EVALUATING MORPHOLOGICAL CHANGES OF HOUSEHOLD ENVIRONMENT: A CASE STUDY OF MIGRATION IN MOHAKHALI, DHAKA, BANGLADESH

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ABSTRACT

Urbanization and migration is accelerating all over the world. Cities are becoming megacities in most developing countries with unwanted, unsolved and unimaginable identities. Dhaka is one of the fastest growing megacities, developing as an example of urban agglomeration where the growth rate is much higher than expected. Decentralization forces a large number of people from all over the country to migrate to Dhaka for a better opportunity. This huge wave is creating unprecedented pressure on urban infrastructure, most notably on housing. As a result, the basic human need for civilized living has become a complicated problem for the city dwellers, particularly the middle-middle and lower-middle income groups. With few exceptions, many of them have little choice of finding accommodation in close proximity of their necessities, which leads them to choose an accommodation with unwanted limitations. However, evidence show that the urban migrants can adjust with and transform their household environment by themselves according to their demand. In case of middle-middle and lower-middle income groups, dwellers transform their living environment over time and follow a particular process in sequential order to adopt these changes. This paper examines selected areas of Dhaka city and explores aspects and ideas for affordable housing solutions by users. Furthermore, socio-cultural and spatial analyses reveals the ways the housing environment is developing and the adaptation patterns of dwellers. In addition, the study shows that migrants from inside the city and outside the city play different roles in the transformation and adaptation processes.
Keywords: urbanization, migration, Bangladesh, Dhaka city, Mohakhali area, migrant dwellers, household environment, middle-middle and lower-middle income groups.

1 INTRODUCTION

Quality of urban area varies between countries whereas in some cases it even varies over time [1]. By 2030, almost sixty percent of the population of the developing world will live in the urban area [2], particularly in the capital cities of the developing world, where major modern productive activities and a large number of paid employment opportunities are located. These are also centres for modern living with better access to education, health care and better public services [3]. These facilities invite a large number of migrants to settle in the city. From a literature review it has been identified that, migrants also differ from their class of origin. Further, the nature and demand of migration of lower income, middle income and upper income groups differ widely [4]. The migrants originating from the higher-income families have better education and they tend to move to large urban centres; the migrant originated from the lower-income families are mostly illiterates and they tend to move to small urban centres [5]. Interestingly this study marked lower-middle and middle-middle income group in the space between those two. They tend to live in such a place where they can get educational facilities, business opportunities and affordable housing altogether. Among these affordable housing facilities are very significant for lower and middle-income migrants which could ensure a sustainable urban development in Dhaka city.
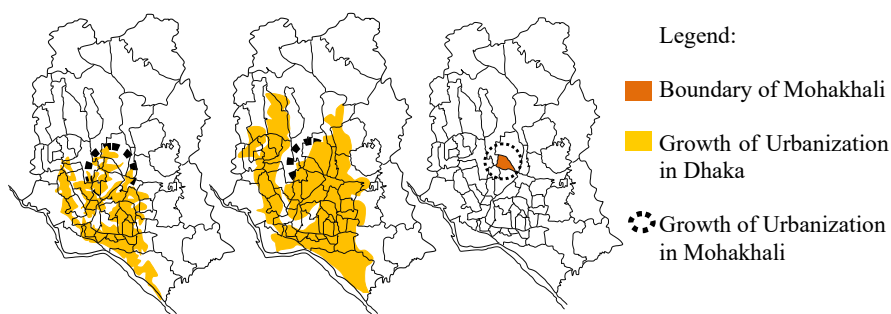
Figure 1:   Urban growth of Dhaka Metropolitan Area (1989–2009) and the growth particularly in Mohakhali area.

High growth of population is creating extra pressure on land and making an adverse impact on various issues of Dhaka city. The high rental price of housing makes it quite impossible for the people, especially middle-income groups to afford a better living environment [6]. Study shows that from the 1960s onwards a noticeable concentration of middle and lower middle-income migrants start to settle down in the Mohakhali area. Development of the Tejgaon industrial area in the 1950s (Fig. 2), establishment of Titumir College in 1968 and Banani Bidyaniketan School and college in 1972 opens up windows with possibilities to middle-middle and lower middle-income groups, who were eager to get affordable quality education for their future generation. As a result, Mohakhali area develops in a prime point of Dhaka city. Study further shows that the Mohakhali area is located in such a place where the combination of three distinct income groups are interconnected and dependent on each other in various ways (Figs 3(a) and 3(b)). The location of Mohakhali area is unique in Dhaka North City Corporation where all services are found within a balance layout. It creates job opportunities and newer investment for people who have the aspiration and affordability to prosper.

