ISSN 1728-7715

JOURNAL OF RESEARCH IN ARCHITECTURE AND PLANNING

VOLUME THIRTEEN
2012 (Second Issue)

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Published by

Department of Architecture and Planning,
NED University of Engineering and Technology,
Karachi, Pakistan.

Printed by

Khwaja Printers, Karachi.

CONTENTS

EDITORS' NOTE

The second issue of 2012 of the Journal of Research in Architecture and Planning (JRAP) has an interesting mix of papers. Two papers are based upon the cultural dynamics and examination of architectural concepts. A very interesting exploration of a case study in low income housing informs us about the emerging issues in the context of Dhaka. The paper places the chosen case study in the perspective of housing situation in Dhaka and the process of housing delivery, provision and evolution during the recent past. Some viable lessons learned in the process are discussed in the conclusions. The next paper is set in Pakistani context. It focuses on the issues of energy utilization in the various components of built environment. An analysis of national scenario of regulatory regime for energy efficiency in Pakistan is a timely contribution, given that one of the most intense power crises faced by the country. A paper emphasizing preventive conservation as an approach to conserve Dhaka is the next in list. With the use of a few important case studies and their analysis, the author makes his point for promotion of preventive conservation as a tool. More details are presented in the following lines.

Literature and critical studies are abound regarding the usage of culture as an urban revitalization enterprise. The paper by Harsha Munasinghe traces the routes of some of these planned approaches in the context of cities in the developed world. In this pretext, cumulative built heritage was viewed as a precious resource capable of generating and staggering economic activities of a diverse nature. Issues of city representing a 'complete' community, ability of cities to produce images and signs of cultural revival to attract and relate to spread out stakeholders and some attributes of globalization are deliberated in this paper. The tracking down of a British vision for Lahore is a useful description in chronology of the city's development in nineteenth century and after. Abdul Rehman and Muhammad Arshad scan through archival artefacts and records to piece together what could be termed as a British vision for Lahore. Conscious architectural control, development of some basic street scape elements, preparation of building and site utilization bye laws and a careful input towards the conservation of Mughal and other earlier period monuments were some of the vital contributions made by the British during their era of administration.

The paper by Taufiq Elahi and Shahid ul Ameen reports on the case example of Vastuhara low income housing project in Dhaka. Like similar metropolitan centres in South Asia, Dhaka has a very high cross section of low income households that traditionally adopted different informal approaches of acquiring housing in their stride to survive in the city. Based upon the experiences of local examples and international inputs, the case study has a useful combination of success and failure factors to learn from in the domain of planning, infrastructure development, administration and monitoring. Among the category of consumers of electricity, buildings formulate a significant user group. In Pakistan, where a huge gap exists between a stagnant and flagelling supply and exponentially rising demand, studies to review the various dimensions of the energy sector are considered timely. Riaz Akbar et.al have investigated the regulatory regime and found that while many applicable statutes exist, the non-existence of an enabling environment for enforcement of regulations is a crucial handicap. The paper by Sazzad Hossain underpins the emphasis on preventive conservation for the monuments and architectural relics of Dhaka in a scientific manner. Based on sound qualitative research, the paper identifies cultural assets and architectural relics to build up a case for this much desired intervention.

This issue of the journal contains a book review by Masooma Shakir on a monograph by Zain Mankani and Murtaza Shikoh on the life and works of Mehdi Ali Mirza – pioneer of architectural profession and education in Pakistan.

Editorial Board

CULTURE SECTOR IN URBAN DEVELOPMENT: RE-BUILDING COMPLETE COMMUNITIES IN THE DEVELOPED CITY

*Harsha Munasinghe**

ABSTRACT

The cities in the developed world make attempts to build complete communities. They continuously build facilities and patronize events to bring people back to the city by using the strength of the culture sector. The theme of this paper is the convergence of urban development and culture. The protection and re-use of heritage buildings and infusing cultural activities to the protected built spaces as well as building new cultural facilities and patronising cultural events have taken a significant turn in the developed world since 1980s. This paper, based on a literature survey, looks into the cities in the developed world and focuses on to the cases where the culture sector has been given a special attention. However, it is noteworthy in selecting cultural facilities and events, the city managers have prioritized attracting visitors rather than all residents. Since these activities do not necessarily represent the evolution of the city culture and have failed to congregate the sub-societies, the compartmentalization of the developed city continues.

1. BACKGROUND

The culture sector has become a noticeable player in urban development process since 1980s. This convergence, aimed at facilitating complete communities in the city, promotes the addition of cultural institutions such as museums, galleries, opera houses, concert halls, etc. and diverse cultural activities such as festivals, sports, etc. This cultural planning undoubtedly has been an important step towards making the city a living space (Evans, 2000). The European City of Culture Programme that primarily aims at strengthening the unique identity of each European city is the highlight of the convergence. The socio-economic resurgence of Bilbao as a result of the building cultural facilities is among the most tangible push-factors for cities to assign this new role to the culture sector. Edmonton, declaring itself as the festival city of Canada with over 40 different festivals held in a year shows another facet of this convergence. The protection, re-use, re-purpose and exhibition of tangible heritage such as buildings, city districts, etc. are also results of the new understanding of city managers who consider this convergence as *overarching* in rebuilding the completeness in their cities. This paper critically looks at the impact of the convergence of culture sector and urban development in building the complete community in the developed city.

The present-day globalized city is inhabited by a floating community. The city space is being continuously re-shaped by this community. The role of the culture sector, as a major player in shaping its development, is an essential area of study for those who plan to take the maximum advantage from this reshaping. This study first focuses on to the emergence of the convergence and the process of culture's elevation to play such an important role in urban matters to rebuild complete communities by recomposing the fragmented city. Then it finds those issues that have prepared the setting for its new role in the scenario of global society and possible means to improve its intended role. The point of departure of this study is an observation of side-tracking of the new role. The cities seem to have paid an undue attention on economic development deviating from facilitating the intended complete community, and as such have made attempts to create or enforce a *desired* identity. This culture-based image is being shaped to attract new economic benefits, hoping that the economic success may attract new societies to build complete community. This, instigating a form of gentrification, has resulted in further marginalizing some social groups and in reserving the city exclusively for a powerful minority.

The paper aims at preparing the grounds to study this conflict further as it seems to have emerged from the undue attention paid to tangible products without respecting their intangible ways of production. The complete community is defined here as the place where one could live, work and entertain. This inclusive and active community would constantly change and evolve yet professing continuity thus improving the living condition of the city. A literature survey has been used as a major research method while urban morphology

* Harsha Munasinghe, University of Moratuwa, Sri Lanka.

is used as a method of analysis to throw light on the findings.

2. DEFINING THE NEW ROLE

The pre-modern city successfully tested the strength of culture sector in comprehending a desirable image to the city in order to boost its socio-economic vibrancy. It integrated spaces and events tagged with culture and entertainment to attract users and investors. Theatres, arenas, temples, pleasure gardens, etc. in Roman cities are the best examples. The more recent cities such as Helsinki, Toronto, New York, all have noted the significance of cultural activities and integrated extensive spaces for cultural facilities and events. The post-modern era understood the culture sector as a major player in urban development for its direct links with the enterprise culture, consumer society, heritage industry and tourism. Today, the place identities are shaped as a marketing tool more than a place-making tool. The new trend has also opened up innovative and unprecedented means for cities to construct images, positioning them in international and domestic competition in *place-marketing.* The new role of the cultural sector has been to define a unique image for each city in order to be competitive, but how far those images represent the particular city culture is not assessed. Therefore, it is difficult to comprehend this selling places is for whom and at the expense of whom! In other words, the culture sector seems to be used to construct or enforce an image that is marketable to a new society of stronger economic actors at the expense of weaker current ones. The city managers shall investigate if the societies are able to enjoy these facilities or the cities are being compartmentalized as a result of the new-found role of culture.

Some cities seem to have acquired a marketable yet positive image by using the norms of cultural planning. Their new image has a significant impact on improved urban governance and demography. Helsinki, for example, seems to have found the *correct* equilibrium as convergence has been appreciated by the urban society, promoting urbanization and cultural diversification. The urban society in Helsinki possesses the socio-economic strength to withstand tourism and is aware of the values of the culture sector. The domination of the value system of the so-called original society and its support to diversify the city image to be in par with other European cities is another reason for reinvigorating the city through the European City of Culture Programme. There, infusing activities to rejuvenate underutilized urban spaces and grafting new institutions, the culture sector has been used as a motor of urban economy, bringing financial benefits and positive images to the city. It shall be noted that Helsinki was one of the few cities that instituted an authority to plan and manage its City of Culture programme (Heikkinen, 2000). However, this is not the case everywhere as some cities are inhabited by societies of less buying power. There, the cultural activities seem to be used by more affluent social groups and tourists. For example in Toronto, the culturally up-scaled urban space is too expensive for many sub-societies. There are cases where the constructed images do not facilitate continuous living: for example the concept of festival city has not been attractive to the families with children in Edmonton. Athens, on the other hand, is going through economic hardships after hosting Olympics in 2004. There are many such cases where convergence did not necessarily facilitate the complete community.

The most beneficial aspect of this flagship policy is its propensity to answer the problems caused by deindustrialization in the cities, where the traditional manufacturing base collapsed thus leaving extensive urban spaces underused or unused. The re-adoption of abandoned spaces such as factories, warehouses, butcheries, rail-yards, etc. to cultural and entertainment activities has given the city a new lease of life and constructed a positive image, and more importantly brought back the city life ejected by industrialization. This rejuvenation of abandoned spaces did attract new users closely followed by new investments. The culture sector, originally conceived for this city transformation, represents evolved societies and reinterprets their activities with a new tag. It is similar to re-humanizing the post-industrial city while adding a new heritage to city's benefit (Ashworth, *et.al*. 2007). The aforementioned case, Bilbao and the preservation of So-Ho district in New York are among instructive examples to strengthening the city life through convergence of urban development and culture.

Discussing the need for integrating the culture sector, (Bianchini, 1991) notes that there are four types of European cities, where different circumstances demanded the convergence:

1. Declining cities; where culture is used to diversify the economy and reconstruct their image (Glasgow, Liverpool, Hamburg, Rotterdam)

2. Economically prosperous political or administrative hubs; which may be culturally less-advantaged but the culture sector is used to create a new competitiveness (Frankfurt, Munich, Stuttgart, Brussels, Strasbourg)

3. Culture capitals or centres for cultural production; where cultural policies are aimed at consolidating their position and adapting the local cultural infrastructure to changes

in fashion, technologies and marketing styles (London, Paris, Amsterdam, Berlin, Rome)

4. Research and development cities; where sectors of economy that depend their success on cultural input is generated by nurturing creativity and talent, supporting an environment to produce innovations, and forging links between local cultural industries and advanced research (Rennes, Grenoble, Cologne, Hamburg, Milan, Barcelona).

In the first type, the culture sector has provided a solid transformative impact bringing success in terms of economics through a combine of building-based *hard* policy and activity-based *soft* methods. Most of the cities witnessed a complete grafting of the culture sector on the historic built spaces through renovation or re-purposing. The building-based policies have easily been favoured for their ability to create jobs by taking the advantage of the potential growth prospects and more tangible results. This, on the other hand, can be directly linked to the post-industrial scenario; making attempts to enlarge employment in the service sector and to offer entertainment to growing number of middle-class consumers in addition to giving a new lease of life to those abandoned spaces and city districts. The new values ascribed to spaces used for usual day-to-day activities and claiming those spaces as city's heritage has diversified city's image. The noticeable success of the culture sector as a source of economic prosperity in some cities has encouraged the others to take up such initiatives in to the central elements in their future plans. Most of those initial efforts did not focus on to the potential danger of replacing the evolved urban society, its values and activities that shaped those spaces because the city managers understood the strength of their city and its particular place in the said categories.

The next phase of development is marked by infusion of *typical* or *standard* cultural activities that are solely aimed at economic success. City managers, arguing for economic development as the development of the city, promoted this standardization that included new or renovated buildings, designed or re-purposed by globally-known architects to accommodate various museums, galleries, cinemas, theatres, etc. Some of these activities have no connection to the evolved city culture and as such do not represent the evolved city life or the cultural strength of the city. By initiating such building projects, cities have created jobs, become attractive to mobile investments and tourism. They may have strengthened the revenue base by engaging in domestic and international competitions with others. Their repositioning in the global market to catch the increasingly-mobile capital has posed both threats and challenges to place-perceptions. Yet, there is a potential danger of distancing own citizens in search of richer citizens (Zukin, 2010) notes how some communities were forced out of New York as a result of embedding the culture tag on the working class built spaces and thereby making them too expensive for those communities. The most intriguing issue is cultural value of the place is not any more emerging from the lived life but from some imported items.

North American cities reflect all four types at once in their new compositions and they are much younger than their European counterparts. They are using the culture sector to diversify the economy while networking all types of new and old functions necessarily with new meanings. In the North American city, the heritage interpretation is largely based on tangible values and built spaces are protected mostly as isolated objects exhibited for a diversifying society. The conserved space accommodates various cultural activities and entertainment. It is interpreted and expressed quantitatively for tourism. This conservation, in turn, demands the protection of built environment against tourist masses, kitsch and standardization. It is important to interpret a particular shaping of a tangible product in order to preserve its uniqueness (Munasinghe, 2003). It is also important to assess the strength of new functions in upholding the uniqueness of a heritage building and the place identity.

The use of culture sector and particularly the reinterpreted heritage to smoothen social conflicts between old residents and new immigrants, or in other words community rebuilding, is crucial in the North American city occupied by a multicultural society. However, the tourists and some immigrants become more powerful in the city and demand the city to adapt to a global-orientation as shown in the case of New York. Sustaining communities shall be designed over time, especially in those multicultural cities. It is noteworthy that such a city shall set goals in rebuilding complete communities using the culture sector and interpreting historic spaces and activities to congregate all sub-societies: new or old. The additions to the Royal Ontario Museum in Toronto, Canada has conceived an inclusive attempt to depict cultural continuity, diversifying city's landscape and making attempts to emphasize its evolution. The museum clearly exhibits the evolution of a country that was then known as 'Kanata', meaning a village or a settlement.

The strength of the culture sector in constructing a desirable image and its capacity could be used as an efficient communication device for displaying city's *lively* and *active*

appearance. This could be manipulated in shaping the new role of culture sector- the congregator. Since the images play a significant part in determining the fortunes of cities in attracting visitors, services, entrepreneurs and new residents as well as retaining existing services and residents, selecting a vision for urban development is the most important. An image that suites or is attractive to all parties may not exist, but the culture sector in each city has its own strength in determining the most desirable image, which is found within rather than importing from a so-called successful city. The new role of the culture sector has the capacity to shape a desirable vision for urban development and as such to facilitate complete communities.

3. REFLEXIVITY OF CULTURAL PLANNING

The earlier discussion focused on city's promotion campaigns since 1980s, in which inclusion of cultural sector has been heavily used for urban development. This process has replaced a pattern of sporadic and short-term phases where cities had adopted a reactionary rather than an active approach to urban development. The cultural planning strategically aimed at more substantial and envisioned developments than mere problem-solving exercises. Yet, most of the extensive projects, having paid undue attention on the completion, have included a sizeable portion of *showing off* to exhibit the city in an imposing manner to attract various kinds of exhibitions, conventions, games or events to earn revenue. Staging these events demanded enormous efforts on infrastructure development thus turning a new chapter in city's history but not necessarily with happy endings. In some cases, the investment did not bring ample outcomes to rebuild city's economy, and sustaining its event-based economy has pushed some cities to the brink of bankruptcy. Learning from mistakes, some scaled down their investments and cleverly integrated the new developments with the needs of the living society instead of theming their city images yet aiming at users with higher spending capacity. In Toronto, housing is being added in the city along with the addition of new cultural facilities. However, the housing is mostly aimed at selected social groups: younger or older child-less executives thus leaving out many. It is on the other hand possible that these are citizens who would use the cultural facilities.

It is a fact that the nature of production in the city is changing, making a huge impact on city's landscape, their communities and more on the value systems. This re-shapes the needs of facilitating complete communities by being attractive to a diversity of social actors. In the post-industrial city, (Lash *et.al*, 1994) note, "What are interestingly produced are not material objects, but signs". The city managers seem to be increasingly interested in those signs, and this is why the *ordinary* manufacturing industry in the city is becoming a cultural product. The values ascribed with just day-to-day production such as handloom clothes, hand-woven laces, food and spaces such as small boutiques, taverns, cafes marks the new trend of commoditizing otherwise ordinary products and spaces. This is why Lash *et.al* (1994) find, "… it is not that commodity manufacture provides the template, and culture follows, but that cultural industries themselves provided the template". This reverse trend demands the adaptation of the community to cultural products rather than represent them. It is easier to understand this trend through the concept of *reflexivity* that denotes the circular relationship between cause and effect and therefore often been discussed in relation to contemporary modernity (Gay, 2009).

On the other hand, reflexivity means increasing social and individual self-monitoring. Lash (1999), citing Kant's aesthetics in *The Critique of Judgment,* observes that people are reflexive cognitively as well as aesthetically. As aesthetic-reflexivity indicates more than self-monitoring that denotes hermeneutic self-interpretation. Thus aesthetic reflexivity enables individuals to be aware of, take reflexive distance to, and to manipulate information of societal flows and signs. Interestingly, this informs the possible conflicts between city's community and cultural activities introduced to instigate urban development. It is important to note that the local community and visitors would take reflexive action based on their own aesthetic reflexivity. The displayed cultural activity or production may thus complement continuous socio-economic development in the city. If the culture sector promotes activities that are discovered from the evolved values of the community, the aesthetic reflexivity could strengthen city's efforts to build and sustain the complete community.

Aesthetic reflexivity thesis assists understanding the eroding boundary between art and everyday life: for example, yesterday's everyday life is becoming today's cultural product. Such observations have a direct impact on the future of cities with our today's *usual* actions may be becoming cultural products of tomorrow. The individuals who are well-placed to manipulate and benefit from new information and communication structures and who consume the informational goods have the ability to aestheticize everyday life in order to garner economic benefits are labelled as *reflexivity winners* by Lash (1999). The new middle class emerged in the city as a result is, branded as *cultural intermediaries* by (O'Connor &Wynne, 1995). The cities try to attract them as residents or entrepreneurs since they

are believed to process *cultural citizenship* that can have a profound impact on the future success of cities. It can be assumed that cities believe that these reflexivity-winners would bring success to the city in global competitions. Yet, O'Connor and Wynne (1995) argue that the cultural intermediaries are working more for the knowledge and service industries and the public sector rather than the culture and media sphere. In addition, these people possess less cultural capital than what might have been expected. On the other hand, these cultural intermediaries are not familiar with the cultural values of the place.

The cultural intermediaries seem to occupy places for a certain period of time, promoting and abandoning places after making their profits. In other words, this society is moving from place to place and fixed to one particular place. The culture sector could become the saviour of the complete community if only there is a *resultant* society to take over the activities, events and spaces created by those intermediaries, who do not nurture such a generation to take over. It is therefore up to the city managers to facilitate the emergence of the successive society to sustain the city life. However, the city managers seem to be heading towards a different direction- to invent more and more new cultural activities to retain the mobile intermediaries for a longer period, thus postponing the inevitable. The culture sector, if interpreted within the uniqueness of the place- or the particular understanding between society and city, has the strength to sustain this continuity that demands the absorption of local residents to the new-found cultural facilities and events. Stockholm, Graz and Helsinki have managed to continuously interpret the cultural sector instigated by the European City of Culture program but not many others.

4. SOCIETY, CULTURE AND PLACE

(Zukin, 1995) coined the term *symbolic economy* to describe how images and products are linked with the culture industry and cultural consumption, and how this link has expanded in a global scale. For cities, this entails a need for marketing, producing and selling themselves as particular representatives of certain key symbols. The idea of European City of Culture intended to promote such symbols of each city and thereby to present the diversity of Europe as a continent. Hence the cities were to find themselves in need of producing kinds of imaginative spaces that are appealing to their particular target groups. Unfortunately, all cities seem to be going after the same target group pushing symbolic economies towards typifying. Yet, (Zukin, 1995) seems to be optimistic, "What is new about the symbolic economy since the 1970s… is its symbiosis of image and product, the scope and scale to selling images on a national and even a global level, and the role of the symbolic economy in speaking for, or representing, the city". These images and products can be London theatre, Parisian Haute Couture or even the more recent Jewish Museum in Berlin, where the products are tightly linked to a particular place and a particular history. The uniqueness of the place is resulted by the particular way of life that evolved there. Culture, as a phenomenon, has intensively place-specific characteristics thereby differentiates places from one another. The way of production, products, consumption, and as such the economy, they all are place-specific and are highly symbolic with one another. By responding to unique characters of a place, the culture sector could become the best tool for urban development that suites the place-or in other words the most sustainable development.

In this discourse of competition, the culture sector has gained a particular significance from 1970 to 1990, where "cultural strategies that initially represented the results of economic development turned into strategies aimed at stimulating economic growth" (Zukin, 1995). The rise of the culture sector in the city can be understood through the process of cultural de-differentiation, a process of postmodernity as against the process of cultural differentiation of modernization. It can be argued that the development of the culture represents two sides of the differentiation- de-differentiation analysis. Lash (1994b) notes that only in the postmodern period has the culture sphere differentiated itself from social, political and economic life and reached an independent status. At the same time, cultural de-differentiation has enabled culture to become an important element in social, political and economic life- and vice versa social, political and economic elements have an impact on the culture sector. Hence, the cultural elements have a role to play and they, being aesthetic in character, may include reflexive and even critical components.

The usage of cultural components in city marketing has predominantly been characterized by an instrumental, techno-rational, economic approach. Most of the developed cities have integrated their technological development with culture sector thus seeking a balance in the approach to develop new facilities such as cyber cafes, cable libraries, digital museums, etc. In this context, making use of the culture sector is a logical extension of strategies already adapted in the 19th century. However, the unexpected consequences and conflicts that are inherent in the cultural developments that take place in urban enclaves have not been sufficiently recognized and that they present interesting opportunities for research. The developed city, been encroached by more

and more immigrants who often form enclaves, is the best case for this. It is important to critically assess and present alternative views to the culture marketing approach dominated by the present-day consumer society. This study is an attempt to emphasize the relationship between society, culture and place against the re-shaping of society and place to accommodate imported cultural activities.

5. CONCLUSION: CONVERGENCE FOR COMPLETE COMMUNITY

The process of convergence aims at selling the city to outsiders but not to its residents. One may compare selling the city to residents as selling the products to its producers, yet the city space appreciated by the convergence will improve its capacity to build complete community. The type of cultural activities could have an intriguing connection to the place, and the society may enjoy this new-found value resulted by they being defined as cultural products. On the other hand, most of the introduced activities are globally oriented marking the diversification of cultural life in the city. Turning the public opinion in favour of the strategies, images and slogans used in city promotion campaigns seem to have made residents believe in the messages, though they often wonder if they could benefit from tourism without tourists. It is important for city authorities to use the strength of its society's buying power in planning such cultural activities and new facilities.

Understanding the demands and expectations of the local population is important if the convergence to bring success, and the city authorities should find out whose city and whose culture before planning new activities. (Eisinger, 2000) notes how most cities have prioritized providing services to visitors over facilitating the needs of the local residents. The target audience is expected to be well educated and prosperous thus leaving a major segment un-persuaded as outsiders though they may have a stake in the city. Understandably, such a situation opens up room for social conflicts and crises. Conflicting parties between locals and outsiders, the better and the less well-off, city centre and suburb residents, and the like can suddenly foreshadow the scene. Drawing from the notion of conflict prospects, it is not surprising that sometimes there are attempts to construct a new identity in order to overshadow an existing place-myth that might be considered as negative or harmful. This is an issue the culture sector has to face as well because its application to city marketing and developing opens up conflicts. "Cultural politics is an ambiguous concept", notes (Jackson, 1993), "it refers to view that cultural questions aesthetics, taste and style cannot be divorced from political question of power, inequality and oppression". Such conflicts can be structurally assessed by using the concept of urban fortunes. The importance of urban growth coalitions and the key urban developers, made out of urban elites, are preoccupied with the idea of considering cities as 'growth machines'. Even if the urban elites may differ radically on many issues, it is the desire for growth that unites them. Thus elites form a *growth consensus* to strive for a strategy that is then carefully formulated as inevitable and an alternative for future success.

Yet, a cultural strategy, with a true interpretation of culture and particularly respecting its intangible aspects: symbols, language, norms and values, and its place-responsiveness could frame a convergence that facilitates the building of complete communities. This strategy could promote inclusiveness, diversity, accessibility and choices to encourage a complete community. Furthermore, it could alleviate urban conflicts that are caused by the juxtaposition of exchange-value and use-value and the relationship to them by different urban actors who may take the advantage of the rising land and property values. Such interests are opposed by local residents whose interest is to emphasize use-value of the living environment. The strength lies in the right understanding of the intangible values of culture.

It is noteworthy that the convergence of urban development and the culture sector has several areas open for new debates on the city and its management. Various problems seem to emerge: Whose city? Whose culture? Who should be given priority? For whom by whom and who is to benefit? This paper's attempt has been to bring these questions to a new forum through a literature review to prepare the grounds for cities to find their own answers.

References

Ashworth G.J, Brian Graham and J.E. Turnbridge (2007) *Pluralising Pasts: Heritage, Identity and Place in Multicultural Societies* London: Pluto Press

Connor, O., Justin & Wynne, D. (1995) City Culture & the New Cultural Intermediaries, Parts 1-5, Manchester Institute for Popular Culture, Manchester Metropolitan University, http.//darion.mmu,ac,uk//h&ss/mipc/citycul1.htm, dated 4.9.1997

Daniel, G. (2009) *Reflexivity and Urban Economics,* London: Palgrave McMillan

Evans, G. (2000) *Cultural Planning* London: Routledge

Franco, B. (1991) Cultural Policy and Urban Development, the Experience of Western European Cities, Paper presented at the 8th Urban Change and Conflict Conference at Lancaster University, cited in Timo Cantell (2000) 'The Convergence of the Culture Sector and Urban Development', *Yhteiskuntasuunnitelu* 3, Helsinki: Helsinki University of Technology pp. 41-53

Harsha, M. (2003) 'Disinheriting the Inheritance: Conservation of World Heritage Cities and Heritage Proclaiming', *Built Environment Sri Lanka* 3 (2) Colombo February 2003: pp. 49-58

Heikkinen, T. (2000) 'In from the margin: the city of culture 2000 and image transformation in Helsinki', *International Journal of Cultural Policy* 6, 200-218

Peter, J. (1993) 'Towards a Cultural Politics of Consumption in John Bird, Barry Curtis', Tim Putnam, George Robertson and Lisa Tickner (eds.) *Mapping Futures: Local Cultures, Global Change,* London: Routledge 207-228

Scott, L. (1990) *Sociology of Postmodernism,* London: Routledge

Scott, L. and Urray, J. (1994) *Economics and Signs and Space: London,* Sage: London

Sharon, Z. (1995) *The Culture of Cities,* Oxford: Blackwell

Sharon, Z. (2010) *Naked City: The death and life of authentic urban place,* New York: Oxford University Press

THE BRITISH VISION OF LAHORE: AN EXAMINATION OF CONCEPTS OF ARCHITECTURE AND URBAN DESIGN THROUGH LITERARY SOURCES

*Abdul Rehman**
*Muhammad Arshad***

ABSTRACT

The British built a new city in the south and southeast of Lahore during their ninety years rule (1849-1947). In this new planned city, new concepts were employed to produce some of the finest specimen of architecture and urban design in the history of the subcontinent. The layout of British Lahore was first conceived by Charles Napier and subsequently detailed urban design projects were prepared for different areas to produce built environment with definite character. To achieve this, new byelaws were introduced for housing and built environment and a debate on architecture was initiated on the possible styles of architecture. Subsequently a variety of concepts was employed in the design of public buildings which were later followed by the common masses. The British Lahore took its real shape with the arrival of Basil M. Sullivan as first Consulting Architect to the Government of Punjab in the first quarter of the twentieth century. The concepts of urban design of the British period have not been discussed in any recent scholarship. This paper will discuss the concepts of architecture and urban design based on the original reports and texts written during the British period. In addition, a detailed philosophy and vision of the British administration has also been discussed which provided a basis for achieving its ultimate shape.

