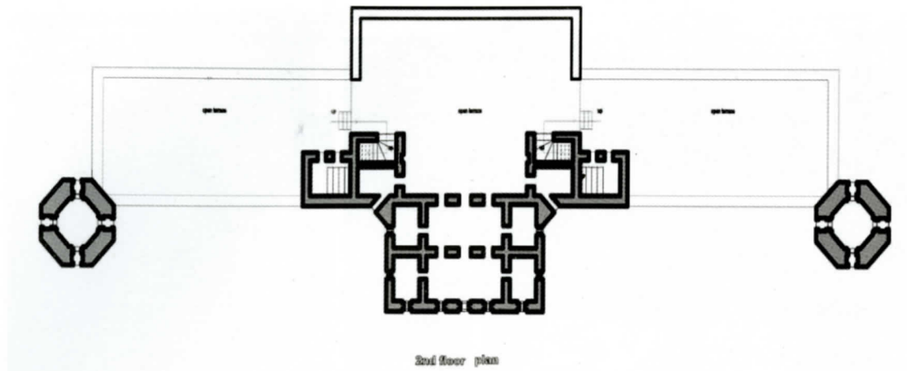


03

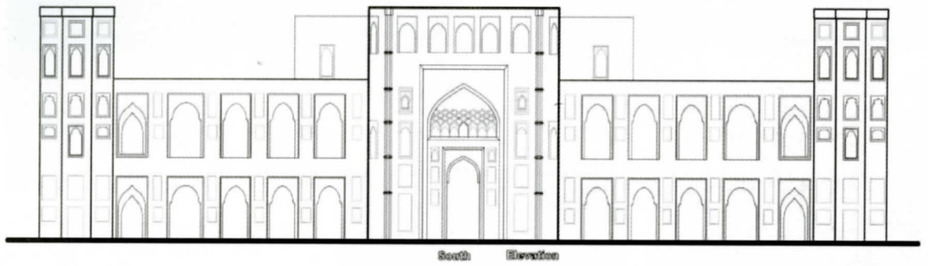


04

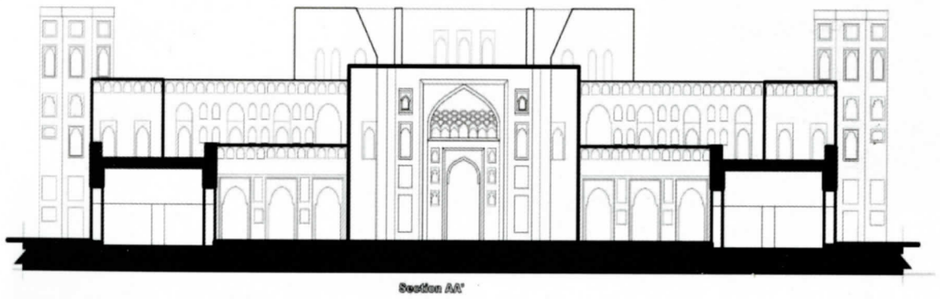
Figure 03: First Floor Plan, Source: Hossain, 2006, b.
Figure 04: Ground Floor Plan without North wing, Source: Hossain, 2006, b.



05



06



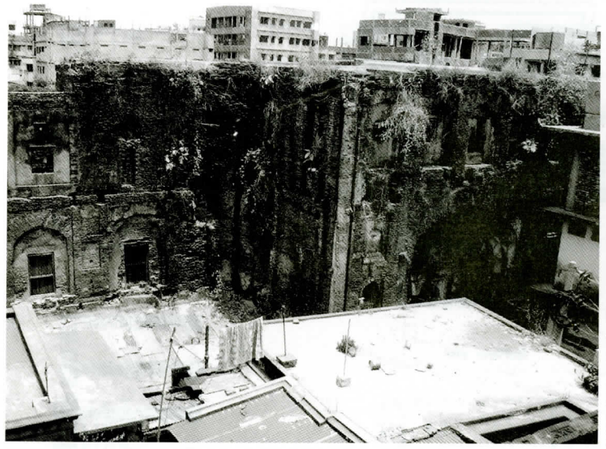
07

Figure 05: 2nd floor plan, Source: Hossain, 2006, b.
Figure 06: South Elevation, Source: Hossain, 2006, b.
Figure 07: Section AA', Source: Hossain, 2006, b.

3. Damage Survey

3.1 Major structural damage

Between the entrance and the octagonal turret at the east a prominent crack seems to bisect the entire southern wing. The crack is clear in elevation and on both side of the slabs. The crack is now filled up with cement mortar. (Hossain, 2006b.)

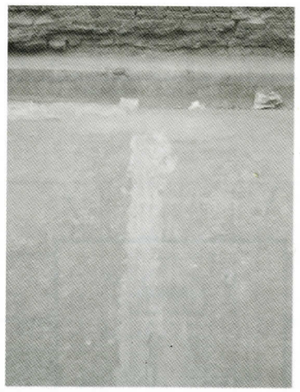


08

09

Figure 08 : Open terrace on 1st and 2nd floor
Figure 09: Existing south wing

10



11

Figure 10: Major Crack (Source: Photograph by the Author)
Figure 11: Continuation of major crack at floor (Source: Photograph by the Author)

3.2 Roof

Prominent cracks run through the center of the barrel vault from one end to another. The free end of this vault takes the form of archway that shows the depth of the continuous crack bisecting the whole vault roof. Water leakage is found at the vaulted roof of first floor of east side. Moreover dampness is a common problem in most of the vault and flat roof.

3.3 Wall

Most of the original plaster has come out and in many cases traces of different layers of original plaster is expossed. Both internal and external wall has deteriorated to extent that the bricks are coming out cracks are also found on these load bearing walls especially at the points where arches rest. Presence of vegetation is found on outer walls, resulting in cracks through their spreading roots. Efflorescence is identified from the traces of crystallized forms on the wall surface.

3.4 Floor and Staircases

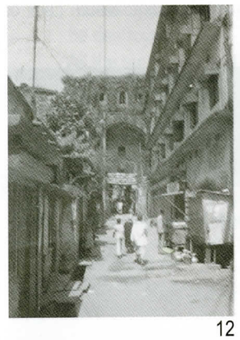
The two major stairs leading to the 2nd floor from the ground floor are severely damaged. The eastern one is reconstructed but the western one is standing with damaged surface.

3.5 Rainwater Disposal and Drainage system

The finishing layer of floor is removed from most of the floor surface and the new repair works failed to maintain the slope to drain off the rainwater. Rainwater accumulates on the terrace and roof due to the lack of proper slopes to drain off the water. As toilets and ambulation spaces are recently located on the terrace of second floor and the sewerage line are drawn to the west side for disposal to the main line that also cause off problem.

3.6 Excess Moisture

Trace of huge moisture at the floor and wall at ground floor indicates capillary action. Though dampness and moisture is a common problem for old buildings in tropical climate the excessive presence of moisture and dampness in most of the floors and walls shows serious lack of maintenance.



12

13

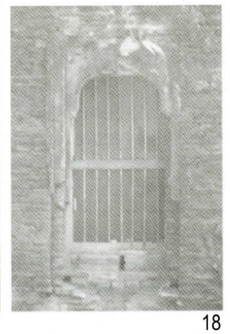
14

15

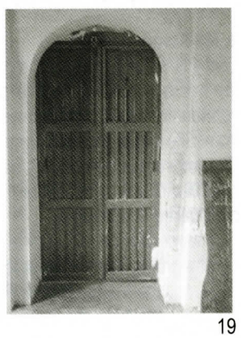
Figure 12: Approach road from the riverbank (Source: Photograph by the Author)
Figure 13: Stair case (Source: Photograph by the Author)
Figure 14: South gate (Source: Photograph by the Author)
Figure 15: Plaster removed from wall (Source: Photograph by the Author)

16

17



18



19

Figure 16: Octagonal turret (Source: Photograph by the Author)
Figure 17: Plaster detail (Source: Photograph by the Author)
Figure 18: Windows (Source: Photograph by the Author)
Figure 19: Doors (Source: Photograph by the Author)

3.7 Door and Window

The old door and windows that are considered original are found in poor condition. Color, polish and most of the iron grills have disappeared. Rust in iron and deterioration of wooden surface is a common feature. Alternations are made but there is a similarity between the old and new one.

3.8 Electrical Services

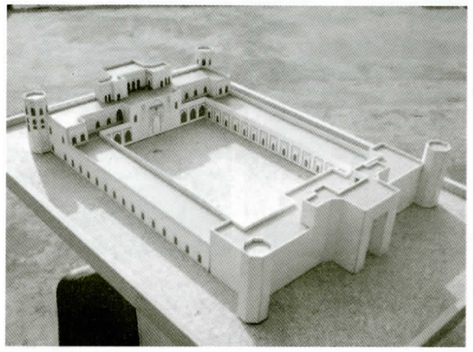
Electrical services are probided without any proper planning and by surface wiring during 70's (Hussain, 2006, b).

3.9 Decoration and finishes

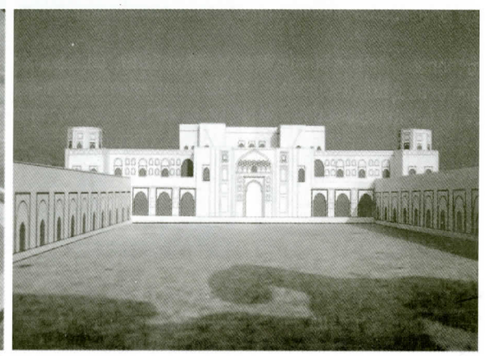
Decoration work on plaster at outer wall is partly present but the internal decoration of domes at the top of the octagonal tower and entrance is still intact. Some internal walls are newly plastered over the old ones. Different colours have been used on doors, windows and wall surfaces recently without considering original schemes.

3.10 Identified Causes of Decay

- **Climatic Causes:** Seasonal temperature variation, humidity (excessive moisture), and precipitation of rain, ground water moisture in soil dust, particulates, and dust and sand particles in air
- **Biological Causes:** Vegetations, Termites
- **Natural disaster:** Earthquake, Flood
- **Man-made Causes:** Lack of maintenance, Purposeful alternation, Traffic vibration, Vandalism and arson, Lack of security precautions, Encroachment. (Hossain, 2006, b.)



20



21

Figure 20 & 21: Model study. Source: Hossain, 2006b

4. Maintenance Plan

There is a need to unite the owners, users and actors on a common platform to generate collective action to conserve the heritage building. Active participation of the community and different actors may be ensured through designing a community based programme. The trustee board may be strengthed by including adequate number of representatives from different actors and community to play active role with unique responsibility in wide scale within a legal framework. To remove the newly built settlements rehabilitation programme may be considered. Tourism may be promoted for adaptive reuse to revitalize the economic base (Hossain, 2006, c.). Micro credit loans and capacity building may be considered in this regard.

- Any interventions for maintenance should be carried out by the Department of Archaeology and approved by the trustee board. For technical supports consultant for such conservation can also be included in the trustee board or the maintenance committee.
- Preventive maintenance must get priority as strategy and necessary steps should be taken for emergency maintenance. Routine house-keeping and periodic maintenance according to suggestions of the experts should be considered.
- The rooms at ground floor may be rented out to the shops and the trustee board should select the tenant. The upper storey may be used as student dormitory; in that case tourists' access may be cautiously regulated.
- Community participation and public awareness programme may be taken up to protect and conserve the heritage artifacts. Facilities should be provided for the access of researchers, study group, journalists and other visitors.
- Part of the income from the shops may be set aside for the maintenance work. For initial investment funds may be raised from local and foreign donations. Government can provide financial assistance through Department of Archaeology. The income generated from the tourist and visitors may also be utilized for maintenance purpose.

4.1 Immediate Work

- Whole property line has to be demarcated and proper documentation should be carried out. All the illegal structures within the property should be removed and the enclosed courtyard should be vacant completely.
- Necessary repair work may be carried out to protect the monument from major structural damage that has divided the southern wing through prominent crack between entrance and octagonal turrets at east.
- Consolidation may be required for repair work at foundation level. Repair work may also be carried out for damages on structural elements like load bearing brick walls that are partly destroyed because of weak brick bonding. Arches, vault roofs that are damaged and have the possibility of collapsing may be repaired.

4.2 Urgent Work

- All biological growth including vegetation and termites that cause active deterioration on outer walls should be destroyed.
- All the temporary and permanent extension like toilet, bathroom, and ablution space on first and second floor should be removed.
- Leakage on the roof should be repaired. Proper drainage system in and around the building may be developed. To stop capillary action abstraction of water should be reduced and ground subsidence should be controlled. Damp proofing course may be carried out at plinth level and wall surface.
- Restriction on further live load and traffic vibration should be introduced.
- Restoration work should be done on the staircase that is highly damaged. Broken parts of the building especially stair at the terrace of the 2nd floor, parapets walls should be restored.
- Restoration of east and west wings should be carried out on the basis of existing ruin, drawings and documentation and archaeological evidences.

4.3 Necessary Work

- Necessary repair work to recover details on plaster at the outer and inner walls should be carefully handled. Proper finishing work in the floor and stairs based on special technical method followed in Mughal period should be carried out.
- Restoration of door and windows with proper details should be done and all the recent addition and changes should be substituted by original typology.
- For proper access to urban services like water supply, sanitation, waste management, garbage disposal, drainage, electricity the existing set-up should be scaled up. Electrical wiring, fittings like switch sockets, fans, and lights should be properly checked and totally replaced for safety.

4.4 Desirable Work

Vehicular and pedestrian entry into the site with parking facility may be considered. Existing road network with Buriganga River may be developed to ensure easy access for the visitors using river route. Existing road network should be developed to integrate the artifacts with urban fabric (Hossain, 2006, b). Surrounding the artifact, height restriction zone may be introduced to control new structures that are out of proportion or incompatible in character with the scale of the heritage building. Traffic vibration and air pollution can also be controlled in similar way.

5. Epilogue

Bara Katra is a valuable asset for the urban heritage of Dhaka. It has survived but under a pressure of transformation in urban fabric. As it is difficult to reach at goal at a time and different efforts have failed in past to evict the existing users, contemporary use may be considered along with tourism for adaptive reuse. Moreover different phase may be considered for mode of operation to reach the goal. Despite many limitations a contextual maintenance plan has been drawn to revitalize the heritage building. Preventive maintenance strategy as intermediate guideline to reach the goal set in the paper can play effective role to make the artifact sustainable.