Therefore, many middle and lower middle income migrant embrace the opportunities according to their demand and start an improved life in Mohakhali. The existing area, although unplanned and crowded, has certain identifiable characteristics and language of settlements. Four study areas have been selected to understand the morphological changes, transformation of spaces and changes of activities inside the houses. Areas are distributed on the secondary and tertiary (pedestrian) roads and preliminary information are collected to identify the nature of change from 2001 to 2015. The morphological changes have been identified through the observation on the changes of building type, their functions, building height and gradual encroachment of road-side functions. This also helps to identify an interesting fact that people migrated here from outside Dhaka as well as inside plays distinct role in these changes. Site 1 and site 3 have been selected to understand the background, need, migration and adaptation process of the locals. From oral history, it has been found that the first-generation owner of site 3 is a family, locally known as Hajari family (72% of the total population) migrate here from old Dhaka. The reasons behind their migration have direct connection with the development of Mohakhali as an industrial area. Before this they migrate to old Dhaka from Narshingdi (a northern small city of Bangladesh). The first generation of Hajari family came here as industry workers and were the only migrants who settled here. Later other workers settled there following them. Gradually more opportunities evolved for other small businesses like restaurants, clothing store, tea stalls and others.
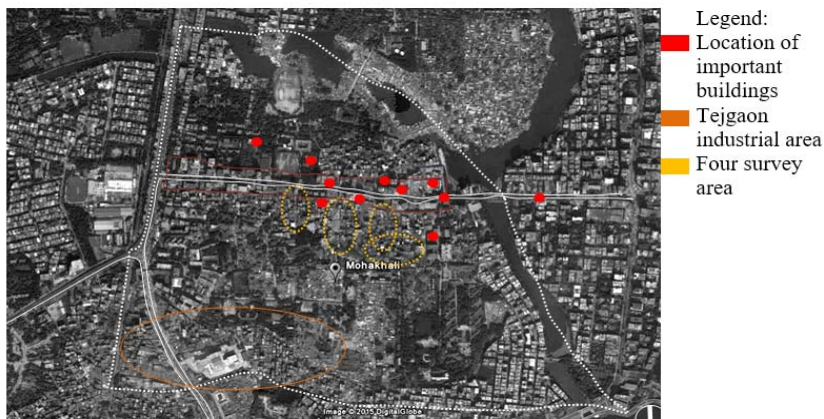
Figure 2:   Four survey areas; location of important buildings; location of Tejgaon industrial area.
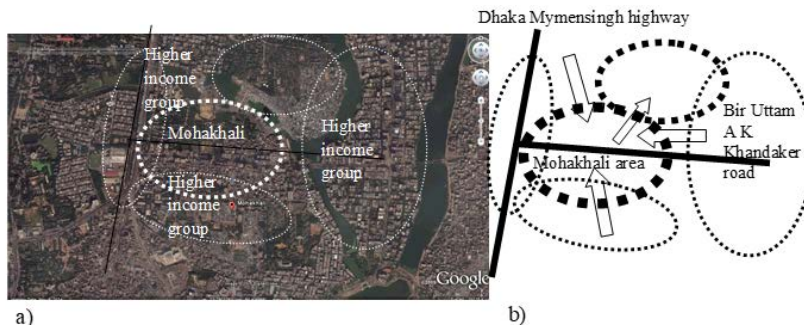

Figure 3:   (a) Central location of Mohakhali area and connectivity with adjacent areas, (b) Shows specially the focus of survey areas rather than other areas.

Figure 4: Graveyard between two buildings, internal community space and primary school

Table 1: Area based information of Mohakhali [7].

