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Morphological Transformation and Evolution of Panthapath as a Commercial Belt of Dhaka City

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Abstract:

Densification is one of the major urban phenomena of the developing cities like Dhaka. Dhaka has undergone phenomenal growth since last three decades. In due course of time, the expansion of the city has created demand for new spaces for required urban activities at convenient locations with ease of accessibility and improved environment. All these aspects reclaimed some unused and less-used areas of the city and integrated those areas with the main flow of life. As a result, in addition to the physical expansion of the city, the internal morphology of urban areas has been evolving to time; thereby continually changing the urban fabric. Such morphological transformations are taking place both at the level of urban grid and at the level of plots in different parts of the city.

The Begunbari Khal, one of the oldest canals, in Dhaka was converted to a box-culvert and an arterial road Panthapath was paved along the natural depression in early 90's. After developing Panthapath as one of the major transverse roads the transformation on both sides has thrived and suddenly backyards of the houses within a residential zone evolved as a commercial spine of the city. Panthapath is now one of the leading commercial streets for the city dwellers. This paper tries to understand the evolution of the Panthapath from waterways to one of the busy road of Dhaka city. It also tries to reveal the morphological transformation of the adjacent areas and the forces that had been shaping the morphology itself.

Key Words: Evolution, transformation, commercial belt, morphology, urban core.

1. Introduction:

Today's Dhaka represent a composite form developed through the ages. Indeed, above the levels of technology and economic condition of the population, the patterns of areal expansion and the form of Dhaka have been dominated largely by the physical configuration of the landscape in and around the city, particularly the river system and the height of land in relation to flood level. (Islam, 1996: 191) Moreover, Dhaka city had an abundance of canals, drainage connections, ditches, swamps, ponds, wells, and tanks and the city used to be criss-crossed by many large and small canals. *Begunbari* Canal, a major waterway lying on the east-central part of today's Dhaka, was a significant canal (khal) of historic city. During Mughal time (1608 - 1764) Dhaka's limit was upto Kawran Bazaar when Begunbari Canal worked as an entry to the city. The city extended towards north and large extent of areas were incorporated under urban limit since the British period. A map of 1960 shows the trace of Brgunbari Khal and its connection with Dhanmondi Lake (Figure 01). After the liberation of Bangladesh in 1971, Dhaka has undergone phenomenal growth.The rate of urbanisation in Dhaka in 1974 and 1991 were 30% and 54% respectively (Hossain, 1995). The expansion of Dhaka city created demand for additional spaces for required urban activities at convenient locations with better accessibility and environment. As a consequence of such infilling, the central location and advantageous position of *Begunbari* Canal contributed substantially towards the urbanization process of Dhaka city. In this course of development, an arterial road 'Panthapath' was paved along the natural depression of the *Begunbari* Canal in 1991 and the waterway was converted to a box-culvert beneath the road upto certain length. Thus the canal was transformed into a major road passing along the boundary of four residential areas - Kalabagan and Kathalbagan on one side and Sukrabad and Rajabazaar on the other side.

Figure:1 Interconnected Canals of Dhaka City.
Source: Map published by The Survey of Pakistan, Dacca, 1960

The urban transformation and morphological changes of the area surrounding *Begunbari* Khal through its evolutionary process are very remarkable. Panthapath was developed initially to serve as a transverse road of Dhaka city, as there was a long felt demand of such connection betweeen the major arterial roads of the city running longitudinally. Locational importance of Panthapath is also considerable as it was situated very close to the second CBD of Dhaka at Kawran bazaar area at one side and the high class residential area Dhanmondi on the other. After the construction of this major road a rapid and rigorous transformation on both sides have undergone and suddenly the backyards of the houses within a residential zone evolved as a busy commercial spine of the city. As being an unplanned part of the city, commercial use easily invaded in the area through the loop holes of development control of the city authority. Within a decade, Panthapath appears as an active commercial street of the city and the locale has become one of the important mixed use area. Hence, the study mainly investigates on the evolution and morphological transformation of the commercial development along the newly inserted Panthapath road. It also concentrates on the possible causes of such configurational changes in the global network of a city in relation to the movement and land use pattern, which has been generated through out the period .