Appendix: Defining the terms.

Prevention of Deterioration: Prevention entails protecting cultural property by controlling its environment, thus preventing agents of decay and damage for becoming active (Feilden, 2003).

Preservation: Preservation deals directly with cultural property. Its objective is to keep it in its existing state .Repairs must be carried out when necessary to prevent further decay (Feilden, 2003).

Consolidation: With historic buildings, when the strength of structural elements has been so reduced that it is no longer sufficient to meet further hazards, consolidation of the existing material may have to be carried out .However the integrity of the structural system must be respected and its form preserved (Feilden, 2003).

Restoration: The object of restoration is to revive the original concept or legibility of the object. Replacement of missing or decayed parts must integrate harmoniously with the whole, must be distinguishable on close inspection from the original so that the restoration doesn't falsify archaeological or historical evidence (Feilden, 2003).

Adaptive Reuse: Adaptive Reuse, a particular type of approach, combining area conservation with the preservation of individual monuments with upgrading, and some renewal is more nuanced and flexible approach. Adaptive reuse should be accompanied by area conservation, which focuses on the conservation of urban character as well as some monuments .Legislatively this means the control of new and offensive construction and the restoration and reuse of key buildings as appropriate (Serageldin, 1996).

Notes

1. *Chawk is an ancient market-place in Dhaka* (Dani,1962)
2. In the dispersed from of submission three parties share a property, one party uses it, a second party controls it, and a third party owns it. (Akbar, 1988)

References

Akbar, J ; *Crisis in the Built Environment-A Case Study of Muslim* Cities, Concept Media Pte Ltd,Singapore,1988

Dani, A.H . *Dacca-A Record of Its Changing Fortune*, Asiatic Society,Dhaka,1962

D'oyele, Sir Charles; *Antiquities of Dhaka,* John Landseer, London.1822.

Fielden, Bernard. M . *Conservation of Historic Buildings*, Architectural Press, UK, 2003

Hossain, M, Sazzad (b),*Conservation and management- A report for Bara Katra*. Advance International Training Report(unpublished) Submitted at Lund University, Lund. Sweden in 2006.

Hossain, M, Sazzad (c): *Planning the Heritage Cities-A case for old Dhaka*. Published in the Conference proceedings-Society Architects & emerging Issues, 18th CAA Conference 2006. Common wealth Association of Architects and Institute of architects Bangladesh, Dhaka, 2007, p.115-122.

Serageldin, Ismail : *Revitalizing Historic Cities*,- presented in the International Workshop on Architecture and Urban Conservation(December 1994) & published in1996, Centre for Built Environment, Calcutta. p.69-79.

Taifoor, S.M : *Glimpses of Old Dhaka, Dhaka. 1956 Dhaka,*

Protibesh © BUET
July 2008, Volume 12 Issue 2
pp. 15-26

Observations on Performance of Commonly Used Shading Devices in Tall Office Buildings of Dhaka

Anisur Rahman
Assistant Professor,
Department of Architecture,
Bangladesh University of Engineering & Technology, Dhaka
Email: rahmana@citechco.net

Dr. Khandakar Shabbir Ahmed
Professor,
Department of Architecture,
Bangladesh University of Engineering & Technology, Dhaka
Email: shabbir@arch.buet.ac.bd

Abstract
Solar radiation is a major source of heat gain for building in the tropics. Large vertical surfaces of tall buildings are exposed to solar radiation and needs to be controlled in view of generating desirable indoor environment. Solar shading is one among the many strategies in dealing with overheating problem in a tropical city like Dhaka. External shading device is the most efficient solar control as it cuts off solar radiation before reaching the window. This paper presents a simulation study of evaluating performance of shading devices on windows in the context of Dhaka (Latitude 23.5°N). Six selected shading devices were evaluated based on percentage of shaded area on windowpane and energy saving potential of shading devices. Simulation results showed that the design of the shading devices need to be explored for desired performance. The results also indicated that depth and spacing of overhangs as well as depth, spacing and angle of vertical fins have significant effect on shading performance. Modification of these parameters may make the shading devices effective in different orientations at the desired periods.

Key words: Performance evaluation, Tall buildings, Solar heat gain, Shading devices, Simulation study, Dhaka City and Tropics.

1. Introduction

The trend of recent development has shifted from low to high-rise buildings due to the pressure of population in much of the world, and Dhaka is no exception. Dhaka is the fast growing capital city of Bangladesh. In 2004 it had an estimated population of 14.34 million (STP report 2005) and every year the city is adding more than 400,000 people to its population. With such a growth scenario, Dhaka has become the center of commerce and economy in Bangladesh. Due to increase in demands for working spaces, high-rise office buildings have evolved. The facades or envelopes of these tall buildings are subjected to a large amount of climatic impact. The recent construction of tall office buildings in urban areas of Dhaka is characterized by extensive use of glass. They have been designed without any respect to the interdependence between outdoor and indoor climate (Ahmed 2003). The common practice now is to provide an envelope which is aesthetically more pleasing rather than climatically responsive. To 'extrude' is the current trend of high-rise development in the context of economic sustainability but the environmental sustainability and energy issues are left unanswered. Architects are often inspired by design ideals from temperate climates that poorly suits with local conditions.

Fenestration and building envelope design has been found to be the most significant factor affecting energy use in high-rise buildings in the tropics (Muhammad et al 2005). Vast vertical surfaces of tall buildings are exposed to solar radiation and glass facades may act as heat trap for incoming solar radiation. So facades of tall buildings need protection in view of generating desirable indoor environment. The thermal effect of a glazed wall section depends on the shading provided and the spectral properties of glass (Givoni 1969). Shading the glass affects the quality of incident radiation and hence modifies both the heat flow to the interior and resultant impact to the indoor temperature. Shading device may perform a variety of functions: controlling heat gains either constantly or selectively (eliminating the sun in over heated periods, admitting it in under heated periods). But at present, there is only little consciousness regarding the thermal characteristics of shading devices and the effect of sun shading in Dhaka.

Because of limited of energy resources, ever increasing energy prices and the global warming, the necessity to reduce the energy consumption in the buildings is an important issue in a developing country like Bangladesh. In such a context the need to develop passive means of solar control is important and efficient design of shading devices may address this issue significantly.

A dynamic computer simulation program named 'Ecotect' (version 5.20) has been used for this simulation study to examine the existing shading devices in terms of their performance in reducing solar heat gain.

2. Aims & Objectives

The study is an attempt to investigate the performance of commonly applied shading devices on facades of tall office buildings as a method of passive cooling with the following objectives:

1. To evaluate the existing shading devices as solar control tools used in tall office buildings.
2. To develop an understanding regarding issues relevant to shading design in office buildings of Dhaka.

3. Tall Building: Definition and Criteria

The experts differ in defining the physical parameters of tall buildings. According to the Council for Tall Buildings and Urban Habitat (CTBUH), a tall building is not strictly defined by the number of stories or its height. It also depends upon the context in which it stands. CTBUH defines tall buildings as a building whose built form, by virtue of its height, requires its own special engineering systems (Yeang, 1997). The important criterion is whether or not the design, use or operation of the building is influenced by some aspects of tallness.

David Fisher defines the tall buildings as 'We build tall buildings of necessity; how we build them is a reflection of society. Tall buildings do not have to be beautiful, they simply must be functional; so it is the degree of our concern for their beauty that serves as a measure of our humanity' (Attia, 1990).

According to Ken Yeang (Yeang, 1997), a tall building can be characteristics by

a) A small foot-print in comparison to its total built-up space
b) Tall facades due to its height
c) Small roof-area in comparison to external-wall area
d) Special engineering systems, different from the low building type simply because of its height.

According to Taranath, to define tall building from structural aspects, from structural design and construction point of view, it is simpler to consider a building tall when its structural analyses and design are in some way affected by the lateral loads (Taranath, 1998).

Although there is no fixed parameter of height to denote tall and high-rise building, in view of the considerations stated below, buildings above six storeys may be considered as tall buildings in the present context of Dhaka city.

a) Walk up limit / provision for lift:
   - According to Building construction rules (2006), buildings of seven storied and above in height shall have provision for lift.
   - According to Bangladesh National Building Codes (1993), lifts shall be provided in buildings more than six storied or 20m in height.
b) Fire escape provision:
   - According to Fire Service and Civil Defence rules, buildings of seven storied and above in height shall have provision for Fire escape/ alternative staircase.

4. Solar Heat Gain

The heat gain in a building by radiation from the Sun depends upon the following factors (McMullan, 1992):

- The geographical latitude of the site, which determines the height of the Sun in the sky.
- The orientation of the building on the site, such as whether rooms are facing south or north.
- The season of the year, which also affects the height of the Sun in the sky.
- The local cloud conditions, which can block solar radiation.

- The angles between the Sun and the building surfaces, because maximum gain occurs when surfaces are at right angles to the rays from the Sun.
- The nature of the window glass and whether it absorbs or reflects any radiation.
- The nature of the roof and walls, because heavyweight materials behave differently to lightweight materials.

Solar radiation falls on a surface varies throughout the day and the year. Most solar heat gain to buildings is by direct radiation through windows. The maximum gains through south-facing windows tend to occur in pre-monsoon and post-monsoon period when the lower angle of the Sun causes radiation to fall more directly onto vertical surfaces. The solar heat gain for a particular building at a specific time are relatively complicated to calculate, although it is important to do so when predicting summer heat gains in commercial buildings.

The solar radiation falling upon a clear glass surface is reflected, absorbed and transmitted in proportions similar to those indicated in Figure 1. These quantities depend upon the angle of incidence (i) and the proportion of direct and diffuse radiation. The angle of incidence (i) is the angle measured between the incident light beam and the normal to the plane of the glass (Smith, 1982).

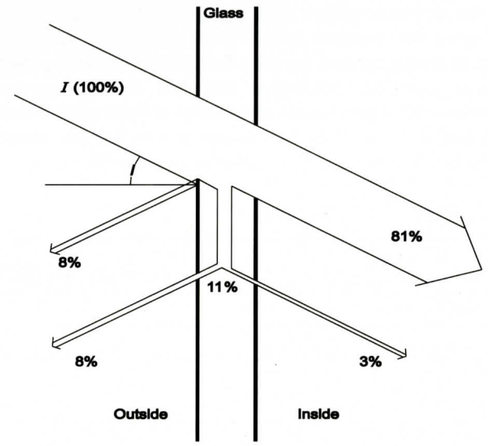


Figure 01: Typical proportions of incident solar radiation, reflected, absorbed, transmitted and retransmitted by glass *(Source: Smith, 1982)*

The absorbed radiation heats the glass and part of this heat reaches the room surfaces by convection and radiation from the inside surface of the glass. The solar heat gain is obtained by adding this inwards released heat to the directly transmitted component of the incident solar radiation. Absorption of this solar heat gain by the internal surfaces raises their temperature. These heated surfaces behave as low temperature, long wave radiators. Since glass transmits shortwave radiation in the range 0.3 to 2.8 μm but is opaque to long wave radiation from low temperature surfaces, the solar heat gained is trapped within the enclosure causing an internal temperature rise. This phenomenon, frequently referred to as the greenhouse effect, may give rise to solar overheating. Heat gain is directly proportional to the area of glass exposed to solar radiation and therefore large glazed areas will permit a large and rapid heat gain.

5. Performance Evaluation Process

The performance of shading devices and its impact on solar heat gain through windows can precisely be evaluated by simulation study. In reality, due to the simultaneous influence of many different conditions, it is difficult to isolate the exclusive effect of one single aspect or the changes of it. Shadow simulation allows study of the effect of changes in one aspect, keeping other factors constant. The observations of simulated behaviour that occurs due to changing parameters allow the identification of elements, the reduction or introduction of which in the design contribute to solar heat gain. Another significant aspect of simulation study is that, it is possible to analyze the performance of shading devices for any period of the year simply by modifying simulation parameters (e.g. temperature, radiation, wind speed and direction, relative humidity and cloud cover).

Evaluation process comprises the following steps:

- Selection of Shading Devices
- Setting criteria for performance evaluation
- Preparing climate database
- Setting simulation parameters
- Developing simulation model
- Analysing results of simulation

5.1 Selection of Shading Devices

Before making selection of shading devices, tall office buildings are identified on the basis of certain considerations to be discussed in the following section. These tall office buildings are located in different commercial areas in the Dhaka city, such as Motijheel, Dilkusha, Karwan bazaar, Panthapath, Banani and Mohakhali. After that, buildings were categorised considering the typology (based on geometry) of shading devices installed on their front façade. Sketches of window sections with shading device of these buildings were prepared with detail construction features, installation technique and geometric features. After analysing the sketches, six shading devices were selected to evaluate performance in terms of reducing solar heat gain considering shading device typology and similarities in geometric features.

Eighty-four tall office buildings of Dhaka city were identified for investigation. Among them, forty buildings are situated at Motijheel and Dilkusha area; twenty-four buildings at Mohakhali, Gulshan Avenue and Banani Kemal Ataturk Avenue; fourteen buildings at Karwan Bazaar area and six buildings at Panthapath. Among these eighty-four tall office buildings, six buildings were selected to evaluate performance of their shading devices. The list of buildings with location, storey, orientation and type of shading device installed is presented below:

Table 01: List of the selected buildings and shading devices

Sl No.	Identification Number	Location	Storey	Orientation	Shading Device
1	H01	Global Insurance Ltd. Dilkusha	11	South	Horizontal
2	H02	Janata Bank Bhaban, Motijheel	23	South	Horizontal
3	H03	Brac Center, Mohakhali	20	South	Horizontal
4	V01	Rupali Bank Ltd, Dilkusha	10	West	Vertical
5	V02	Ispahani Bhaban, Dilkusha	9	West	Vertical
6	V03	Bangladesh Samobye Bhaban, Motijheel	9	East	Vertical

5.2 Criteria for Performance Evaluation

In order to evaluate the performance of shading devices in reducing solar heat gain, a base-case situation is established by studying the unshaded window (without shading device) during the critical shading period of the year at different orientations. From the literature review it is found that the percentage of the shade area and the shading coefficient are two primary critetia of shading performance to determine ability of a fixed shading device in terms of reducing solar heat gain.

a. The percentage of the shaded area: The percentage of the shaded area, given by various types of fixed shading devices is one of the criteria of shading performance (Givoni, 1969; Steemers et al, 2002). The percentage of the shade areas refers to portion of the window area, which is not exposed to the direct solar radiation. Heat gain is directly proportional to the area of glass exposed to solar radiation. This also reflects the ability of a fixed shading device to protect the window area at critical time.

b. The shading coefficient: Computation of the shading coefficient, which is the ratio of the heat entering the window-shading combination to that entering an unshaded window, is another criteria of shading performance. Shading coefficients basically refer to the fraction of solar heat gain that passes through a transparent solar aperture compared to the amount of solar radiation incident upon it. The shading coefficient is expressed as a dimensionless number from 0 to 1. A high shading coefficient means high solar gain, while a low shading coefficient means low solar gain (Givoni, 1969; Givoni, 1998; Steemers et al, 2002; Lechner, 2001). Shading coefficient (C_{sh})can be expressed as below.

$$C_{sh} = \frac{\text{Heat entering through the window with shading device}}{\text{Heat entering through the window without shading device}}$$

From energy saving point of view, shading coefficient should be '0' and shading percentage of shaded area should be 100% for optimum performance.