Zone 3	Ward	Area(sqm)	No. of holding or house	Ward area name
Gulshan	20	1729	4062	Mohakhali, Niketon

Despite the limitations of reliable and up-to-date data this paper can help to understand the links between urban form and infrastructure. Again, for the lack a global standard in the classification of urban environments gives scope to this paper to contribute further to explore the future options for urban form and space for affordable living environment.

2 CASE STUDY

At this point, exploration is necessary to identify the hierarchy and to understand the nature of household environment of middle and lower-middle income people. A physical survey has been conducted to determine the relationship between changes of activities and transformation process of space, to evaluate and analyse the facts, systems and process. Four case studies have been selected which contain unique characteristics with some similarities with others (Fig. 5). Primarily, Google satellite images (from 2001 to 2015) are studied thoroughly to understand the morphological changes and transformations, local issues and site potentials. Major transformations and changes are noticed at site 1 and sites 3, including changes in building heights, materials and functions. This survey identifies location of small shops and community space, market areas, pedestrian roads, user's possibilities within walking distance and other issues that connected to the changes and transformations. Due to the establishment of the Tejgaon industrial area in 1950s, availability of basic urban services, and low land price compare to other areas of Dhaka city makes people interested to migrate here. Site 01 is located at the '*Wireless mor*', a prime node on the Bir Uttam A K Khandaker road leads to Dhaka-Mymensing high way and Gulshan circle 01 (Fig. 3(a)). Site 02 is close to a prime landmark 'Titumir college', which is a government education institution established in 1968. Again Site 02 and site 04 have been found with little transformations due to their distant location from other important areas. It has been found from secondary data that, the middle class is the broad group of people in contemporary society who fall socioeconomically between the working class and the upper class. As middle-income people get more interested about this area, they start to live here and gradually become involved in economic activities that leads to development of roadside

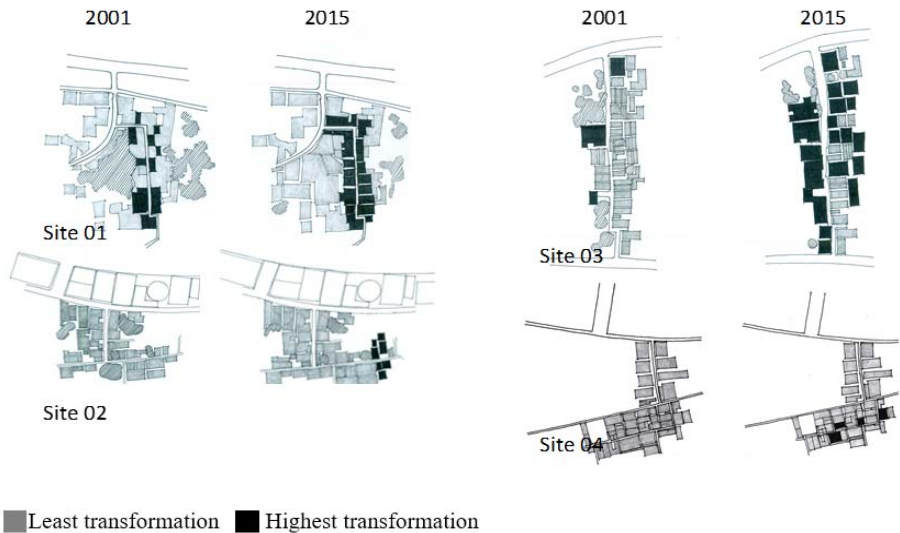■Least transformation ■ Highest transformation

Figure 5: Major changes and transformations undertaken in 4 sites from 2001 to 2015.

Figure 6: Different road side activities in different points.

Table 2: Primary data on migrant from four survey areas.

Migrant from inside Dhaka	Migrant from other urban areas	Migrant from rural areas
35%	50%	15%

commercial activities. Flourishment of small businesses helps people to afford better facilities and change their lifestyle. Availability of better facilities creates possibilities to increase the house rent which turns house owners to spend more money on house-hold development. As a result, gradually the thatched roof and bamboo mat houses turned into brick wall tin-shaded houses. Thus, with time Mohakhali area has been developed as an affordable place for the lower-middle and middle-middle income group.