Keywords: Colonial architecture, urban design, urban management, landscape.

1. INTRODUCTION

The British inherited a Mughal city, the beauty of which was admired both by native as well as the European travelers who visited it in the 16th and 17th century (Abul Fazl, 1989) and William Finch (Foster, 1921) gave a picture of great prosperity of the city in the following words: the streets are "Fair and well paved", the buildings are "fair and high, with brick and much curio site of carved windows and doors", and of course, "the delightful gardens have lent it additional beauty". It was, "resort of people of all countries whose manufactures present the astonishing display and it is beyond measure remarkable in populessness and extant". Mughal emperors, princess and high officials built themselves "lofty and superb edifices", garden retreats and tomb outside the walled city". The walled city had wide bazaars, from where *kuchas*, a relatively wide street, lead to different *mohallas*. Narrow winding lanes mostly dead end alleys provided access to residences. The houses were densely packed within the residential neighborhoods. Open drains used to ran in every direction leading to open sewers which ran outside the periphery of the walled city. The drinking water was drawn from wells located within the houses and public streets. After the fall of Mughal Empire, Lahore became capital of the Sikh who ruled the area for almost 100 years. The British travelers who visited Lahore during Ranjit Singh reign described decay and ruinous suburbs (Moorcraft, 1977).

2. CONCEPTS OF URBAN PLANNING IN GREAT BRITAIN AND INDIA BEFORE BRITISH OCCUPATION

The nineteenth century was significant in the history of town planning in Europe and its influence was also seen in Lahore. The industrialization created congestion, disease and poverty especially in the working class. New theories of ideal cities were put forward as a social movement for urban reform that arose as a reaction against the disorder of the industrial city. At the same time practical considerations of adequate sanitation, movement of goods and people, and provision of amenities also drove the desire for planning. Contemporary planners seek to balance the conflicting demands of social equity, economic growth, environmental sensitivity, and aesthetic appeal. In England the movement for the improvement of public health facilities started in 1840's but most practical steps put forward in this direction was the introduction of Public Health Act of 1875. The act provided a new foundation for urban planning and management to improve environmental conditions.

* Dr. Abdul Rehman, Professor, Department of Architecture University of Engineering & Technology, Lahore.
** Muhammad Arshad, Associate Professor, Department of Architecture University of Engineering & Technology, Lahore.

The British colonial administration was equally concerned with the sanitary condition in India primarily because of high mortality rate of British troops. Accordingly, planning and public health were linked, with ancestry in the English sanitary movement of the 1840's. Urban planners, most of whom were civil engineers and health professionals, were required to design schemes to improve sanitation conditions in residential areas and work places. Other efforts sought to separate land use activities, especially residential from industrial zones. Military establishments such as cantonments were developed on garden city concepts in the suburbs of historic towns. The history of sanitary work really began with the reports of the Royal Commission of 1859. The 1863 report described the sanitary conditions of the Army with the remarks that the mortality rate among British troops was 69 per 1000 and recommended the establishment of a Commission of Public Health in each presidency and pointed out the need to improve sanitation and prevention of epidemics in civil society for improving the health of the British Army. To improve civil sanitary conditions, sanitary boards were formed in each province in 1864 to carry out the inspection of sanitation, supervise vaccinations, maintain vital statistics, and collect meteorological data. Lahore at the time of occupation of British forces had serious environmental problems but at the same time Lahore started expanding in different directions. The epidemics and disease was common in addition to sanitation problems. The British administration had to work in different directions to improve the quality of built environment and to continue to preserve the character of a garden city. These efforts are being discussed in detail in the following pages.

3. THE BRITISH CONTRIBUTION TO LAHORE

The British occupied Lahore in 1849 which at that time comprised of Walled City ruins of the Mughal period gardens and few suburban settlements. One of the important task before the British administration was to plan and develop

Figure-1: 1845 Map of Lahore showing the routes and important settlements

such areas where they could provide residential accommodation for the British administration as well as to keep army. Initially the officers were settled in Lahore Fort and tombs located in the suburbs of the walled city. The army was kept in the Lahore Fort and Sikh period barracks near Anarkali. Lt. Colonel Napier prepared the basic outline of the Colonial Lahore in 1851 (Goulding, 1924). In his plan the lower Mall connected Lahore Fort (military establishment) with Anarkali while Upper Mall connected Mian Mir with Anarkali.

The British occupation of Lahore coincided with the period of their greatest material progress and the same was reflected in the development of the city. They succeeded in creating at Lahore a city of having well planned and spacious roads lined with variety of trees. The beginning was made by establishing their administrative headquarter near the tomb of Anarkali where General Ventura and military advisers of the Khalsa army used to reside and decide important military affairs (Lee, 2002). However, residence of Lt. Governor was fixed at its present location of tomb of Kasim Khan. The troops were housed in Anarkali barracks, an old Sikh cantonment. The British soon found this place unhealthy or too near the places of displeasures in many ways which John Lawrence felt very strongly. "Few suburban localities could be found in any province presenting such peculiar sanitary difficulties as the vicinity of Lahore. The station of Anarkali with its adjunct is dotted over an area of several square miles, over which extend the ruins of not one but of several successive cities of various ages and various dynasties. The surface of this extraordinary plain is diversified by mounds, kilns, bricks, stones, broken masses of masonry, decaying structures, hollow, excavations and all the debris of habitations that have passed away. The soil is sterile and impregnated with salt petre, but the ground is interspersed with rank vegetation, and though generally arid yet from its undulating nature possesses an unfortunate attitude for accumulating stagnant water" (Grenfell, 1964). An American artist /painter Lord Weeks described Lahore in the following words:

"There is no lack of hotels at Lahore, considering the smallness of transient population, and, as usual, they are all situated in the civil station, as the European settlement is called….As the European suburb is usually large, these highways, shaded by tall trees of the tamarisk family, have a rather wearisome, sameness, and this impression of monotony is partly due to the somber hues of foliage…..While the English community of Lahore, as elsewhere in India, has elected to live away from the native city, and while the original nucleus of this settlement was planted, for sanitary and other reasons, far from the city walls, it has gradually filled up the intervening space, so that usual neutral ground, or no man's land, has ceased to exist" (Weeks, 1986).

The earliest most important sub-urban contribution made by the British soon after their occupation of Lahore was the development of cantonment on the south east side of the historic city. Lt. Col. Napier decided that the Anarkali cantonment was to be moved away from the city on sanitary grounds (Goulding, 1924). Therefore, the present site was selected and laid out by military engineers. It was planned on grid iron pattern having straight north-south roads bisected by east- west roads. The major north south street was named after British officers while minor east west streets were named after Indian cities of Punjab Province. One of important feature of the plan was an oval park located at the center with the Anglican Church at one end of the oval and tennis grounds at the other. Senior officers lived near the center while subordinate personnel's were accommodated outward from the center in order of decreasing rank. Indian and European troops were separately accommodated north and south of the officer's quarter respectively. Each group was housed according to its rank in identical barracks grouped in blocks of parallel lines. For the convenience of the civilians Saddar Bazaar and Royal Artilary Bazaar was planned in different locations. The artillery and cavalry grounds were two major open areas of the proposed scheme. A large number of trees were planted and irrigated with water drawn from the canal. The cantonment was a "garden city," an idea which became popular in England half a century later than its implementation in Lahore.

In 1852, Bari Doab Canal was excavated which separated the city from the cantonment and brought a landscape change in the city. It became one of the most pleasant features. The canal, with the roads lined with plantation that run along its banks, swing in a great arc from the north east to south west irrigated the lawns of important settlements laid out for British bureaucracy. A channel drawn from the canal also irrigated the circular garden around the walled city. The most important pre-partition settlements founded along the canal were Mayo Garden, railway colonies, Government Officers Residence (GOR).

The British laid much emphasis on the area around cantonment, secretariat and the railway station. The civil lines (Donald Town), Governor House, the Garden started by the Montgomery and the race course, was principal residential and recreational area furnished with clubs, all lay along the cantonment side of the town in the easy reach of the protection required. The roads built to enable the

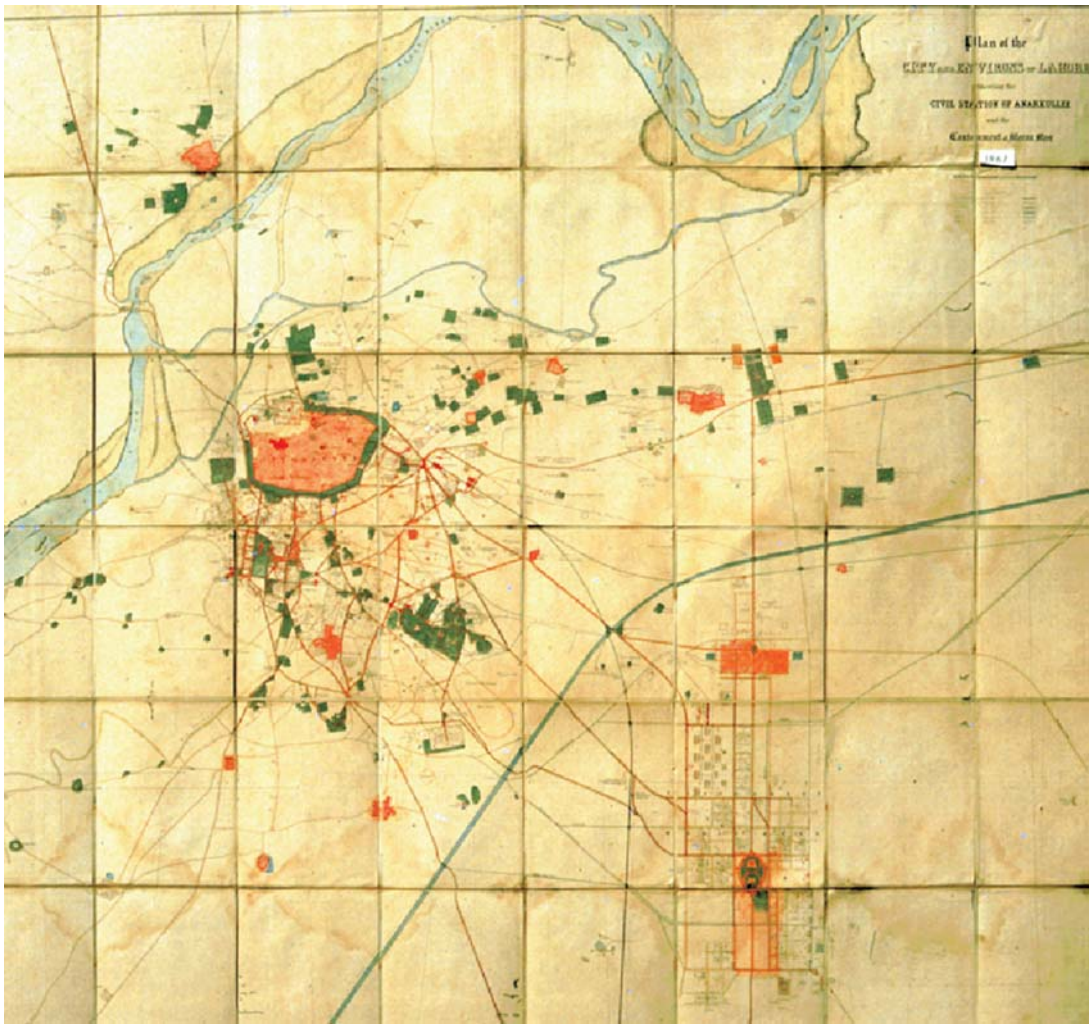


Figure-2: Early British period Map of Lahore Showing Extant Mughal and Sikh period Gardens.

Sahibs to drive sedately from house to office or club or cantonment was superimposed on the indigenous pattern. Grenfell noted that "through deference to local custom or through lack of appreciation of the importance of town planning, it is difficult to say which every bullock track was retained. Indeed the Sahibs, may even have added a few bridle path of their own. No attempt was made to rationalize the requirements of the old and the new. East was east and west was west and that is that" (Grenfell, 1964). The road meant for the British were wide, spacious and lined with trees on both sides. In addition front lawns of the bungalows further added spatial dimension to the landscape. The open spaces and spacious lawns of the railway housing Governor House, Cantonment, Government Officers Residences and Lawrence Garden were irrigated from irrigation channels drawn from canal. Canal as artifact changed the landscape environment of Lahore.

While the new housing areas were taking shape, the improvement of sanitation and provision of safe water supply was considered rigorously. In this connection a resolution was promulgated by the Municipal committee Lahore at a special general meeting held on May 31st 1876. The resolution conveyed the intention of the municipality to undertake, subject to necessary sanction of the Government, the erection of the water works so as to ensure pure water supply to the city of Lahore and its suburbs and the construction of an improved and complete drainage and sewerage system for the same localities. For this purpose the services of Mr. Leslie Clark, who had long experience of working in Indian cities, was hired to design and prepare the estimate. Subsequently the work was started and a large

reservoir was started in the city and opened in 1883-84 (Latif, 1892). The project helped in the provision of safe water supply to residents of walled city. The water tanks were filled through a series of pumps installed near the river bed.

While the concepts of garden city and sustainability were being debated in England, Lahore was equally perusing and implementing such ideas. The concept of sustainability was considered important in both public and private housing schemes. Soon after the establishment of railway workshops in 1912, workshop colonies were established on the east side of the city. These colonies were laid out on grid iron pattern with large bungalows having spacious front and back lawns. The roads generally 40 feet wide were planted with shade trees on both sides. The important feature of this housing scheme was the provision of vegetable and dairy farms to provide fresh food and milk to the residents. Clean water supply and sewerage system was ensured. The lawns were irrigated from city *Rajbah* (channel) from Bari Doab Canal near Mughalpura (Rehman, 2009).

The most important scheme developed, in this regard, slightly on larger scale was the development of Model Town Lahore. In the early twenties Cooperative Societies Act was passed which enabled independent groups to form cooperative societies and construct their own housing schemes. The most important township in the suburbs of Lahore was built under this act was Model Town. This was one of the most outstanding examples of ideal town built in the early years of 20th century on co-operative basis in the Indian sub-continent both incorporating the ideas of sustainability and the garden city. The idea of this scheme was a brain child of Diwan Kham Chand, a lawyer of Lahore. He published his idea in January 1921. "My scheme", he expressed, "is that within easy reach of Lahore, say within 6 or 7 miles of it, about 1,000 acres of agricultural or waste land be purchased, and on it by built a town with all the conveniences of modern times" (Aijazuddin, 2003, Chand, 1921).

Model Town achieved a mark of success due to its innovative byelaws and therefore became one of the best housing scheme in the Indian subcontinent. In 1927 Bogle writes, "In Lahore a garden City has recently been started by a cooperative society, and an area laid out for residential houses in an endeavor to provide ideal homes; this 'Model Town' as it is called, has its first two byelaws, (1) That every house shall have a garden; (2) That of the total area of the plot not less than two third shall be garden and not more than one-third built over. No better rules can be imagined for ensuring a delightful residential area, cool attractive and healthy, and, where it is possible to enforce such rules, a municipality could not do better than adopt them" (Bogle, 1929).

4. URBAN DESIGN AS A PROFESSION

Twentieth century was a turning point in which the role of an architect became much more crucial. With the introduction of a more comprehensive Municipal act of 1911 every owner of a plot was bound to submit building plan for the approval of the municipal committee. The Improvement Trust Act of 1922 and establishment of Lahore improvement trust further imposed checks on the urban growth of Lahore. The municipal committee was asked to submit large schemes to the trust for approval the consulting architects to the government of Punjab prepared most important urban design schemes.

Patrick Geddes, a scot botanist also admired Sullivan's contribution in the following words: "I am glad to find that improvements of some of the defects in the network of roads are already in active progress. Beginning with Charring Cross, I have nothing but approval of the new layout, and congratulate Mr. Sullivan accordingly. His improvement of the mall as its crossing with Maclagan Road is also, I like it, the best that could be made of that difficult situation." He further stated that "While we are discussing the improved aspect, as well as convenience and safety, of the fine thoroughfare of Civil Station, one cannot but ask – How comes it, that with all this real interest in this fine modern city, and even pride – for instance , the improvement of the Charring Cross" (Geddes, 1917).

Twentieth century was a turning point in which the role of an architect became much more crucial. With the introduction of a more comprehensive Municipal act of 1911 every owner of a plot was bound to submit building plan for the approval of the municipal committee. The Improvement Trust Act of 1922 and establishment of Lahore improvement Trust further imposed checks on the urban growth of Lahore. The municipal committee was asked to submit large schemes to the Trust for approval the consulting architects to the government of Punjab prepared most important urban design schemes. This created their lasting impression on the built environment. The layout of major crossing and urban design schemes of important square were handled carefully before actual implementation. The consulting architect designed building for both government and private clients to achieve a meaningful built environment having both quality and character. In this case the Charring Cross Schemes and Prince Albert Victor Scheme (Nila Gumbad area) can be

Figure-3: Part Plan of the Mall Lahore (1928) showing the alignment of buildings and squares designed by Basil Sullivan.

sited as important examples, a true and positive meaningful urban space with a strong architectural character can only be created if there is a single architect who is preparing the layout and designing the buildings around it.

The encroachments were strictly controlled everywhere including in the walled city. Comprehensive mapping were undertaken and detailed proposals were prepared for the urban improvement. For the first time conservation proposals were prepared to improve quality of life in the historic walled city. The urban expansion all over towns in Punjab led to the creation of the post of town planners. He prepared master plan of Lahore and designed or scrutinized a number of schemes. But the dominating role of consulting architects remained crucial throughout the first half of the 20th century. This is the reason why we admire the quality of urban spaces in colonial Lahore.

Beside all these initial effort in urban development, the British did not care the Mughal landscape of Lahore rather they destroyed it to suit their own requirements. The most important case associated with this is the development of railway network. Beginning from construction of Lahore railway station in 1859-60, Multan-Lahore railway line and Lahore-Gujranwala railway line were laid in 1861 and 1881 respectively. The Multan railway line connected cantonment with Lahore city but it bifurcated Mian Mir area into two parts. The Mullah Shah and Khwaja Bihari tomb garden were separated from Nadira Begum and Mian Mir tomb. Similarly along Gujranwala railway line, Nur Jahan tomb was separated from Jahangir and Asif Khan Tomb complex.

5. URBAN CONSERVATION IN LAHORE

In 1904 an act for the preservation of Ancient Monuments was passed. According to the Act a well-conceived scheme was prepared for both the conservation of buildings which had escaped destruction and the exploration of archaeological sites which remained untouched by this time. Both duties-conservation and exploration were entrusted to a skilled Director-General of Archaeology, aided by a staff of expert assistants in the provinces, and supplied liberally with funds. The Department thus, did admirable work, and its reports become more and more interesting every year.

Basil Martin Sullivan served as consulting architect to Government of the Punjab from 1913-1938 and made significant architectural contributions and improvements in every part of the city. From 1924-26, a complete survey of Lahore was carried out by him and prepared the very first ever comprehensive conservation plan of the Walled City in 1929 entitled "A note for the use of the Lahore Improvement Trust Committee and of the Lahore Improvement Trust when formed, With special reference to the City of Lahore inside the walls" (Sullivan: 1929). The most serious problems he found were congestions, heaps of debris, domestic animals and encroachments. Therefore, a number of suggestions were made to improve the situation. He proposed a dairy form outside the walled city to transfer the animals to keep the walled city clean. He also felt concern over the overhead cables which changed the visual character of historic streetscapes.

6. MASTER PLANNING IN LAHORE

By the year 1940 Lahore had expanded in every direction. New housing schemes come up in every direction. The vacant areas in and around older settlements almost got filled with private housing schemes. The railway workshops brought a significant change and new industries begin to grow particularly in the northern part of Lahore. Additional areas were required to house educational institutions. There was a lot of pressure to accommodate new facilities. This required a comprehensive master planning. In this situation Aylmer Coates, provincial town planner to the Government of the Punjab proposed the first master plan for the development of Lahore (Coates, 1944).

The master plan was published in "Memorandum on Town Planning" in 1944. The important concerns addressed in the plan were with questions of congestion, unplanned growth and ribbon development along major roads. His report discussed the problem of existing and new residential settlements, location of Industries and made recommendation for future development. This map gives the proposed outline for future development of Lahore. The major industrial area suggested in the plan was around Pakistan Mint between Bari Doab Canal and Grand Trunk Road.

7. CONCEPTS IN ARCHITECTURE

In the early years of British rule the services of architects were hired either from England or other provinces of British India who had no sympathy with the local architecture. The architects took inspiration from the English or classical architecture rather taking lessons from grand tradition of Indian architecture. The most important structures in this regards are Lahore Church of resurrection, Government College, Lahore Railway station and Mayo Hospital. The church was designed by John Oldrid Scott, son of Sir George Gilbert Scott in Early English decorated style (Latif, 1892). Both father and son were specialist in designing churches and cathedrals. Mr. Oldrid Scott was requested to draw new plans by adapting foundations of existing church as far as possible. Gothic pointed arches, flying buttresses, two towers with gable roof were the main feature of architecture. Similarly Government College Lahore was also inspired from gothic architectural tradition.

On the other hand there were few architects who designed buildings in Indo Saracenic architectural style. Completed in March 1889, Punjab High Court building was the most outstanding structure of this category. The building was designed by J. W Brossington, Consulting Architect from Madras (Latif, 1892). The architect had strong inspiration from the works of Robert Fellowes Chisholm. This quadrangle building was built in burnt bricks using lime mortar. Special molded bricks were used in cornices, moldings, friezes, overhangs and other decorative features such as jails (trellis) to fill the upper portion of arches. The roof of the main court rooms is double pitched supported on wooden trusses and covered with clay tiles. The ogee shaped pointed engrailed arches have been used throughout the building. The main feature of the building is the central portion which has a porch in the front and naqqar khana gallery on its rear side. It is flanked by two towers having square base and projecting eaves at the top over which rise circular shaft having flutes inspired from Qutb Minar. It is finally topped with projecting balconies over which rest domed pavilion. A muqarnas cornice runs along the arcaded verandah. Within the structures both element from European and local indigenous architecture have been used. The elements are very neatly detailed out in a fine proportion. These building set strong examples of two different streams of architectural styles both designed by the British architects.

The twentieth century began steadily but development activities continued. John Beggs, Consulting Architect to Government of India, designed large number of projects in Lahore which include Physics and Biology Departments at Government College, Veterinary College, Railway Church on Empress Road and Time Keeper Office in Mughalpura. In addition a number of small housing projects were undertaken by the local architects throughout the town particularly in Gwalmandi and in Donald Town. John Begg in a report to the Government of India in a note to a Report on Modern Architecture wrote: "….The art though still living is dormant. Is it worth reawakening? Should we allow it to die the natural death that from one cause or another has overtaken nearly all similar art traditions in other countries or should we try to give it a new lease of life?" I think…. The living tradition is an artistic asset of such incalculable value that we cannot afford to allow it to die out; that it is well worth reawakening even though the complete process should be lengthy and interim results not acceptable may be to all" (Begg, 1913).

The buildings designed so far followed a variety of styles. There was an utter confusion among the architects as what should be appropriate architecture of Lahore. As a result a debate was initiated among the architects. There were two main schools of thought; the aesthetic imperialists and the revivalists of indigenous architecture. The former argued that the British should seek to emulate the Romans and impose British architecture with confidence.They were

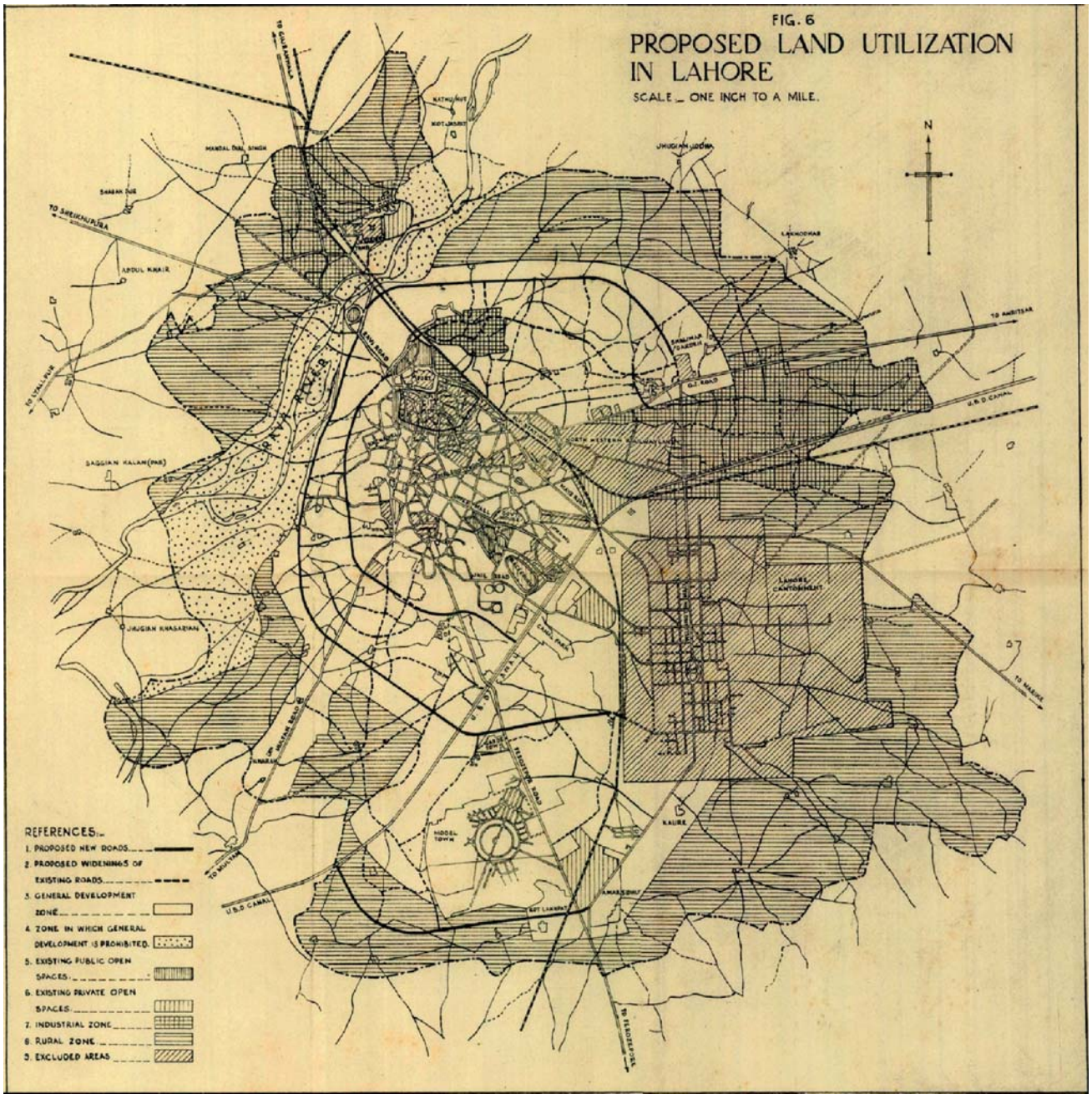


Figure-4: Proposed Land Utilization (1845) by U. Aylmer Coates**.**

opposed by the revivalists who thought that uninterrupted living tradition existing in architecture, connecting the present and the past should continue. The true policy should be to discard all imported forms and ideas, and to foster living traditions by sustaining the local master builders, whose craft, skills and expertise were in danger of dying out from lack of patronage. The architecture of Lahore is the outcome of these schools.