2. Objective of the Study

From historical background it has been known that the emergence of Panthapath had great impact on the land use transformation from residential to commercial area. Such changes have significant impact on the morphological pattern of development. Therefore, the objective of the present research is to observe and understand the morphological evolution along Panthapath and the subsequent land use transformations in the surrounding area. In addition, it also aims to identify the possible forces that shaped Panthapath over the year from privately owned residential area to commercial belt. Moreover, understanding of the causes for transformation of plots in the surrounding area after developing Panthapath as well as to trace the gradual transformation and evolutionary changes of Panthapath beyond the existing pattern of development also needs to be investigated.

3. Methodology of the Study

Both the physical and social aspects of urban morphology have been considered in this particular investigation. In this process, the primary and secondary sources were used. To depict the morphological changes due to the development of Panthapath along the *Begunbari* Canal cartographic records were considered. For the spatial analysis of Panthapath commercial area the layout map

of that particular area was used as the base map to show the spatial variation of land uses. This present research has also consulted an analysis of configurational patterns of the urban grid of Dhaka (Nilufar, 1997) where interpretation of spatial data was made with the method of 'Space Syntax' [2] to determine the global character of the urban grid of Dhaka after the inclusion of Panthapath. This research has undertaken reconnaissance survey with photographic and observational study to depict the current physical environment, with particular focus to the plots under study. In this process a number of plots in two distinct areas (from road side and from inner area) have been investigated in detail, both for physical as well as economic transformation, which had been recorded. It has also conducted a questionnaire survey to understand the users' response in identifying the possible forces of transformation. The field study was conducted in different periods since 2002 to 2007.

4. Urbanization process in Dhaka City - Socio-Spatial Structure and its' shifting cores

Cities are the products of unique situations of their origin. It is the circumstances, culture, societies, politics and economy of their origin and growth that make them different. Therefore, the interpretation of morphological forms and its meaning requires an examination of the continuing forces that shape the cities with its millennia of urban evolution. With all it's idiosyncrasies from the established planning theories, the harmonious development of Dhaka's land use with its morphological transformations is significant. Dhaka, the capital city of Bangladesh, has grown from a small Hindu-trading centre to a metropolis. The history of Dhaka as a town is of four hundred years old and its different phases have developed and been structured at different historical stages based on the vigour of that particular period of development (Nilufar, 1997). In different periods of history the city expanded due to significant development in trade and commerce (Islam, 1972). The spatial structure of Dhaka faced a number of major phases of socio- economic and political changes during its evolution. After the political change in 1971, the landscape of Dhaka has experienced rapid and uncontrolled urbanisation and this changing pattern also change the shape and character of its CBD (Chowdhury, 1981).

The morphological analysis of Dhaka identified that the city have had a dynamic structure which has been transformed with time. (Nilufar, 1999) With the growing upper and middle class residential areas, the retail and commercial areas also expanded towards the northern part of the City (Ahsan, 1991). Thus it provides evidence of a shift in importance from the old city towards the newer part in northern direction that serves as the central area for commercial facilities in the global context of Dhaka city. The CBD shows a northward pull and has become diffused from Motijheel (Ahsan, 1991:412-13). The changing land use and land value in Dhaka over the recent period of expansion have proven that a complex socio- economic process along with the advantage of location has influenced a shift of the retail area from Gulistan to the New Market area (Chowdhury, 1981). In later period, to meet the demand of growing population of Dhaka City, some higher order activities or central functions of the city invaded in northwest part of the city. However, a second CBD emerged around Newmarket while Kawran Bazaar, Sher-E-Bangla Nagar are also demarcated with new pockets of commercial and governmental institutions.

From last three decades the business and commercial zone shows a gradual growth pattern towards the northern part of the city The government or public sector has not been able to cope with the tremendous growth of commercial activities, which has lead from a need to meet the demand of the growing population Previously an extensive growth of commercial building started to develop through private initiative with the absence of any planned policy for zoning. The changing land use and the short supply of land accelerated by the rapid and extensive growth of population in the capital city which has resulted in increased demand for compact and multi-

Figure: 2 Panthapath appears as part of Integration Core of Dhaka in 1997.
Source:. Nilufar, 1997

storeyed shopping centre and other retail development.