5.3 Simulation Parameters

To investigate the results of the simulations, a specific day has been selected (from the weather database for the year 2005) on the basis of some specific attributes to observe the results.

The test day is March 21 (Day: 80). Outdoor air temperature range of this day is 24.5ºC -35.4ºC and sky condition is clear. From 0900-1700 hours the cloud cover is 1.1 out of 8.0 (13.8% coverage). This is a day with considerable high outdoor air temperature but not the extreme one and bears a common character regarding the climatic features specially of the hot-dry season. The average temperature of this day (29ºC) is very close to the average temperature of the season (28.02ºC). It has been observed that the sky condition in the given climate is clear for 67 percent of the whole pre-monsoon period and the 'clear sky' condition prevail for the chosen day. This 'clear sky' condition of the chosen day is also important to investigate the impacts of solar radiation and this clear sky condition enhances the direct solar radiation to reach the building surfaces. Fixed shading device are effective to reduce heat gain from direct solar radiation (Goulding, 1992).

For a fixed shading device, the shading period is symmetrical about June 21. This is because the position of the sun cycles, relative to earth, through the sky on a seasonal basis. Thus, the sun will pass through the same path twice every year, the first time when going from winter to summer and the second time when traveling back to winter. Thus, any shading device will always shade between two dates. In the northern hemisphere, an optimized shading device for the 21st of March will actually shade from the 21st of March, right through June until the 21st of September (Lechner, 2001). Thus the whole overheated period (hot-dry and warm-humid) is taken into account for simulation.

For simulation to investigate the performance of the shading devices, the time period is considered when the space is only considered to be used during office hours. In general, the office time is from 0900 to 1700 and this time period is taken as a critical time period for shading requirement.

5.4 Simulation Program

Simulations regarding solar performance analysis are carried out using building analysis software 'ECOTECT v5.20'. It features a user-friendly 3D modelling interface fully integrated with a wide range of performance analysis and simulation functions. The visual nature of calculation feedback makes 'ECOTECT' unique.

The original 'ECOTECT' software was written as a demonstration of some of the ideas presented in PhD thesis by Dr. Andrew Marsh at the School of Architecture and Fine Arts at The University of Western Australia. The software has undergone some major changes since then. Version 5.2 builds significantly on the functionality of previous versions introducing a range of new analysis functions and real-time hidden line and sketch visualization.

ECOTECT provides a range of thermal and solar performance analysis options. At its core, is the Chartered Institute of Building Services Engineers (CIBSE) Admittance Method used to determine heat loads. The Admittance Method is widely used around the world and has been shown to be an extremely useful design-tool. This thermal algorithm is very flexible and has no restrictions on building geometry or the number of thermal zones that can be simultaneously analyzed. Most importantly, with only a few pre-calculations for shading and overshadowing, it is very quick method to calculate and can be used to display a wide range of very useful information.

Whilst in summary it is a simplified method, the Admittance Method encapsulates the effects of conductive heat flow through building fabric, infiltration and ventilation through openings, direct solar gains through transparent materials, indirect solar gains through opaque elements, internal heat gains from equipment, lights and people and the effects of inter-zonal heat flow.

5.5 Climate Database

The climate database stores files containing hourly weather data. The weather files supplied with Ecotect cover different regions of the world and each represents a typical year's weather for a particular region. The weather file for

Dhaka is not provided with the software but facilities are provided to allow creating own weather files and can be added to the climate database.

The weather file 'Ban_Dhaka.wea' has been prepared for the research purpose by using the Weather Tool, associated software of Ecotect. The Weather Tool is a visualization and analysis program for hourly climate data. The weather file consists of a group of parameters relating to the weather site and hourly values of seven weather variables (dry-bulb temperature, relative humidity, direct radiation, diffuse radiation, wind speed and direction and cloud cover). Hourly radiation data has been collected from Renewable Energy Research Centre of Dhaka University. Three hourly weather data regarding dry-bulb temperature, relative humidity, wind speed and direction and cloud cover has been collected from Climate Division, Bangladesh Meteorological Department Agargaon, Dhaka. Due to the simulation requirements, all three hourly data have been converted to hourly data by interpolation method. Hourly weather variables for Dhaka have been collected for the year 2005.

The site parameters of Dhaka for weather file are as follows:

Parameters	Details
Latitude (degrees North)	23°50' North
Longitude (degrees East)	90°20' East
Time Zone (hours ahead of GMT)	GMT +06.00

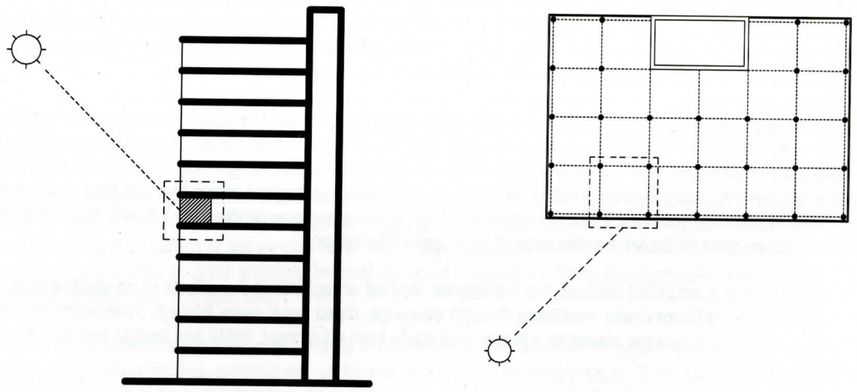
The combination of site parameters and hourly weather variables forms the weather file, with which the simulation program 'Ecotect' is capable to analyse any climatic characteristics of the selected site.

5.6 Simulation Model

Following models (Figure 03b-08b) have been developed for simulation that represents the selected shading devices. These models refer to the high-rise buildings selected with identical single glazed clear glass facades with similar shading devices. The room size for simulation model is 6000mm x 6000mm which is considered to be located at an intermediate floor of a high-rise building. The room size is taken from the typical high-rise column grid. A fixed window width 5400mm has been considered with single glazed glass, as the window covers the whole span between two columns (Figure 02). Different shading devices are attached on it for simulation study. For the ease of calculation, a study plane at the level of the exterior surface of the window wall has been observed.

In terms of shading analysis and solar heat gain, the simulations are done for the following options of models:

- The 'without shading' option - which refer to the high-rise models with identical facades without the shading device but with clear glass;
- The 'with shading' option which refer to the high-rise models with shading as designed by the architect.



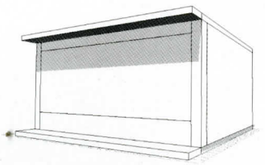
(a) Section of typical high rise building

(b) Typical floor plan of high rise building

Figure 02: Schematic drawings showing generation of simulation model from typical high rise building

The simulations are done for the following models generated by 'Ecotect':

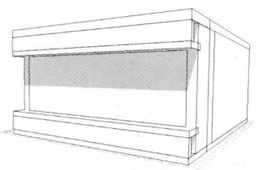
Figure 03(a): View of building H01



Building Parameters:
- Office room dimension: 6000mm x 6000mm
- Floor height: 3000mm
- Window: Orientation: South Sill: 600mm, Width: 5400mm, Height: 2100mm
- Overhang depth: 750mm

Figure 03(b): Simulation model of Shade H01

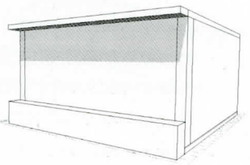
Figure 04(a): View of building H02



Building Parameters:
- Office room dimension: 6000mm x 6000mm
- Floor height: 3000mm
- Window: Orientation: South Sill: 600mm, Width: 5400mm, Height: 1800mm
- Overhang depth: 450mm

Figure 04(b): Simulation model of Shade H02

Figure 05(a): View of building H03



Building Parameters:
- Office room dimension: 6000mm x 6000mm
- Floor height: 3000mm
- Window: Orientation: South Sill: 750mm, Width: 5400mm, Height: 2400mm
- Overhang depth: 450mm

Figure 05(b): Simulation model of Shade H03

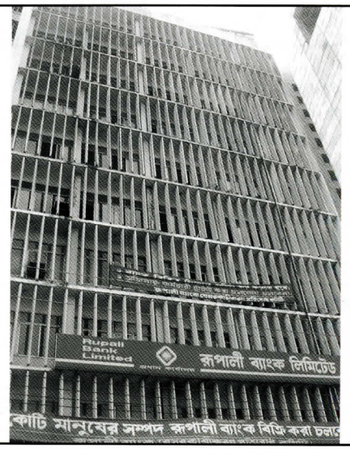


Figure 06(a): View of building V01

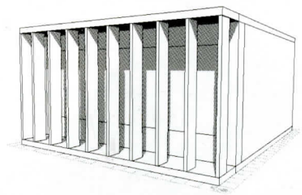


Figure 06(b): Simulation model of Shade V01

Building Parameters:
- Office room dimension: 6000mm x 6000mm
- Floor height: 3000mm
- Window: Orientation: West
  Sill: 600mm, Width: 5400mm, Height: 1950mm
- Vertical Fin: Depth: 375mm, Spacing: 600mm

Figure 07(a): View of building V02

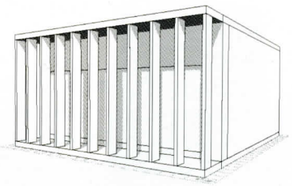


Figure 07(b): Simulation model of Shade V02

Building Parameters:
- Office room dimension: 6000mm x 6000mm
- Floor height: 3000mm
- Window: Orientation: West
  Sill: 600mm, Width: 5400mm, Height: 1950mm
- Vertical Fin: Depth: 300mm, Spacing: 600mm

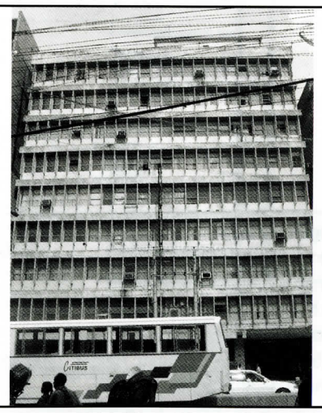


Figure 08(a): View of building V03

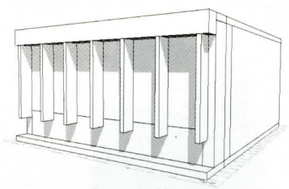


Figure 08(b): Simulation model of Shade V03

Building Parameters:
- Office room dimension: 6000mm x 6000mm
- Floor height: 3000mm
- Window: Orientation: East
  Sill: 600mm, Width: 5400mm, Height: 1950mm
- Vertical Fin: Depth: 450mm, Spacing: 600mm

6. Simulation Results

To evaluate the shading performance on the basis of set criteria discussed earlier, a comparative analysis among the selected shading devices has been summarized in the following section.

6.1 Shading Performance of Horizontal Shading Devices

Table 02 shows the percentage of shaded area of windowpane by three selected horizontal shading devices. At south orientation, all three shading devices were capable to shade maximum area of window pane at mid day. The percentage of shaded area decreased along as time passes before and after mid day (Figure 09). Simulation results show that among the three horizontal shading devices, Shade H01 can shade maximum 60% of the whole windowpane, Shade H02 can shade maximum 53% and Shade H03 can shade maximum 46% of the whole windowpane.

Table 02: Percentage of shaded area at South orientations by horizontal shading devices for 21st March

Orientation	Shading	09:00	09:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00
		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
South	H01	52	54	53	56	56	55	60	53	56	57	54	55	52	50	48	42	38
	H02	45	46	47	51	50	50	53	48	52	49	46	45	42	41	36	29	25
	H03	39	41	45	42	41	44	46	40	44	39	36	43	39	38	38	30	28

Table 03 presents the amount of direct solar radiation received by the shading devices and also shows shading coefficient of respective shading devices. From table 2 it is found that at south orientation, Shade H01 can block 3411 watt solar radiation which is 54% of the total incident radiation (6314 watt). If it is compared with other two horizontal shading devices, it is found that Shade H02 can block 46% of the incident radiation and Shade H03 can block 41% of the incident radiation. Highest shading coefficient (0.6) is shown by the Shade H03, while the lowest one was presented by the Shade H01 which was only 0.46. The lower the shading coefficient is better against solar radiation.

Table 03: Amount of direct solar radiation incident on windowpane at South orientations

Orientation	Shade H01			Shade H02			Shade H03		
	Shaded (in Watt)	Unshaded (in Watt)	Shading Co-efficient	Shaded (in Watt)	Unshaded (in Watt)	Shading Co-efficient	Shaded (in Watt)	Unshaded (in Watt)	Shading Co-efficient
South	2903	6314	0.46	3439	6319	0.54	3766	6326	0.60

6.2 Shading Performance of Vertical Shading Devices

Table 04 illustrates the percentage of shaded area of windowpane by three selected vertical shading devices at east and west orientation. At east and west orientation, almost same character of performance of these vertical shading devices has been observed. All three shading devices are capable to shade maximum area of window pane at the time when the sun is just tilted to east or west from south. From Table 3 it is observed that at east and west orientations all three shading devices are not consistent in their performance. Sometimes these three shading devices can protect almost 95% of the window area but the efficiency drops frequently to 13%. Considering all these limitations, in comparison with these three vertical shading devices, Shade V01 is capable to shade more areas than other two shading devices.