In this scenario Bhai Ram Singh started contributing towards the revival native tradition with the support of John Lockwood Kipling (Vandal and Vandal, 2006). From 1880 to 1911, Lahore has witnessed Bhai Ram Singh as one of the most creative and innovative architects in its history. He has produced a number of most prestigious buildings in fair face brickwork. Born in Jullundur in 1858, he got his initial training in carpentry 1874 and a year later he got enrolled at Mayo School of Industrial Arts. During his stay at Mayo School he participated in a number of exhibitions with his furniture products. John Lockwood Kipling, Principal Mayo School of Arts discovered the talent of this young man and gave him special tasks. In 1881-82 Bhai Ram Singh did first architectural project of the design of Mayo School of Arts under the direction of J. L. Kipling. He was now been consulted for prestigious projects. He designed Khalsa College Amritsar, interior of the Durbar hall (Indian Room) at Osborn House in England. His real professional career started in 1894 when he was appointed Drawing and Carpentry Master and officiating Vice Principal of Mayo School of Arts in 1894 and subsequently as Principal Mayo School of Arts Lahore.

There is a long list of Projects undertaken by him in Lahore, Amritsar, TaranTaran, Srinagar and Peshawar, Lyallpur, Simla, Nabha State etc., but the most important buildings he designed in Lahore are main building of Chiefs College, later Aitchison College (designed 1886 construction completed 1890), Mayo School of Arts and Museum (1888-89), Albert Victor Wing of Mayo Hospital (1890), Boarding House of Government College (1889-90) Punjab National Bank, Anarkali (1904), Punjab University Senate Hall ((1905), Punjab University Library (1910), Queen Mary College (1910), Chamba House (Between 1912-14). Aitchison College was his largest project in which he designed Gurdwara, Mandir, Gymnasium, Three Boarding houses, Bahawalpur House, Principal and Vice Principal House from (1890-1907). One of the most inspiring elements of his work was his unity of concept throughout the building. He rigorously maintained the same design vocabulary in the interior as well as exterior. He handled brick like a soft wood and executed even minute details to its mastery. A variety of specially molded as well as carved bricks were used throughout the buildings to achieve the desired objective. He very well understood the potential of local materials, drew inspiration from traditional architecture and produced works with its own distinctive style which can be ranked among the finest work of the British.

8. CONCLUSIONS

The British contribution in architecture and urban design was most comprehensive and considered most crucial in shaping the built environment. In terms of urban design, projects were specially handled. This includes the layout planning as well as design of buildings by the same architect to create a meaningful urban environment. Architect in the public sector designed buildings for the public sector projects as well as for private clients. The private clients were then forced to implement these projects. The second important contribution was the creation of definite architectural character of streetscape. In this regards, the layout of the building and complete architectural detailing were conceived and implemented. In addition to the Mall Road, the buildings and squares on other roads were also dealt in a similar manner. The third important contribution was the preparation of byelaws for the housing schemes and buildings. These byelaws were strictly implemented. The sanitary aspects and light and ventilation in buildings were important considerations. Conservation of walled city for the creation of an improved living was another important area which received special attention. In addition, Mughal period monuments were restored and conserved, environmental resources were preserved and maintained. The canal water was used in the irrigation of lawns and open spaces. Comprehensive sanitation and water supply schemes were prepared for the improvement of urban environment. Finally, comprehensive master plan of Lahore was prepared and implemented. A complete land use proposal was made in which industrial areas were segregated from residential areas. In short, comprehensive planning based upon strong vision was undertaken and implemented faithfully.

References

Abul Fazl. Ain-e Akbari, (1891) Vol. II, Trans. Colonel H. S. Jarrett. Asiatic Society of Bengal, Calcutta.

Aijazuddin F. S, (2003) Lahore Recollected: An Album, Sang-e-Meel Publications, Lahore.

Begg, John, Consulting Architect to Government of India, December 1912. Note on the Development of Indian Architecture, in Report on Modern Architecture by Sanderson, Gordon under the direction of Dr. J. H. Marshall, Director General of Archaeology in India, published Government Press, Allahabad, 1913

Bogle G. M. Linton. (1929) Town Planning in India, Oxford University Press, London.

Chughtai, Abdullah, M. (1975) Masjid Wazir Khan, KitabKhana Nauras, Lahore.

Foster, William. (1985) Early travels in India: 1538-1619. Oriental Books Reprint Corp. Delhi, .pp.117-118.

Geddes. (1917) Patrick Town Planning in Lahore: A Report to the Municipal Council. Commercial Printing Works, Lahore, pp.28-29.

Goulding H. R. (1924) Old Lahore: Reminiscences of a resident. Universal Books Lahore, pp.30.

Latif. S. M. (1892) Lahore: Its History, Architectural Remains and Antiquities. New Imperial Press, Lahore, p.187.

Lawrence, Sir J. (1851) Selection from the records of the Government of India (foreign Department), for the years 1851-52 and 52-53, relating to the administration of Punjab territories.

Lee, H. (2002) Brothers of the Raj: The Lives of John and Henry Lawrence, Oxford University Press.

Rehman, N. (2009) From Site to Artifact: Canal in the City of Lahore. Unpublished SMArch Thesis, Massachussetts Institute of Technology, Cambridge.

Sullivan Basil M. (1929) A note for the use of the Lahore Improvement Trust Committee and of the Lahore Improvement Trust when formed, with special reference to the City of Lahore inside the walls, Lahore.

Vandal, P. and Vandal, S. (2006) Lahore, Raj and Bhai Ram Singh.National College of Arts Publication, Lahore.

TRANSFORMATION PROPENSITY IN LOW INCOME HOUSING: THE CONTINUING STORY OF THE *VASTUHARA* IN DHAKA

K. Taufiq Elahi*
Md. Shahidul Ameen**

ABSTRACT

Dhaka, the nation's capital, has a diverse range of extremities in its general socio-economic composition. For the last few decades, the imprints of such a distinctive but composite juxtaposition have become evident through the physical and cultural bearings of its housing industry. In a broader spectrum, the overall housing divide can be identified under two opposing categories – the formal and the informal sectors. With the government agencies out of the scene as the key provider in the housing stock, the formal sector is primarily dependent on numerous real-estate organizations and private entrepreneurs. The informal sector, on the other hand, is left to survive on its own – in conditions beyond human justification, but growing steadily to meet the demands of its urban machinery and economic whirlpool. This paper reveals the tale of the *Vastuhara* resettlement scheme for the urban poor that stand out as a bright and optimistic example in transformative propensity where some catalectic efforts by the government and its associated donor agencies have turned out to be a spontaneous phenomenon of social and economical advancement. Various sections of this text will portray a timescape of almost 40 years or so, assessing and addressing to various architectural details, which acted as the contributing factors in its overall process of development.

Keywords: Transformation, low income housing, urban poor, *vastuhara* resettlement scheme, user-behavior phenomena.

1. INTRODUCTION

Housing, in its qualitative and quantitative terms, is perhaps the only denominator that elucidates a society and its cultural bearing with reference to its physical existence. Generally considered as a condition that provides with habitable shelter, housing situations in a city must ensure the inhabitants' right to the opportunity of living in proper houses in accordance to their equitable standings (Beyer, 1965; Rahman, 2008). In Dhaka, the continuing deterioration of conditions in appropriate services and its resulting demand-supply paradox only signifies the government's institutional and organizational incapacity to ensure universal access to this basic need (Islam, 1996 and 1998; Banks, 2008). In present circumstances, it is highly improbable that equitable distribution of resources could be achievable among its general mass. The higher and higher-middle income groups have the highest accessibility to the resources available for affordable housing expenditure; whereas, the middle and lower income groups are gradually falling out from the supply chain.

For the last few decades, formulation and execution of housing stock for the low income strata within the perimeters of Dhaka city have been suffering severely from the overwhelming lack in relevant data and technical knowhow. In-depth studies and surveys were carried out in several instances, but inconsistencies due to rapid and incessant in-migration and the city's present state of constant reformation have prevented any development initiative that was devised for the wellbeing of the urban poor (Elahi, 2005). Although there are suggestive implications for appropriate and workable directives in the first draft of the National Housing Policy (1993) and its revised proposals, the schemes were never implemented (NHA, 1993, amended: 2004 and 2010; Islam, 2005).

Projects were initiated to accommodate the urban poor within or on the fringe areas of Dhaka city. These initiatives were confirmed to be inadequate in terms of control or effective changes that they ought to bring about for the target group. Core housing at Mirpur and Mohammadpur areas during the 1950s and the 1960s, the Slum Improvement Program (SIP) funded by the World Bank, and various efforts by the UNDP, UNCHS and the ADB in the recent decades are evident testimonies to the fact where higher housing standards encouraged the upper income groups to get hold of the provisions instead and the poor eventually moved back to the inner areas of the city that are nearer to their workplace (Ameen, 1992; UNDP-UNCHS, 1993; ADB-GoB, 1993;

* K. Taufiq Elahi, Assistant Professor, Department of Architecture, Shahjalal University of Science and Technology (SUST), Sylhet, Bangladesh.
** Md. Shahidul Ameen, Professor, Department of Architecture, Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh.

ADB-GoB-LGED, 1996). *Vastuhara* resettlement scheme, in the context of the above, demonstrates of an optimistic outcome that displays marked advancement in socio-economic circumstances within the lowest income generating class. The dwellers' active / responsive / participation in the overall process of development, together with little or almost no intervention from the government bodies, have given birth to an example for the developing scenarios of the world where the supply of housing stock for the disadvantaged are noticeably scarce.

Transformation, in its rudimentary form (in Mirpur, Dhaka), was identified and revealed for the first time during the late-80s through the doctoral research of the co-author.[1] It was subsequently followed by an ODA research scheme showing a cross-country comparison in an international level. After a few years of silence, further observations were made through small scaled fieldworks in sites under similar consideration. On the basis of these findings, a wide-ranging story of the *Vastuhara* resettlement scheme is attempted to be communicated in this paper.

The article not only addresses to the situations of change through time, but also investigates into various spatial and physical dimensions and their corresponding set of relationships that might have helped as the defining parameters in the overall transformative process. In doing so, the aim of this study is to identify some workable parameters, upon which guidelines can be formulated regarding low income housing in the context of Dhaka city and circumstances similar to this.

2. *VASTUHARA* RESETTLEMENT SCHEME – THE BACKGROUND, THE ORIGINAL PROVISIONS

Bangladesh had a tremendous undertaking of recovering from the economical, strategic and intellectual vacuum during her seminal years of independence. Adding up to the burden, approximately one-eighth of the total population in the city were illegally occupying several isolated pockets, abandoned railway lines and pedestrian walkways beside major arteries in the form of informal settlements. These post-war drifters were commonly named as the '*Vastuhara*' (or the shelterless) by the authorities. State being the provider in the housing industry, some 27,000 units were planned during 1972-1973 by the Ministry of Relief and Rehabilitation, and consequently executed through the agencies of the Housing and Settlement Directorate (HSD) in 1973. Among the 27,000; a total number of 4,304 units under the capacity of sites and service scheme were distributed among the low-income strata of the society in different peripheral locations of Dhaka (HSD, 1979; Ameen, 1992). The project was implemented in Sections 4, 7 and 9 at Mirpur.

2.1. The Original Provision

During 1974-1975, an approximate total of 175,000 economically disadvantaged were uprooted from various slums and squatter settlements in Dhaka. The government could only accommodate a handful through the capacity of its *Vastuhara* resettlement scheme. Of 4,304 units built, the actual provision of a single tin-shed unit with only one living area per household was modified in 1,124 cases, where two were merged/combined to form one unit comprising of two rooms. These double-roomed units (562, in total) were allotted to class III and IV government employees, while distribution of the other 3,180 units remained uncertain for a good while (Ameen, 1987 and 1992; Tipple and Ameen, 1999).

The original provisions in the *Vastuhara* resettlement scheme included a piece of land per household without having any outline demarcating its boundary. The units usually consisted of only one habitable room (17'-11"X8'-9") that had small openings on three sides for natural illumination and ventilation. The blind side goes with the common wall between the two adjacent units in closely spaced grids. With a verandah (8'-9"X6'-2") placed on the rear as an indirect access for each house, the total built area covered an average of 247.50 sq.ft. or 23 sq.m. (Figure-1). The entrance to the dwelling units was through a door adjoining the verandah. The scheme was originally planned in a semi-detached format and the units were joined in pairs along their elongated edges, placed at a repetitive organization. The alternate rows left narrow but open-to-sky passages between two pairs. The brick-built walls were laid on single pile, while the floors had crude net-finishing. Each pair of units formed a double-pitch ceiling, having corrugated iron (CI) sheets as overhead coverings.

Provisions for lavatories were placed separately – roughly between every sixth dwelling – with a number of latrine blocks that were fitted with pits and pans. The lavatories

1 Ameen M.S., 1987; *Housing for the Lower Income People of Dhaka, Bangladesh: A peri-Urban Development Approach* (unpublished Ph.D. dissertation); University of Newcastle upon Tyne, Newcastle.

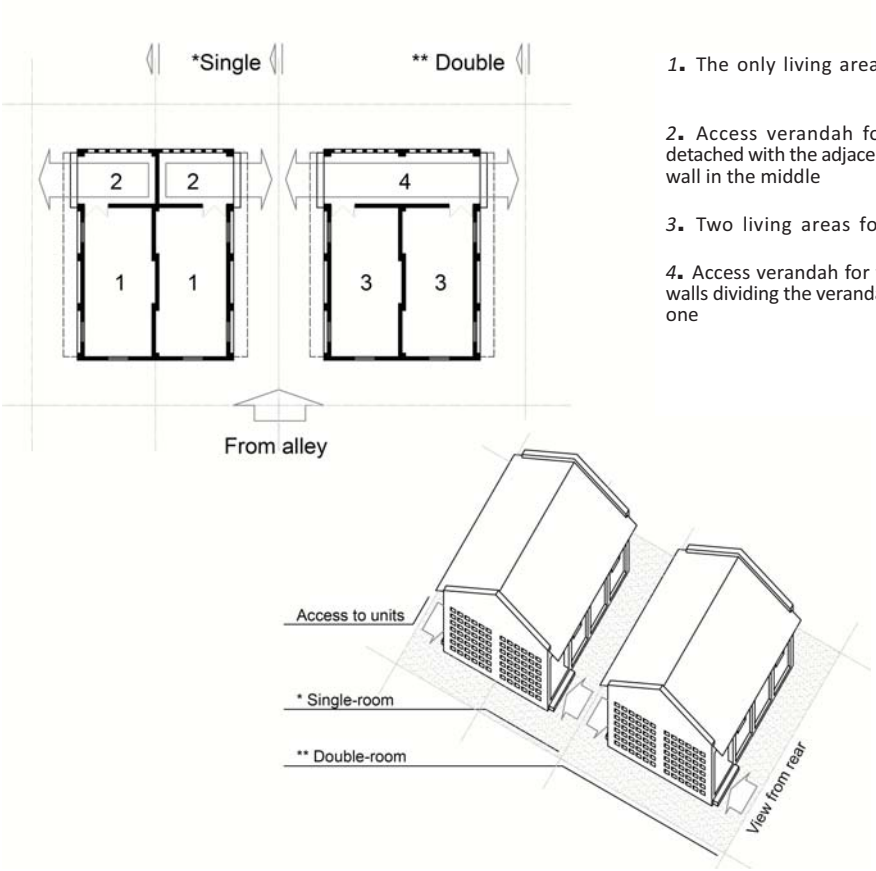


Figure-1: *Vastuhara resettlement scheme – the original building provision.*
Source: Ameen, 1987 (redrawn)

were not serviced by the government during its initial years. No electric supply was drawn in any of the sites of the *Vastuhara* scheme. Even the access routes (or lanes/by-lanes) within the sites were left undone.

3. METHODOLOGY, DATA AND THE STUDY AREA

Center for Architectural Research and Development Overseas (CARDO), University of Newcastle upon Tyne in 1994-1995 conducted a research on transformation involving different scenarios in Egypt, Ghana, Zimbabwe and Bangladesh. Corresponding evidences from models around the global and regional initiatives of similar kind includes: a) Medinet Nasr, Cairo and Workers' City, Helwan in Egypt; b) Asawasi, Kumasi in Ghana; and c) Mbave and Highfield in Zimbabwe. Among the four case studies, the Bangladeshi scenario in Mirpur, Dhaka reveals the basic characteristic features of transformation. Based on this research, a comprehensive story on user-initiated transformation of government-built housing in developing countries has been published in 'Extending Themselves', by Dr. A. Graham Tipple (Liverpool University Press) in the year 2000.

The first two sections of this study (sections 4 and 5) are based on various secondary sources of information that interpret *Vastuhara* resettlement scheme from early-70s to mid-90s. These sections not only review the existing literature and project reports on the subject matter, but also address to its user-behavior tendencies in general architectural terms – an aspect that was largely ignored in the preceding studies. The fourth section (section 6) has a primary base of data and material information that have been collected with the aid of detailed and comprehensive field surveys. Among several complementary situations within the *Vastuhara* resettlement scheme at Mirpur, households were selected through random sampling from Section 7 alone (Figure-2). These dwelling units are representative of the whole in terms of their backgrounds in tenancy, transformative tendencies and behavioral pattern in both vertical and horizontal extents.

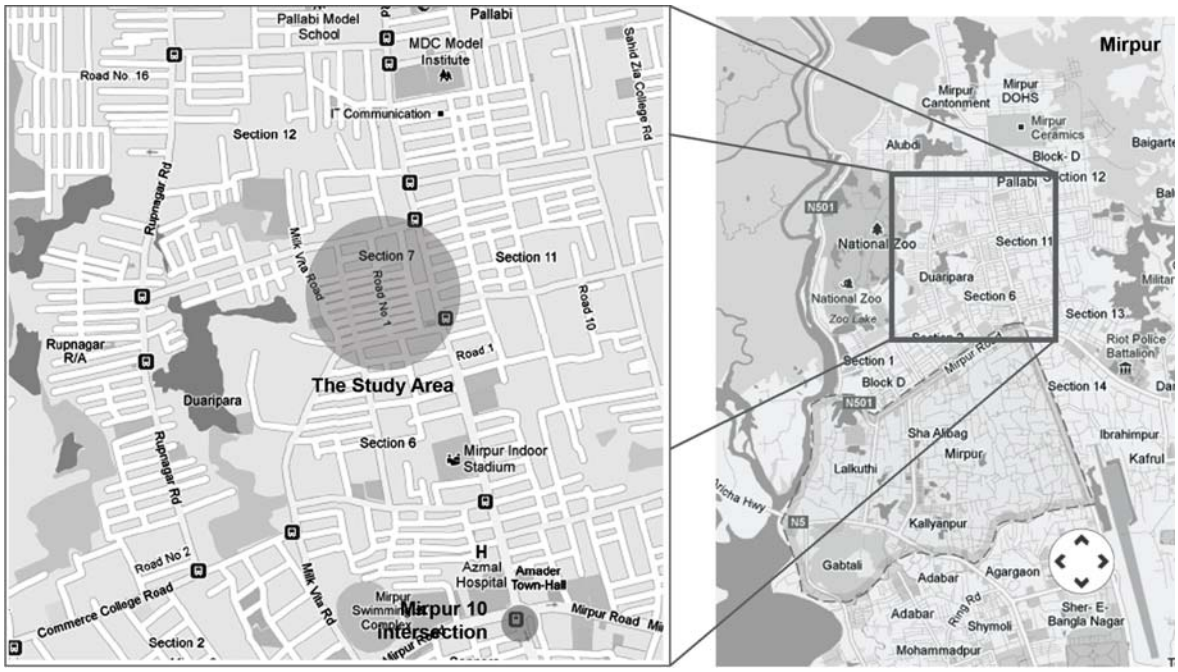


Figure-2: Early British period Map Showing Extant Mughal and Sikh period Gardens.

Data generated in the procedure have eventually resulted into a deeper insight on various causal affiliations that influence (d) its unique and distinctive nature of adaptive mechanism in the housing scheme. While the questionnaire survey was conducted, the allottees, as well as the local people, were made aware that the study would not generate any contradictory or conflicting terms with (or against) their present interest; and the sole purpose of this study was to record the details (rather than appropriating them) of the positive story regarding the transformative phenomena.

4. TRANSFORMATION IN 'VASTUHARA' – THE BEGINNING, THROUGH ITS RUDIMENTARY STAGE

In the late-70s, it was found that some of the unoccupied units were unscrupulously taken over by local middlemen and hoodlums (otherwise known as 'mastaan') with a view to gain some money out of a scheme that was handled badly by the authorities.[2] In the process of government's failure to respond to the allotment procedure, the rest of the vacant housing units were gradually occupied by the lower-income strata of the society as well. The government agencies with the HSD, in a deferred attempt to recover its legal stance over the Vastuhara resettlement scheme, undertook the registration process of the occupiers in each housing unit (HSD, 1979). After years of negotiation, the authority eventually allowed them to stay on a rental basis. It should be noted that a survey of 251 households have confirmed that 194 were original allottees paying rents to the government, while the rest were found occupying the units on a sub-rental basis.

The phenomenal transformative development in one of the low income settlements in Dhaka was identified by (Ameen, 1987). His research establishes the basis for this section.

4.1. Transformation in Rudimentary Form

A rudimentary form of transformation had already begun since the construction of the dwelling units were completed in the mid-70s (Figure-3). The occupying dwellers drew illegal connections from the nearby electrical mains, installed hand-drawn water pumps (tube wells) and even made provisions for the basic sanitary systems within their sites. The HSD authorities, after the registration process was systemized, laid bricks on the access lanes and by-lanes (alleys) in conventional herring-bone pattern in an attempt

2 If this is not typical of the developing scenarios of the world, the forced intervention by the local middlemen and mastaans (usually backed by political leaders/parties) was perhaps the only reason that the HSD failed to initiate its actual program in the Vastuhara resettlement scheme.

to revive the project. Gradually, formal supply of electricity was allowed in the project areas and so on. The initial propensity in transformative process usually took two forms:

- *Alteration* – extra number of rooms added through alterations of the existing scheme; changes commenced within the existing built area.

  Of the 194 cases surveyed, 71 had converted their verandah spaces into additional rooms by walling up the open surfaces.

- *Extension* – extra number of rooms added to the original space-provisions; construction beyond the existing built area.

  Among the 194 surveyed, 93 households were responsible for the construction of an extra 141 rooms – 62 by one room and 31 by more than one room afar from original provisions.

More to the discussion above, a comparison with another list of examples have revealed that among the 93 households who had extended their spatial provisions, also altered their verandahs into rooms in 55 accounts. Thus, total extra rooms for 164 families (the transformers) were 267, making an average of 1.62 rooms per household in the *Vastuhara* resettlement scheme.

One of the features in the original building provision that might have contributed to the occupants' initial urge to transform was the positioning of a transitory space – the access verandah – towards the farthest end of the site. The access verandah seemed to lose its actual purpose as a frontage-element in the overall functional disposition. It can be assumed that the occupants simply responded to their need for more spaces by placing vertical enclosures (temporary in nature – affordable in monetary terms) on the open surfaces and altering it into livable indoor spaces. When the benefits of alteration were realized, they proceeded on to differentiate their unit spaces by dividing it into two or more segments. The propensity for extension followed as the sites had no boundary walls or demarcation of any kind. The extent of extending their provisions on open land depended on mutual benefits of the neighboring occupants.

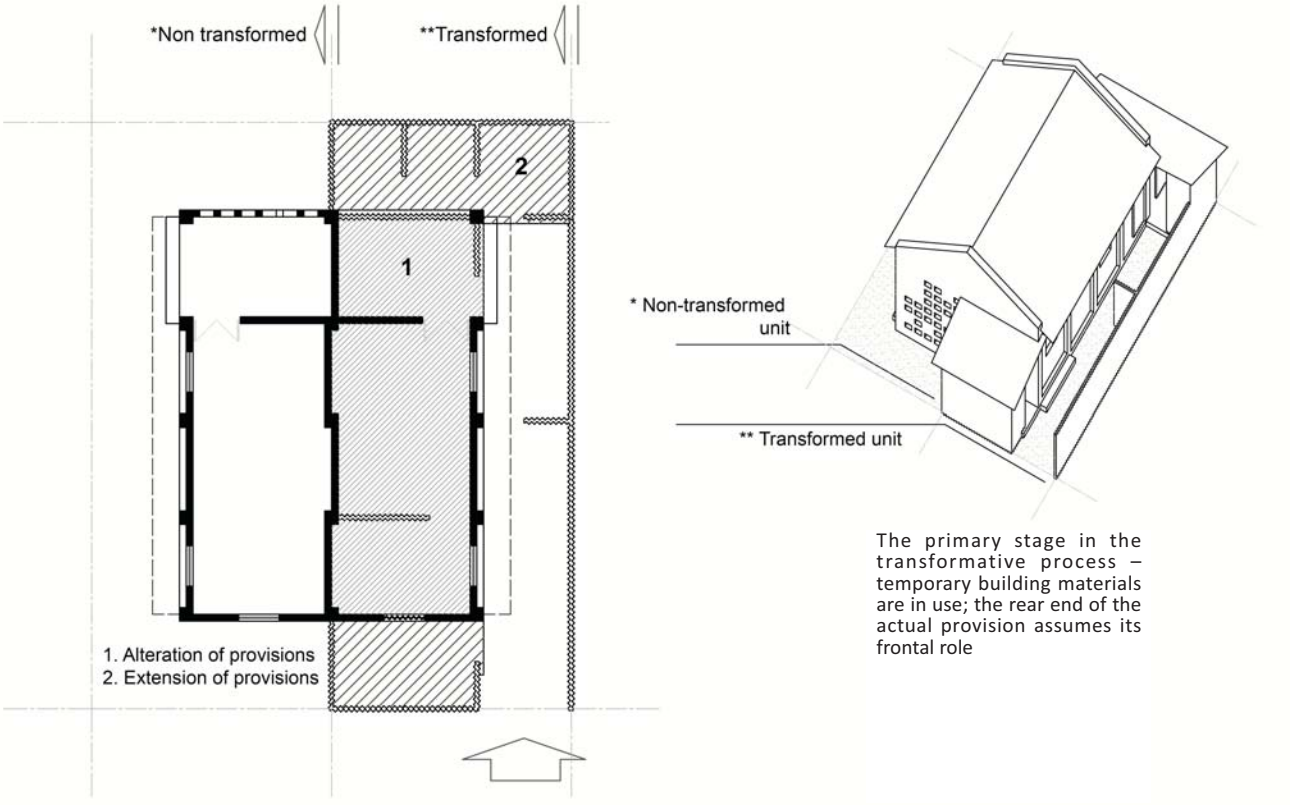


Figure-3: *Transformation in rudimentary form.*
Source: Ameen, 1987 (redrawn)

Implications

Although unsatisfying in quantitative terms, the Vastuhara resettlement scheme did not fail to meet the demands of its target group. Traces of proliferations by the upper income status had been found minimum. Building materials used in its earliest stage for spatial transformation were basically temporary in nature. In most of the cases (69%, approximately), it had been confirmed that families comprising of 5 to 7 members were not only extending/altering their original provisions to meet the internal demand for more spaces,[3] but also subletting to others to increase their financial capacity. The realization of some specific features in the original provisions had resulted into an 'enabling' factor among its target group (Tipple, 1999).