It can be easily identified that, in site 01 and 03, small scale business opportunities are created focusing on food related business (lunch box, tea stalls and others) as these two areas are closely located to educational institutions, commercial centres and main access roads. At site 01 major transformation is visible on the internal pedestrian road. Here, front parts of the ground floors are transformed to accommodate various kinds of shops (vegetable shop, grocery shop, electronics shop, salon, cleaning shop and so on). Again, at site 02 more shared spaces, less nuclear space is noticed along with sense of adaptability, interaction, and sense of kinship. Thus, lower income groups of this street create a new opportunity for the owners living here for generations. The opportunities invite a new group of tenants who transforms the physical settings of the buildings to accommodate their commercial activities. Other important findings from all survey areas can be summarized as follows:

- Availability of necessary things are mostly found in walking distance

- Around ninety percent work places is found in walking distance from living area
- Pedestrian roads are considered as community gathering space and children play area in most cases
- Most changes and transformation of buildings are happened due to:
  a. Accommodating more people
  b. Creating opportunities for small scale business

Table 3: Primary information from four survey areas.

No.	Title	Site 01	Site 02	Site 03	Site 04
01	Type of houses	6 types according to materials and no. of storey No. of building: 24	2 types Common or shared and Nuclear	79 houses 39 families	Low-rise only
02	Population size	600 approx. Male: 40% Female:60%	Male: 46% Female:54%	523 approx. Male: 67% Female:33%	19 families
03	Income range in Taka	(40,000–60,000) (15,000–40,000) Below 15,000	46% (10,000–25,000)	49% (16,000 – 30,000)	(5000–10000) (10000–30000) (30000–50000)
04	Duration of living	Local for generations	35% born 19% (6–10 yrs.) 9.7 % (41–50yrs)	50%(16–30 yrs.) 28.5% (31–50yrs)	10 yrs. 50%
05	Work place	Walking distance	71% in Mohakhali area	Walking distance	Walking distance
06	Living rooms and others	(500–700) sqft 35% (700–800) sqft 53%	(8`* 9`), (12`* 9`), (700* 800) sqft,	(1200* 700) sqft,	2-3 bed rooms
07	Use of Open space	Pedestrian road	Pedestrian road	Pedestrian road	Pedestrian road
08	Availability of necessary things	Walking distance	Walking distance	Walking distance	Walking distance
09	Change in building (current situation)	Height 90%	Height and material	Height	material
10	Transformation of space and reason behind it	Street becomes narrow	Street side commercial space	Rented and education purpose	Street side commercial activities
11	Changes of space and reason behind it	To accommodate more people (commercial and rented purpose)	Mostly commercial purpose	Already in stable condition Mostly rented house	Commercial space, change noticed at ground level

3 ANALYSIS AND FINDINGS ON SOCIAL AND PHYSICAL SETTINGS

New settlement systems cannot be easily captured by a simple urban-rural dichotomy [8]. For example, zones of intense economic activity of a particular city can be emerged in the intersection between cities and rural areas that are neither urban nor rural in the traditional sense although they can contain essential elements of both. Some urban scholars have referred to these emerging urban configurations as '*city-regions*,' highlighting the fact that cities have not just grown in terms of population size. They have also changed their economic character and spatial form [9]. The Mohakhali area is acting as a special region having newer scenarios where special systems and grammar are developed by a particular income oriented people. Analysis on socio-cultural and spatial elements reveals the ways how housing environment have been built and how the migrant dwellers trying to adopt there. Through the analysis it has been found that values, attitudes among the dwellers fluctuates due to their income, state of origin, life-style and for the place itself. Thus, the field survey and oral history find new approach in social and physical settings. The analytical meanings of those settings are described below.