Table 04: Percentage of shaded area at East and West orientations by vertical shading devices for March 21

Orientation	Shading	09:00	09:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00
		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
East	V01	47	53	78	87	95	*	*	*	*	*	*	*	*	*	*	*	*
	V02	40	48	66	82	94	*	*	*	*	*	*	*	*	*	*	*	*
	V03	38	42	53	58	80	*	*	*	*	*	*	*	*	*	*	*	*
West	V01	*	*	*	*	*	*	*	*	*	89	80	66	42	40	27	16	13
	V02	*	*	*	*	*	*	*	*	*	80	64	50	40	36	31	2	16
	V03	*	*	*	*	*	*	*	*	*	76	64	48	38	36	36	18	14

* Percentage of shaded area is not taken into account as the sun does not see the window

From Table 05, it has been found that the ratio of total energy received between shaded and unshaded situation is lowest for V01, while it is highest for V03 at both east and west orientation. Table 4 shows that at east and west orientation, Shade V01 can prevent almost 70% (in average) of the total incident radiation. If it is compared with the other two vertical shading devices, it is found that Shade V02 and Shade V03 can resist 60-65% of the incident radiation.

Table 05: Amount of direct solar radiation incident on window pane at different orientations

Orientation	Shade V01			Shade V02			Shade V03		
	Shaded (in Watt)	Unshaded (in Watt)	Shading Co-efficient	Shaded (in Watt)	Unshaded (in Watt)	Shading Co-efficient	Shaded (in Watt)	Unshaded (in Watt)	Shading Co-efficient
South	1248	3766	0.33	1461	3766	0.39	1443	3763	0.38
West	701	2556	0.27	906	2556	0.35	848	2556	0.33

7. Discussion and Conclusion

The investigation was carried out to understand the impact of external solar shading devices on reducing solar heat gain and to evaluate the performance of commonly used shading devices in reducing solar heat gain. Analysis of the simulation results indicated a clear understanding of the shading parameters and their contribution to the energy consumption. From the comparison of shading percentage and solar radiation gain between options 'with' and 'without' shading device schemes, it has been shown that solar radiation blocked by shading devices offers an opportunity to reduce cooling loads and energy requirement significantly.

Result of the simulation indicates that Shade H01 was able to shade more areas of window with compares to other two horizontal shading devices. Shade H01 also showed low shading coefficient (0.46) which indicates low solar heat gain than other horizontal shading devices. If we look at the geometric parameters of the shading devices (Fig 3b, 4b & 5b), we will find that the ratio of shading overhang to window height is high in case of H01 which is 1:3. For other two shades H02 and H03, it is 1:4 and 1:6. The shading device with higher 'overhang depth and window height ratio' performed better in reducing solar radiation gain. It means 'overhang depth and window height ratio' has a great impact on the performance of horizontal shading devices in solar heat gain. Although Shade H01 was more effective in comparison to Shade H02 and H03, H01 failed to block almost half of the total incident radiation. So projection of this overhang is not effective to protect the window from the solar radiation properly. So, further investigation is needed to find out the required depth of overhang in relation with window height to get optimum result.

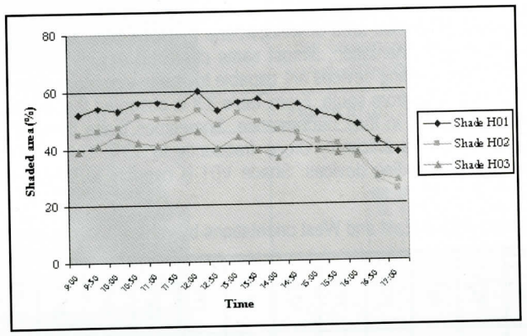


Figure 09: Comparison of percentage of shaded area at South orientation by horizontal shading devices for March 21

It has been observed from the results of the simulations that the performance of horizontal shading devices remains quite consistent at south orientation only. It works better when the sun is opposite to the window pane at a high altitude. This performance drops when the sun is in a lower altitude and oblique to the window pane. The horizontal overhang is not capable to protect the window when the sun azimuth and altitude are low. Therefore, the sun will outflank an overhang with the same width as window-width. So from these analyses, need for modification of horizontal shading devices is evident when the sun is at low azimuth and altitude. To improve the performance of horizontal shading device at morning and afternoon, the effect of side offset of horizontal overhangs from window edge need to

be assessed. Several overhangs on the window pane can be used instead of one large overhang. Installing several overhangs on the window pane is also appropriate when the projecting distance from the wall is limited for structural or other reasons. This could be important if a building is on or near the property line or there are certain restrictions by building regulations.

In case of vertical shading devices, it has been observed from the simulation results that Shade V01 can shade more areas of window than other two shading devices and also shows low shading coefficient (0.33 in east orientation and 0.27 in west orientation) which indicates low solar heat gain. If we analyze geometric parameters of the shading devices, we will find that the V01 is not the deepest one. Although Shade V03 is the deepest vertical fin among the three, it shades less than others. But one thing has to be noticed that the total effective depth of shading device (Fin depth + distance between fin and windowpane) is biggest in case of shade V01 which is 900mm. The shading device with higher effective depth of fin performed better in reducing solar radiation gain. It means effective depth of fin (Fin depth + distance between fin and windowpane) has a great impact on the performance of vertical shading devices in solar heat gain. The depth and spacing of vertical fins is independent of window height and width. The performance of vertical shading devices increases with the increase of depth of vertical fins and with the decrease of spacing between vertical fins.

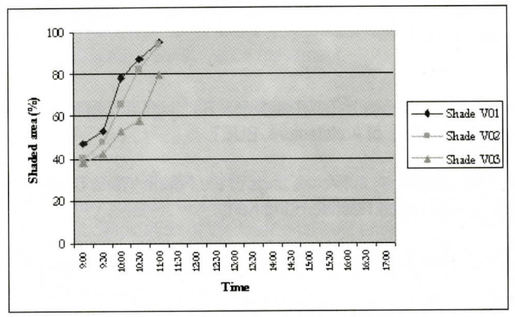


Figure 10: Comparison of percentage of shaded area at East orientation by vertical shading devices for March 21

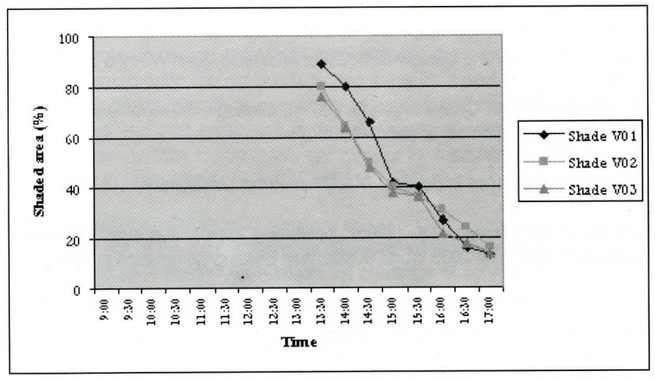


Figure 11: Comparison of percentage of shaded area at West orientation by vertical shading devices for March 21

The simulation results show that all these three vertical shading devices are capable to shade above 50% of the window area on an average at east and west. They work efficiently when the sun is at an angular position with the window. They are not effective when the sun's altitude is low and perpendicular with the façade. It has also to be noticed that vertical fins are not efficient at east and west orientation when the sun is just in front of the window. This phenomenon needs further investigation. By changing the angle of vertical fin from perpendicular to the window surface to clock-wise direction, the performance of vertical fin may increase. This type of vertical slanted fin can be

appropriate either when there is a desire to control the direction of view or when the view is not important. When designing a vertical fin for west facade, one must remember that the sun travels relative to earth from the southwest. Therefore, the sun will outflank a vertical fin with the same height as a window-height. Windows need higher vertical fin extending over the window edge. The extension over the top edge of window depends on spacing between vertical fins.

After investigating the performance of commonly used shading devices it could be stated that the design of the shading device is need to be explored for optimum performance. The results of the simulation study indicate that depth of overhangs and depth, spacing of vertical fins has significant effect on shading performance. Modification of these parameters may make the shading devices effective in different orientations at the critical periods. Designers can evaluate the performance of shading devices in the design stage. Environmental design principles are most effective when considered during the earliest most conceptual stages of the building design process. Geometry, material and siting are three important determinants of overall building performance. Designers can start generating vital performance-related simulation to support for very early stage of conceptual design as well as final design validation. Designers can also do detail climatic analysis to calculate the potential effectiveness of various passive design techniques. The very act of analyzing different options will help the designer in guiding and refining subsequent decision-making. This work may also instigate designers to design efficient shading devices with a reference to climate issues.

References

Ahmed, Z.N. (2003), 'Climate Responsiveness in Tall Residential Buildings of Tropical Cities', International Seminar on Architecture Overcoming Constraints, Dept. of Architecture, BUET.

Attia, E. (1990), 'The Shape of Tall Buildings', In Proceedings of the Fourth World Congress on Tall Buildings: 2000 and Beyond, Council for Tall Buildings and Urban Habitat, Hong Kong.

Givoni, B. (1998), Climate Considerations in Building and Urban Design, Van Nostrand Reinhold.

Givoni, B. (1969), Man, Climate and Architecture, Elsevier Publishing Company.

Goulding, J.R., Lewis, J.O., Steemers, T.C., ed. (1992), Energy in Architecture (The European Passive Solar Handbook), B.T. Bats ford Limited.

Lechner, N. (2001), Heating, Cooling, Lighting Design methods for Architects, John Willey & Sons, Inc.

Louis Berger Group Inc. and Bangladesh Consultants Ltd. (2005), Strategic Transportation Plan for Dhaka, (2004-2024), Ministry of Communications, Government of Bangladesh.

MacMullan, R. (1992) Environmental Science in Building, MacMillan Press Ltd, London.

Muhammad, A.E.; Zuraini, D.; Puteri Shireen, J.K. (2005), 'optimizing tropical sun shading systems using thermal analysis and lighting visualization tools', The 2005 World Sustainable Building Conference in Tokyo.

Rahman, A. (2007), Performance Evaluation of Shading Devices Used in Tall Office Buildings of Dhaka City, M.Arch Thesis (unpublished), Department of Architecture, BUET, Dhaka.

Smith, B. J.; Phillips, G. M.; Sweeney, M. E. (1982), Environmental Science, Longman Scientific & Technical, UK.

Steemers, k.; Baker, N. (2002), Daylight Design of Buildings, James & James Ltd, London.

Taranath, S. B. (1998), Structural Analysis and Design of Tall Buildings, McGraw Hill Book Company.

Yeang, K. (1997), 'Designing the Green Skyscraper', In Proceedings of the Third International Conference on Conquest of Vertical Space in the 21st Century, London.

Protibesh © BUET
July 2008, Volume 12 Issue 2
pp. 27-35

Community Participation in Urban Heritage Conservation

Dr. Mahbubur Rahman
Professor, North South University, Dhaka 1213, Bangladesh
Email: mmrahman@northsouth.edu

Debashish Nayak
Heritage Program Advisor, Ahmedabad Municipal Corporation, Ahmedabad 380 006, India
Email: debashishnayak@rediffmail.com

Abstract
This paper covers the issue of community participation in architectural conservation, and presents elaborately a project, which was initiated in Ahmedabad. This paper describes how the municipality made strategic interventions in heritage conservation in Ahmedabad, by involving the community and instilling a sense of pride and belongingness into them so that the futures of the sites are prolonged. It explains the mechanism of the project, which was an alternative and sustainable way of connecting conservation and community participation to revive cultural heritage. This methodology can be replicated in many old cities in order to conserve their cultural and architectural heritage. The paper presents the effectiveness of participatory guided walk as tools for urban revival and means of overcoming various constraints that are typical of many large cities of the developing worlds. It emphasises on role of the community and organisations in participatory conservation movement.

Keywords: Community heritage, Local support, Public participation, Strategic intervention for conservation

1. Introduction

Current development paradigms consider valuable historic architecture as inefficient, unproductive and inconvenient elements of development. Hence, they suggest replacing them with new buildings. Coupled with depressed economic conditions, this has led to decay and dilapidation of the traditional built environment, often forcing people to migrate to more prospective areas, bringing further decay of the environment. However, the identity and character of a city are the result of centuries of growth in the course of which new elements constantly juxtapose with older repository of wisdom and knowledge. Hence, such old cities, including those in South Asia, have areas with distinct architectural and urban character, full of life, vitality, wealth, power, enlightenment and culture.

In spite of being less aware of their customary built environment, citizens may be oblivious of its importance. Yet they develop a reciprocal relationship with it. Thus instead of just rebuilding the city, urban renewal restores people's relationship with it. As architecture and the urban form embody the community's tradition, heritage and culture, therefore people should looked upon the old buildings and areas as assets, not as liabilities. Ahmedabad Municipal Corporation (AMC) intervened strategically to conserve and develop its built heritage within the 'Walled City'. After a number of surveys, studies and pilot projects, it is now fine-tuning the replicable method. This paper explains an alternative way of linking conservation to community participation for a sustainable process of revival for Historic cities, and presents the initiatives in Ahmedabad.

2. Evolution of Traditional Urban Cores

Cities generally developed out of the necessities of its dwellers; not until today, planning intervention has taken place. Urban cores of many old cities in South Asia retained the character of spontaneous mixed use and shop houses as hub of activities, making versatile spaces with pedestrian circulation and less pollution, resource wastage, and congestion. Craftsmen usually have addressed the challenge of making climate-responsive buildings in such areas with narrow winding streets and low-rise built forms. Courtyards and openings ensured good airflow through buildings, many with terraces, and varieties of spaces adapted to seasonal variations in climate. Nevertheless, modern planning concepts segregated residential, commercial and working zones, rather than encouraging mixed land use. Such planning decisions for zoning had generated long travels for livelihood, services, leisure, and socialisation. Urban planning threatened the versatility and culture of the city. As a result, the neighbourhoods and the environment in traditional cities are loosing familiarity.