5. TRANSFORMATION IN 'VASTUHARA' – THE TRANSITORY, THROUGH ITS FORMATIVE STAGE

With a marked increase in population and land value since the 1980s, accommodation in the central areas of Dhaka were becoming more and more inconvenient in terms of rapidly deteriorating supply in the overall housing stock and its economic sustenance. In the process of this, Mirpur and other peri-urban locations around the city were growing popular to the lower income stratus of the society. Some proliferations (insignificant, comparing to the total stock) had been seen in the Vastuhara housing. Considerable amount of money were paid to the registered allottees in exchange of the right to live in houses that were still under the capacity of the HSD authorities by legal means. In most cases, the newest occupants – with their weakest form of tenure – actually inhabited units that had already been transformed to some extent (or more) by the original allottees. However, the occupants were generally found to be reliant on unskilled professional affiliations and the like, with their household income ranging from 58,000 to 64,000 taka (707.60 to 780.80 USD)[4] per annum. Even the reasonably well-offs in the Vastuhara community did not belong to the higher income stratus of the society.

The ODA-CARDO affiliated investigation, led by Tipple (1994-95), provides with an in-depth study on the transformative rationales and changes that were identified in various developing scenarios across the globe, including Bangladesh. This section renders a brief review of the research initiative while keeping the focus of this study.

5.1. Provisioning Themselves

Up to the mid-90s, horizontal expansion (and alteration) was the predominant form of spatial transformation in the Vastuhara resettlement scheme. While the transformative impetus of the occupants remained the same as its initial years, the forms diverged into different categories. Nevertheless, emergence of a new pattern of development had been observed where functional organization and differentiation of space-performance could assume its own identity; representing a particular economic class on its gradual upward transition (Figure-4). The transitory stage of the Vastuhara transformation can be identified in the following terms:

- *Growing up to the Limit* – altering and extending to their highest extents; bounded by the physical realities of their immediate surroundings, and beyond.

  In almost 75% of the cases the households comprised of 5 to 7 members. Families that had commenced transformations in various development phases, actually tended to achieve some degree of favorable living conditions by providing accommodations for their own. Nonetheless, subletting extra rooms to other people in their houses seem to be a common-trend for these families with lesser economic circumstances.

  Incremental growth, throughout many years of alterations and extensions, had constricted the average floor area per person and, at the same time, increased the general population density. The spaces around the dwellings were found to be entirely built up, excepting the horizontal spines left for internal circulation. Householders frequently extended their buildings up to (and over) the roadside drains to gain maximum extra space. With horizontal transformation explored and exhausted to its fullest degree, the occupants were restrained from moving upwards (vertically) by the means of tenancy rights, and regulatory and financial constraints.

- *Material Permanency* – using materials that are more

3 The primal need for spatial differentiation that responds to specific cultural behavior, a range of privacy settings and proxemics (see: Rapoport, 1979).

4 Conversion as in 19 July 2012.

permanent in nature; transformation from *kutcha* (temporary) to semi-*pucca* (semi-permanent). Transformers during the later development phases had begun to deploy building materials that are more durable, locally available, and in unison, easily accessible in monetary terms. Temporary partitioning walls were replaced by brick-bonded walls of (comparatively) stronger bearing capacity. The bricks were usually laid in single piles – on their sides – forming only 7.5 cm. of thickness. The later developments ultimately took up the form of the original building provision that had a semi-permanent composition, with CI sheets topping the lower segments of *pucca* arrangements. The main households almost inevitably occupied the semi-*pucca* areas of the houses, whereas the rooms that were rented out often remained *kutcha*. Material permanency allowed the occupants of the *Vastuhara* housing to have safer and securer living conditions. Poor maintenance of building capacity is common among the entire lot, where some of the houses (47% of the total) had cracks on the walls and/or leaking roofs.

- *Spatial Hierarchy and the Ordering of Forms* – disposition of spaces according to functional use and various privacy settings; a distinctive realization of form that carries identity (Figure-4).

  The unit houses were originally built upon open land, without any demarcating plot boundaries. After a row of every six units (or so), the provisions for public lavatories were placed. In later periods, a tendency of developing individual plot areas had been observed – the households proceeded to wall up their entire portion – up to the extensions made by the adjacent plots, and going as far as the edge of the allies. Thus, the plots usually accumulated an average width, excepting for those who had the flexibility to take up more spaces towards the end of the allies – where the lavatory facilities were left unused. The allies had been compressed to leave only 4 meters (sometimes even less) wide carriageways between the front walls of the houses.

  In such condition, the narrow allies between two rows of plots were the only public accesses within the locality. A distinct enclosure of space behind the high boundary walls formed the insides of the households. Doors (usually only one on each) on these high walls adjoining the allies were the only thresholds where public spaces were succeeded by the semi-private spaces within. The household-insides were connected with the alley-outsides through semi-private transitions in the form of open corridors. These transitory spines, running through the entire length of the plots, were often partly or wholly covered with corrugated plastic sheets. The peripheral walls being solid, the corridors were the only means by which natural conditions of lighting and ventilation could reach the habitable areas. Washing and cooking areas were generally formed as parts of these transitory spines or placed nearest to them. The habitable rooms – the private domains – succeeded the semi-privates. Sometimes, more private (or inner) areas did not have the right of passage to the semi-private, but were connected to rooms that had direct admission from the transitory spines.

- *Growing Commercial Needs* – accommodating commercial services into the residential fabric; emergence of the new *raison d'être*?

  Small and insignificant growth of commercial uses had been identified in the study area since its early years. By the 1990s, about 11% of the households had rooms specifically dedicated to small enterprises, manufacturing workshops and other programs that are directly related to higher income generating opportunities.

5.2. *Implications*

Although a handful, the *Vastuhara* households were already trending towards two-storied extensions by way of semi-*pucca* standards during the mid-90s. Growing upwards seemed inevitable for a community that was gradually improving their overall socio-economic circumstances. As per the transfer ownership documents, the authorities had enabled the allottees to extend vertically with the clause that demolition of the original building provision would have to be followed by a high-standard (*pucca*) construction having low floor area ratio.

Tipple and Ameen (1999) recommended that the requirement of building *pucca* stories would have to be removed, and simultaneously, planning and building codes generally applicable in the urban environment would have to be relaxed in order to prevent displacement of the poorer households to peripheral land, and spawning new slums and squatter settlements. With a view to keep the existing fabric (and potentials for growth) intact, the following recommendations were made:

- Adoption of permissive attitude towards the practices of transformation; in doing so, procedural delays and

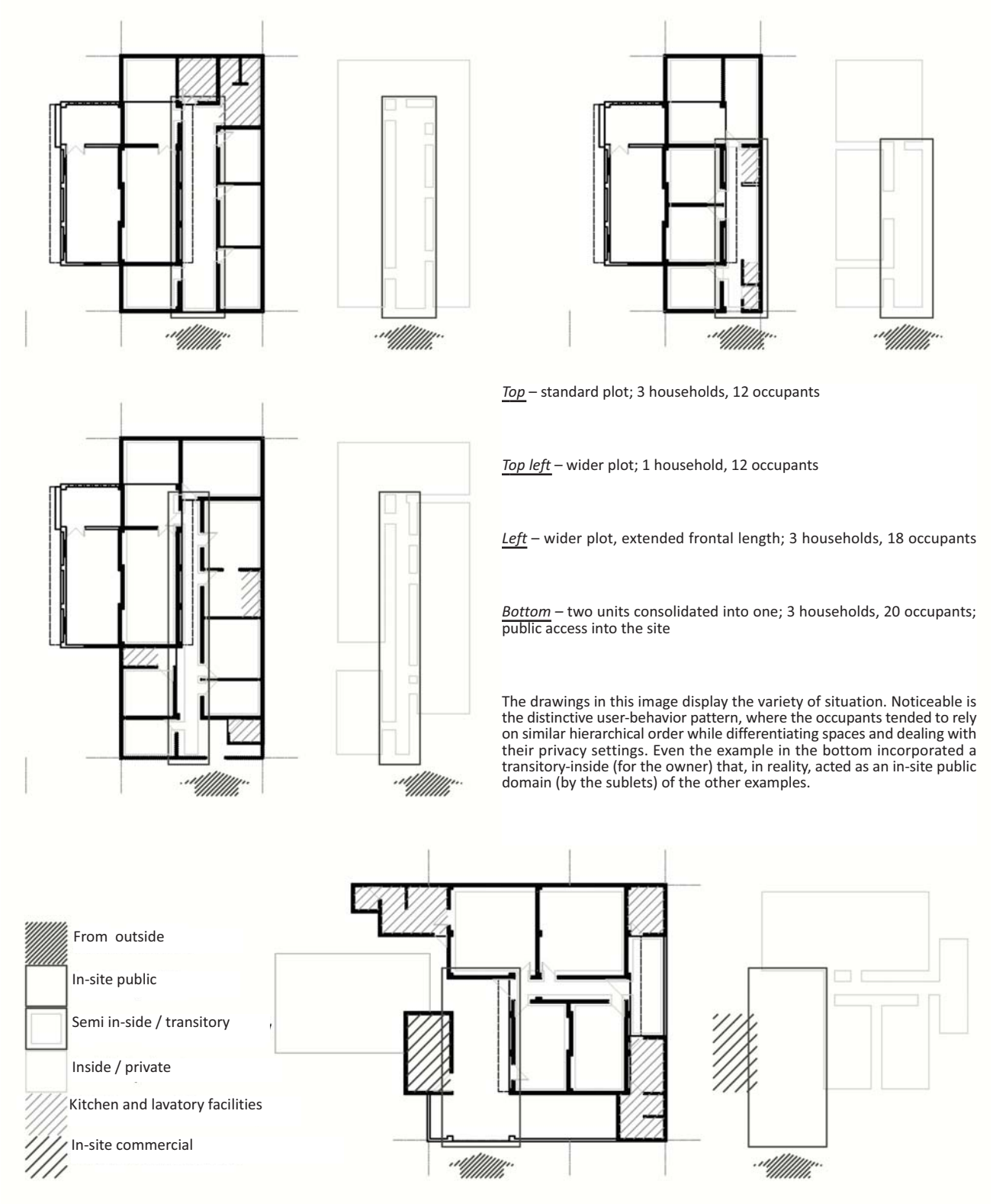


Figure-4: The transitory development-phase.
Source: Tipple, 1994-95 (redrawn)

interference would have to be kept to the minimum.

- Encouragement of local practices by allowing the semi-lattice; ensuring a balanced growth through a detailed development plan by incorporating flexible implementation of building code that would also take environmental issues into account.

- Enablement of financial institution into the development-discourse of the poor; formulating policies that would encourage incremental growth.

- Official recognition of the urban poor and the process of user-initiated transformation in the city limits; formulating pro-poor policies within an appropriate legal framework.

6. TRANSFORMATION IN '*VASTUHARA*' – THE NEW MILLENNIA, THROUGH ITS REFORMATIVE STAGE

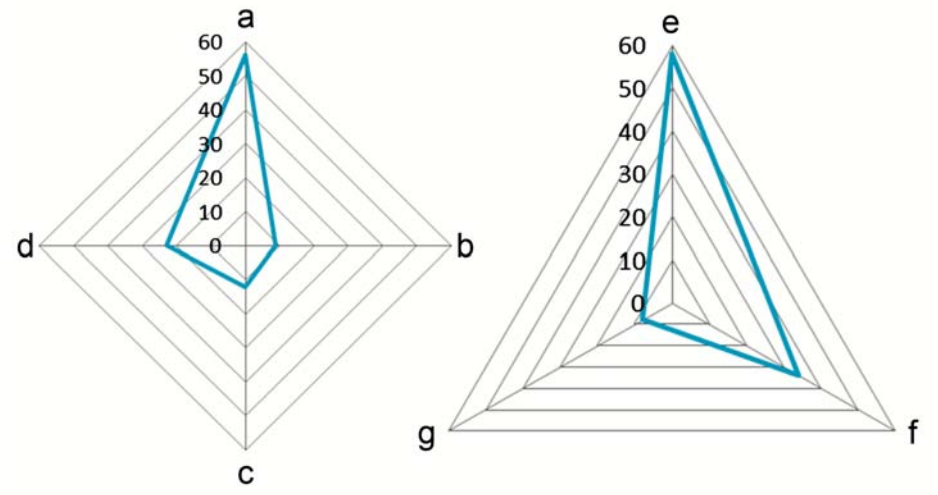
Even through the late-80s and the early-90s, the formal residential areas and other housing enclaves in Dhaka had an average composition of single ownership units. With the turn of the century, this distinctive physical trait of fine grain and uniform texture has evolved into an admixture of different functional properties and multi-ownership apartment buildings containing six or more floor levels in the vertical rise. Commercial developments in these areas are the obvious brunt that grew with the rising demand of the global development-trends. In conjunction with the usual shopping complexes, the RMG industries and an array of institutional categories are the primary infiltrators that infest on the available infrastructural expediency of the organized central city areas.[5]

The *peri*-urban areas, on the other hand, offer the convenience of inexpensive labor-force for the RMG industries as the mass of low income stratus finds housing accommodations at financially accessible ranges. The *Vastuhara* resettlement scheme in Section 7 at Mirpur has gone through comparable circumstances during the last two decades. While legal perimeters restricted various commercial and institutional developments of larger categories from infiltrating into the study area, the housing provisions continued to grow through the means of transformative and other reformative changes that are analogous to present needs. By 2010, it has, by large, developed into a commune for the lower income groups serving the nearby RMG industries.

The study area now comprises of 30 rectilinear housing blocks placed in rigid grid-iron pattern (Figure-5). Generally, these blocks had been devised to contain (on an average) 22 plots each in closely spaced lateral arrangement, but were adjusted with the peripheral artery on their western edges. Two internal access-lanes divide the housing scheme in three columnar sections. Alleys are placed at regular intervals, intersecting these internal access-lanes in perpendicular direction and forming frontages for the individual housing units/plots. Although community facilities (*e.g.* schools, healthcare, social welfare, etc.) had never been planned with the original service provisions, a few NGOs were found serving the community within their appropriate ranges. A total of 1,029 plots set up the overall base for the housing scheme.

Figure-5: *The study area and its immediate environs.*
Source: Survey, 2007-08 and 2011-12

5 According to the BBS (2010), the RMG industries in Bangladesh singlehandedly made 79.04% of the total export-oriented earnings in 2008-09.



Graph-1: *Distribution of ownership and building types.*
Source: Survey, 2011-12

At present, the *Vastuhara* resettlement scheme houses an assortment of development-stages that can be typologically differentiated into several groups. Transformed to both horizontal and vertical extents, the majority of the dwelling units still have the original building provisions at their cores. A good number of multi-storied developments can also be noted in the study area where the original units had been entirely erased to make room for *pucca* arrangements with more systematic provisioning of basic functional needs. In cases, several plots were merged together to form a larger base for comparatively taller building structures. The recent vertical rises have little to do with the original scheme, but through the process of growing up in a community with predetermined pattern and uniform texture, the growths have eventually taken a distinctive shape that are readily identifiable as its own. Moreover, these building types were found to have a direct correlation with the terms of allotment and ownership pattern for the housing scheme.

Buildings that had been transformed from their original provisions still dominate the housing scheme by 63.37%, while 35.37% have constructed *pucca* structures demolishing their semi-*pucca* basics. Additionally, 1.26% plots have been found excavated for new construction work.

6.1. The Transformers and Their Ways of the Past

The occupants in this group are mostly regularized tenants who had been paying rental fees to the authority since the earliest years. Transformations of various stages – from *kutcha* to semi-*pucca*, including extension of additional rooms – took years for these initial settlers to avail. In comparison with the transformed single-storied buildings, the multi-storied versions are in short supply also because their structural members at the ground levels usually do not have the capacity to bear additional floor level on top of them. Nevertheless, buildings extended up to three levels have been recorded.

It has been identified that 9.04% of the plots in the housing scheme and 38.55% among the transformed households have converted their rooms into small community shops. Mostly, these shops take up the frontages or corner positions from the accommodating households. The households on the intersecting alleys seldom convert their entire extended street-side segments into such commercial enterprises. In recent years, the corner plots were extended further into the lanes; encroaching over the drainage systems by means of *kutcha* construction materials. On the arterial accesses to the housing, similar conditions were seen to be adapted for workshops or appropriate provisions that serve the greater peripheral outside.

- *Transformed, Single-storied* – generated through alterations and extensions of the basic housing unit; building activity limited to the ground level (Figure-6).

  Through the last two decades, plan-arrangements in the transformed single-storied houses for both land provisions remained the same. A few design considerations were identified that had been adapted by the community in general as supplementary advancements. In the form of problem-solving realizations, these details have added merit to the

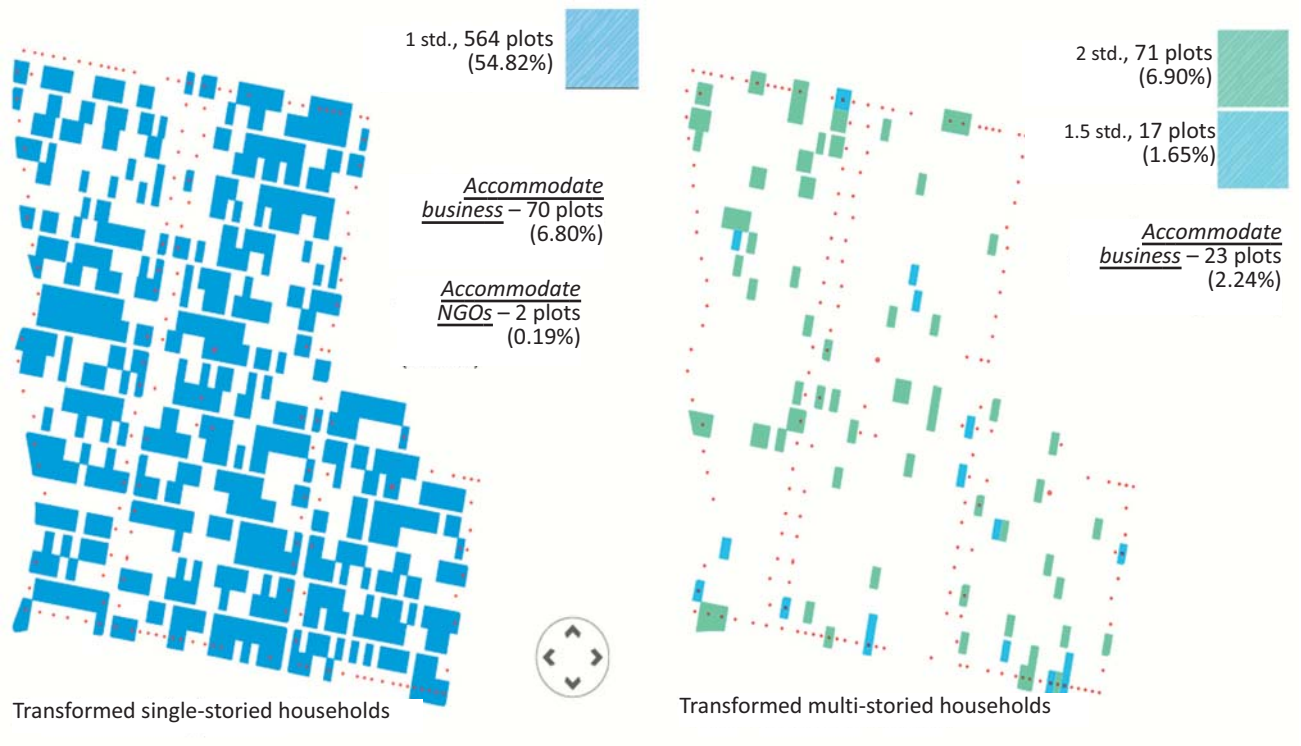


Figure-6: *Ground area coverage by the transformed households.*
Source: Survey, 2011-12

archetypal image (and functioning) of the *Vastuhara* resettlement scheme. Manually operable wind-scoops with the CI roofing for natural lighting and ventilation, and appropriating the use of rainwater ducts and spouts are the distinctive features that have been achieved through simple vernacular means. Apart from all these, a tendency for putting up their frontal façades with vertical brick-bonded stretches and rendering the outer surfaces with local motifs display the residents' urge for individual social identity within a mass housing scenario.

- *Transformed, Multi-storied* – availing transformative changes in multiple floor levels; building activity extending upwards.

  In 1.65% units, partial or minimal transformation propensity in multiple floor levels has been observed. Above their general ground level constructions, mere provisions for a couple of extra rooms had been created with the means of *kutcha* building materials. In such cases, single-flight ladders (made of GI pipes and/or flat iron bars) are placed within the base-level transitory spaces to access the first floor extensions. Usually, these semi-private transitions remain open to sky through both the levels (Figure-7). No partially transformed multi-storied unit was found exceeding two successive floors. Characteristically, transformers of this variety are those who have larger household size with more years of experience in such trade.

  The other category belongs to the households who are basically the absentee allotment holders and/or investors paying one-off financial packages to the first parties; with a sole intention of extracting utmost financial benefit from the housing scheme that required no significant form of investment. In such cases, a rectangular form of an additional floor takes up the entire area the plot at the first floor level, exclusively covering the general ground level provisions and thus converting the archetypal transitory space into an internal passageway (Figure-7). The upper level floors in these situations are often seen extending beyond their ground floor frontage limits and making intrusions over the narrow alleyways. Three storied transformations of the similar kind are comparatively rare, but increasingly gaining popularity among the *Vastuhara* settlers as this particular type meet the demand of the low(est) income workers with the RMG industries in terms of their affordability and sustenance paradox. A good number

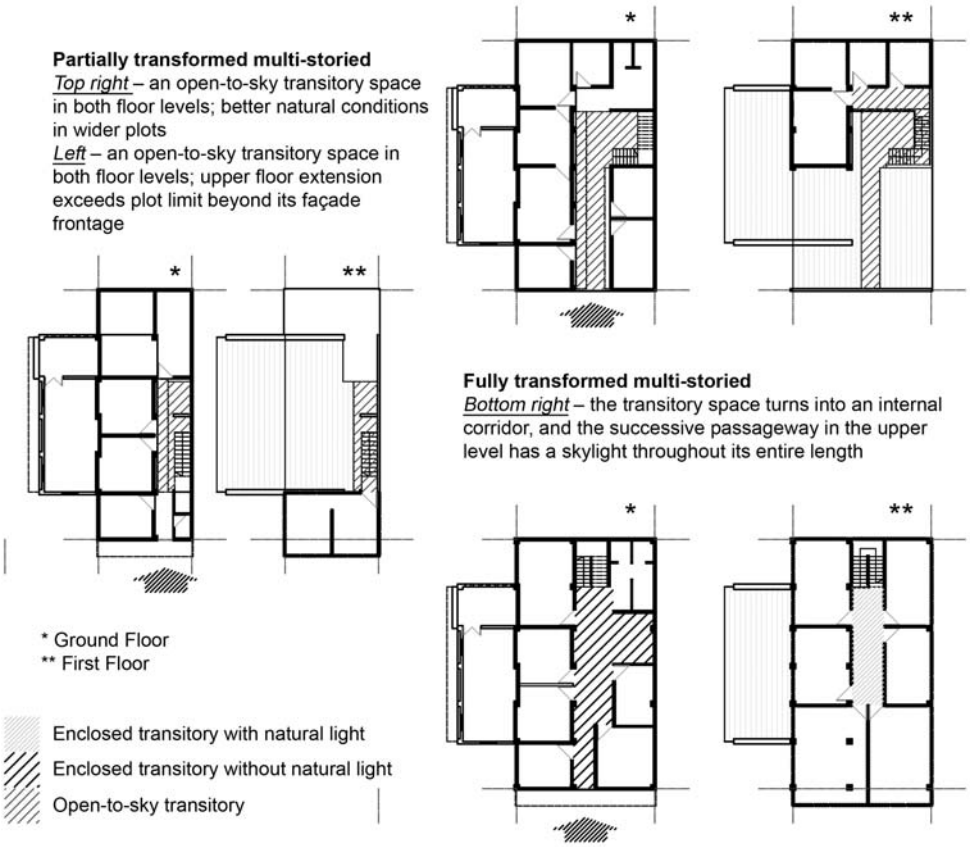


***Figure-7*:** *Transformed multi-storied households.*
Source: Survey, 2007-08 and 2011-12

of the original allottees and the advanced developers (see the following subsections) have expressed their dissatisfaction that transformations such as this would eventually turn the housing scheme into a typical squatter settlement.

6.2. The New Builders and the Present Duality

Comparing to the previous category of transformed single-storied households, newly (recently) constructed building provisions in the *Vastuhara* resettlement scheme is reasonably in short supply. The households are basically the higher income group proliferators who had procured the use of these plots by paying one-off packages to the original allottees with lesser economic means. Essentially, the purchased allottees seem to have been accessing various formal and informal financial organizations for the development of their respective properties. A corresponding group of government class III and IV employees, who were originally allotted with the *Vastuhara* plots, also fit into this particular category. An indistinctive differentiation can be made from the above discussion that newly constructed buildings comprising of more than four floor levels belong to the purchased tenants, while constructions below this vertical extent (1 to 3 storied *pucca* formations) are to the originally allotted households with secured but insignificant income structure (Figure-8).

For the recent multi-storied constructions, small community shops are conventionally placed in distinctive detached arrangements with/against their original pucca building provisions (Figure-9). Whereas, transformations of semi-pucca arrangements incorporate these additional commercial chambers along their sideways as extensions from their core structure. Permanent multi-storied buildings seldom accommodate similar functional arrangements in their ground floor levels.

- New Provisioning, Multi-storied – pulling down the entire transformed accumulations, including their original building provisions in order to create new structural and functional arrangements; permanent constructions of multiple floor levels.

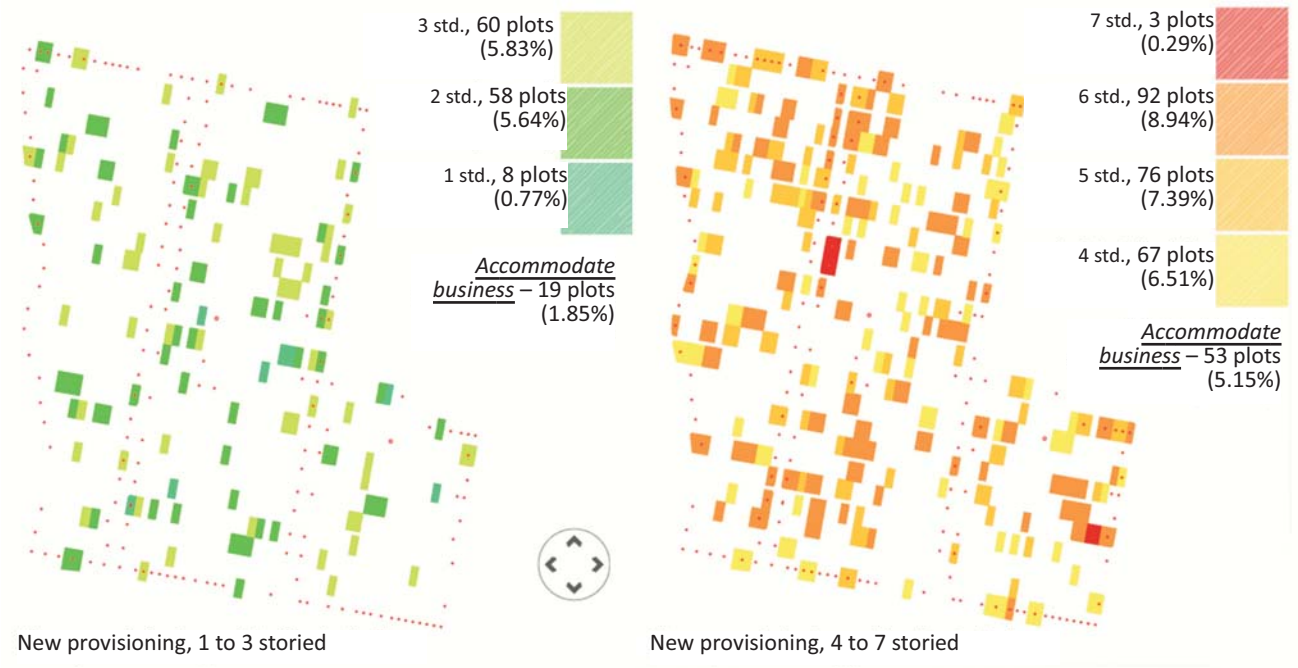


Figure-8: *Ground area coverage through new provisioning.*
Source: Survey, 2011-12

The recent developer households are generally slow builders who take their time to accumulate the money required for each segmental or partial construction phase. In this process, an average six storied *pucca* building takes 10 to 15 years (sometimes even more) to be completed by the particular user group. Safety standards and rules of clearance with adjacent plots are frequently violated as the entire unit areas are built up in an attempt to extract the utmost from their respective land provisions – a tendency that had been evident with the original transformation practices in the *Vastuhara* housing scheme. Arranged in closely spaced grids (conventionally, in post-lintel structural system), the buildings are often trapped within neighboring multi-rises on the three sides, leaving only the front surface for admittance of natural conditions (Figure-9). Indents on the side façades are seen, but this treatment has been proven inadequate as the sun does not reach the bottom levels. These households generally occupy multiple floor levels, renting out the remaining spaces to persons who can avail paying charges higher than that in the transformed categories.