3.1 Morphological changes result self-sufficient life

At site 01, seventy-five percent of the dwellers are educated, twenty-five percent are income-generator and around seventy-five percent are woman and children. Again, information regarding building typology shows that sixty-eight percent buildings are made of permanent materials with RCC roofs which are considered as high-rise building (no. of floors vary) whereas twenty percent are found in low rise category. The character of buildings, their functions and dimensions are changing here according to the demand of dwellers. Site 01 and site 03 are more or less similar in terms of adjustment and transformation by locals regarding the household environment as well as road-side activities due to future development. In some places, major changes happened in terms of building heights, materials and activity pressure on roads (left side upper one and lower one of Fig. 07). There are few active small commercial zones located in site 01 area where an increasing number of alleys are found after the increasing demand of the area for middle-middle and lower-middle income migrants. It is also visible that the vehicular access decreases along the roads and the roads get narrower gradually. Narrower streets lead from the primary road link the secondary roads which are only wide enough for cycles, small vans, rickshaws and people to walk though. There is no defined public space found except the street itself. Some daily shops, a salon and a laundry are located on the street. From this site primary school, college, private university, hospitals are in close proximity. People don't have to travel far to get access to these facilities. These facilities make this place liveable and people show interest to live at this area for a long duration. As middle and lower middle-income families have desperation for their next generations to be educated, they are particularly contributing in the social and economic change in a slow and subtle way. It is interesting that some migrants give their focus on education based facilities where some are involved in education based business and other small-scale business.

Above mentioned factors play a major role behind the morphological changes. The factors are summarised as follows:

    a.   Addition of more floors to accommodate more people

    b.   Ground floors are divided into two spaces where the front part is used as shops or other commercial purpose and back side for residential purpose. This results in two entry points, one is for the residential part at the back and another for the shop at

the front. The shop invites more people which otherwise decreases the effective road width.

c. Roof top spaces are rented to accommodate various functions.

These morphological changes show that the Mohakhali area is developing and now it is equipped enough to serve the incoming migrants of middle and lower-middle income groups. The time line of development further shows how the commercial development and availability of quality life effecting the growth of multi-storied buildings and commercial space to make people self-sufficient.

3.2 Spaces are growable through the change in building heights and functions

Analysis shows that people build multi storied buildings when they have more settling tendency and less migration tendency as better building needs better economic involvement or more affordability. Thus, economy brings changes in social thoughts which blended together transforming the physical condition (site 03). Again, economy guiding life styles and interactions change values to create the sense of belongingness to the systems. As the study areas permit less change or new transformation horizontally, a natural tendency of growing vertically is noticed in these areas. This vertical growing also makes impact on the
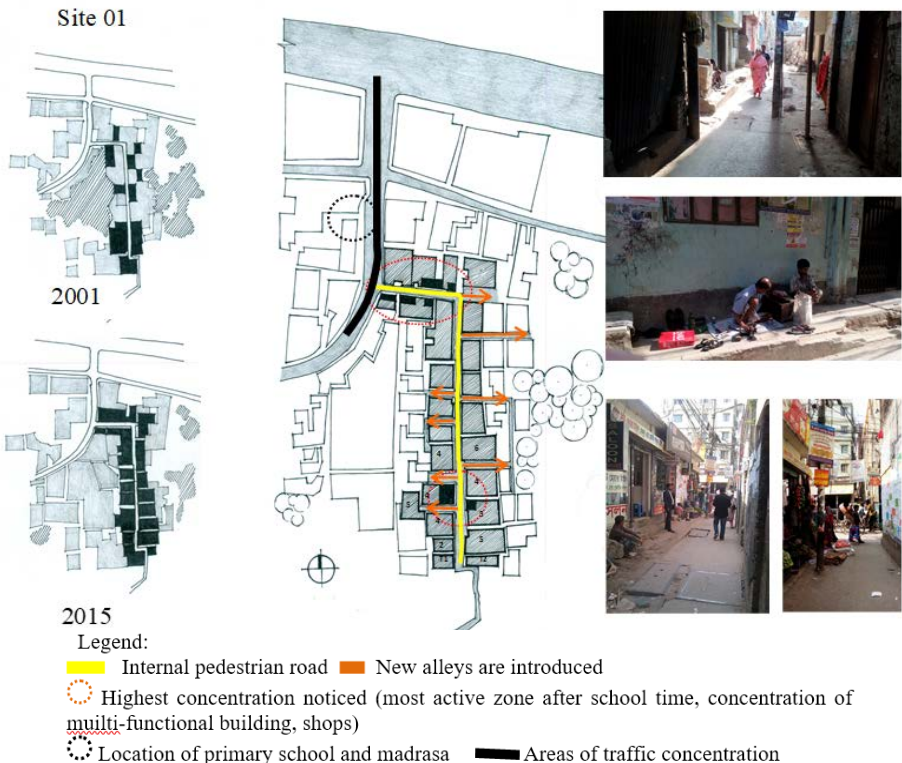