Most of the old urban cores act as Business Districts. Yet these dense, intense and unhealthy areas are devoid of improved services and they are often compared to slums. These areas remain neglected and, in many cases, they are being abused. The areas that once provided the foundation of the city are now considered hindrance to development,

despite of possessing wealth of heritage resources and a strong community network. The traditional urban and social fabric, under tremendous commercial pressure, is constantly transforming to accommodate and adjust to the new land use, industrial growths and transport needs, by subdivision and appropriation of housing, overloading infrastructure, overstretching commercial capacity, and bearing traffic problems. These result in a breakdown of the physical and social cohesion, awareness to and appreciation of traditional architecture, and long-established local governance systems.

Manmade disasters and obstacles too are responsible for the degradation of traditional areas. Non-participatory decision making and planning that do not response to the users' needs normally neglect rundown areas, and put priorities on components that often threat the survival of traditional buildings. Owners of such buildings gave in to alien uses to change the character of the place. Increasing land values and irrational reaction of the authorities to the needs of burgeoning population made habitable housing unaffordable for the majority. Yet a huge population continued to live in the old city in vulnerable conditions, to whom preservation of heritage, engulfed in all-pervasive commercialisation, becomes a non-priority.

City authorities across the globe made little or no attempt to preserve heritage, though they often designated monuments and properties as 'National Monuments' and formulated few laws. These laws on many occasions were however weak in protecting the monuments and buildings and met no need of the areas in terms of civic or social amenities, income generation, liveability, etc., a situation typical of cities across the world. The regulations and policies made it difficult to safeguard the heritage buildings, and rather encouraged new and massive constructions. For example in case of Ahmedabad, the permissible Floor Space Index, the policies disqualifying buildings older than 15 years for housing loans, the tax structure that does not favour heritage conservation, etc. are, to a large extent, responsible for this decay of historic areas[1]. Similar case is found in Dhaka where Building Construction Rules disfavour narrow winding streets, building on periphery by keeping interior courtyards, low-rise walk-up structures, etc.[2]

2.1 Image, Identity and Participation

Historic cities and sites hold a vibrant and kinetic society. Their survival is dependent on coping with the present, burdened with complexities of burgeoning population, urban decay, and development challenges. Yet planning and urban development rules and regulations are disconnecting people from their heritage, who are unable to grasp the consequences of their homes and cherished familiar spaces becoming the public domain by gaining 'universal value'[3]. The enticement of tourist-related wealth confuses the people's expectation and needs as it is romanced with concepts like 'cultural significance'[4]. Value added by heritage related activities reduces the community's scope to determine its own future. Hence, a good heritage conservation strategy would be to build a strong identity, sense of belongingness and pride in one's own place, culture and heritage; this can provide a rallying point to work together.

A growing number of people searching for economic opportunities in the developing cities have a chance to improve their situation and build a sustainable life, which is a formidable challenge. Most decision-makers fail to see and exploit the people as a resource, though these people add colour to a city with their broad multi-cultural diversity. The lack of necessary economic opportunities has led to a culturally rich yet divided and anonymous society that cannot express itself. Providing them with scope to express culture, heritage and talent is an important component in a sound heritage conservation strategy. Many cities have reinvented themselves by emphasising their historical roots and cultural assets, traditional ambience and rich architecture, which give credence and justification to providing a distinct identity to cultural expressions and manifestations.

Heritage is much more than just physical or tangible asset, manifested in festivals, fairs, exhibitions, cultural and sports competitions, and other aspects of the culture and religion. These are an intrinsic part of the local cultural fabric, representing unique heritage value. Citizens Forums can highlight the importance of the assets they possess, and thus bring the community together, protective of their pride heritage. Transfer of skill related to traditional art and craft is also critical in this regard; it can occur in number of ways like apprenticeships under a master craftsman (who may be a 'living cultural asset'), facilitated by such forums.

Urban neighbourhoods offering a wide range of familiar and historical landmarks that are important in creating and sustaining a strong sense of belonging and attachment to urban life are a key domain for the transmission of shared values and norms. In a rapidly urbanising and globalising world, these hold opportunities for valuing community and enhancing the city's cultural heritage and unique competitive edge. (Yuen, 2005) Instead of asking, the planners to

achieve development objective, range of stakeholders are often engaged to set choice(s), formulate modes, make decision and execute. For example, the public is invited to share and discuss how local cultural heritage assets can be protected. These offer scopes to reveal the assets that define the collective memory (Yuen, 2005).

Conservation should go beyond the monumental relics of church, state, and monarchy to include the process of celebrating the familiar and beloved cultural heritage in daily lives. Projects worldwide now holistically protect cultural resources rather than only monumental or architectural splendour. Sustainable heritage conservation depends on the involvement of local communities. In Singapore, local area conservation went beyond the physical dimension to conserve more of the built heritage and nature areas…conservation should embrace not just buildings from the colonial and earlier periods but also more recently developed areas which are rich in culture and character (The Straits Times, 24 Nov. 2000)[5].

Worldwide the traditional cities face the dilemmas, like, what needs to de included or to excluded? How to preserve the sense of a place and sense of belonging within the context in which land uses suffer from growing demand in economic terms? What to do to retain the history, character, and vitality of old cities, as cities continue to grow and evolve with time? Too often government initiated conservation projects involve artificial replicas of the past, managed spectacles designed to impress, which are devoid of life and cultural memory. The current preservation schools recognise that the conservation must learn the social value and context of places from the community. Successful projects show that distinctiveness cannot be kept by statutory actions alone; rather it must embrace the community. The richness of places and people's attachment to them grows from their daily use. Thus familiar neighbourhoods, with its place-identity, constitute opportunity for a new definition of active heritage assets. They offer living cultural resources familiarised with social meanings invested in them by the workers and residents. These are important ingredients of collective feeling that 'this is our place'.

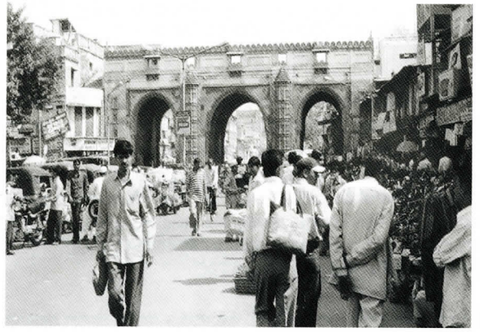


Figure 01: Tin Darwaza on the old city wall
Source: Debashish Nayak

Figure 02: The historic Ahmedabad Jama Masjid

2.2 Efforts for Heritage Conservation

Urban Heritage represents an appreciation of the past, which may be more tangible than that illustrated in grandeur monuments. Such heritage elements, possibly, extend a social insight into the life of a previous era, and more often give a sense of identity and of belonging within physical surroundings responding to the human scale. It is not just through the actions of international heritage bodies, but also through the often-passive appreciation of the users and visitors that urban conservation is gathering momentum. For it to be real, a place has to present a meaning to its users and occupants. Towards this end, finances need to be available to initiate and realise urban conservation programs.

The citizens alone cannot initiate heritage preservation; rather the government agencies and the local government institutes should play a pro-active role for the realisation of the conservation goals by providing direction, legislation, protection, control and monitoring. It suggests that the involvement of a well-represented local government institute closer to the grassroots people is imperative to implement an integrated conservation program. The ultimate goal calls in for the empowerment and capacity building of the concerned authorities for the effective realisation of the conservation aim. A relationship needs to be established between the financers, the policy makers, and users, to achieve the satisfaction of both. There is a need for the dissemination of the ideas and experiences amongst the various cities and a practical replication of the same in their respective contexts.

The creation and spreading of awareness regarding the heritage resources through heritage walks, workshops, plays and skits, celebration of heritage festivals, etc. amongst the local inhabitants is an important aspect of the whole process. The mass media play an important role in raising awareness and educating the local communities on heritage issues and the representative value. Seeking their active involvement in the heritage conservation action will ensure that the local community is informed and involved in the activities. Thus, links to global information network can increase the availability and access to locally relevant information and tourism opportunities.

Figure 03: House to house rapport building by the architects of Urban Study Group

Figure 04: Discussion with community elders

Reference : A community conservation movement was undertaken in Sakharibazaar, Dhaka. Source: Taimur Islam

3. The Ahmedabad Initiative

Ahmedabad dates back to 10C town Ashava and late 11C town Karnavati nearby. The present Walled City was created during the 15C Ahmed Shahi period. A new palace and fort covering 500mx800m were built in Vadra. The city expanded outwards and strengthened fortifications in the 17-18C. It started to decline then as many parts of the inner city were abandoned and gradually deteriorated. During the British rule, political stability and beginning of textile industry resulted in economic growth and prosperity; diversified types of buildings were built. The wholesale markets, mechanised industries and worker's quarters on eastern suburbs, the Ellis Bridge, residential buildings and educational institutions were also established. The physical expansions resulted in congestion and decay of the Walled City, as economic activities grew unhindered. Fort walls were mostly pulled down towards the mid 20C.

The nucleus of activities at Vadra and Manekchawk, and the twelve gates on the wall, created a radial street pattern. Pol (micro mahalla) around residential streets entered through the gates from wider streets became typical. It would have at the most two gates that bar entry at night to a particular pol, which thus remains secured by a silent code of citizen's vigilance[6].

3.1. Obstacles to Heritage Conservation

The AMC and the Ford Foundation studied the essential elements (history, form, wall, gates, pols, house patterns and the problems related to old fabric) required in the conservation of city's historical areas. A list of heritage buildings and precincts was prepared. Following those, a conservation policy and a demonstration project were also proposed. The AMC improved upon the report, as it found that the list was not intensive and not much explored and documented. It made a new list with about 15,000 buildings, which are now protected under a recently gazetted Heritage Regulation. Various obstacles identified in Walled City heritage conservation are as below.

3.1.1 Regulations and Policies

During the British rule, 'Road Lines' were demarcated to keep right of way for future road widening in the Walled City. Hence, the facades falling within the line were not cared for. Low height and interior courts meant the traditional mahallas consume much less floor areas than permitted by 3.0 FSI in the Walled City. Multi-storied buildings on large amalgamated plots taking advantage of high FSI threaten the character and integrity of the existing form. The FSI was then reduced to 2.0 to allow only restoration and upgrading of the property. The tax structure disfavours retention of old structures. For example, Chabutaras (bird feeder) are taxed at commercial rate. Vacant properties have low tax, leading to buildings of heritage value locked up and let to ruin.

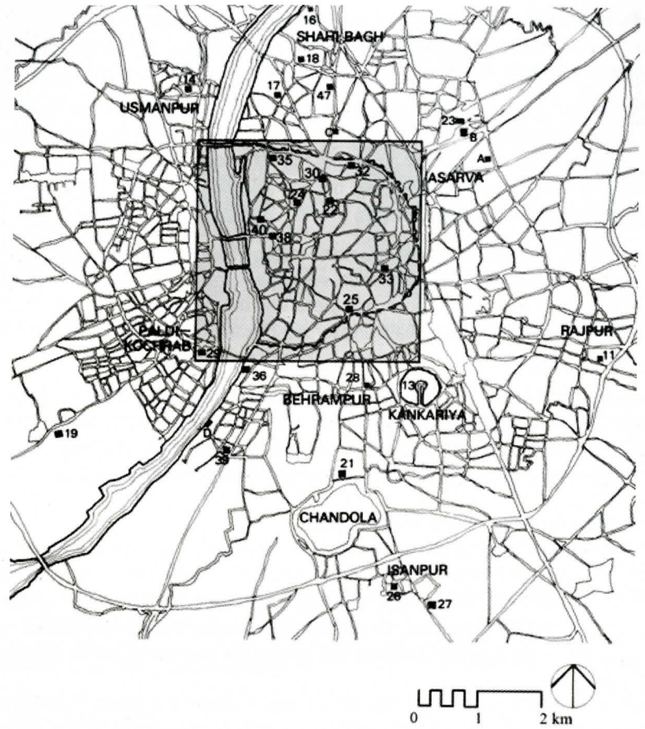


Figure 05: Map of the City of Ahmedabad showing the old walled city (inset) and historic structures

3.1.2 Economic Changes

Large parts of the Walled City residents were tenants working in the textile mills. With the mills closing down, they became jobless, and could not maintain the old buildings where they lived. However, the growing jewellery in the area attracted many skilled and unskilled people and traffic. The influx of outsiders destabilised the social fabric in the pols, and raised the crime rate; riots and communal problems forced many people to migrate. Other commercial ingress into the old fabric generated after the addition of the Relief Road, created alien and competing changes in the land use and price. Also new or converted warehouses disturbed the residential character.

3.1.3 Lack of Information

Lack of appreciation of conservation among the common people is ascribed to poor awareness about the need, justification, and technique of conservation. Scarcity of long-obsolete building materials, technique, or craftsman for repair works due to lack of patrons and advent of often-cheap modern methods and products, caused delay in repair works, and led to inaction and deliberate decay of the building. Proper maps and drawings were often absent.

3.2 Strategic Partnerships

The success of intervention depends on a mutual understanding, strategic partnership, and widespread participation of a variety of stakeholders including the locals. In these activities, a proper role of media was important and integral to give publicity and create awareness among the commoners. In Ahmedabad, a series of activities in forms of consultation and participation at ground level were organised to elicit community attitude and desire. Attended by citizen groups, community representatives, renowned personalities and AMC officials, a meeting held in Khadia (Old City) discussed the problems, possibilities and strategies of conservation and development of the Walled City.

'Preservation of the Past and Glimpses of History' was launched at Desai-ni-Pol, which was involved in the freedom movement, as part of the 'World Heritage Week' celebration, jointly organised by citizen's groups and AMC to discuss

'Heritage'. The residents released a booklet to mark the Day, listing the historical houses, personalities, and a chronicle of important events. In another event organised on the 50th anniversary of Independence focused on 28 houses connected with the freedom struggle. The citizens led by elected and government officials visited these houses.

The AMC held more publicised Heritage Walks through the mahallas. The community came forward to help by keeping the route and the surroundings restored and maintained. Involvement of local volunteers and a rapport with the community is crucial to sustain such participatory programs. The AMC introduced a process of certification to recognise the role of the community and its members. The AMC put up nameplates and inaugurated them in the presence of AMC officials, locals, politicians and elderly persons.