6.3. Comparative Discourse

The growing distance in housing divide between the two broad-based categories has resulted into dissatisfaction and discontentment among the *Vastuhara* settlers. Comparatively disadvantaged – the experienced transformers with lesser economic means; the superlative majority – are constantly blaming the newer developer households of obliterating the existing neighborhood fabric by creating overcrowding situations and undesired growth. Whereas, the other group – the parties who were able to access more permanent means of living – are (rightfully, of course) continually looking forward to greater objectives of social and economic progression by defying the realities of the past.

In the present circumstances, it can be argued that the housing conditions in *Vastuhara* resettlement scheme is far improved than any other low income settlement in the city. The settlers have not only increased the total housing stock of the community, but also improved their economic capacity by adapting transformative mechanism to their original building provisions. The entire settlement, up until now, has grown to this extent without putting any (additional) pressure on government resources.

7. CONCLUSIONS AND RECOMMENDATIONS

Although the study shows that the concept of transformation has made efficient use of existing finite resources – particularly serviced land, infrastructure, building materials, etc.; no initiative has successfully been taken to demonstrate

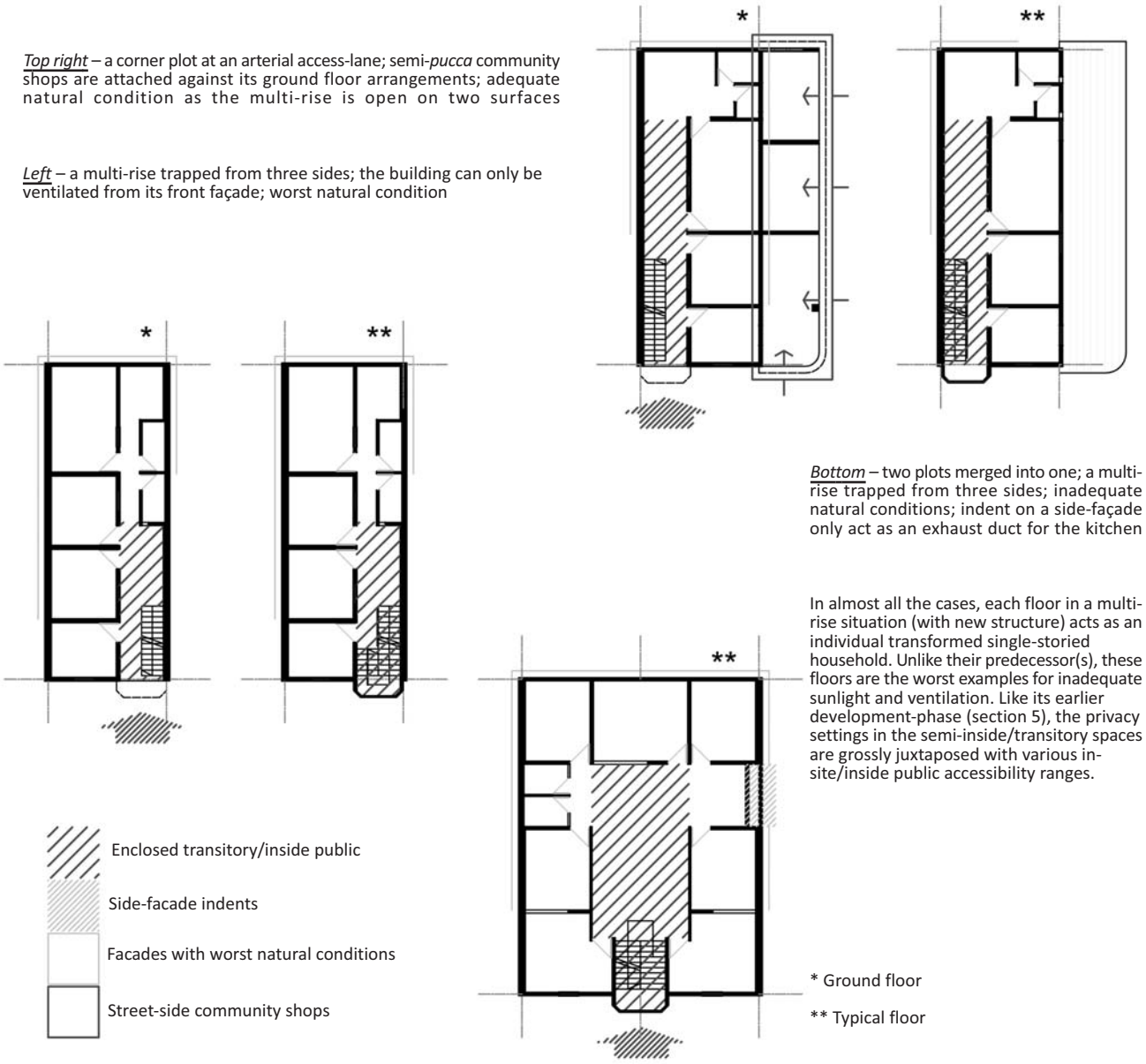


Figure-9: *Multi-storied households – the new provisioning.*
Source: Survey, 2007-08 and 2011-12

the result of the concept. The absence of which has ensued in the ignorance of the outcome in the long run. At this stage, it has become difficult to ascertain whether the resettlement scheme had been actually addressing to the needs of its original target group or not. But the story of *Vastuhara* housing through the last 30 years or more have been proven to be a constructive one. The authorities concerned have a lot to learn from its mistakes and also from its favorable outcomes that had eventually contributed to the sustenance of a low income community.

Broad-based recommendations concerning the urban poor in Dhaka city are abounding in various literature and research works. Without making any contradictions with them, a few insinuative guidelines might be proposed as they would be more appropriate in addressing and assessing the present situation of the study area and schemes that are similar to this. Rather than enforcing with strict and constricting decrees, the poor settlers have to be made aware of their circumstances and changes which will contribute to a healthier home environment.

For the transformed categories, suggestions can be made with respect to the components or functional devises in the form of various privacy situations. These devices had been identified in the households' existing alteration and extension practices and the majority of the tenants, still in their transformative process, are contingent to these features as the basic physical manifestation of user-behavior settings. Ideal compositional variations among the components in terms of their functional and environmental values can be conveyed among the target group so that they can 'do the same thing' but somewhat in a better and acceptable way. In doing so, localized building trends and space-standards should be encouraged instead of their globalized and/or modernized equivalents.

The process of transformation conventionally involves semi-*pucca* construction methods that supports flexibility of horizontal growth and convenience in future alterations, but at the same time, restricts its occupants from growing upwards. Vertical extension up to two floor levels should be encouraged, where the transitory (semi-private) component is repeated in both the floors. Semi-*pucca* buildings exceeding this ceiling are extremely risky. The settlers in the housing scheme should be warned of the consequential threats such development has to offer. Buildings above two floor levels should be of *pucca* standard. Height restrictions for the area must follow the limits applicable for the particular city district (*i.e.* Mirpur). More to this, new provisioning having multi-storied structural capacity should obligatorily comply with bylaws that are more responsive to the housing scheme.

The study area has been found to be a gross distribution of plots having no significant concern for spatial hierarchy or interactive social provisions. Adequate community facilities/services could have commenced moral advancement for the community. With respect to the character of the district, provisions for commercial enterprises could have created employment and/or investment opportunities for the economically disadvantaged residents. Nevertheless, in the present circumstances, small-scaled commercial developments within individual plot-boundaries should be promoted; given that the allottees will be entrepreneurs or (at least) partners in business.

If the government is convinced that the *Vastuhara* resettlement scheme should keep in track with its general objective (*i.e.* providing home for the shelterless), proliferating tendencies of the higher income groups should be stopped by any means possible. It should be strictly maintained that the allottees do not profit from selling out their provisions to anyone other than surrendering their leases to the authority.

For each scheme, self-compliant advisory bodies should be assembled who will act as guides to the overall development process, and facilitate the use of necessary logistics and finance that are appropriate to the households' income structure. The advisory bodies should comprise of architects, planners, economists and experts in social welfare. Unconstrained involvement of various NGOs and complementary organizations in the development sector should also be encouraged. Most importantly, participation of the households in the development process must be ensured if an all-encompassing and practicable outcome is to be expected.

Acknowledgment

The author is indebted to the significant input of
Dr. A. Graham Tipple
United Nations consultant
Housing and Urban Issues in Rapidly Developing Countries
& Former faculty member; director, CARDO
School of Architecture, Planning and Landscape
University of Newcastle upon Tyne
United Kingdom

Decade 1975-1985
a. Aerial view of the resettlement scheme – the original provisions.

b. Transformation in rudimentary form; kutcha partition wall between two detached housing units.

c. Transformation in rudimentary form; the frontal commercial impetus.

Decade 1985-1995
d. The formative stage; the original housing unit extended by means of both *kutcha* and *pucca* provisions façades.

Decade 1995-2005, and onward
e. A semi-open transitory spine; commonly treated in transformed single-storied category to allow natural lighting and ventilation.

f. Transformed single storied households; frontal façades are detailed and differentiated from the adjacent units – an expression of individual social identity; the core provisions are still inside.

g. A partially transformed multi-storied household; vertically extended by means of kutcha building materials.

h. A partially transformed multi-storied household; the access ladder to the upper level.

i. A fully transformed multi-storied kutcha household.

j. A newly constructed multi-rise; an open stairway visible on the right; semi-inside turns into an inside public dominion.

k. a newly constructed five-storied household.

Figure-10 (a-k): *'Vastuhara', through decades.*
Source: HSD, 1979; Ameen, 1987; Survey, 2007-08

References

ADB-GoB, 1993; Housing Sector Institutional Strengthening Project (final report); Asian Development Bank and Government of Bangladesh; Dhaka.

ADB-GoB-LGED, 1996; Urban Poverty Reduction Project (draft: final report); Asian Development Bank, Government of Bangladesh and Local Government Engineering Department; Dhaka.
Ameen M.S., 1987; Housing for the Lower Income People of Dhaka, Bangladesh: A peri-Urban Development Approach (unpublished Ph.D. dissertation); University of Newcastle upon Tyne, Newcastle.

Ameen M.S., 1992; "Transformation Practice in Low Income Housing"; Conference Proceeding: 18th WEDC Conference – Water, Environment and Management; Kathmandu.

Banks N., 2008; "A Tale of Two Wards: Political Participation and the Urban Poor in Dhaka City"; Environment and Urbanism, Vol. 20(2); International Institute for Environment and Development (IIED).

Beyer G.H, 1965; Housing and Society; Collier-Macmillan Ltd.; London.

Elahi K.T., 2005; "Understanding the Sustainability of Dhaka City: Some Preliminary Observations"; Bangladesh National Geographical Association, Vol. 33, Nos. 1&2; Bangladesh National Geographical Association (BNGA); Dhaka.

HSD, 1979; Vastuhara Resettlement Scheme; Housing and Settlement Directorate; Dhaka.

Islam N. (ed.), 1996; Dhaka – from City to Megacity; Bangladesh Urban Studies Series No. 1, Urban Studies Programme, Department of Geography, University of Dhaka; Dhaka.

Islam N., 1998; "Dhaka City: Some General Concerns"; Conference Proceeding: Reforming Dhaka City Management, in: Asian Cities in the 21st Century: Contemporary Approaches to Municipal Management; Asian Development Bank (ADB).

Islam N., 2005; Dhaka Now – Contemporary Urban Development; Bangladesh Geographical Society (BGS); Dhaka.

NHA, 1993; National Housing Policy, 1993; Ministry of Housing and Public Works, National Housing Authority; Government of Bangladesh**.**

NHA, 2004; National Housing Policy, 2004 (amended); Ministry of Housing and Public Works, National Housing Authority; Government of Bangladesh**.**

NHA, 2010; National Housing Policy, 2010 (amended); Ministry of Housing and Public Works, National Housing Authority; Government of Bangladesh**.**

Rahman G., 2008; Town Planning and the Political Culture of Planning in Bangladesh; Dhaka.

Rapoport A., 1979; "Cultural Origins of Architecture"; Introduction to Architecture, Snyder J.C. and Catanese A.J. (eds.); NY.

Tipple A.G., 1994-95; "Extending Themselves – Resident Transformation of Government-Built Housing in Developing Countries"; Draft final report on ODA research scheme**,** CARDO; University of Newcastle upon Tyne; London.

Tipple A.G., 1999; "Transforming Government-Built Housing: Lessons from Developing Countries"; Journal of Urban Technology, Vol. 6, No. 3; The Society of Urban Technology; London.

Tipple A.G. and Ameen M.S., 1999; "User Initiated Extension Activity in Bangladesh: 'Building Slums' or Area Improvement?"; Environment and Urbanization, Vol. 11, No. 1**.**

UNDP-UNCHS, 1993; Bangladesh Urban and Shelter Sector Review; United Nations Development Program and United Nations Center for Human Settlements; Dhaka.

AN ANALYSIS OF CURRENT REGULATORY REGIMES FOR ENERGY EFFICIENCY LIVING AND THE WAY FORWARD: A CASE STUDY FROM PAKISTAN

Muhammad Riaz Akbar *
Prof. Neil Hewitt **
Prof. George Heaney ***
Dr. Lay-Cheng Lim ****
Syeda Shabnum Najaf*****
Waseem Akram******

ABSTRACT

Pakistan is currently facing acute energy shortages. The local energy production is inadequate to meet domestic needs and support economic growth which has decelerated the pace of economic development and industrialisation of the country. The residential sector consumes a significant chunk of the total energy resource available in the country. In this context there is a need to look for avenues where energy savings can be realised. The concept of energy efficient homes and sustainable dwellings is at the centre of energy saving debate but is still in its early stages of development in Pakistan. The main instruments to realise energy savings in any energy management regime stem from legal and regulatory frameworks, institutional and individual delivery capacity and enforcement mechanisms employed by the concerned authorities. This study looks into these regimes at national, regional and local levels and analyses their adequacy as to the objectives of their development and institution. The paper starts by detailing the prevailing situation with respect to (total) energy consumption and energy efficient living in Pakistan in the first part. Next, it analyses energy efficiency provisions for residential sector within the current legal and regulatory frameworks and identifies the challenges to such developments. The research method involves content analysis of policy, legal and regulatory provisions in Pakistan and institutional response through a dichotomous awareness survey about the existence and use of Building Energy Code of Pakistan, which is complementary to the main methodology. The research finds that there is need to adopt a holistic approach to improve the prevailing legal and regulatory regimes, which are weak and poorly defined. The capacity, enforcement mechanisms and environmental performance of these regimes are also important issues. The outcomes of this study are recommendations for the necessary policy responses to better enable Energy Efficient Homes in Pakistan.

Keywords: Efficiency, Passive, Design, Legal and Regulatory, Capacity

1. INTRODUCTION

"*A low energy path is the best way towards a sustainable future*" (WCED, 1987). This path reflects a paradigm shift from energy intensive to energy efficient developments whilst ensuring a balanced interaction among environmental, social and economic concerns (Bell and Morse, 2003). The concept of sustainable development has gained momentum and significant recognition in order to avoid expected threats of climate change and fuel poverty across the globe. However, policy makers, planners and environmentalists, especially in the least developed and developing countries still need to go a long way to achieve the desired objectives of sustainable developments to improve the quality of life for current and future generations (Khator and Fairchild, 2006). Currently, the world is confronted with the challenges of higher energy consumption, CO_2 emissions and unsustainable development in the housing sector. The intentions of nations around the globe are quite evident from their policies, legal and regulatory frameworks, research and development initiatives and international commitments to engage in efforts to conserve energy. Globally, a number of initiatives, policies and plans have been adopted not only to conserve energy

* Muhammad Riaz Akbar, PhD Research Scholar, REI Initiative, University of Ulster, UK
** Neil Hewitt, Professor of Energy / Director, CST, University of Ulster, UK
*** George Heaney, Professor of Construction / Director, CENI, University of Ulster, UK
**** Lay-Cheng Lim, Lecturer, School of the Built Environment, University of Ulster, UK.
***** Syeda Shabnum Najaf, Senior Urban Planner, The Urban Unit, P&D Department, Punjab
****** Waseem Akram, Senior Transport Planner, Transport Planning Unit, Punjab

but also to safe guard the environment from the severe impacts of climate change. The focus of any sustainable economic development is to ensure the planning, development and management of a nation's limited resources in an energy efficient and environment responsible way.

Pakistan is facing the challenges of acute energy shortages (Raja et al., 1996). The local energy production is insufficient for its needs and the country is heavily dependent on the import of fossil fuels. The intermittent electricity supply and unplanned load shedding have become a culture in Pakistan whilst domestic activities and economic growth demand continuous supply of energy. The total installed power generation capacity in Pakistan is 19560 MW (CCP, 2010). The Water and Power Development Authority (WAPDA), Pakistan Electric Power Company (PEPCO), Pakistan Atomic Energy Commission (PAEC) and Karachi Electric Supply Corporation (KESC) are federal energy agencies responsible for power generation, transmission and distribution. About 31 % of the installed capacity is generated by Independent Power Producers (IPPs) (CCP, 2010).

Continuous and adequate energy supply is a pre-requisite to ensure sustainable economic growth in any country. Currently, only 65-70% of the total population in Pakistan has access to electricity and the country is facing serious power shortages of up to 6000 MW (CCP, 2010), intermittent gas supplies and costly imported fuel. The big gap between the demand and supply of energy has decelerated the pace of economic development and industrialisation in the country. To ensure sustainable economic growth and better quality of life, there is a need to exploit not only innovative, environmental friendly, sustainable and renewable sources of power production (Raja et al., 1996) but also develop an energy efficient culture of energy consumption in all sectors.

For clarity, this paper uses the concept of 'total energy consumption' that incorporates electricity, gas, oil and energy from other primary commodities for domestic and commercial activities. The domestic sector in Pakistan is responsible for a substantial portion of total energy consumption. Figure-1 shows that the Domestic sector utilises 20% of total energy as compared to Transport 29%, Industrial 43%, Agriculture 2%, Commercial 4% and other consumption 2% (ADB, 2009). (see Figure-1)

However, if we look at consumption by the type of energy then domestic sector's share of electricity use (a major component in total energy) is 46%. (Alter and Syed, 2011 & Economic Survey of Pakistan 2009-10). Currently per capita energy consumption in Pakistan is 500 kilowatt hours

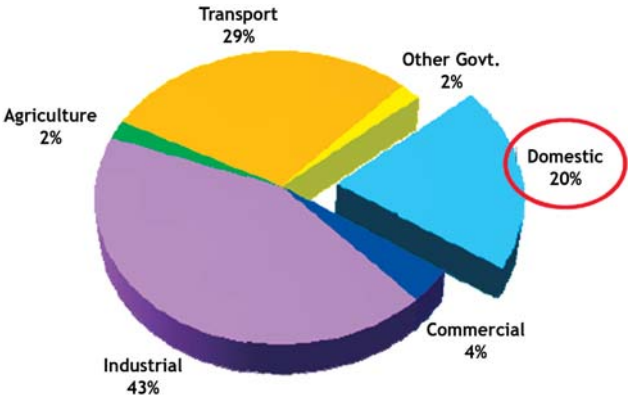


Figure-1: Energy Consumption by Sector FY 2008.
Source: Pakistan Sustainable Energy Efficiency Development Programme (ADB, 2009).

per year which is still very low as compared to the global average of 2500 kilowatt hours per year (Pasternak, 2000 and EEIU, 2011). These figures are expected to increase with the increase in the country's economic growth.

Given the current energy supply crisis in Pakistan as noted above, increases in domestic energy use must be counteracted by improvements in the regulations of building energy use and their enforcement. The absence of passive energy means, utilisation of poor building materials, urban design challenges and energy intensive sources for thermal comfort which are allowed within the current legal and regulatory framework challenge the sustainable development initiatives in the country. The concept of energy efficient homes and energy conservation is at the early stage of its development despite the fact that the traditional buildings constructed centuries ago are more energy efficient than today's modern developments in the cities of Pakistan (Qureshi, 2008).

This study aims to analyse energy efficiency provisions for domestic buildings within the current legal and regulatory framework that further leads to the identification of the challenges to such developments. The outcomes of this study are policy recommendations for Energy Efficient Homes (EEH) in Pakistan.

2. BUILDING PRACTICES IN PAKISTAN

The built environment is responsible for huge energy consumption and CO_2 emissions where buildings are the major part and have a substantial share in the total energy consumption in Pakistan and across the globe. According to the International Energy Agency (2005), *"30-40 per cent of the worldwide primary energy is being used in buildings.*

Up to 90 per cent of the energy is utilised during the operational stage of buildings, for the purposes of heating, cooling, and lighting" (UNEP, 2007 and Soharwardi, 2009). In Pakistan attention is not being paid to a sustainable design for energy efficiency and environmental performance of buildings. The main drivers for a building design include layout, aesthetics, capital cost, novelty and market resale value, whereas energy efficiency, environmental and higher operational costs are totally ignored at the planning, design, construction and operational life of the buildings (Mathur, 2007). Modern building design in Pakistan lacks energy efficiency measures although traditional architecture utilises solar passive means, thermal mass, shared shading, central courtyard and even street patterns to achieve thermal comfort levels both in the winter and summer (Alamgir, 2008). Sustainability features such as location, function, layout, materials, daylighting, waste, water consumption, energy efficient appliances, energy resources, adaptability and compatibility with the surrounding environment play a significant role towards energy conservation and carbon reductions during the whole life cycle of the buildings (Younger et al., 2008). Some of these considerations may cost more initially, but offer long-term savings (Younger et al., 2008) and better quality of life for current and future generations.

Legal and regulatory frameworks and city planning practices with effective energy efficient considerations in the housing not only facilitates energy conservation but also sustainable urban development in the broader context. However, energy efficiency and conservation concepts are not well adopted in the Pakistan's real estate market despite "*strong relationship between energy and planning components such as land-use, buildings, built form, transportation, urban form, and infrastructure systems"*(Duvarci and Kutluca, 2008).

3. ENERGY EFFICIENCY POTENTIAL IN THE HOUSING SECTOR

Pakistan is facing energy shortages due to poor planning, low production and inefficient consumption. The intermittent, unreliable and poor quality of energy supply culture in the country is influencing economic growth of the country and hindering foreign direct investment. Moreover, higher cost of energy production through conventional methods with the technologies utilised by IPPs are responsible for considerable investment in the energy sector. Such investments in technologies utilising expensive imported fossil fuels e.g. oil have ensured the deceleration of economic development. In this context, energy conservation in the domestic sector is one of the options to reduce overall current and future energy deficits. The adoption of energy efficiency and conservation measures can make available substantial capital resources for social and economic development of the society along with environmental benefits (US Congress, 1992).

The residential sector comprises 24 million households in Pakistan (ADB, 2009) with a 30%* overall energy efficiency potential in the housing sector (ENERCON, 2008 http://www.enercon.gov.pk/). The energy consumption distribution in the residential sector is on average 59% natural gas, 34%, electricity, 2% Oil and 5% LPG. This distribution is dominated by two main sources of energy consumption i.e. electricity and natural gas. Electricity is mainly used to run home appliances such as lighting, fans, motors, refrigerators and air conditioners whereas natural gas is being use for space and water heating and cooking. Electricity consumption in domestic sector is 33,704 GWh/year (ADB, 2009) and power consumption for 9.8 million electric home appliances is 3530 MW (ENERCON, 2008 http://www.enercon.gov.pk/). Energy efficient appliances offset their initial relatively higher cost during their operational life. According to the Pakistan Energy Yearbook 2008, there is at least 10% potential to save energy by introducing energy efficient appliances (ADB, 2009 and ENERCON, 2008). Moreover, significant amounts (approximately 1085 MW) of energy can be conserved by replacing Incandescent light Bulbs (IBs 37% of the total residential points i.e. 117.4 million) with Compact Fluorescent Lamps (CFLs) (ADB, 2009).

The energy efficiency potential in cooking, water and space heating appliances with gas is 40%, 30% and 36 % respectively (ADB, 2009). This can be achieved by replacement of older systems, retrofitting/upgrading newer appliances and encouraging more efficient appliance use, especially in new residential developments (Byambasaikhan et al. 2009). All gas based appliances in the residential sector are expected to contribute substantially to energy security and economical energy supplies for future sustainable developments.

Energy savings can be achieved by improving building

* 30% energy efficiency potential refers opportunities to conserve energy out of domestic share through energy efficient building designs, materials, appliances, water and waste management and retrofitting / modifying the existing buildings.

materials, wall insulation, double or triple glazed windows, orientation (new developments), water consumption, waste management and proper roof insulation in existing buildings and new developments. According to the ADB report on Sustainable Energy Efficiency Development Programme of Pakistan, roof insulation can reduce up to 20% of electricity demand for thermal comfort in summer (ADB, 2009).

New developments to accommodate current and future housing demands are expected to play a significant role not only to provide shelter but also substantial energy efficiency and conservation in the housing sector. The estimated housing demand in 2008 was 570,000 units, with the annual supply of 300,000 units and a shortfall of 270,000 units per year (NHP, 2001). With the introduction of energy efficiency measures, these 300,000 new housing units have the potential to save 297000 MWh/year.