Legend:
▬ Internal pedestrian road ▬ New alleys are introduced
⬤ Highest concentration noticed (most active zone after school time, concentration of multi-functional building, shops)
⬤ Location of primary school and madrasa ▬ Areas of traffic concentration

Figure 7: Load on internal pedestrian road and activities undertaken.

internal functional space which can be summarized as follows:

a. Residential living space is changing its character and new culture of multi-purpose living area is introduced in many dwellings where normally woman and children stays for the whole day. This multi-purpose living area is used for small business oriented purpose, especially for women. Accordingly, these spaces are placed faced to roadside.

b. In a number of cases, at the earlier phases of vertical extension, the ground area keeps free to have access for business oriented function which is overcome by transforming the roof top into an accommodation space or another business oriented space.

So above mentioned all changes or transformation ultimately left no option but let a building increasing in height. Even some old single storied houses which are still occupying spacious area are planning to build multi-storied building as the site has a huge tendency to grow more. So, the growing and changing tendency is visible with the increasing of building in height.
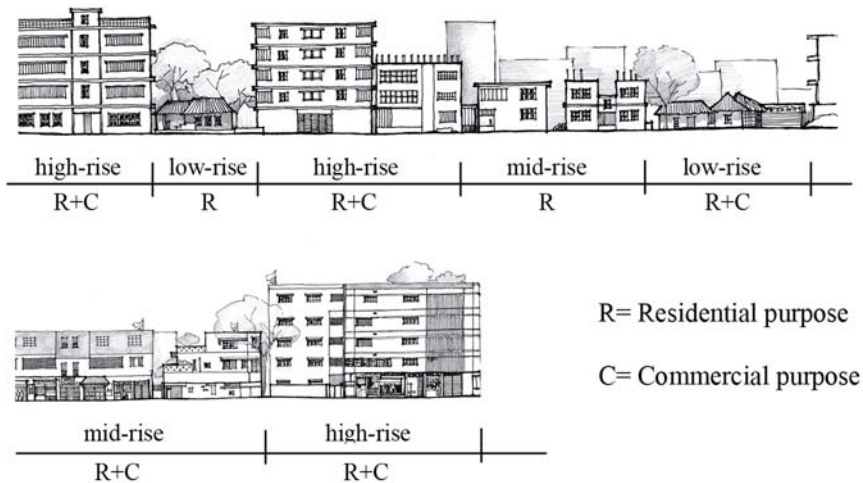
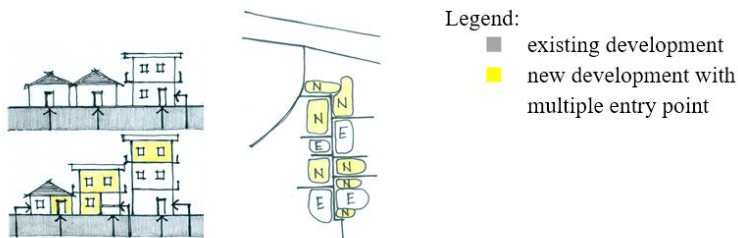Figure 8: Developed and developing areas of site 01 and site 02.
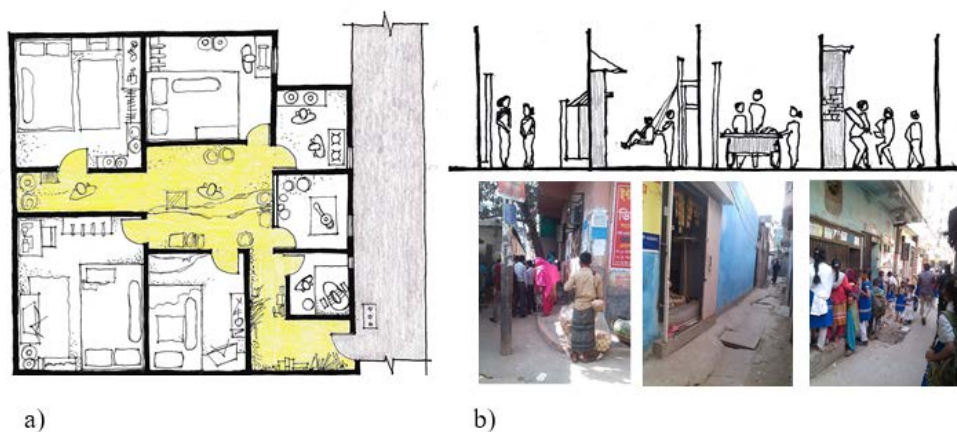
Figure 9: Gradual development process of site 01.