Gandhi's birthday was also celebrated and buildings associated with his life and work visited. Netaji's birthday was celebrated in the 1905 Bengal Home where partisans stayed and trained the locals in revolution. The need for searching authentic history and associated places, and preserving the cultural heritage that includes all such events were stressed upon during a public meeting. Death anniversary of a local Kaviswar Nanalal Dalpatram was observed in Lambeshwer-Ni-Pol where he used to live, cooperated by literary organisations.

'Pol - Etale molun dahin ne upar katke gor' was staged to create awareness and instil pride in tradition, and to initiate a dialogue with the pol people. A collaborative effort among the CRUTA Foundation, Theatre Media Centre and the Ahmedabad Community Foundation, the play described the life and culture in the pols, and discouraged tearing them down. It also encouraged people to revive the traditional system of local governance (panch)[7].

3.2.1 Inter Departmental and Public Private Partnerships

The AMC in association with the Archaeological Survey of India implanted landscape elements and street furniture around the fort wall and city gates. The ASI worked on the physical restoration, while the AMC worked on the landscape and lighting. The AMC with the assistance of state government, the ASI, citizen groups and the NGOs, is giving façade restoration grant (50% of the cost). One of the pole-mounted transformers located next to a Chabutara, designed by a local Architect to highlight the Chabutara and conceal the transformer, will be replicated in the future.

Dalpatram Memorial was proposed at the site of the poet's house. In absence of proper drawings and plans, the effort relied on the memory of the elders, and adjoining buildings comprising the original façade studied for an authentic memorial, Tulsi Manch and a large bronze statue. The statue of renowned local poet Akha Bhagat was installed at Desai-ni-Pol.

Swaminarayan Temple Trust supported a project to restore the remains of Manek Burj, the southwest tower of the Wall associated with the city's founding. A building near Panchkuwa Gate was restored and used as Ward Office. Inspired Collector of Ahmedabad requested the AMC to design a Heritage Gate for its complex and took up renovation of its buildings. City Museum was established with the help of architect BV Doshi.

The public representatives elected at various levels usually have direct contact and rapport with their constituents, often with profound influence. Hence, they were taken into confidence for support and involvement. The AMC allocated US$ 125,000 to start Heritage Cell to look after related activities and policies.

3.3 Collaborations

Helped by the AMC Heritage Cell, heritage walk and other initiatives were contextually adapted in many Indian cities like Amritsar, Pondicherry, Baroda and Jamnagar. The experience of the participatory heritage revival activities were shared with smaller Gujrati towns. The AMC officials helped them to prepare comprehensive plans for improving physical conditions and heritage conservation. This will hopefully lead to regional small town development initiatives. In 1999, the AMC signed an MOU with the French Government for a scientific study of the walled city. A French team along with AMC staff is working jointly in the project. The Dutch had a small presence in Ahmedabad in earlier days in connection with trade and commerce; restoration of a Dutch factory and graveyard, and an interpretation booklet exploring the related history are underway, through collaboration with the Dutch government.

Inclusion of Walled City of Ahmedabad in the List of Endangered Heritage Sites by the World Monument Fund intensified the activities and generated international attention. In 2000, the Housing and Urban Development Corporation approved investment for heritage exploration; an MOU was signed between the AMC and the HUDCO to detail its financial implication.

Figure 06: Distributing Certificate of Appreciation to local volunteers
Source: Debashish Nayak

Figure 07: A scene of the street drama on Pol

4. Heritage Walk: a tool for urban revival

Heritage Walk is an effective tool whereby the architectural heritage, cultural heritage and the craft heritage of the inner city are explored. The walk takes the people following specific routes ambling through the traditional settlements, exploring the heritage resources, such as the beautiful temples, historic buildings, ornate structures, pols, shops, traditional socio-cultural activities, and a lot more.

4.1 Role of Organisation

The exploring and exposing of the inner areas of the Walled City required action by the AMC, to provide basic infrastructure like paving, street cleaning, street lights, signage, public amenities, etc. The walk brought a positive change in the land use pattern of the area, by putting a number of the heritage buildings into serving the tourists who can get the feel of the place by staying within them. The revenue influenced the area's economy positively. Below is a list of heritage conservation essential for a municipality:

1. Make strategic intervention,
2. Start with and optimise the use of available resources,
3. Elicit support of local architects, other professionals, NGOs and CBOs,
4. Get support of local people, individuals, formal and informal groups,
5. Identify both short-term and long-term implement-able projects,
6. Involve elected representatives and bureaucracy,
7. Coordinate with other government and non-government agencies and institutes,
8. Establish a heritage unit in the local government,
9. Inform and sensitise all agencies about heritage work, and
10. Recognise and cooperate with International bodies and coordinate their actions.

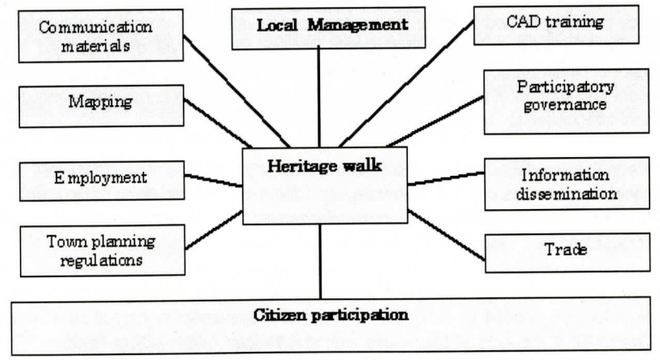


Figure 08: Linking Heritage Walk with other Strategies

The AMC, helped by the Conservation and Research of Urban Traditional Architecture Foundation, set up a Heritage Cell in 1996 to create awareness among the citizens and develop a comprehensive plan for conservation of the Walled City of Ahmedabad, the first of its kind among the Indian municipalities. The AMC Heritage Department works under the supervision of a Deputy Municipal Commissioner helped by the CRUTA volunteers and deputed AMC staff.

The Heritage Cell is creating awareness of and initiating actions to guard heritage. The objectives were to enable people to take pride in their building tradition and get involved in its revival through a sustainable policy; people's involvement was imperative to continue with such an action. The innovative and interactive process was self-sufficient to conserve architectural and cultural heritage in many old city centres. The walks display the unique heritage of the city to the locals and the visitors. The list of heritage buildings within the walled city area was used to start restoration projects gradually. Street theatre and pol-day celebration generated spontaneous public participation celebrating their culture and belongingness, and made them realise the potential of their heritage.

4.2 Fall-Out

The Heritage Cell in the AMC was a pioneering effort. Since the initiation of its programs, many restoration projects spontaneously undertaken by the owners are in progress along the heritage route. Old spaces are being renovated in accordance with new techniques, without disturbing the historic character, under the guidance of the Heritage Cell. Thus, the Cell grew the capacity to provide consultation in preparing restoration works and on-site assistance. The agreement between the French government, AMC and HUDCO, under which the buildings older than 15 years can get loans for restoration activities, indicates a national policy that now appreciates the value of architectural heritage conservation.

With heritage issues integrated in the development agenda, the unique concept created a wider impact on the nearby towns and cities. The Gujarat City Manager Association organised a Transfer Seminar in 2001 when many cities participated, and awarded the AMC experience as a 'Best Practice'. Following its example, Jaipur, Amritsar and Delhi are also taking steps to protect and preserve their heritage through community participation.

After several initiatives through Vibrant Gujarat, the government as Urban Development Year has declared the year 2005, and the Gujarat Urban Heritage Institute for training and promoting conservation initiatives in the State was set up. Gujarat today has a strong heritage conservation movement; the inclusion of Champaner as a world heritage site provided an impetus. Significant efforts have resulted in many conservation projects being taken. The number of trained professionals and active volunteers has also increased.

5. Conclusion

Despite a wealth of heritage resources and a strong community network, historic urban settlements are succumbing to rapid urban changes. Much effort by the authorities to reverse the decline of these areas that are vital for the local identity and continuity is absent. This calls for an alternative way of utilising community resources and initiatives through participation of the community and CBOs for managing, regenerating and redeeming the quality of these areas.

Participatory advocacy planning helped to ignite the heritage conservation movement in many places[8]. However, this was often institutionalised to such an extent that people became cynical; yet many termed the efforts as token. Nevertheless, it did not diminish participation as a valuable means for a historic town to tap an extraordinary array of resources, commitment and support. It was indispensable to the success of the conservation movement, dependent on the degree of personal attachment to the goals shared by the community.

The conservation efforts in Ahmedabad intended to build capacity of the community and facilitate its involvement in the revival process so that it could assume the ownership and keep the efforts going. The energy mobilised by the involvement of communities facilitates many developmental interventions. People themselves can take responsibilities for many projects, which could be carried out with funds raised by them.

The government or non-government organisations have an enormous role in reviving the inner cities, by preserving its heritage, but not the resources needed to accomplish it isolatedly. Sustainability cannot be achieved unless heritage conservation finds relevance in the lives of the people seeing it as their responsibility. Heritage Walk convinces them that there is a need for social, cultural and architectural revival. Such participatory approaches can enable people to take pride in preserving their culture and heritage.

However, in case of Ahmedabad, individual voluntary efforts could not be scaled up due to the continued apathy among the public. One has to strongly propagate that Heritage preservation does not oppose development, but can be parallel to it. Instead of being nostalgic in a world where established beliefs and social structures are increasingly challenged, an understanding of the past provides a perspective on the present, a means to understand and make sense of it. Thus, heritage has a much wider power to inspire and move people towards the progress and development of their community.

Notes

[1] As against these, Building Rules in some parts of India, like Chennai, allow higher Floor Space Index (building more) for additions or improvements made to existing structures without demolition compared to new structures. Thus, the owners of heritage buildings are discouraged to pull down structures and building new as that will mean a loss of floor area.

[2] However, the 2008 Building Construction Rules for Dhaka for the first time mention heritage buildings, maintaining their list, safeguarding/honouring historic areas and heritage structures, controlling mass, colour, offset, height etc. in historic areas or sites bear historic structures.

[3] Value is a social association of qualities produced through cultural-social processes; outstanding is the best and most representative example. Considering the global scale, this is not limited to local community. In addition to cultural and natural properties, the World Heritage List includes properties with both outstanding cultural and natural value. A feature of the World Heritage Convention is the protection of heritage of Outstanding Universal Value (OUV), which transcends national values and has an importance to present and future generations. While OUV is defined in the Convention's Operational Guidelines, discussion of its meaning and application continues to maintain an appropriate threshold of value for the selection of World Heritage properties to uphold the credibility of the List. A heritage resource will obtain universal value if it is a true and authentic expression of a particular culture, considering history, art or science of monuments or groups of buildings, and from the historical, aesthetic, ethnological or anthropological points of view.

[4] Cultural heritage value means possessing historical, archaeological, architectural, technological, aesthetic, scientific, spiritual, social, traditional or other special cultural significance, associated with human activity. It describes what is important about property with respect to heritage listing, forming the basis of conservation of any kind to retain cultural significance of the property. An integrated approach emphasizes the retention or enhancement of cultural significance balanced with other relevant property management concerns so that it is achievable and add to the longevity and viability of the property. The 1981 Burra Charter developed conservation principles that include comprehensive definitions of items, and introduces the concept of cultural significance, the 'aesthetic, historic, scientific or social value for past, present and future generations', and requires this to be defined for each place, and conservation plans to be established and justified prior to any intervention. Burra Charter, describing conservation processes for good practice, is well established in Australia, and is used by other countries too.

[5] The Singapore Master Plan 2003 shows that locally based identities are important to most people; collective historical memories play a strong role in their sentimental attachments to places and community identity. In an increasingly placeless world, urban neighbourhoods can play an important part in people's personal and social identity. Singapore's search for identity in conservation underscores a common first principle of participatory development: the primacy of citizenship - a key strategy in the making of a distinctive city, making use of not just quantitative analyses of the urban fabric but also people's personal views and feelings, to identify the underlying qualities of the sense of place and attachment to locality.

[6] The 18C Pols are quaint honeycomb-like community dwellings enclosed by a wall and protected by huge gates. They stand out in their architectural finesse and appeal -richly carved woodwork and stone facades nurtures within its folds, unwritten pages of history and the warmth of communal harmony. Narrow lanes crisscrossing pols terminate in squares characterised with the presence of community wells and carved wooden chabutaras for feeding pigeons. Numerous Jain and Hindu shrines dotting these lanes testifies the amicable life these communities traditionally enjoyed.

[7] Like many traditional towns of South Asia, a civic committee consisting of five elders were formed in Ahmedabad, in order to take care of local problems through community initiatives and resolve conflicts through arbitration. A similar system (Panchayet) existed in Dhaka during the Mughal rule, which was later revived in the late-19C on behest of Nawab Abdul Ghani.

[8] The community action groups got engaged in downtown revitalisation programs across USA in the 1980s, and the government started to consult public to ensure adequate community input into the decision-making process.

References:

Yuen, Belinda, 2005: 'Strengthening Urban Heritage in Singapore-building economic competitiveness and civic identity'; Global Urban Development, Vol. 1, Issue 1, May.

Protibesh © BUET
July 2008, Volume 12 Issue 2
pp. 37-45

Living beyond the Bound: A Human Rights Perspective towards Habitat of a Refugee Camp

Yasmin Ara
Lecturer,
Department of Architecture, BRAC University, Dhaka, Bangladesh
E-mail: yasminara@bracuniversity.ac.bd

Abstract
Currently, there is widespread international attention to the issue of the quality of treatment accorded to the refugees by states and humanitarian agencies. The level of importance attached to addressing the predicament of refugees is due mainly to several human rights declaration, like Universal Declaration of Human Rights (1948) and other major international treaties on human rights. However, the laws and covenants about human and civil rights that consider housing, healthy living environment and identity become forged when people and condition of the refugee camps all over the world come into discourse. Since the camps are purpose-built to temporarily accommodate displaced persons, in the long run they usually fail to fulfill even the most basic long-term requirements of such shelter. Bangladesh had been hosting about 2,40,000 stranded 'Pakistani' refugees since the liberation war of 1971. Since then, they are located in several camps, of which Geneva Camp in Dhaka is the largest. This camp area holds one of the examples of how, in real life, people are being dealt with when they are in crisis. It is the purpose of this paper to highlight a few selected habitat issues with special focus on housing and environmental condition of the camp. The paper aims to analyze the situation in relation to the international human and housing rights, treaties and standards for refugees in a global context.

Key words: Refugee Camp, Universal Declaration of Human Rights, Housing Rights, ICESCR.