4. METHODOLOGY

The research method adopted in this study is that of descriptive evaluation, which involves both theoretical and practical considerations to strengthen analysis and research outcomes. This three-step methodology takes input from three components (i.e. legal and regulatory arrangements, Building Energy Code of Pakistan and the extent of the institutional response judged through an awareness survey of existence and use of Building Energy Code of Pakistan). The first stage involves the content analysis of legal, regulatory and policy arrangements for energy efficiency, environmental performance in the housing sector at federal, provincial and local level, and Building Energy Code of Pakistan. The results from the content analysis of the policies, laws, rules, regulations and standards relating to energy efficiency, environmental performance and sustainable developments, identify gaps, poor dissemination of federal policies into provincial plans and local legislation. Moreover, challenges to the Building Energy Code of Pakistan have also been identified. (see Figure-2)

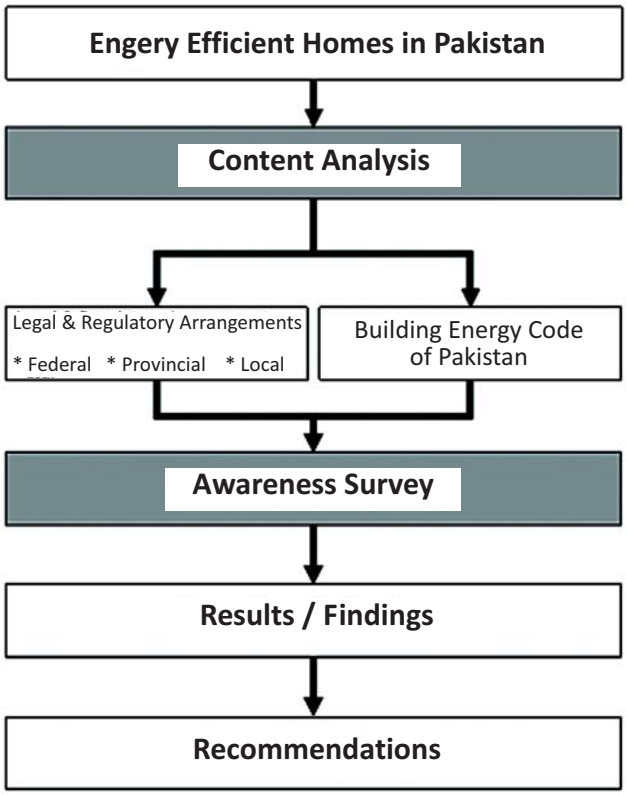


Figure-2: Research Methodology.

The second stage of the research consists of analysing institutional response through a simple dichotomous survey to identify level of awareness of the Building Energy Code of Pakistan and its application in the real estate development. The method of enquiry is based on an enumeration survey that followed a structured format and asked a closed-end question from the participants from three different organizations. The organizations surveyed are: the Urban Unit; City and Regional Planning Department, University of Engineering and Technology Lahore; and Lahore Development Authority. The participants are involved in policy planning, capacity building and professional growth, development and management activities in the housing sector. It needs to clarified and emphasized here that this survey is: quite limited in its scope and coverage as it surveyed planning professionals only in one of many big urban centres who were asked only one question; not a main focus of this research; and is complementary in nature and has been used to verify or otherwise the inferences obtained from content analysis which is the main methodological component of this research. Thus, it provides generalised information about the dissemination of the building energy code of Pakistan from Federal to Local level.

The final step of the methodology analyses the results from the content analysis and awareness survey, which leads to the research findings. The outcomes of this study are a set of policy recommendations for energy efficient culture in the housing sector in Pakistan.

5. ENERGY EFFICIENCY LEGAL AND REGULATORY FRAMEWORK IN PAKISTAN

The legal and regulatory framework for energy efficient homes, like other developing nations, is in transition in Pakistan. To achieve the objective of energy conservation in the housing sector, environmental protection, integrated land use planning, development and management nation-wide broad principles, policies and laws have been established at the federal level in Pakistan through acts, ordinances, national policy, planning manuals and codes. (see Figure-3)

The federal policies and acts set a broad framework for devising provincial level policies and regional development plans. Provincial level polices and plans are legally "binding" for large, medium, small towns and villages for planning, development, management and decisions making. Consequently, whenever District Governments wish to prepare or modify any of its land use or development plan, they are legally bound to follow the provisions of provincial policies and plans at the provincial and local level. It is obvious that the main instrument and the driving force for energy efficiency, conservation and improvements in the housing sector will be legislation and enforcement (Clarke, et al., 2008).

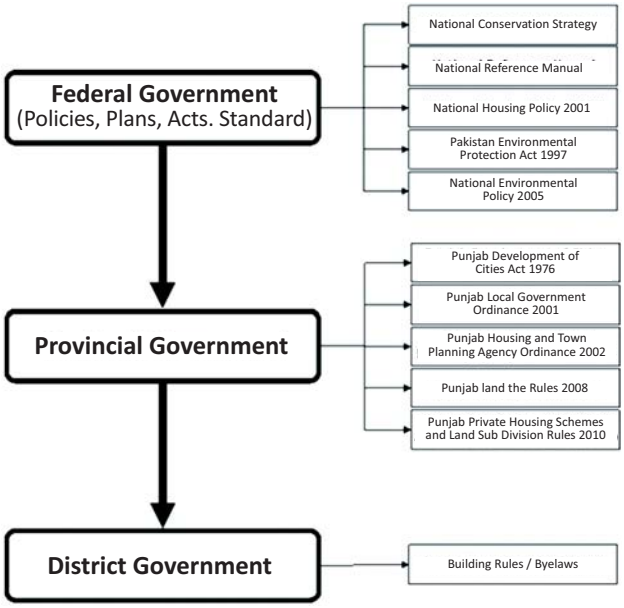


Figure-3: Legal and Regulatory Framework in Pakistan
Source: The Urban Unit, P&D Punjab (Syeda and Akbar, 2007)

6. LEGAL AND REGULATORY ARRANGEMENT

The Pakistani government is struggling to introduce energy efficient homes due to fragmentary legislative provisions. Although the Building Energy Code of Pakistan was initially launched in 1990, it could not achieve expected energy efficiency targets in the housing sector. A brief analysis of legal and regulatory provisions with a focus on energy efficiency, environmental performance, energy conservation measures, quality of life and overall sustainable development in the housing sector at federal, provincial (Punjab) and local levels has been described in Annex-1.The evaluation of the legal, regulatory and policy arrangements at the federal level including the National Conservation Strategy, National Reference Manual, Environmental Protection Act 1997, National Housing Policy 2001 and the National Environmental Policy, cover a wide range of environmental concerns such as industrial pollution, transport pollution, hazardous substances and sustainable development but no specific measures are adopted for energy efficient and environment friendly sustainable developments in the housing sector. Similarly, at the provincial level the legislative provisions focus on devolution plan, environmental control, urban design, passive means of energy, indoor environment, ecological balance, beautification of administrative areas, implementation of rules and bye-laws, provision of shelter and cost effectiveness issues rather energy efficiency and conservation. Moreover, the federal and provincial legal provisions provide an opportunity under different sections to make rules and Bye-laws to carry out the purposes of the concerned law. Unfortunately subordinate legislations have not been framed to provide an enabling environment for energy efficient homes.

7. BUILDING ENERGY CODE OF PAKISTAN

The Building Energy Code of Pakistan 1990 was initially prepared by National Energy Conservation Centre (ENERCON), Planning and Development Division and Ministry of Housing and Works Environment and Urban Affairs Division. The Code aimed to provide energy efficient design and construction of buildings for optimum thermal comfort levels and lower domestic energy consumption. Initially Code was considered as the postscript of Building Code of Pakistan with minimum performance standards for building walls, roofs, windows and openings, heat, ventilation and air conditioning (HVAC) equipment and lighting. These HVAC arrangements were based on American Society of Heating Refrigerating and Air-Conditioning Engineers (ASHRAE) standards. The code was non mandatory at that time but was expected to be the part of mandatory requirements with the dissemination from federal to local

***Table-1*: Energy Efficiency Awareness Survey**

SR.NO	ORGANISATION	LEVEL	PROFESSIIONAL PLANNERS	ANSWERED	YES	NO
1	Lahore Development Authority	Local	33	22	3	19
2	CRP Department, UET Lahore	Provincial	13	10	3	7
3	The Urban Unit, P&D Punjab	Provincial	5	5	3	2

levels, gradual improvement in the federal, provincial and local legislations, continuous capacity building and research and development activities. However after 20 years, including research and development by ENERCON, Pakistan is still far from achieving optimum energy efficiency and environmental performance of the buildings. Currently, ENERCON is updating the Code according to the contemporary building requirements. A draft document, based on the previous Code, has already been prepared in 2009. The Code has divided the whole country in five different climatic zones. The Code facilitates *new buildings and portions of existing buildings, new systems and equipments and change in use of buildings* (BECP, 1990). The factors covered in the code for energy efficient homes mainly include*, "building envelopes, building mechanical systems and equipment, including heating, ventilating, and air conditioning (HVAC), service water heating, lighting and electrical power and motors* (BECP, 1990).

The Code provides a basis to sustainable building standards in Pakistan. It was introduced as non statutory standard in 1990 (still having non mandatory status) and could not disseminate to local levels due to legal, institutional, political, financial, awareness, delivery capacity and coordination barriers between federal and local levels. The Code is the first step to ensure energy efficiency, thermal comfort with minimum energy consumption, carbon reductions and sustainability of new and existing buildings.

8. ENERGY EFFICIENCY AWARENESS SURVEY

The energy efficiency awareness survey conducted in 2010 evaluated the level of awareness and dissemination of Pakistan Building Energy Code from the federal to local level during the last 20 years. The survey was simply based on a dichotomous question, whereas Yes/No question was used to separate professional town planners familiar with the Pakistan Building Energy Code for energy efficiency, conservation and improved environmental performance of the buildings. The fieldwork for the survey was performed by the professional town planners (co-authors) in the three organisations.

Three organisations namely The Urban Unit, P&D Department (Provincial); City & Regional Planning Department, UET Lahore (Academia); and Lahore Development Authority (local development agency) were selected for the survey. The selection of these three different organisations is based on their functions and unique role in planning, development and management measures at different levels within existing legal framework.

The survey aimed to determine the existing level of awareness among the town planning professionals involved in policy planning and establishment of legal and regulatory arrangements at provincial level (The Urban Unit); academia involved in education and training of the professional qualified town planning graduates (City and Regional Planning Department) and Professional town planners involved in the implementation and enforcement of the Building Regulations and all development activities (Lahore Development Authority). All professional Town planners across three organizations were contacted to evaluate the level of awareness about the Pakistan Building Energy Code. (see Table-1).

The results from the energy efficiency awareness survey clearly depict very low level of awareness about the existing non statutory Building Energy Code of Pakistan. This indicates poor networking between federal, provincial and local academic, planning and development agencies, lack of trained professionals, individual and institutional capacity building. The lack of professional awareness impedes public awareness about energy efficiency standards, renewable technologies, orientation consideration, building materials, international best practices, water consumption and energy conservation at large. The low level of dissemination of energy efficiency measures during the last two decades is the real dilemma for future sustainable new developments and refurbishments in Pakistan.

9. ANALYSIS

Energy efficiency and conservation measures in the domestic sector have great potential not only to reduce energy deficit, financial benefits to the general public and better quality to life but also considerable capital resources for other economic development activities. The energy efficiency potential in the domestic sector in Pakistan can be exploited by the introduction of sustainable designs, materials, insulations, efficient electrical appliances, gas heaters and cookers. For instance, there is potential for realising 10% reduction in electricity use by using better electrical home appliances, which is equivalent to saving 353 MW of electricity. Whereas total production from PAEC is only 462 MW. Moreover, substantial saving in electricity consumptions can be achieved by introducing CFLs instead of IBs and 30 to 40% savings can be achieved in cooking, water and space heating appliances with gas (ADB, 2009).

The review of legal and regulatory provisions at federal, provincial (Punjab) and local level for energy efficiency, housing, urban planning and development reveals a poor and deficient policy framework for energy efficiency and energy conservation in the housing sector in Pakistan. It does not provide the enabling environment to support and disseminate energy efficiency measures in the building practices. These existing laws do provide broad statements about energy efficiency, conservation, GHG reductions, environmental impacts and overall better quality of life but broad provisions under different sections have not been trickled down to subordinate legislation and standards for real applications, dissemination and enforcement. The current situation depicts a lack of enabling laws and regulations at local levels to support and integrate energy efficiency initiatives in the current building practices in different parts of Pakistan. This deficiency also reflects in near-total lack of international best practices such as Leadership in Environmental and Energy Design (LEED), Building Research Establishment Environmental Assessment Method (BREEAM) and Deutsche Gesellschaft fur Nachhaltiges Bauen (DNGB) rated developments; inadequate energy efficiency standards under the current legal umbrella; lack of energy efficient labelled appliances and goods for thermal comfort, energy conservation and other domestic operational activities along with substantial reduction in the carbon emissions.

Laws and legal provisions have always been an effective instrument to strengthen and provide strong foundation to institutional structures to enforce and achieve short and long term development targets. Due to poorly defined legal and regulatory frameworks in Pakistan, the institutional arrangement to strengthen energy efficiency initiatives is also facing challenges. One of the major challenges is the lack of substantial financing in this sector whilst a wide range of energy efficient building materials, sustainable technologies and equipment has already been integrated in the construction industry in developed and developing countries. Currently, Pakistan is at the early stage of development in the domestic sector and penetration of energy efficiency, energy conservation measures and sustainable technologies is almost negligible. Financial institution, established financial companies, government development agencies, real estate developers are reluctant to invest in this sector and exploit the social, economic and environmental potentials of energy efficient homes in Pakistan.

The relatively high energy consumption in the housing sector seems a potential for energy efficient refurbishment and new developments. Current culture of higher energy consumption, lack of motivation, resistance to adopt contemporary tested energy conservation measures and sustainable technologies are upfront challenges. Four major players namely government (federal, provincial and local), private sector (investors, real estate developers etc.), civil society (NGOs, CBOs etc.) and general public (Individual household) need to play active role from policy framework at federal level to on ground development at the individual dwelling unit. Government influential and pro-active role towards energy efficient developments in terms of comprehensive energy efficiency policy framework, legal and regulatory arrangements, benchmarking for short term and long term targets, performance based financial allocations, subsidies and coordination among policy institutions and development agencies, is inevitable to enhance motivation and energy efficiency culture in Pakistan. Private sector including national and international financial institutions, real estate developers and business communities are merely paying attention to integrate energy efficiency measures and renewable sources of energy in the housing sector. New developments are simply swallowing Greenfields in the name of high tech infrastructure provisions for economic benefits with little attention to social needs and virtually no attention to energy efficiency, conservation and environmental concerns at overall development and individual dwelling unit levels. The private sector needs to play a model role for the energy efficiency initiatives in the housing sector in Pakistan with the introduction of innovative design solutions, materials, ecological and management measures and contemporary sustainable technologies. This will lead to sustainable development with more economic benefits and market acceptability due to consumer and environmental

considerations. Civil society organization including Non-governmental Organisations (NGOs) and Community-based Organisations are expected to play a significant role in terms of capacity building, localise standards, model sustainable developments and mass awareness of energy efficiency, conservation and environmental issues in the housing sector. The common people need to adopt such initiatives not only for their own social, economic and environmental benefits but also for future generations. The private sector needs to stimulate indigenous industries developing the necessary low cost materials to enable a low carbon building to be constructed. Moreover, the role of academia must be realised and strengthened for professional and general capacity building at large.

The Pakistan Building Energy Code covers minimum energy efficiency, energy conservation and other features of sustainable developments for existing and new buildings in Pakistan. The Code is facing technical, legal and regulatory, economic, social and cultural and capacity issues in the delivery of Energy Efficient Homes in Pakistan. These challenges include;

- Non-statutory and voluntary status of Code not only causing poor usability but also poor dissemination of energy efficiency measures at lower tier legislations.

- Insufficient incorporation of energy efficiency measures in Building Regulations and Bye-Laws as envisaged in the Code according to five different climatic zones of Pakistan.

- The code covers new buildings and refurbishments (all building types are being covered). No specific energy efficiency measures have been incorporated for different land uses such as residential, offices, shops, schools, hotels, government buildings etc.

- No minimum acceptable level for energy efficient homes based on energy efficiency and sustainability features in any particular building, although there are specific standard requirements for individual components of the building such as roof, windows and HVAC etc.

- No standard parameters have been incorporated to assess and evaluate energy efficiency and environmental performance during design, construction and operation period of building life.

- No specific standards have been elaborated for efficient building materials, equipments and appliances.

- The Code does not talk about other sustainability factors such as water consumption, surface water runoff, location, appliances, cooking system, heating system, waste management, daylighting, ecological impact etc.

- Proper attention has not been paid to the ecological factors and enhancement of the site before and after the construction.

- Lack of established institutions at provincial levels to translate federal policies to provincial and local plans. More over poor coordination and culture of isolation in federal, provincial and local bodies is also a dilemma for such initiatives in Pakistan

- Exemptions such as buildings without electricity or fossil fuel utilisation, minimum use of electricity and gas and equipment and portions of building systems that use energy primarily for manufacturing industry and processes, warehouses, storage and agriculture need to be rectified.

- Lack of awareness among the professionals and general public which lead to poor or no interest toward energy efficient homes.

- No consideration to integrate gradually sustainable renewable technologies in the housing sector

- Lack of individual and institutional capacity and implementation framework and feedback

- Poor consideration towards international best practice sustainable development initiatives.

The Pakistan Building Energy Code is just the first step towards sustainability and energy efficient sustainable homes in Pakistan. The real challenge is the awareness, market acceptability, appreciation and fully adoption of these measures. Moreover, gradual contemporary improvements, preparation of technical guides and manuals, practical sheets, educational curriculum, training manuals, professional certifications and adoption of international best practices are demanding fronts for mainstreaming energy efficiency in the housing sector in Pakistan.

10. KEY FINDINGS

The descriptive analysis of legal and regulatory framework, Building Energy Code of Pakistan and results from the awareness survey reveals that;

- Domestic sector has about 30% energy efficiency potential that needs to be exploited not only for social, economic and environmental benefits but also better quality of life at large.

- Lack of enabling environment at the federal, provincial and local levels has resulted in a fragmented and voluntary energy efficiency, legal, regulatory and policy framework

- Lack of awareness about energy efficiency, conservation and environmental performance measures among the professionals in particular the academia and professional government agencies.

- Lack of institutional arrangements and poor coordination among existing federal, provincial and local government departments and agencies.

- Individual and Institutional capacity constraints to enforce energy efficiency provisions under the existing legal framework.

- Limited Research and Development initiatives by professional bodies, research institutions, government agencies and international organizations.

- Limited professional and technical expertise across Pakistan to evaluate energy consumption and performance of buildings, equipments and appliances.

- Lack of substantial financing in the domestic energy sector due to weak legal and policy framework, market acceptability, confidence and adoption issues.

- Poor market acceptability due lower per capita income and higher capital cost of energy efficient products, materials, equipments and appliances. This shows limited awareness about low operational cost, economic and environmental benefits over the life time of these.

- Low level of awareness regarding international best practices on energy efficiency.

- No concept of subsidies and incentives for energy efficiency in the housing sector to achieve social, economic and environmental benefits in the broader context.

11. CONCLUSIONS AND RECOMMENDATIONS

Major Challenges in disintegrating energy efficiency parameters in the housing sector and city planning system in Pakistan include; inadequate and inefficient federal and provincial policies, mismanagement and poor dissemination of federal government initiatives into provincial plans; poor institutional arrangement and delivery capacity at local level; lack of awareness and interest of all the stakeholders (Professionals, Public, Government and Developers) and lack of financing due to weak legal framework. There is a pressing need to adopt a holistic approach to instituting of an enabling environment and energy efficiency culture in Pakistan. Following recommendations are an effort to support future legal, regulatory and policy reforms to enhance energy efficiency and sustainability performance in the built environment.

Recommendation 1

Development and adoption of overarching legal, regulatory and policy frameworks for energy efficient homes and sustainable developments in Pakistan.

The Government intends to enact the Pakistan Energy Efficiency and Conservation Bill, which will provide a legal framework and a regulator role to National Energy Conservation Centre (ENERCON) to coordinate and implement national energy conservation and energy efficiency initiatives and policies. This will also provide a legal support to Building Energy Code of Pakistan because under its statutory authority ENERCON will be able to develop such standards and energy efficiency parameters. The integration of these standards and measures with the provincial and subordinate legislations especially Building Regulations (BR) and Bye Laws is the pre-requisite of Energy Efficient Homes in Pakistan. There is need to have clear and doable energy conservation and carbon reduction targets with a comprehensive road map. This road map will enable all enforcing authorities to gradually improve BR and Bye Laws in order to comply with energy efficiency and environmental performance of the buildings.

Recommendation 2

Establishment of a comprehensive institutional framework with explicit role and responsibilities from federal to local level.

This framework will enable provincial government / departments to translate federal policies into provincial plans and legal binding for the local governments to incorporate energy efficiency measures and achieve set targets of energy conservation at household level.

Recommendation 3

Standardisation and labelling schemes for equipment and appliances such as refrigerators, air conditioners, gas heaters, gas stoves, washing machines, driers etc.

Recommendation 4

Continuous research and development, training and capacity building of provincial and local government departments and authorities.

The role of educational and research institutions (academia) is strongly recommended for such trainings through R&D activities for energy efficient sustainable developments. Development of case studies and demonstration sites modelled on constructability parameters for energy efficient living will help in furthering general awareness of the energy efficiency issues and in understanding the practical implications of such endeavours, and will ultimately contribute to sustainable development.

Recommendation 5

Review and incorporate other sustainability factors such as water consumption, waste water, waste management, renewable source of energy, local materials, location, ecological consideration etc. in the Building Energy Code of Pakistan.

However, there is a need to establish a robust process to review and update energy efficiency performance indicators and criteria.

Recommendation 6

Prepare technical guides, and manuals, training manuals, educational curriculum, software and institute professional certifications for professional planners, architects, engineers, and other code practising officials.

Recommendation 7

Development of a robust database for existing and new buildings for better energy efficiency solution and record.

Recommendation 8

Introduction of subsidies against substantial improvements in the energy efficiency and environmental performance of the individual building.

References

ADB. (2009), Pakistan: Sustainable Energy Efficiency Development Programme, Hagler Bailly Pakistan and Econoler International, Islamabad, Pakistan.

Alamgir, S. (2008), "A Quick Design Approach Towards the Energy Efficient Buildings in Pakistan", Passive and Low Energy Architecture, Dublin, eds. P. Kenny, V. Brophy & J.O. Lewis, University College Dublin, Ireland, Dublin.

Alter, N., and Syed, S.H. (2011), "An Empirical Analysis of Electricity Demand in Pakistan", International Journal of Energy Economics and Policy, Vol. 1, No. 4, 2011, pp.116-139, ISSN: 2146-4553.

Bell, S. & Morse, S. (2003), Measuring Sustainability-Learning From Doing, Earthscan Publications Ltd, London.

Byambasaikhan, B., Aleem, A., Chen, H., de Dios, A., Endelman, M., Jayewardene, R., Kawawaki, F.C., Kunzer, M., Luo, T., Noshab, F. & Tareen, A. (2009), Environmental Assessment and Review Framework: Pakistan Energy Efficiency Investment Program, Asian Development Bank (ADB).

CCP, (2010). The Analysis of Competition and Economic Development in the Power Sector, Competition Commission of Pakistan, Islamabad, Pakistan.

Clarke, J.A., Johnstone, C.M., Kelly, N.J., Strachan, P.A. & Touhy, P. (2008), "The role of built environment energy efficiency in a sustainable UK energy economy", Energy Policy, vol. 36, no. 2, pp. 4605-4609.

Congress, U.S. (1992), Fueling Development: Energy Technologies for Developing Countries, U.S. Government Printing Office, Washington, DC.

Duvarci, Y. & Kutluca, A.K. (2008), "Appraisal of Energy Efficiency of Urban Development Plans: The Fidelity on Izmir-Balcova Case", World Academy of Science, Engineering and Technology, Johannesburg, South Africa, pp. 359.

Enerdata and the Economist Intelligence Unit (EEIU), Trends in Global Energy Efficiency. (2011), Energy Efficiency Report, Saudi Arabia.

Government of Pakistan (2005), National Environmental Policy 2005, Pakistan, Islamabad, Pakistan.

Government of Pakistan (2001), National Housing Policy 2001, Ministry of Housing & Works / National Housing Authority, Islamabad, Pakistan.

Government of Pakistan (1997), Pakistan Environmental Protection Act 1997, Pakistan, Islamabad, Pakistan.

Government of Pakistan ENERCON (1990), Building Energy Code of Pakistan 1990, Pakistan, Islamabad, Pakistan.

Government of Pakistan (2010), Pakistan Economic Survey 2009-10, Islamabad, Finance Division, Economic Advisor's Wing.

Government of Punjab (2010), The Punjab Private Housing Schemes and Land Sub-Division Rules, Punjab, Lahore, Punjab.

Government of Punjab (2009), The Punjab Land-Use (Classification, Reclassification and Redevelopment) Rules, Punjab, Lahore, Punjab.

Government of Punjab (2007), Model Building and Zoning Regulations for Development Authorities in Punjab, City District Government, Lahore, Punjab.

Government of Punjab (2002), The Punjab Housing and Town Planning Agency Ordinance, Punjab, Lahore, Punjab.

Government of Punjab (2001), The Punjab Local Government Ordinance, Punjab, Lahore, Punjab.

Government of Punjab (1976), The Punjab Development of Cities Act 1976, Punjab, Lahore, Punjab.

Hanson, A.J., Bass, S., Bouzaher, A., Samdani, G.M. & Zehra, M. (2000), Pakistan's National Conservation Strategy: Renewing Commitment to Action, Pakistan.

Harlem, G.B. (1987), Report of the World Commission on Environment and Development: Our Common Future, Published as Annex to General Assembly document A/42/427, New York, USA.

Khator, R. & Fairchild, L. (2006), "The Evolution of "Sustainable Development.", Rebecca Lee Harris (Ed.) Globalization and Sustainable Development: Issues and Applications, pp. 13-22.

Mathur, A. (2007), "Energy Conservation Building Code: Powering Energy Conservation", IEEMA, vol. XXVII, no. 7.

Ministry of Housing & Works, Pakistan (1986), National Reference Manual on Planning and Infrastructure Standards, Ministry of Housing & Works, Islamabad, Pakistan.

Pasternak, A.D. (2000), "Global Energy Futures and Human Development: A Framework for Analysis", U.S. Department of Energy, USA.

Qureshi, S. (2008), "Appropriating Traditional Wisdom for Sustainable Building Design", International Seminar and Workshop on Sustainable Building Design "SBD08", eds. M.A. Tirmizi & S.F. Sajjad, Edge Hill University, Lancashire, UK, pp. 10.

Raja, I.A., Dougar, M.G. & Abro, R.S. (1996), "Solar Energy Applications in Pakistan", Renewable Energy, vol. 9, no. 1-4, pp. 1128-1131.

Rizvi, S.A. (2001), December 17' 2001-last update, National Housing Policy 2001: Revitalising the Housing Sector [Homepage of Pakistan and Gulf Economist], [Online].
Available: http://www.pakistaneconomist.com/issue2001/issue51&52/i&e3.htm [2010, 07/07].

Sohaib, Q. & Athar, R.D. (2002), Pakistan's Environmental Laws and their Compliance: A Guide for Industrial Establishement, Law Times Publications, Lahore, Pakistan.

Soharwardi, A. (2009), Designing Buildings for Energy Efficiency, Archi Times, Karachi, Pakistan.

Syeda, S.N. & Akbar, M.R. (2007), Urban Planning Framework in Punjab, Research & Development edn, Lahore, Pakistan.

United Nations Environment Programme (2007), Building and Climate Chang: status, challenges and opportunities, UNEP DTIE Sustainable Consumption and Production Branch, Paris, France.

Younger, M., Morrow-Almeida, H.R., Vindigni, S.M. and Dannenberg, A.L. (2008), "The Built Environment, Climate Change, and Health Opportunities for Co-Benefits", American Journal of Preventive Medicine, vol. 35, no. 5, pp. 517-526.