a)   b)

Figure 10:   Space within space (internal functional space) and multi-functional shared walk-way with small scale business opportunities.

3.3 Anthropology of space

Low income people live in a very congested space with lack of proper ventilation and light, still there is a sense of sharing and bonding. Although the space is very limited, people make the maximum use of it and live there very heartily. For example, a building in site 01 shows four families share one kitchen and one bathroom (Fig. 10). Here each room is for one family of four to five members. A strong sense of kinship and family bonding is seen here which is rare these days. The family live under one roof; parents sleep on the bed while the children sleep on the ground. Children study in the room, dine on the floor and store belongings in the room itself. One room is thus shared and used for various purposes. Income is the main factor to manipulate their values and attitudes. Thus, people's values and attitudes changes over time. It is noticeable that, their values and attitudes are strongly reflected into their daily life as well as their activities. Even the engagement of furniture in their small room reflects their values. On the other hand, it has been noticed that, people isolate themselves regarding their religion, their districts and so on. Most of the times they tend to sit all together at the leisure time in common spaces. Outside the living area, internal alleys are found playing different role in different time of a day. Allay of same dimension found to be functioned differently; like children play area, vendor's zone, gathering space for woman, cricket play zone and so on.

3.4 Old dwellers playing important roles for communities' betterment

Migrants from inside the city and outside the city play different roles in the transformation and adaptation of living space. A sense of community development can be identified at site 01 and 03, rather site 02 and 04. For instance, after an annual meeting some old families of site 03 have decided to take their boundary walls down and let their set back area usable by the community as roadside activities decrease the width of the road. Symbolically they kept one gate in the original position which is so unique. Another unique example is found in site 01 which shows a family of three member's lives for generations. The courtyard in the middle of that house is shared by other three families who also live around that court and use the court in many ways like for hanging cloths, ground for playing and so on. They also
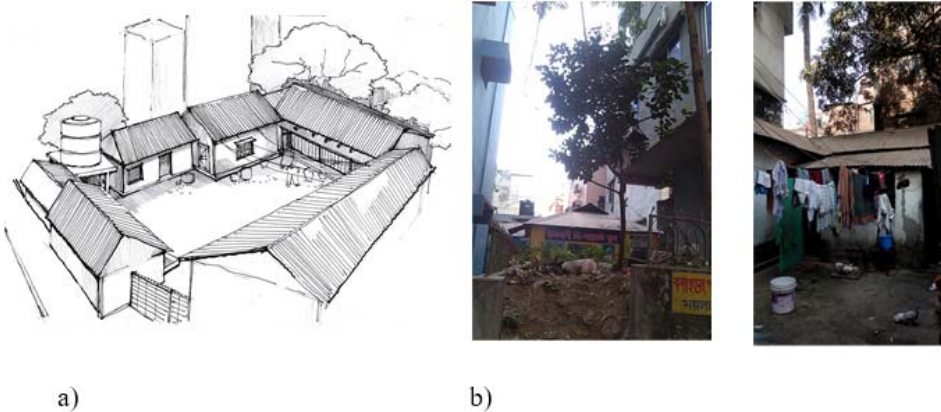
a)   b)

Figure 11:   Multi-functional role of a court carrying strong religious aspect; graveyard located in a setback area between two buildings giving a new definition of space.

share common kitchen. This is the only house found in this area which has this spatial quality. As the eldest member of these family mentioned, one of the main purposes of this court is to keep a dead body for a while after his/her death. Family members and relatives say good bye to the departed soul. Thus, the court is used by the community for the religious purpose also. So, it is found that community dwellers can take necessary steps for the betterment of the community.