1. Introduction

Since the human history of war and disasters, 'camps' are considered as the most familiar temporary shelter of the victims; explicitly of the displaced people usually known as 'refugees'. The majority of today's refugees have spent years of their lives in confined areas, restricted to camps or enduring a meager existence in urban centers. Most of them survive in an indeterminate state, and are usually dependent on others to find solution to their sufferings. The camps that accommodate these refugees are destined to be a part of the host-land or city, with time, if the crisis reaches no solution. More paradoxically, a lot of refugee camps keep on existing even when the emergency situation is over or a political solution to the crisis is reached. Due to the lack of interest or inadequate institutional support to repatriate, the camps often remain as they were. As a result, the sufferings of refugees tend to continue for an indefinite time. Refugees, who are being trapped in these distressed situations, frequently face significant restrictions on their rights. Since the conditions that led to the creation of refugees have not changed yet, and since today's protracted refugee crises show no signs of being resolved in the near future, predictably the situation will keep on distressing the humanity even in the coming decades.

Presently, there is intense international attention to the issue of the quality of treatment accorded to the refugees by states and humanitarian agencies. The level of importance attached to addressing the predicament of refugees is due mainly to several human rights declaration, like Universal Declaration of Human Rights (1948), Convention Relating to the Status of Refugees (1951), International Covenant on Economic, Social, and Cultural Rights (1966) and other major international treaties of human right. However, the laws and covenants about human and civil rights that consider housing, healthy living environment and identity become forged when the condition of the refugees and their camps all over the world come into discourse. With the growing number of natural disasters and the rising tension in world politics leading to wars and genocides, new refugee camps are coming into scene recurrently where the perception of human rights faces regular violation. Conditions of the long-existing camps are more wretched. Children are born as refugees in these settlements and by virtue of that status they are denied all human rights - right to food, clothing, education, health care and decent housing. Since the camps are purpose-built to temporarily accommodate displaced persons, in the long run they usually fail to fulfill even the most basic long-term requirements of such shelter.

2. Human Rights and other Covenants for Refugees

2.1 Human Rights:

The Universal Declaration of Human Rights (1948) is the major legal document that protects the inherent dignity and the equal and inalienable rights of all members of the human family. Different articles of this declaration are considered here to assess the condition of Geneva Camp. The highest aspiration of the common people that is to enjoy 'freedom of speech and belief' and 'freedom from fear and want' has been proclaimed in this document. It protects everyone's right to 'life, liberty and security of person' [article 3]. Moreover, it gives emphasis to the right to freedom of movement and residence within the borders of each State [article 13(1)]. It also recognizes people's right to leave any country, including his own, and to return to his country [article 13(2)]. The right to a nationality is also enforced in the Declaration [article 15]. Besides, the document secures the right to equal access to public service in the country [article 21(2)]. It gives prior right to parents to choose the kind of education that shall be given to their children [article 26(2)]. All the rights and freedoms that are set forth in this Declaration are entitled to everyone without any kind of distinction such as race, colour, sex, language, religion, political or other opinion, national or social origin, etc. No distinction is allowed to be made on the basis of the political, jurisdictional or international status of the country or territory to which a person belongs, whether it is independent, trust, non-self-governing or under any other limitation of sovereignty [article 2].

Several other fundamental rights of human being including economic, social and cultural rights are included in various international legally binding documents. Among the most significant of these is the ICESCR or the International Covenant on Economic, Social, and Cultural Rights (1966). The ICESCR aims to ensure the protection of economic, social and cultural rights including the right to self-determination of all people [article 1]; the right to non-discrimination based on race, colour, sex, language, religion, political or other opinion, national or social origin, birth or other status [article 2]; the equal right of men and women to enjoy the rights in the ICESCR [article 3]; the right to social security [article 9]; protection and assistance to the family [article 10]; the right to an adequate standard of living [article 11]; the right to health [article 12]; the right to education [articles 13-14]; and the right to cultural freedoms [article 15]. Thus the ICESCR tries to uphold the issues, which ensure rights of refugees' as human being.

2.2 Housing Rights:

The human right to adequate housing is the right of every woman, man, youth and child to acquire and sustain a secure home and community in which to live in peace and dignity. The right to housing is codified as a human right in the Universal Declaration of Human Rights [1948] -- *"Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services"* [article 25(1)]. Moreover, International Covenant on Economic, Social, and Cultural Rights recognizes 'the right of everyone to an adequate standard of living for himself and his family, including adequate food, clothing and housing, and to the continuous improvement of living conditions' [article 11(1)]. Furthermore, "General Comment 4" of the Committee on Economic, Social, and Cultural Rights (CESCR) elucidates that the individuals or female-headed households are also entitled to adequate housing regardless of age, economic status, group or other affiliation or status, and enjoyment of this right must not be subject to any form of discrimination [paragraph 6]. The Covenant declares that the right to housing should be interpreted in a broad and inclusive sense as the right to live in "security, peace and dignity" rather than a narrow or restrictive sense. The right to housing is inextricably linked to other fundamental human rights and should be seen as referring to not only accommodation (housing) by 'adequate housing' [paragraph 7].

While the definition of 'adequacy' with regard to housing is influenced by social, economic, cultural, climatic, ecological, and other factors, certain aspects of the right are applicable in any context. These are *"legal security of tenure, availability of services, materials, facilities and infrastructure, affordability; habitability, accessibility, location, cultural adequacy, etc."* [Paragraph 8].

2.3 Rights of Refugees/ IDPs:

The 1951 Geneva Convention relating to the Status of Refugees is the key legal document in defining refugees, determining their rights and the legal obligations of states to them. The convention defines a refugee as a person with *"well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion"* and who due to these reasons *" is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country".* It is enforced that the provisions of this Convention to refugees should be applied without discrimination as to race, religion or country of origin [article 3]. The

refugees should have the right of freedom to practice their religion and freedom as regards the religious education of their children [article 4]. Housing is declared to be as favorable as possible and, in any event, not less favorable than that accorded to aliens generally in the same circumstances [article 21].

Formally, it is the role of the United Nations Commission on Human Rights (UNCHR) to protect refugees. However, unlike refugees who cross national borders and benefit from an established system of international protection and assistance, those forcibly uprooted within their own countries i.e. IDPs lack predictable structures of support. UNCHR characterizes an IDP (Internally Displaced Person) as one who has also fled his or her home because of armed conflict or other similar situations as the refugees like internal strife and systematic violations of human rights but remain within the borders of their own countries. Neither the 1951 convention nor any other international humanitarian agency specifically covers the IDPs because of the sole fact that they remain within their own territory and thus are still subject to the laws of the state. Too often, they are overlooked in the humanitarian system whether it is a matter of aid or protection of human rights.

ICESCR, in its General Comments in 1996, has particularly elaborated on the right to adequate housing of refugees and the displaced persons. It is applicable for all, "including internally displaced persons who do not or no longer take an active part in the hostilities", and both in situations of non-international and inter-state armed conflicts. It is declared that whether during their displacement, in transit, or when resettled in camps, all displaced persons should be entitled to the enjoyment of the most basic rights mentioned in the Convention (Deng, 1998).

3. Geneva Camp in Dhaka: Human Rights at Stake

The refugee camps in the world are the living monuments of non-fulfilled human rights. On the most basic level, the movement of refugees from their homes signifies either the violation, or lack of protection of human rights. From the first exodus, begins the plight of refugees and defiance of their rights continues in the camp life. Every refugee camp has a long and painful story of people displaced from their land, living in temporary and inadequate shelters. Nearly every country in the world hosts refugees, including many of the poorest nations. Bangladesh, too, had been hosting about 240,000 stranded Pakistani refugees (typically known as 'Bihari') in about sixty-six camps for more than three decades since 1971. This group of people left their homes in Bihar, Uttar Pradesh, Maddhya Pradesh and few other states in India in 1947 with a hope of living in the newborn Muslim state 'Pakistan'. During the war in 1971, many of them joined the auxiliary forces of Pakistan army since culturally they were closer to and identified with West rather than East Pakistan's Bengali culture. As a consequence of this role, this community was persecuted after the independence and soon was domiciled in camps through a Presidential order (Chowdhury, 1998). For the Biharis, the move into the camps was intended to be temporary, as they wished to repatriate to Pakistan and assumed they would soon be able to do it. But most of them never did so, although thirty-six years have already passed by. As a matter of fact, the people of these refugee camps do not fit into the definition of either 'refugee' or 'IDP'. Neither have they been persecuted, nor do they have reason to fear persecution, in their 'home' country, Pakistan. They are not at risk in Bangladesh either. However, because they are regarded as 'Pakistanis', they do not have the privileges and benefits accorded to the Bangladeshi citizens. Since the Biharis face many of the same problems as refugees, U.S. Committee for Refugees (USCR) includes them among the populations who are facing "refugee-like circumstances". A recent High Court verdict declaring the community as citizens of Bangladesh and giving the community right of voting might be expected to bring certain change in the situation.

Conditions in the camps are wretched. Most of the Biharis live in one-room houses built by the government in 1972. In many camps, the population has more than doubled since 1971 but available housing has remained fairly static causing families to share already crowded rooms. Geneva camp is the largest of all these settlements in Bangladesh. The camp was named like this, as the Geneva based ICRC appeared at the scene much to the relief of the Bihari community during that state of disorder in 1972 (Nahar, 2000). The residents of this settlement are made up of low-income groups who work mainly as weavers, rickshaw-pullers, barbars, technicians, drivers, tailors and cooks. Women work in garment factories and as domestic help (Chowdhury, 1998). The camp is situated in the heart of the city occupying about 50,500 sq.ft of land. A fair estimation of population would be around 22,000 persons, resulting into a density of 2.3-sq.ft./ person. The Slum Survey Report conducted by the Center for Urban Studies (CUS, 1991) showed this camp as a slum of Dhaka city in terms of its physical appearances and characteristics. The condition of the area is illustrated below by discussing the elements of houses and infrastructures, uses of inadequate space and the level of privacy and the crisis of identity inside the camp area.

3.1 Extent of Houses

From the very beginning, the camp was divided into nine blocks. Houses or 'huts' are arranged in rows placing the dwelling units on two sides of a common wall. The houses, in most cases, are comprised of only one small room of about 3m X 2.5m in size and, usually, have a regular shape. Family units are found to be consisting of 5 to 10 members, generally being the extended ones. The linear space is subdivided into more rooms according to the needs. Orientation of the houses is chosen without making an allowance for any climatic requirements. Their placement in rows, in most cases sharing two or three walls, makes the houses suffer from poor or no ventilation, inadequate daylight, and other negative attributes. As there is single or no window provided, the houses are generally dark. Small ventilating windows in the walls and skylight in the roofs allow little daylight and air to get in. Even if there is any small opening, the problem of excessive dust and odor compel most houses to keep their street side windows shut. Therefore, the situation inside is warm and humid.

At the inception of the camps, the materials used for the construction of the houses were mainly plastic sheets and bamboo for walls and roofs and mud for the plinth. Eventually, people have paved the floors and changed the walls and roofs to CI sheet and brick. Some of the houses have made vertical extensions because of shortage of space in the ground level. The houses, in all senses, are unable to protect sun, rain and provide security for the inhabitants.

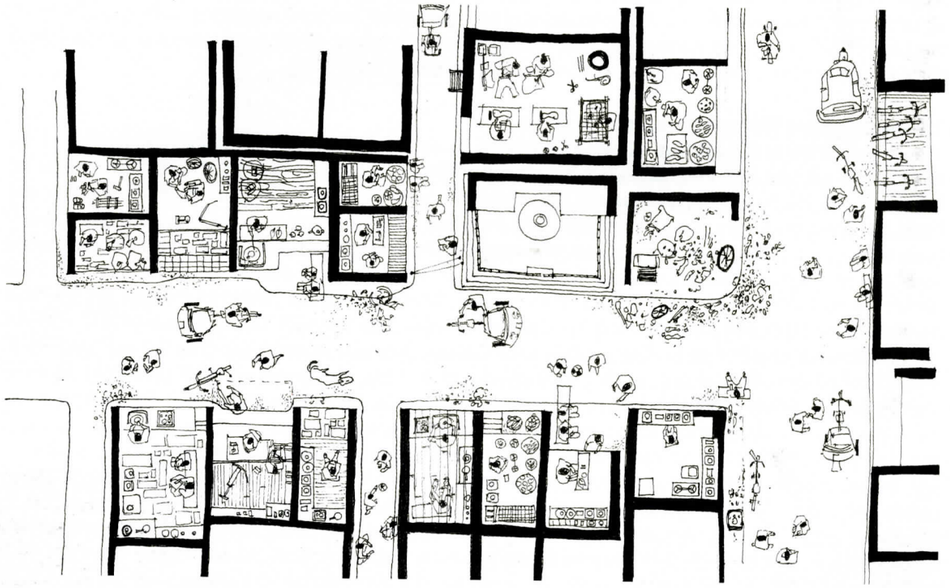


Figure 01: Dwelling units placed on two sides of common walls and the narrow streets flanked by them
Source: 4th year Design Studio (2008), Department of Architecture, BRAC University

3.2 Use of space

From the need to derive optimum benefit of the limited space in the camp area, people try to work out different activities in the same place, by different individuals and in different periods of the day. Almost all households have single room, where all members of the family are forced to stay disregarding age, relation and privacy. During night, usually children and senior members sleep on bed and the young people on floor. The two-room houses, somewhat, ensures less congestion and provides more privacy. Commonly a room is kept without any bed to allow its flexible uses, like as domestic workspace (i.e. for cooking, eating, washing, studying, etc.) during day and sleeping at night. Usually a corner in the house is used for cooking and as there is no access to gas supply, people use kerosene stoves creating unbearable congestion of smoke inside. Some households have separated a small part inside the house for bathing and washing etc., though majority people of the camp use the common baths. Due to the absence of piped water to individual houses, water is needed to be stored. Bringing water in sufficient quantity from distant tube wells is laborious, so attempts are made to minimize water use.

Apart from daily works, many households in the camp are involved with income-generating works inside the house. Weaving and embroidery are very common activities that generate earnings of the community. These works are also integrated in the scarce space inside the houses. People sometimes come out and work on the alley considering it as an extension of their house when lack of space does not allow any extra activity inside. Usually, domestic works that do not require privacy and small professional works that do not need specific machine or standard size of space are executed in these outdoor spaces.