ANNEX 1

A.1 FEDERAL LEVEL

A.1.1 National Conservation Strategy

The Pakistan National Conservation Strategy (NCS) was adopted in 1992 with the challenges of protection, conservation, rehabilitation and improvement of the environment, prevention and control of pollution and sustainable development. The NCS targeted fourteen core areas along with three operating principles. These principles include "*Public partnership in development and management; integration of environment and economics in decision making and improvements in the quality of life"* (Hanson et al., 2000). The derived implementation mechanism involved seven key stakeholders/partners from government (federal, provincial, district) and the society in order to achieve the objectives of sustainable development. Increasing Energy Efficiency, one of the core areas, targeted energy efficiency in building, retrofits and appliances and identified policies such as development of alternative energy sources and efficient use of energy only. Moreover, practical measures such as use of fuel efficient cookers, introduction of private sector for commercial development of local energy sources and solar water heaters were suggested in the NCS (Sohaib and Athar, 2002). The Strategy covered wide range of areas and sectors instead of more focused and doable road map towards sustainable development. It put great emphasis on NEQS, EIAs, public awareness about environmental issues, Institutional strengthening and protection of natural resources for better quality of life. However it could not focus properly the "*Macro-economic and sectoral economic policies,*" and housing sector in particular (Hanson et al., 2000).

A.1.2 National Reference Manual on Planning and Infrastructure Standards

The National Reference Manual is the only reference document for planning and infrastructure provisions for development activities in Pakistan. The concept of energy efficient homes has not been dealt with in the manual. No specific measures have been suggested to adopt energy efficiency and environmental performance of the buildings. The Physical Planning Process has briefly incorporated environment and orientation considerations to exploit wind and solar energy. General guidelines cover planning and designing of lots in a layout plan at a neighbourhood level according to different climatic zones (cold composite, cool composite, normal composite, warm composite, extra dry cool, extra dry hot, inland maritime and maritime) and climatic effects in different regions of Pakistan. These guidelines comprise plot dimensions, building lines, plot relationship and arrangement for effective and efficient use of passive means (NRM, 1986). The basic design and layout considerations have been incorporated in the Manual but these standards are not legally bindings for the professionals and developers in the housing industry. Even development schemes by the federal and provincial governments and registered developers during the last two decades have not considered these passive considerations as guiding principles to enhance energy efficiency and environmental performance of buildings at individual and neighbourhood level. Moreover, the Manual has not been reviewed and updated since 1986 to meet the requirements of contemporary energy efficient homes, environmental performance and carbon reductions.

A.1.3 National Housing Policy 2001

The National Housing Policy 2001 highlighted the government's role to exploit resources whilst facilitating and regulating development initiatives to enhance economic activity (Rizvi, 2001). The policy has put great emphasis on "*resource mobilisation, land availability, incentives for home ownership, incentives to developers and constructors and promotion of research and development activities to make construction cost effective"* (Ali et al. 2010 and NHP, 2001). The objective was contributing affordability and cost effectiveness instead of energy efficiency, thermal comfort and environmental performance of buildings. Key considerations of the Housing Policy include revision and improvement of planning and building regulations, codes and standards, building materials, construction technology, capacity building, coordination among different development agencies at federal, provincial and local levels (NHP, 2001).

A.1.4 Pakistan Environmental Protection Act 1997

The Pakistan Environmental Protection Act 1997 was enacted to strengthen Environmental Protection Agency created under 1983 ordinance for the protection, conservation, rehabilitation and improvement of the environment. The Act mainly focused on the implementation of Council's policies (established under section 3 of the act), delegation of powers to government agencies, enforcement of NEQS, introduction of EIA / IEE review procedures, regulatory regime for hazardous wastes, resource generation through establishment of provincial sustainable development fund, pollution charges and providing an appeals process for environmental cases (PEPA, 1997). The environmental concerns in terms of transport pollution, hazardous substances and industry related issues, were covered thoroughly but no specific arrangement had been ensured for energy efficient and environment friendly sustainable developments in the housing sector.

A.1.5 National Environmental Policy 2005

The National Environmental Policy 2005 focused on energy security and to achieve energy efficient, environmentally friendly and sustainable arrangements for the future. The policy aimed "*to protect, conserve and restore environment to improve quality of life through sustainable development"* (NEP, 2005). The policy challenged different strategic issues such as sustainable development, cost effective and energy efficient measures to improve economic productivity and poverty alleviation, reduction in CO_2 and Green House Gas emissions, gender mainstreaming and energy supply to rural areas. The policy provides broad general, sectoral and cross sectoral guidelines to federal, provincial and local district governments to address environmental issues. The policy provides strategic direction under section 3(7) (Energy Efficiency and Renewables) of the sectoral guidelines to adopt energy efficiency and conservation measures leading to sustainable developments. No doubt the policy has covered a wide range of sectoral and cross sectoral areas with a long shopping list of initiatives and measures. These guidelines describe what is required for short term and long term sustainable development activities but the questions are how to do (road map, system and systematic legal and regulatory arrangement, transformation of federal policies and legislation to provincial and local rules and regulations, integration of renewable technologies) and who will do (individual and institutional capacity, enforcement mechanism with rational bench marking).

A.2 PROVINCIAL LEVEL

A.2.1 Punjab Development of Cities Act, 1976

The Punjab Development of Cities Act 1976 was promulgated to improve quality of life in the cities of Punjab through a systematised planning and development. The act emphasised on "*an integrated development approach and a continuing process of planning and development, to ensure optimum utilization of resources, economical and effective utilization of land and to evolve policies and programmes, relating to the improvement of the environment of housing, industrial development, traffic, transportation, health, education, water supply, sewerage, drainage, solid waste disposal and related issues"* (PDCA, 1976)*."* The Punjab development of Cities Act does not highlight energy efficient buildings, domestic energy conservation and environmental performance of the buildings. However, section 7(2) and 2(v) identifies few measures for environmental improvements, development control and beautification of the areas rather energy efficient sustainable developments.

A.2.2 Punjab Local Government Ordinance 2001

The Punjab Local Government Ordinance 2001 was promulgated to "*devolve political power and decentralise administrative and financial authority to accountable local governments for good governance, effective delivery of services and transparent decision making through institutionalised participation of the people at grass-roots level"* (PLGO, 2001). The Ordinance provides a comprehensive legal and administrative arrangement for the devolution plan but energy conservation and energy efficiency in the housing sector has not been specifically entertained. However, Section (40) and 6th Schedule Section (27) describes environmental control, urban design, passive means of energy, indoor environment, ecological balance, beautification of administrative areas and implementation of rules and bye-laws. Moreover, Sections 191 and 192 facilitate the Councils to make rules and Bye-laws to carry out the purposes of the Ordinance. But subordinate legislations have not been framed

to provide an enabling environment for energy efficient homes across the whole province.

A.2.3 The Punjab Housing and Town Planning Agency Ordinance, 2002

The Punjab Housing and Town Planning Agency Ordinance 2002 was enacted to establish Punjab Housing and Town-Planning Agency. The main functions of the Agency, as envisaged in the ordinance, are to provide shelter and to establish a comprehensive system of town planning at provincial, district,ÊtehsilÊand union council levels. The Ordinance describes few functions and powers of the agency to adopt environment friendly measures in the housing sector. The Section 4(2)(i)(ii)(iii) and (vii) clearly facilitate to *"develop indigenous and cost effective approaches; adopt parameters of the national housing policy; low cost housing; and promotion of environment for friendly and standardised construction activities"*(PHATA, 2002). Moreover, under Section 4 sub-section 2 (xviii)(xix) the agency may provide technical assistance to the District Governments and Tehsil Municipal Administrations and coordination with the federal government for housing and town planning development initiatives (PHATA, 2002). The main focus of the Ordinance is the provision of shelter and cost effectiveness rather energy conservation.

A.2.4 Punjab Land Use Rules 2008

The Punjab Land Use (Classification, Reclassification and Redevelopment) Rules 2008 has been framed under section 191 of the Punjab Local Government Ordinance 2001 and section 44 and 43 of LDA Act 1975 and Punjab Development of Cities Act 1976 respectively. The main objective of the Rules is the classification, re-classification and redevelopment of the land uses in order to ensure sustainable, harmonious and compact development in the cities. The Rules provide comprehensive planning framework for different land uses and development activities in urban, peri-urban and agriculture areas. However, energy efficiency and environmental performance of existing housing stock and future dwellings has not been considered in these Rules (PLUR, 2008).

A.2.5 Punjab Private Housing Schemes and Land Sub-Division Rules 2010

The Punjab Private Housing Schemes and Land Sub-Division Rules 2010 have been notified under the section 191 of the Punjab Local Government Ordinance 2001. These Rules define procedural criteria to sanction housing developments and planning standards for housing schemes and sub-divisions. These planning standards incorporate minimum standards for open spaces or park, graveyard, commercial area, public buildings, maximum size of residential plot, roads, solid waste management, provisions for low income groups, tube well location, site of grid station and green strips. There is nothing about energy efficiency, environmental performance, exploitation of passive means for sunlight and wind by systematic and innovative arrangement of streets and roads (PHS&LSR, 2001).

A.3 LOCAL LEVEL

A.3.1 Building Regulations/Byelaws

The Building Regulations and Byelaws adopted by Development Authorities and Local Governments in Punjab have incorporated environmental issues in the form of environmental impact assessment, considerations for flood plain areas and environmentally sensitive areas. Moreover, internal lighting and ventilation specification (such as external openings and internal wells), fire safety precautions, emergency exits and standard specifications for utility services such as water, drainage, sanitation, solid waste management and electricity have been comprehensively elaborated for individual and common development activities (BR, 2007). The concept of Energy Efficient Homes is missing in the Building Regulations and Byelaws. The limited environmental concerns in the Regulations are targeting better quality of life. Different features such as optimum utilisation of passive means, design considerations, materials, integration of contemporary renewable technologies, insulation, double or triple glazed windows, thermal bridging, embodied energy etc. contributing to energy efficiency, environmental performance of the buildings and energy conservation has not been incorporated in these Regulations.

PLANNING CONSERVATION FOR OLD DHAKA - A GUIDELINE FOR PREVENTIVE INTERVENTIONS

*Mohammad Sazzad Hossain**

ABSTRACT

Dhaka has been transforming due to adaptation of settlements into its fabric for more than 400 years. The existing fabric can be seen as overlapping layers of successive interventions. Rapid urbanization, shifting economic activities, changes in land use pattern, growing density of new settlements, modern transportation are bringing rapid transformation in the historic fabric. To promote the historic urban structures, characterized by the strong sense of continuity, conservation at urban level has now become an urgent issue. The objectie of the paper is to develop a framework to revatalize the old city through legible and sustainable integration of the historic layers in the existing tissue. The paper attempts to outline a comprehensive guideline for conservation to manage rapid transformation and maintain the historic fabric.

Keywords: Physical planning, Conservation, Revitalization.

1. PREAMBLE

The old city is currently the commercial nerve of Metropolitan Dhaka, that covers an area of 284.3 acres with a population of 8, 87,000. The area possesses 15% of the total population of urban Dhaka while occupying only 7% of its gross built-up area. (DMDP 1995-2015, Vol ll). Most of the area is facing gradual physical deterioration. Scarcity of open spaces, coupled with high plot coverage limited the scope for recreation and cultural activities. The social characteristic of the old district have undergone changes. Historic buildings have been subdivided for multiple families and densities have risen to inordinate level; informal settlements are growing without considering the historic interventions. The paper will make analysis of the historic layers with successive transformation in the fabric and finally outline a strategic approach for conservation.

2. METHODOLOGY

The study is carried out as desk-top research including review of literatures, and field survey. ***Historical Research***[1] method may be included partly to establish the physical growth pattern's chronology and legacy. To mitigate the research problems ***Qualitative Research***[2] method will be followed. The study will have two measures of approach:

1. The theoretical part will be based on literature survey.

2. Field research will be based on Empirical survey that will have two types of data collection and analysis:

Quantitative data: Involves architectural survey and analysis of numerical data such as land use, infrastructure, on site investigation at small scale etc.

Qualitative data: Involves analysis of data such as interview, history analysis etc.

Documentary research and on-site investigations will be important to identify the historic interventions and urban elements. It will be continuation of author's previous study on the heritage site.

3. HISTORIC LAYERS

The old city has following identical layers in its fabric:

* Mohammad Sazzad Hossain, Assistant Professor, Department of Architecture, Southeast University, Dhaka, Bangladesh.

1 Historic Research is a research based on describing the past. This type of research includes for instance, investigations like the recording, analysis and interpretation of events in the past with the purpose of discovering generalizations and deductions that can be useful in understanding the past, present and to a limited extent ,can anticipate the future (Landman,1988).

2 Qualitative Research is multi method in focus, involving an interpretive, naturalistic approach to its subject matter. That means qualitative researchers study things in their natural settings, attempting to make sense of, or interpret phenomena in items of the meaning people bring to them. Qualitative research involves the studies use and collection of a variety of empirical materials .Qualitative research is specially effective in obtaining culturally specific information about the values, opinions, behaviors and social context of particular population (Denzin & Lincoln, 2000).

3.1 Pre Mughal Settings (before 1608)

From about the 9th century A.D. Dhaka was governed by the Sena Kings. During the Sena dynasty Dhakesshwari Temple was built (Taifoor, 1956). After the Sena dynasty, Dhaka was successively ruled by the Turkish and Afghans. Afghan fort was built by Afghan rulers (Dani,1956). Before 1608 AD, Dhaka was a trading centre for *pre Mughal* capital located at Sonargaon and consisted of few market centers along with few localities of craftsmen and business men. All these localities were confined within the circuit of the old *Dholai khal*. The tantis (weaver) and the sankharis (shell cutter) are believed to be the oldest inhabitant of the city and they still live in the area. (Dani,1962). In most of the localities, houses of the local craftsmen were accompanied by small factory. The row houses of Shankhari bazaar had narrow frontage of 6 to 10 feet width and 30 to 40 feet depth and were vertically extended up to 4 storied (Taifoor, 1956). Tanti bazaars also had similar type of settlements. The linear organization of houses at both sides along narrow lane resulted very compact settlement pattern (Figures-1,2, 3 & Table-1).

Figure-1: Pre-Mughal Dhaka
Source: Islam, 1996b

Figure-2: Dhakeshwari mandir in 1904(source British museum)

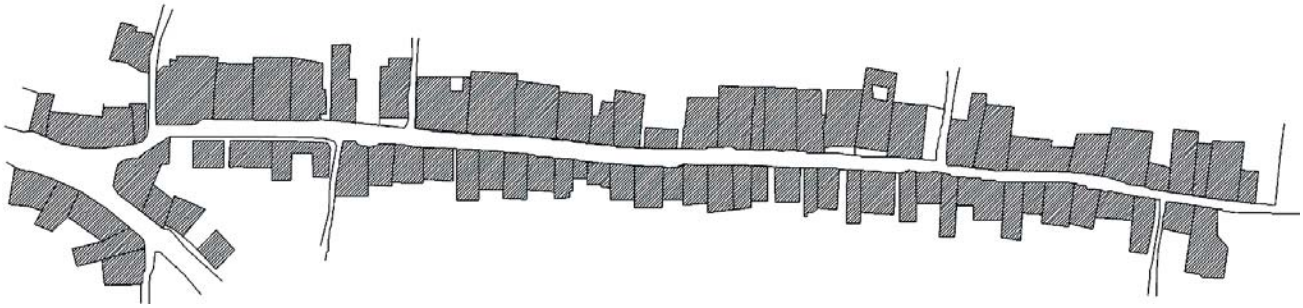


Figure-3: Lay out of Shankhari bazaar in late 18th century. (Ahmed: 2012)

Table-1: Settlement types in Pre-Mughal Dhaka

TYPES	SETTLEMENTS
Market Centers	Sankhari Bazar (shell cutter's locality) Tanti Bazar (weaver's market), Laksmi bazaar, Bangla bazaar
Localities of crafts man & businessman	Kumartoli (potter's locality), Patuatuli (jute-silk painters areas), Sutrapur (carpenter's area), Bania Nagar (trader's area), Jalua Nagar (fisherman's locality), Bania Nagar and Goal Nagar.
Fort	Old Afghan Fort
Religious	Dhakeshwari Temple, Jaykali Temple & Lukshminarayan Temple, Binat Bibi Mosque

3.2 Mughal Settings(1608-1764)

The *Mughal* rulers established the city as the capital of Bengal to control the trade and commerce in the entire region. It started to extend westward up to *Sarai - begampur* and northward to *Bagh-I- badshahi*. Under Shaista Khan (1662-1679), the city then stretched for 20 km in length and 12 km in breadth and contained nearly a million people (Ahmed, 1986). (Figures-4,5,6 & Table-2)

Figure-4: Hussaini Dalan in 1982
source: Aga Khan Visual Archive, MIT

Figure-5: Kartalab Khan Mosque in 1982
source: Aga Khan Visual Archive, MIT

Table-2: Types of Mughal monuments in old Dhaka

TYPES	MONUMENTS
Mosques and other religious buildings	Khan Mohammad Mirdha Mosque, Kartalab Khan's Mosque, Star Mosque, Chauk Bazaar Mosque, Farrukhsiyar Mosque, Begum Bazaar Mosque, Hussaini Dalan
Tombs	Tomb of Bibi Pari, Bibi Champa
Caravan Sari	Bara Katra & Choto Katra
Fortress & Palace	Incomplete Fortress at Lal Bagh

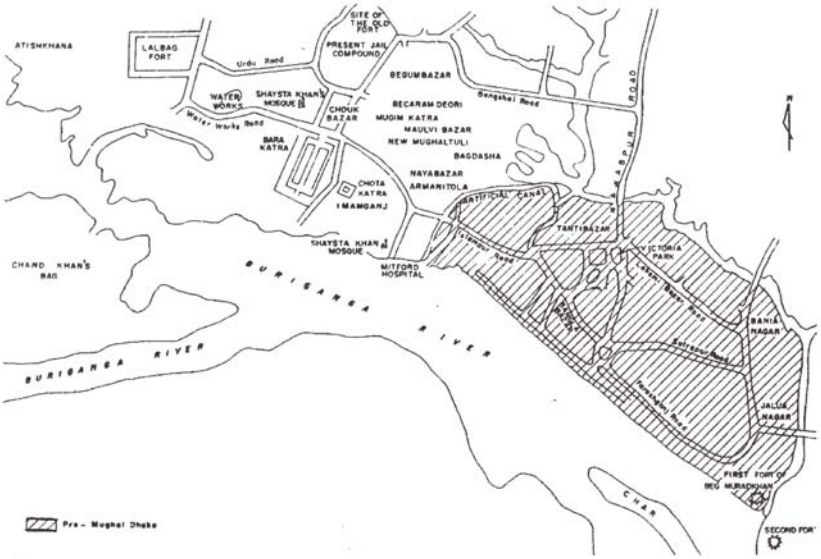


Figure-6: Demarcation between Pre-Mughal and Mughal Dhaka (Dani, 1956).

The local roads were pedestrian and the river and canals were the important traffic conduit of the city. In Mughal Dhaka there were several bridges that are completely lost now. The city was divided into a number of neighborhoods which was a cluster of houses webbed with intricate narrow lanes (Islam, 1996a). The narrow lanes were paved with bricks in 1677-79 (Dani, 1962). There were two principal roads: one running parallel to the river from Victoria Park to the western fringe of the city and the other ran from the Park to Tejgaon. The intersections of the narrow lanes formed wider and irregular nodes that acted as civic space at local level. The sense of enclosure of these spaces was very intimate in scale. Some of the local nodes turned into 'chowks' (squares) of mohallahs (neighborhood), others were rather intimate in nature and held local social gathering (Nilufar, 2011). Dhaka lacked any kind of corporate or municipal institutions during the Mughal period (Gupta, 1989). The functional zoning of the Mughal Dhaka was as follows:

3.2.1. Zone-1 (Residential zone):
(See Table-3)

3.2.2. Zone-2 (Service zone):

The cottage industries and trading areas of pre Mughal period and some other localities used to house the major part of the city's low class population consisting of artisans, laborers and traders. These pre Mughal localities, confined within the circuit of the old Dholai khal (a cannal), were the service zone of Mughal city. Those localities were almost segregated from the high-class residential areas.

3.2.3. Zone-3 (CBD):

During Mughal period Chauk Bazaar was developed as the main business center near Bara-Katra. The market was well located to serve both the upper class and the lower class residential areas. Chauk Bazaar was connected with the *Sadarghat* (a landing platform at the bank of Buriganga River) by a road running parallel to the river. Another commercial centre was located at Bangla Bazaar and that was the main shopping centre before the Mughals (Taifoor, 1956) (Figures-7, 8 & Table-4).

Table-3: Types of Mughal residential buildings in old Dhaka

USER GROUP	RESIDENTIAL AREAS
Though it was an incomplete fort but it indicates the Mughal intention to establish the residence of the prince at Lal Bagh fort	Lal Bagh Fort
Rich but comparatively ordinary citizens who often could be identified with the Mughal nobilities.	Large palatial buildings at Becharam Dewri, Aga Sadeq Dewri, Ali Naqi Dewri and Amanat Khan Dewri.
The princes and wealthy elites	Residential buildings along the riverfront

Table-4: Types of building in the CBD of Mughal Dhaka.

TYPES	BUILDINGS
Trade Center	Chauk & Bangla Bazaar
Caravan Sarai	Bara Katra & Chota Katra
Administrative headquarters and residence of prince and other imperial officers and soldiers	Old Afgan Fort, reconstructed during the Mughal period

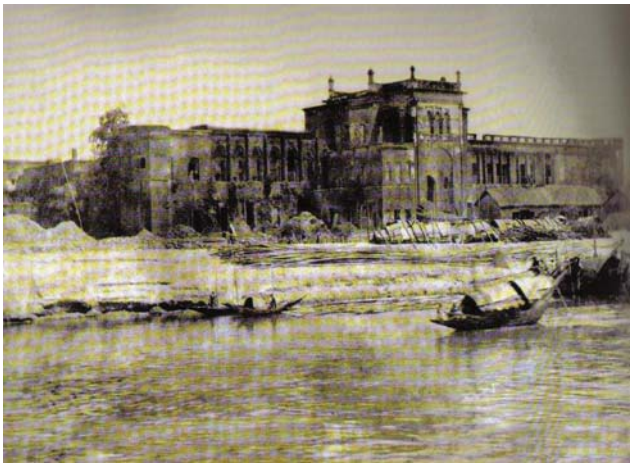


Figure-7: Chota Katra from the river bank in 1875
Source: Dept of Archeology, Bangladesh

Figure-8: South wing from the court yard of Bara katra in 1870.
Source: British museum

3.2.4. Zone-4 (Recreational zone)

The Mughal elites had garden houses for recreation, festivity and reception. In the present Ramna area there were number of two or three storied mansions with spacious reception hall (see Table-5).

3.3 British Settings (1765-1947)

The new set up was laid mainly northward, round about Ramna racecourse area. Some roads within the old city were widened and new buildings were erected for administrative and educational purposes near the Victoria Park. The Old Fort was turned into jail. The localities of the Wari and Ganderia came into existence. Middle class residential areas were located mainly at Bakshi Bazar. Dewan Bazar, Nawab Katra, Aga Sadeq Road, Begum Bazar, Armanitola, Bangla Bazar and Lakshmi Bazar. The riverbank remained as high-class residential area. High European civil officers used to live there. (Figures-9, 10, 11 & Table-6)

Table-5: Mughal Gardens

USER GROUP	RECREATIONAL AREAS
Mughal elites	Gardens at Hazari Bagh, Qazir Bagh, Lal Bagh, Bagh Chand Khan, Bagh Hosainuddin, Bagh Musa Khan, Aram Bagh, Rajar Bagh, Mali Bagh and finally the Bagh-i-Badshahi (Dani, 1962)

Figure-9: River side of Ruplal house in 19th century
Source: Dept of Archeology, Bangladesh

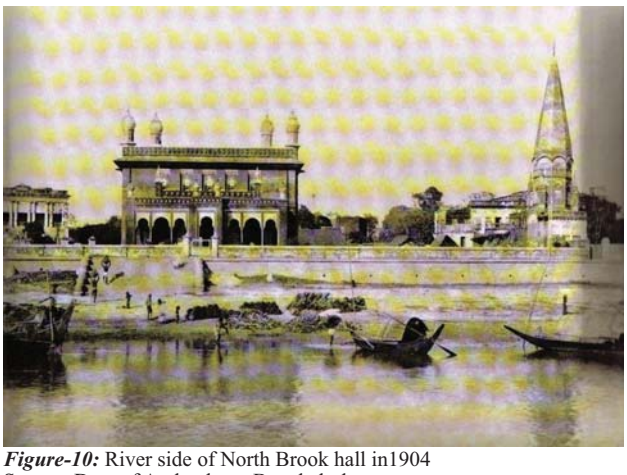


Figure-10: River side of North Brook hall in1904
Source: Dept of Archeology, Bangladesh

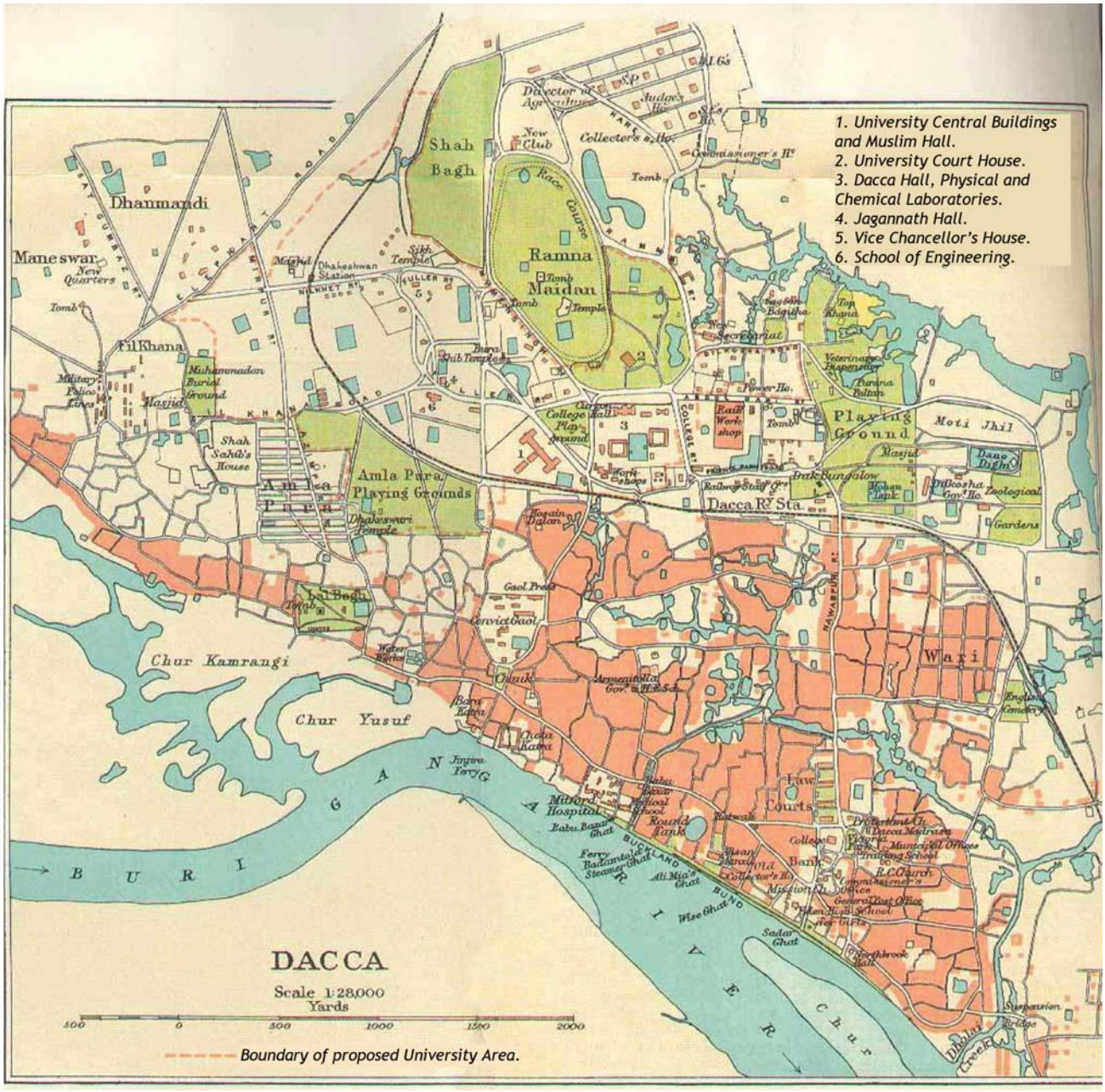


Figure-11: Dacca 1924
Source: http://en.wikipedia.org/wiki/History_of_Dhaka

Table-6: Building in British Period

TYPES	BUILDINGS
Religious buildings	Armenian Church, Anglican Church
Residential buildings	Ahsan Manjil, Ruplal House, etc
Secular public buildings	North Brook Hall, Mitford Hospital etc

4. POST COLONIAL (BRITISH) TRANSFORMATION (AFTER 1947)

After the partition of British-India in 1947 Dhaka acted as the capital of the then East *Pakistan*. After the liberation in 1971, Dhaka became the capital of *Bangladesh*. Dhaka continued to expand farther to the north. The old city has gradually become congested due to unplanned growth. Since 1947, most part of the area has been loosing residential qualities and transforming rapidly to a wholesale & retail area. Historic buildings have been subdivided for multiple uses and densities have risen to inordinate level due to encroachment and growth of informal settlements around. Cannels like *Dholai khal* and *Begunbari khal* that worked as important traffic conduit are filled up to create land for new settlements.