4 CONCLUSION

Housing is a physical commodity, which includes other than dwellings services, facilities, equipment's and devises needed for physical and social well-being of the family or the individual [10]. Affordable housing is essential for the planned growth of a city. Lack of affordable housing results in the increase of informal housing and destroys the formal growth of a city. It is evident that the housing affordability of the middle-income group is decreasing day-by-day in Dhaka City. If the affordability of the middle-income group can't be ensured the eviction of this group would be obvious from many areas of Dhaka city [11]. Therefore, the provision of affordable housing is must for a sustainable city.

Today, there are almost 400 cities around the world that contain more than a million residents and about seventy percent of these live in less developed countries [12]. Urban areas of these cities can be seen as systems in which relatively slow-changing urban forms provide the setting [13]. Within these settings, population levels vary over time and result in changes in composition and develop new patterns of living environments. Businesses evolve, their space and mobility requirements change, and capital is invested and withdrawn with significant spatial impacts [14]. There has been a growing acceptance that the complexity of urban city requires new responses which can be termed as 'rational planning' [15]. There is also a growing argument that we should not be seeking a single 'model' for the future, but looking for the benefits of a range of different urban forms ensuring function for different groups [16]. Urban forms were described as successful when they underpin the functioning of an array of urban systems, use resources sustainably and provide a sound economic base that provides the setting for a good quality of life for their

inhabitants [17]. After analysing various issues from various angles on migrant people of particular income group in Mohakhali area, it has been found that, better and affordable housing solutions for urban migrant demand small scale business opportunities first which can come up along with other household facilities. These things vary according to the duration of living of the dwellers in this city. This duration decides the typology of the dwellings also. So how a living environment can be shape up, should be decided from the understanding of above mentioned sequences. Otherwise, urban city can lose its uniqueness soon.

REFERENCES

[1] Cohen, B., *Urbanization in developing countries: Current trends, future projections, and key challenges for sustainability*. Committee on Population, National Research Council, Washington, DC.

[2] Tacoli, C., McGranahan, G. & Satterthwaite, D., *Urbanization, Rural–urban Migration and Urban Poverty*. Human Settlements Group, International Institute for Environment and Development, International Organization for Migration (IOM), London.

[3] Mohit, M.A., Rural-urban migration in Bangladesh: an urban perspective. *Journal of Bangladesh Institute of Planners*, **1**(1&2), pp. 47–59, 1990.

[4] Jahan, R. & Kalam, A.A., Measuring rental housing affordability of middle-income group in Dhaka city. *Journal of Bangladesh Institute of Planners,* **5**(2), pp. 79–91, 2012.

[5] Urban form and infrastructure: A morphological review, Foresight, Government Office for Science, London, Online. https://www.gov.uk/government/publications/future-cities-urban-form-and-infrastructure. Accessed on: 12 Feb. 2017.

[6] Cohen, B., Urban growth in developing countries: A review of current trends and a caution regarding existing forecasts. *World Development*, **32**(1), pp. 23–51, 2004.

[7] Geographical Location and Area of DNCC, Dhaka North City Corporation (DNCC), Online. http://www.dncc.gov.bd/site/page/c0b6953f-16d3-405b-85e9-dece13bb98de/%E0%A6%B2%E0%A7%8B%E0%A6%95%E0%A7%87%E0%A6%B6%E0%A6%A8-%E0%A6%93-%E0%A6%85%E0%A6%BE%E0%A7%9F%E0%A6%A4%E0%A6%A8. Accessed on: 7 Mar. 2017.

[8] Designing our city: Planning fora sustainable Singapore, Urban Redevelopment Authority, Singapore, Online. https://www.ura.gov.sg/skyline/skyline12/skyline12-03/special/URA_Designing%20our%20City%20Supplement_July12.pdf. Accessed on: 20 Feb. 2017.

[9] Abukhater, A.B.E.D., Rethinking planning theory and practice: a glimmer of light for prospects of integrated planning to combat complex urban realities. *Theoretical and Empirical Researches in Urban Management*, **2**(11), pp. 64–79, 2009.