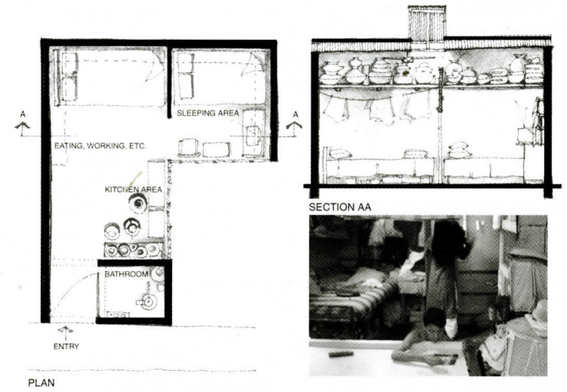


Figure 02: View of multiple uses in limited space

3.3 Open Space

Streets/ alleyways and the community service points are the only open spaces of the Geneva Camp. Due to absence of any proper open space, the intense use of the street and the pavement for most differing kinds of activities is very common in the area. Depending on time and weather, the street's use is always altered from outdoor kitchen to children's playground and sports-field to street café or restaurant. These narrow streets serve as the only breathing space of the camp-dwellers where they can gather and communicate. It constitutes their working area for embroidery and crafts, and their selling units. Thus, the internal alleys have formed a type of semi-public space, used by the camp-dwellers and the pedestrians passing by.

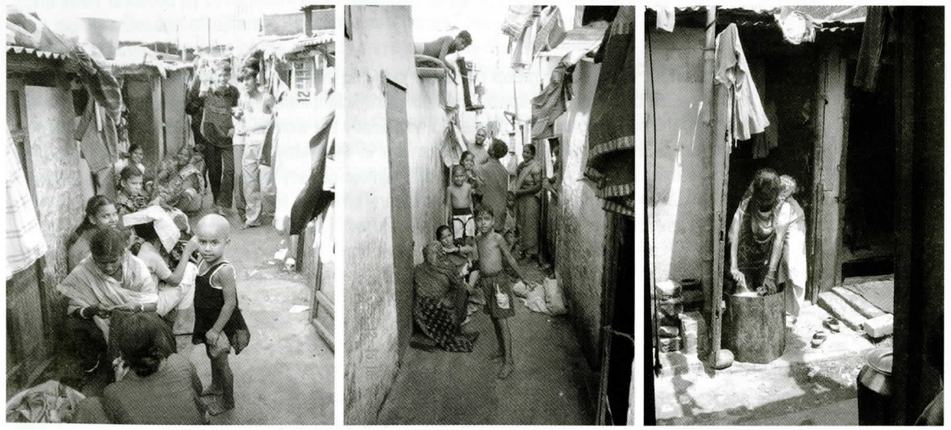


Figure 03: Intensive use of alleyways as 'open space'

3.4 Provision of Infrastructure

While started as the camp, very little infrastructure was provided to support individual houses in this area, as the experts earnestly considered temporality. The area was controlled mostly to share common infrastructure and facilities. The standard of life has been violated. The houses have no electricity, water or gas supply, sanitation facility and other essential infrastructure to live a standard life. Even though, some houses have arranged for own electricity and water supplies through illegal channels, there are still several inadequacies that make the community struggle throughout the year. Poor road network, inadequate water supply and sewerage system, lack of toilets and bathrooms, water clogging in rainy season are some of them. A survey conducted on sanitation in the camp area (Al-Falah International, 2002) shows that there exists 273 toilets in 35 shades and 36 bathrooms serve the entire community. That is, in average, one toilet is to be used by 80 people. Reportedly, many women have to wait from 4 o'clock in the morning to get the chance to use toilet.

Disposal of garbage has been identified as a persistent problem. No regular service of the municipality is allowed to collect solid wastes. Though there are six specific points determined by Municipal Corporation for disposing waste, it is neither maintained by the camp-dwellers nor is the authority very regular in collecting refuse. The narrow internal roads and walkways are often found to be filled with garbage, making the whole camp area a dirty place full of waste and odor, a source of pollution, disease and contamination of drinking water. During the wet seasons, the condition becomes critical. The alleyways get submerged under water and filled with wastes due to inefficient sanitation and drainage system.

Figure 04: Toilet blocks: a mere inadequacy of services
Source: 4th year Design Studio (2008), Department of Architecture, BRAC University

3.5 Level of Privacy

Maintaining privacy is very difficult for a displaced group of people residing in temporary shelters. Along with lack of resources, this happens also because of limitation of space and lack of sufficient infrastructure. Though this community have a very conservative background and before being displaced, especially the women, used to observe strict purdah system, now they are forced to go through an adaptive mechanism in their way of living. The lack of adequate infrastructure aggravates the situation. For the women, it is hard to maintain privacy when they need to fight everyday for collecting water and have to wait in long queue to use toilets that are provided for common use. At home, most of the people use curtains to obtain a level of seclusion. Inside the dark houses, generally there is no access of outsiders. Sexual separation is almost impossible when most of the families have only one room for the whole family to live in. Sometimes, the women have to stay even with distant or non-relatives in the same space. The conjugal life is maintained in mid of this atmosphere.

3.6 Identity and Culture

Relph (1976) illustrated three interrelated components that comprise the identity of a place- physical features or appearance, observable activities and functions, and meanings or symbols. As for the Geneva Camp, the area has gained a decaying character throughout the years. From the identity of a 'refugee camp', the area now poses a new manifestation that is closer to that of 'slum' area. Owing to the media, observable functions primarily include criminal activities like 'gambling, drug trafficking, arms, wine and toll collection' (The New Nation, 1997). It is now known as 'a den of crime or criminals', or 'urban cancer' to the city dwellers. Nevertheless, over the decades, this place and its

people have achieved a very distinct and unique identity. The commodities available in this area are the traditional products from people of the community. These are hand-woven clothes of North India (Benarasi saree), customary Indian ornaments (bangles) and delicious foods like kebab and biryani. With their colour, shine and flavor, these products convey the tradition of the people and allow the camp to achieve a distinct social and cultural identity.

Children of the community do not have proper opportunity to go to school and get education in Urdu, which is their mother tongue. Other than in one 'primary school' run by Al-Falah International (an NGO), no Urdu-medium education is available in or around the settlement. The only possibility of getting higher education is through Bengali medium schools that, in turn, destroy their linguistic culture. Most of the young-generation people in the camp can speak Urdu, but cannot read or write the language. This gives rise to a cultural and linguistic loss and leads to a new way of life, which is predominantly hybrid in nature.

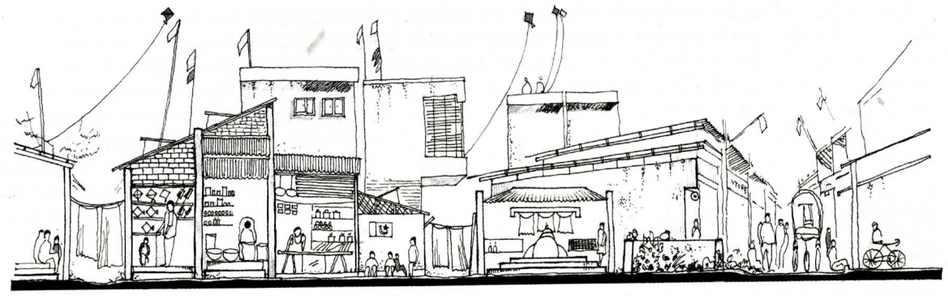


Figure 05: Street-side façade showing a distinct character
Source: 4th year Design Studio (2008), Department of Architecture, BRAC University

4. Review of the Geneva Camp from Human Rights Perspective

As with all human rights, the right to adequate housing is comprised of a web of intertwined obligations and entitlements which, when combined with one another, constitute the full right. In the case of Geneva Camp, numerous violations to which the right to housing is susceptible are depriving the community resulting into exclusion, thus leaving the refugees beyond the limit of human rights. The situation seems ironic considering that the right to adequate housing for every human being is recognized in several legal documents. The right is equally applicable, and at some points more responsive towards the refugees and displaced people. However, in the Geneva Camp area, the entire community is forced by circumstances to reside in desperately inadequate housing that threatens their 'security, peace and dignity'. Despite of different economic categories, people are unable to have a better or bigger house, due to spatial constraint. The area of the camp is same as it was thirty-six years ago, though the population has multiplied in the mean time. Certainly, the tiny houses that were built temporarily have now become insufficient to give shelter to the expanding large families. As a result, the use of the extremely limited space harms their health, education, safety and privacy that are declared to be ensured by the human rights laws. The arrangement of the houses and the building materials are not suitable to provide protection from severe tropical weather. This insufficiency intimidates habitability of housing defined by ICESRC, which includes "physical safety of occupants as well as adequate space free from vagaries of weather and threats to health". [1966] Therefore, in terms of materials and habitability, the housing environment in the area fails to sustain the standards set in the international documents.

Although ICESCR focuses on 'availability of services, facilities and infrastructure and accessibility' to housing as right of every human being, the camp area is significantly inadequate in this regard. The settlement does not offer 'reasonable accesses' to sanitation and water sources as defined by the World Health Organization (UNCHS-Habitat, 1982) as a situation where household members do not have to spend a disproportionate part of the day fetching water. The word 'reasonable access' can therefore cover both distance and waiting time at the source of water. While distance may be less important in the camp, the waiting time, which is often several hours, certainly has to be considered disproportionate to other daily activities. The accessibility of the area is thereby inadequate according to the definition of ICESCR as well, which is to ensure "sustainable access to natural and common resources, safe drinking water, energy for cooking, heating and lighting, sanitation and washing facilities, refuse disposal, site drainage and emergency services" [1966] for the health, security, comfort and nutrition of the occupants.

In addition to these, ICESCR noted that the human right to adequate housing is of central importance to the enjoyment of all economic, social and cultural rights. This right, in its full expression, is a powerful means of gaining political and democratic rights and through that of building cultural identity. Housing is a vital form of cultural expression that utilizes a rich array of skills, tradition and crafts and is a vibrant expression of cultural diversity. However, the cultural adequacy of housing which is supposed to be expressed in "the way housing is built, the materials used, and the policies supporting these" facilitating 'cultural expression and housing diversity' is totally absent in the Geneva Camp area. Furthermore, the Urdu-speaking community is losing their linguistic and cultural identity due to lack of opportunities (i.e. lack of educational institutions, cultural practices, etc.) that would enable them to retain their language, culture and tradition. The result is a loss of identity, skills and the sense of 'being' and belonging to a place that is so crucial to the survival of the diversity of the world's people.

5. Conclusion

A simple reason for the lack of adequate attention to the problem of displaced people has been the absence of their voice at international forum, where the interests of this group have not been sufficiently represented. A second reason for such lack of attention is the fact that until recently, refugee issues have tended to be separated from human rights in legal systems (Beyani, 1995). This has continued despite the obvious link between the two sets of concerns. Despite the significant steps towards the development of the refugees' human-rights perspective -- from the Universal Declaration of Human Rights in 1948, through the 1951 Convention Relating to the Status of Refugees to the International Covenant on Economic, Social, and Cultural Rights in 1966 and its General Comments -- the plight of refugee people has not always been featured on the agenda of international gatherings convened to advance the cause of humanity. The theoretical and practical gap which exists between the protection of refugees on the one hand, and the assertion of human rights on the other, is clearly reflected in the case discussed where no humanitarian organization is playing role to eradicate the sufferings of this long-existing refugee community.

As mentioned, the exodus of refugees and their living in the camps worldwide indicate the obvious violation of human rights. Geneva Camp in Dhaka is no exception and the people suffer from same predicament, as the settlement is nothing but an example of a long-existing refugee community of the world. This community is not the only long standing uprooted population in the world: many Palestinians have been refugees since 1949, and Tibetans since 1959, and there are other examples too. The quality of life is precarious in these settlements and this has been justified over the years exploiting the concept of temporariness of the camps. A durable solution is to be sought right now to accommodate the displaced and distressed group of refugees in decent shelter. The meaning of the term 'right to housing' must be defined more socially and understood against the background of the international context, taking the realities of world politics and regional variations thereof into account.

References:

Al-Falah International (2002) 'Mohammadpur Geneva Camp', Unpublished Report, Dhaka

Ara, Yasmin (2004) 'Case Study- A Refugee Camp: A New Addition to the Slums of the City?' Unpublished Masters Dissertation, Catholic University, Leuven

Beyani, Chaloka (1995) 'The Needs of Refugee Women: A Human Rights Perspective' in 'Gender and Development', Volume 3, No. 2 [Rights], June 1995, pp 29- 35

Chowdhury, R. Abrar (1998) 'A Forsaken Minority: The Camp-based Non-Bengali Community in Bangladesh', Occasional Paper 2, RMMRU, Dhaka University, Dhaka

Chowdhury, R. Abrar (1999) 'Perception of Biharis on the issue of Repatriation and Reintegration: Preliminary Findings from the Dhaka Camps', paper presented on the conference 'Refugees, Migrants and Stateless Persons: In Search of a National Consensus', organized and published by RMMRU, Dhaka

Centre for Urban Studies (1996) 'Survey of Slum and Squatter Settlement in Dhaka City', Unpublished Report, CUS, Dhaka

Deng, Francis M (1998) 'Internally Displaced Persons: Compilation and Analysis of Legal Norms', Human Rights Study Series 9, and UNCHR

Nahar, Sultana (2000) 'Bihari in Bangladesh: Present Status, Legal Impediments and Solution', in Choudhury R. Abrar (ed.), On the Margin: Refugees, Migrants and Minorities, RMMRU, Dhaka University, Dhaka, pp 173- 184

Office of the High Commissioner for Human Rights (1966) 'International Covenant on Economic, Social, and Cultural Rights' [http://www.unhchr.ch/, accessed on June 2008]

Relph, Edward (1976) 'Place and Placeness', Pion Limited, London, pp 59- 62

The New Nation (1997) 'Geneva Camp I: shanty houses turn into living hell', June 19, 1997

United Nations (1948) 'Universal Declaration of Human Rights', General Assembly res. 217A (III), December 1948

United Nations (1951) 'Convention and Protocol relating to the Status of Refugees', [http://www.unhchr.org/, accessed on June 2008]