5. EXISTING SITUATION

The old city is currently considered as historic core and commercial nerve of Dhaka. The existing city web is very difficult to maintain as the organic growth has remained apparently unaffected by coerced geometry. But it is important from the perspective of urban conservation as many design qualities are inherent in such townscape. Many Government organizations play proactive role to safeguard the built heritage of the old city (see Table-7).

5.1 Urban Pattern and Spatial Divisions

The socio cultural dynamics resulted in the formation of spontaneous neighborhood, known as *para, mahalla* that act as the basic spatial unit to form the organic pattern in the urban web. Documentation of these informal units of urban web is necessary which should cover primary measurements including height, nature of internal divisions, use etc. Comprehensive strategy may be required to determine different level of interventions for different spatial divisions on the basis of their townscape value. (see Figures-12 & 13).

The basic pattern evolved hierarchy of spaces; *court, lanes, node, market place etc and* manifested the socio-cultural quality of urban life that should be preserved. Landing platforms at river bank establish significant linkage between streets and river. The typical lanes and by lanes of old Dhaka are extremely narrow with curves that often create difficulties for the modern transport but offer changing views during pedestrian movement. The streets are typically accompanied by urban services. The street front should be considered as principal part for conservation as the continuous façade of old settlements represent strong urban character. The *Buckland* embankment, that once used to offer recreational facilities for quality urban life have undergone changes due to the growth of informal settlements.

Table-7: Major Actors for conservation of old Dhaka.

ACTORS	ROLE
Department of Archaeology	Dept of Archaeology is the main authority concerning the Conservation & management of the Historic sites.
RAJUK (Capital Development Authority)	Control new developments on and around historic sites.
Department tourism	Promote tourism
Dhaka City Corporation	Provide municipal services

Figure-12 & 13: Historic artifacts in the dense settlements.(Hossain, 2007a)

Documentation and preservation of the streets should cover dimensions, width, sidewalk, changes in length, urban hierarchy, allocation of services, physical and qualitative characteristic of the intersections etc.

5.2 Historic Buildings and Sites

The historic settlements stand in great contrast to the new developments. Historic Building has almost become isolated element of the present fabric. Very few of these structures are preserved but most of them exist in deplorable condition and are gradually deteriorating due to lack of maintenance. There is a need to carry architectural documentation of these historic buildings. The historic structures are hidden within newly developed dense settlements that create visual obstacle and poor access to the historic buildings. The following survey was carried out on the existing conditions of some historic buildings in the present fabric: (Figures-14 to 21 & Table-8)

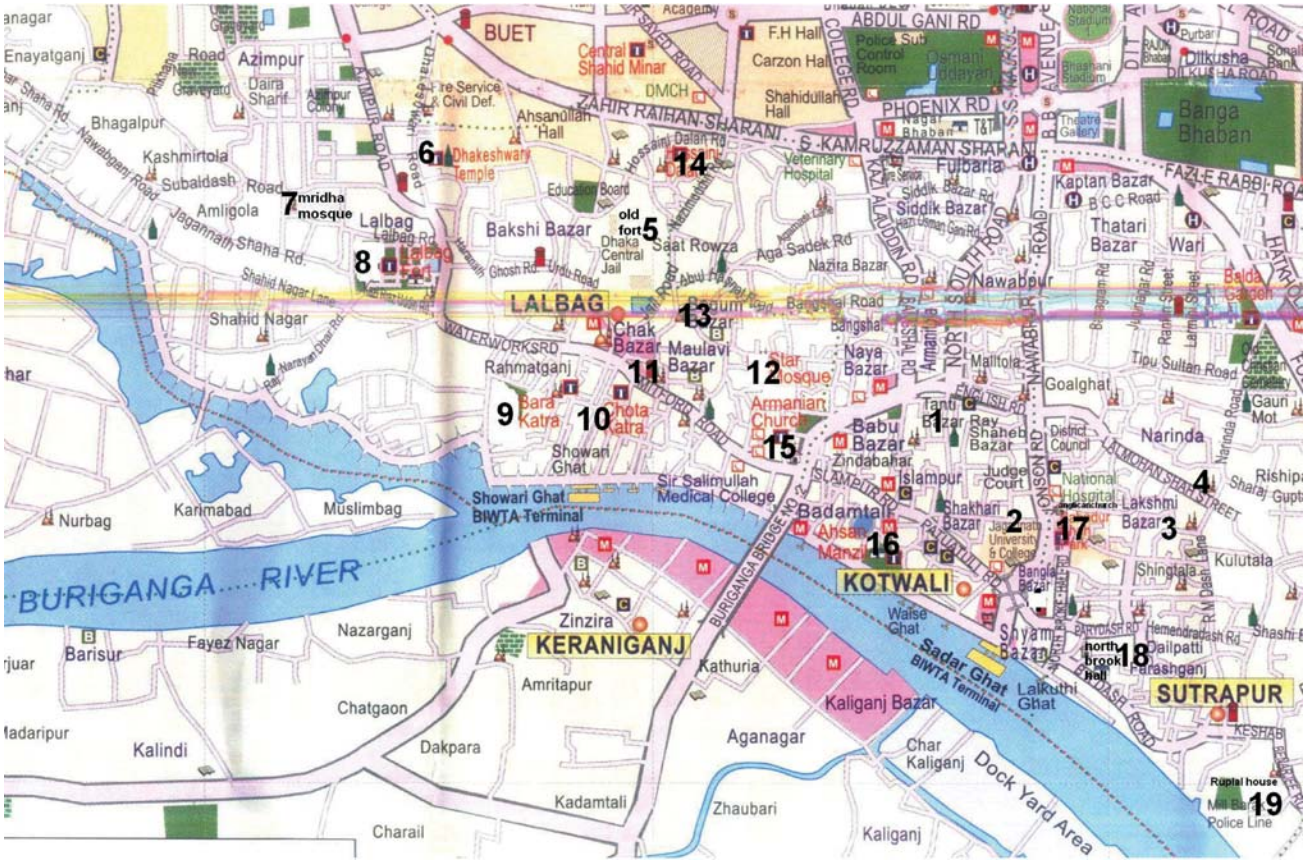


Figure-14: **Historic monuments in old Dhaka**

1. Tanti Bazaar
2. Shakhari Bazarr
3. Lakhsmi Bazaar
4. Binat Bibi Mosque
5. Old Fort
6. Dhakeshwari Temple
7. Khan Mohammad Mridha's Mosque
8. Lal Bagh Fort
9. Bara Katra
10. Chota Katra
11. Chauk Bazaar Mosque
12. Star Mosque
13. Kartalab Khans Mosque
14. Hussaini Dalan
15. Armenian Church
16. Ahsan Manjilm
17. Anglican Church
18. Northbrook Hall
19. Ruplal House

Table-8: Existing condition of the Historic structures in the present fabric.

Historic Structure	Legal Status	Accessibility & visibility	Physical Condition	Present Use
Tanti Bazaar	Enlisted by RAJUK. as heritage site	Poor	Extremely dilapidated condition,	Shop house
Shakhari Bazaar	Enlisted by RAJUK as heritage site	Poor	Extremely dilapidated condition,	Shop house
Binat Bibi Mosque	Enlisted by RAJUK as heritage building	Poor	Existing with extreme alternations to the original structure	Original use as Mosque
Dhakeshwari Temple	Enlisted by RAJUK as heritage building	Good	Requires proper maintenance	Original use
Old Fort	Not Enlisted as heritage building	Accessible but not visible from distant due to newly built surrounding structures	Existing with several alternations to the original structure.	Central Jail
Khan Mohammad Mridha's Mosque	Enlisted by RAJUK as heritage building & Department of Archaeology for protection	Accessible but not visible from distant due to newly built surrounding structures	Preserved and maintained by Department of Archaeology	Original use as Mosque
Lal Bagh Fort	Enlisted by RAJUK as heritage building & Department of Archaeology for protection	Accessible but not visible from distant due to newly built surrounding structures	Preserved and maintained by Department of Archaeology Some portion is still encroached	Museum
Bara Katra	Enlisted by RAJUK as heritage building & Department of Archaeology for protection	Extremely Poor	Extremely dilapidated condition, inner court and surroundings are extensively encroached	Subdivided & used as Warehouse, School, Residence, Shops etc.
Chota Katra	Enlisted by RAJUK as heritage building & Department of Archaeology for protection	Extremely Poor	Extremely dilapidated condition, inner court and surroundings are extensively encroached	Subdivided & used as Warehouse, School, Residence, Shops etc.

Continued....

Historic Structure	Legal Status	Accessibility & visibility	Physical Condition	Present Use
Star Mosque	Enlisted by RAJUK as heritage building	Accessible but not visible from distant due to newly built surrounding structures	Existing with several alternations to the original structure. Requires proper preservation and maintenance	Original use as Mosque
Kartalab Khan's Mosque	Enlisted by RAJUK as heritage building	Accessible but not visible from distant due to newly built surrounding structures	Existing with alternations to the original structure. Requires proper preservation and maintenance	Original use as Mosque
Hussaini Dalan	Enlisted by RAJUK as heritage building	Accessible and partly visible from distant	Existing with alternation to the original structure. Requires proper preservation and maintenance	Original use
Ahsan Manjil	Enlisted by RAJUK as heritage building	Good	Preserved and maintained by national Museum	Museum
Armenian Church	Enlisted by RAJUK as heritage building	Accessible but not visible from distant due to newly built surrounding structures	Requires proper maintenance	Original use as Church
Anglican Church	Enlisted by RAJUK as heritage building	Accessible but not visible from distant due to newly built surrounding structures	Requires proper maintenance	Original use as Church
Northbrook Hall	Enlisted by RAJUK as heritage building & Department of Archaeology for protection	Accessible but not visible from the river side due to newly built structures	Requires proper maintenance	Library & town Hall
Ruplal House	Enlisted by RAJUK as heritage building & Department of Archaeology for protection	Poor	Dilapidated condition	Subdivided as Warehouse & Whole Sale Market

Figure-15: Approach road to Choto Katra (Hossain, 2007b)

Figure-16: Courtyard & the southern wing of Bara Katra (Hossain, 2006)

Figure-17: Existing River side of Ruplal house.
Source: http://icwow.blogspot.com/2010/04/dhaka-ruplal-house.html

Figure-18: Existing River side of Chawkbazar & Lalbagh area.
Source: http://dhakadailyphoto.blogspot.com/2007_05_01_archive.html

Figure-19: Layout of row houses at Shankhari Bazaar in 2006.
Source: Ahmed, 2012.

Figure-20 & 21: Existing condition of the row houses at Shankhari Bazaar (Bahauddin, 2010)

6. PLANNING CONSERVATION

Urban planning and conservation may act as semiotics (Cohen, 1999). Shifting focus from individual buildings to urban context during conservation may reinforce the urban pattern to incorporate the new structures into the old fabric. Conservation therefore may be judged as a planning concept and tool to justify the urban form to incorporate the new and the old to maintain the urban continuity. Urban conservation can be correctly conceived within the frame of a general approach to urban problem. Basic methodology of urban conservation can be compared with classical town planning that considers the past along with future as fundamental element of planning (Lemaire, 1996). To a large degree historic city manifest characteristics of self preservation. It is important to establish guidelines as to the nature of intervention to meet the standards of historic value and adopt those in response to the economic and social realities in which the building is to be used.

6.1. Special Planning Zone

The entire old city may be considered as a special planning zone to protect the scale, visual exposure, skyline and different qualities of the old urban fabric. "Dhaka Metropolitan Building Construction, Development, Protection and Removal Rule-2008" already introduced construction-restriction within the encircling area of 250 meters radius around historic structures. This rule still needs to give specific guidelines for color, texture, material, façade design, height, function, set back, orientation and other design specification for any new structures in the existing fabric. So the identical new structures may ensure authenticity and integrity of the urban structures. Moreover, an effective buffer zone should be introduced to protect the old structures from traffic vibration, noise pollution, air pollution, water pollution and other threats.

6.2. Traffic Restriction

Narrow and curved street , irregular crossing, and shortage of parking spaces in the old city are not suitable for modern mechanical traffic system as the old pattern can provide efficient living condition when based on pedestrian circulation or slow moving vehicles. Traffic vibration is a major constraint to manage damage and decay of the old fabric. Moreover unrestricted access of slow and fast moving vehicles results in protracted congestion. There is a need to introduce strong control over mechanical traffic in the area. Parking may be considered on the perimeter outside a ring road with loops into the centre. The center may be restricted to pedestrian movements, light vehicles and limited number of heavy vehicles. Shifting focus more to water transportation may also reduce traffic load on the existing roads.

6.3. Access, Exposure and Buffer

Many historic buildings in old Dhaka had substantial open spaces like gardens and courts that are now mostly encroached by newly built informal settlements. These informal settlements are creating obstacle for access and visual exposure to the historic artifacts. Some of such open spaces were recovered during the conservation of Lal Bagh fort,

Khan Mohammad Mridha Mosque and Ahsan Manjil. It is important to recover such open spaces at other historic buildings like Bara Katra and Choto Katra, Ruplal house, etc to ensure proper access and visual exposure as well as substantial buffer to the historic buildings. View corridors may be also created through the fabric to get distant and interesting view of the urban elements. Some of the historic buildings have already lost their original approach from the riverside and inner city due to newly imposed settlements in the fabric. So, small routes for heritage walk may be developed within the present fabric to ensure interesting approach and promote cultural tourism. (see Figures-22, 23)

Figure-22: Lal Bagh fort complex after conservation (http://www.bpedia.org/T_0200.php)

Figure-23: Barakatra with enclosed courtyard (Hossain, 2008)

6.4. Preserving the Street Elevation and River Front

The historic structures at the bank of the river used to produce magnificent view of the city. The river front and the street elevations of the old city need to be recovered to reveal the historic identity and integrity. The facades of the historic buildings should be preserved and restored to maintain the continuity of the riverside and street elevation of the old city.

6.5. Relocation & adaptive reuse

To reduce densities, relocation of informal shelters and commercial establishments may be considered outside the old city. Many historic buildings are presently used as ware houses and whole sale area. These historic buildings should adopt sustainable uses like hotel, restaurant, souvenir shops, art galleries, craft shops and other enterprises that support tourism. Relocation of Central Jail may open up huge possibilities for the area to reduce emerging pressure on the old fabric. (see Figures-24 & 25)

Figure-24: Street elevation of Shankari Bazaar
Source: Urban study group

Figure-25: River side of Ahsan Manjil after conservation
http://www.cemsonline.com/countryprofilebd.html

7. CONCLUSION

Old structures exist as witness of continuity of urban culture. Urban conservation is more than merely preserving few historic buildings and requires comprehensive approach to integrate important urban elements of the past within the existing urban tissues. Considering the townscape value for the heritage buildings the concept of integrated urban conservation was promoted by the ICOMOS, 'Charter for the Conservation of Historic Towns and Urban Areas' in 1987. Under the light of this Charter the paper suggested some strategic guidelines for Old Dhaka. To understand the heterogeneous tissue the transformations of the city are carefully studied initially. Preventive strategies are mainly emphasized as intermediate guideline to manage decay and damages of the old fabric. Substantial buffer, proper set back, construction restriction and traffic restrictions may not only reduce the possibility of physical deterioration but also ensure proper access and visual exposures. To strengthen the state of authenticity and integrity at urban level, preservation of building envelops are highlighted to maintain street elevation and river side elevations. To avoid rigidity in architectural conservation different degree of interventions may be synthesized for different monuments. So it is not necessary to conserve the historic buildings in the conventional manner. Moreover Integration of historic monuments within the present urban fabric through development of contextual circulation pattern can promote interrelation among the monuments. During urban conservation it is important to manage the urban dynamics to control increasing pressure on establishment functions that causes rapid transformation. So policy and plans should be formulated to focus on adaptive reuse for the monuments to safeguard the historical patrimony. The city must continue to renew itself and it is not necessary to enact special legislation to preserve the original urban plan or to restrict the urban continuity in a static frame of any specific period. Urban conservation is necessary to relate past interventions and manage the urban dynamics to control increasing pressure that causes rapid transformation in the fabric. Thus conservation at urban level should be carried out as a continuous process and to maintain the transformation in sustainable manner.

References

Ahmed, I. (2012): "A Study of Architectural Heritage Management by Informal Community bodies in Traditional Neighborhoods of Old Fort Dhaka" - Unpublished Phd Thesis National University of Singapore.

Ahmed, S. U. (1986). "Dacca: A Study in Urban History and Development". Dhaka: Curzon, Press.1986.

Bahauddin, M. (2010). "Conservation of Shakhari Bazar", Unpublished training Report submitted at Lund University Sweden.

Cohen, N. (1999). "Urban Conservation", MIT Press, Cambridge.

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

Dani, A. H. (1956). "Dacca: A Record of it's Changing Fortune". Asiatic Press. Dhaka.

Denzin, N. K. and Lincoln, Y. S. (eds) (2000). "Handbook of Qualitative Research": SecondEdition. Thousand Oaks, CA: Sage.

DMDP- (1995-2015). "Dhaka Metropolitan Development Plan", Volume I and ll.

Gupta, N. (1989). "Urbanization in South Asia in the Colonial Centuries" IN Sharif Uddin Ahmed (eds), Dhaka Past Present Future. The Asiatic Society of Bangladesh, Dhaka: 1989. 595-605.

Islam, N. (.1996a). "Megacity Management in the Asian and Pacific Region" IN Giles Clarke and Jeffry R. Stubbs (eds). Vol. 2, Megacity Management in the Asian and Pacific Region.ADB.

Islam, N. (.1996b). “Dhaka from City to Mega City: Perspective on People, Places, Planning and Development Issues: Urban Studies Programme”, Department of Geography, University of Dhaka, Reprint.

Lemaire, R. (1996). “Why do we preserve historic towns?” – presented in the International Workshop on Architecture and Urban Conservation (December 1994) & published in 1996, Centre for Built Environment, Calcutta.

Landman, W. A. (1988). “Navorsingsmetodologiese grondbegrippe/ Basic concepts in research methodology”. Pretoria: Serva.

Nilufar, F. (2011). “Urban Morphology of Dhaka City: Spatial Dynamics of Growing City and the Urban Core” an Article published in 400 Years of Capital Dhaka and Beyond , Volume- III, Urbanization and Urban Development, Published by: Asiatic Society of Bangladesh, Dhaka ,pages 187-210.

Sazzad, H. M. (2006). “Conservation and Management of Bara Katra”, Unpublished training Report submitted at Lund University Sweden.

Sazzad, H. M. (2007a). “Planning the Heritage Cities- a case for Dhaka.” Published in the Society Architects and Emerging Issues, published by Commonwealth Association of Architects (CAA) & Institute of Architects of Bangladesh (IAB).

Sazzad, H. M. (2007b). “Revitalizing the Mughal Settlements in Old Dhaka”, Published in *Protibesh*, Journal of the Departmetn of Architecture, BUET, Dhaka, Vol 11 (2), pp. 49 -54.

Sazzad, H. M. (2008). “Preventive Maintenance Strategy of Bara Katra” in *Protibesh*, Journal of the Departmetn of Architecture, BUET, Dhaka. July 2008, Vol 12 (2), pp. 5 -14

Taifoor, S. M. (1956). “Glimpses of Old Dhaka”. Pioneer. Dhaka.

BOOK REVIEW

ARCHITECT MEHDI ALI MIRZA – PIONEER OF ARCHITECTURE IN PAKISTAN 1910-1962

by

Mankani* & Shikoh**

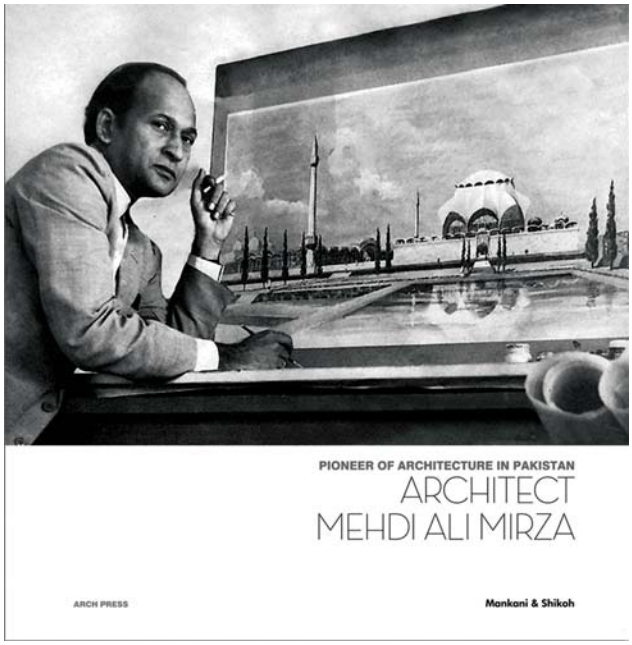
A Review by
Masooma Shakir, Assistant Professor, Department of Architecture and Planning, NED University of Engineering & Technology, Karachi.

'***The interpretation of life is the true function of the architect because we know that buildings are made of life, to be lived and to be lived in happily, designed to contribute to that living joy and living beauty***.'

Quote by Mohtarma Fatima Jinnah, interpreted by Mehdi Ali Mirza as

'…let us find the out the 'form and function' of our ancestral legacies, so that we may interpret them to the best effect in the vocabulary of today. In doing so, let us avoid the danger of falling into the pit of superficial imitation and illiterate jargon.'

The above quotes from an article written in the book summarize the essence of what the book is all about. This book on Architect Mehdi Ali Mirza is an invaluable contribution to the architectural record and history of post independence Pakistani Architecture. Architect Mehdi Ali Mirza was a modernist architect belonging to the immediate post independence time period which is hardly covered in history, philosophical thought and practice of architecture in Pakistan. Few books, if not none are available on architecture during this time period. It marks an important phase for architectural history and practice in which a Pakistani identity is sought by architects like Mehdi Ali Mirza that was evolving from a combination of Islamic Architecture and Modernist Architecture. Apart from this, the architect's major contribution has been in laying the foundations for architecture as a profession, through the establishment of the first architecture school and the Institute of Architects, Pakistan.



The book is a simple read and is divided into sections such that it covers three major aspects including an introduction to the design philosophy, life and background of the architect; Mehdi Ali Mirza in the words of his peers; and the works of Mehdi Ali Mirza.

The main aim of the book has been to document the history of Pakistani Architecture for students and young architects and to fill the gap in knowledge of our architectural heritage. The book includes an article by Mehdi Ali Mirza himself, titled 'Islamic Architecture in Contemporary Idiom', which explains much about the philosophical thought behind the architect's work and its subsequent development. His work took inspiration from Islamic Architecture, from the use of structure as an integral part of space and form. It explores

* Zain Mankani
** Murtaza Shikoh

the acquired characteristic of architecture where the aesthetic forms are derived from its structural elements. His article talks about the development of the intersecting-binding arch, a feature of Islamic Architecture that led to the solution of problems in dome construction as well as having an intrinsic quality of representing a structural system that can be explored and interpreted in the contemporary idiom. His own work, presented in the latter half of the book is witness to this exploration.

He quotes the profound advice of Mohtarma Fatima Jinnah that with the end of the colonial rule, '*…the servile attitude of the mind must go. Mental servility is witnessed when everything that bears the stamp of the West is accepted and imitated. The ideas, values and modes have to be tested and assessed in the light of knowledge and fundamentals of one's own faith*.' These quotes show the deep rooted quest for a Pakistani identity for architecture.

A comparison between the Taj Mahal and its imitation, the Tomb of Rabia Durrani, Aurangabad is made to show the difference between conceiving 'architecture' and superficial imitation. He defines architecture as an comprehensive unit whole embracing a creative concept of space, structure and materials, growing organically out of the physical and spiritual needs of man and his economic resources.

Mirza was born in Hyderabad Deccan in 1910. He received his early education here, then joined JJ School of Arts, Mumbai in 1933 when he was 22. He later went to England and received his diploma in 1940 from Regent Street Polytechnic. He moved to Pakistan after partition and joined the Public Works Department, becoming the Chief Architect to the Government of Pakistan. He campaigned vigorously to give an effective voice to the profession of architecture in Pakistan, along with other architects like M.A.Ahed, Zaheeruddin Khwaja and Minoo Mistry.

He was clearly influenced by Modernists in particular Frank Lloyd Wright. His work, like Wright, carries the characteristic of balanced juxtaposition of horizontal and vertical volumes, cantilievered canopies and sunshades. With an excellent understanding of structural design, he designed buildings with beautiful proportions and structurally unique. His friends and colleagues, architects and engineers, speak about him with great respect and honour for having set up the foundations of the profession and take inspiration from his values as an artist and a professional.

In short the book is a must read for those interested to know about the beginnings of architecture in an independent Pakistan. An understanding of the starting point of the profession, the vision and the issues faced then can provide good reference for the future of it. The book will be an insightful read for students and architects. Given the limitations faced by the compilers / editors of the book including demolition of important pieces of architecture, including Mirza's own house and the building for the school that he established, and others found in dilapidated condition like the Printing Corporation of Pakistan. With all that, the book remains a comprehensive compilation of important references for an architect who was a pioneer of architecture in Pakistan.

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Journal of Research in Architecture and Planning	Vol. 11, 2011
Journal of Research in Architecture and Planning	Vol. 12, 2012

PROPOSED RESEARCH

Architectural philosophy
Building conservation
Building integrated renewable energy technologies
Conservation led urban regeneration
Eco-housing
Interactive architecture
Land use planning
Low carbon impact buildings
Secondary cities
Sustainable architecture
Urban ecology / Urban renewal / Urban sprawl
Urban sustainability / Urban transportation
Urbanization ..... and many more

BOOK REVIEW: Contributions for our 'Book Review' section are welcome in the form of a brief summary and a sample of the publication related to the field of architecture, planning and development.

For Further Information, please write to JRAP Coordinators 2012-2013
Ar. Farida Abdul Ghaffar at jrap@neduet.edu.pk

City Campus | Maulana Din Muhammad Wafai Road, Karachi - 74200 PAKISTAN
Phone | (9221) 99213058 (9221) 32620793 Fax | (9221) 99213058 & 99261255
Email | jrap@neduet.edu.pk crd@neduet.edu.pk Website | www.neduet.edu.pk