From morphological analysis of the urban grid it has been revealed that the global integration core[3] of Dhaka identified the functional core, both commercial and administrative, in each corresponding period. (Nilufar, 1999) Consequently, a strong correspondence between the commercial and retail growth and the global integration core of the city has been found through out the period (Hossain, 2000). Here we find that the commercial and retail areas are also growing along the major roads, which followed the highly integrated lines of global integration core of the city. The syntactic analysis of the Dhaka city in 1997 shows that the location of Panthapath from it's inception appear as part of global integration core and it is one of the more integrated lines in the context of total Dhaka (Figure 02). It is one of the major connecting roads between different areas and localities in Dhaka and thus

this natural depression in 1985. Later in 1996 Panthapath had evolved in the global scenario of Dhaka. The impact of shifting CBD in the course of time perhaps has accelerated the development of Panthapath, a transverse road that has connected four major roads like, Mirpur Road, Green Road, Airport Road and Sonargaon Road, in east-west direction. Originally, the natural depression existed in between the built structures at their back. Along the geographical location of Begunbari khal, all the land on the outer edge of Kalabagan, Kathalbagan, Sukrabad and Rajabazaar was Khas land, i.e., the land under the possession of Government, which remained vacant because of the location of canal (Figure 03). However, the government ownership of this vast area had accelerated the implementation of the initiative and the development process of Panthapath was exceptionally fast. It has been observed that Kawran bazaar ditch, Begunbari Khal, Dhanmondi Lake and all ditches in this zone were interconnected (Figure 01). Begunbari Khal acted as one of

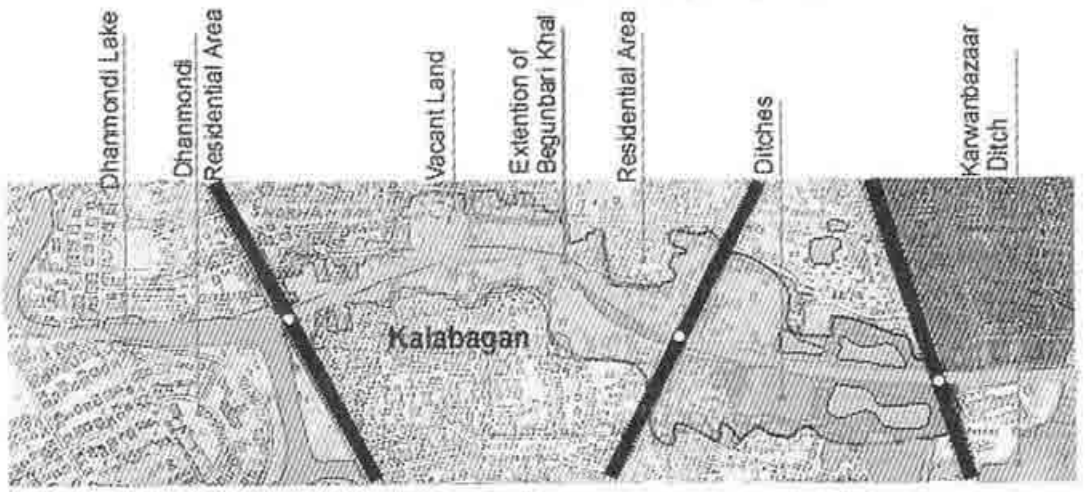


Figure: 3 Location of Panthapath in the site of Begunbari Khal *Source: Mappa 1982*

recognised as a prominent transverse link in the city. Therefore, the natural growth process and development of Panthapath following the location of a water body can be considered as a natural extension of shifting CBD and thus serves as the part of the core area for commercial facilities in the global context of the Dhaka city.

5. Evolutionary Changes and Morphological Development of Panthapath:

Although the development of Panthapath meets the demand of transverse road in expanding metropolis, the interruption of water body ecologically disturbed the natural flow of water. In Figure 3 the low land defined the boundary of Kalabagan, Kathalbagan, Sukrabad and Rajabazaar area. RAJUK proposed a road layout along

the major outlet of storm water and drainage channel from central area, Dhanmondi, to the eastern fringe. However, the emergence for developing this road was introduced and continued without interrupting the flow of water from Dhanmondi Lake to Begunbari khal and upto Eastern fringe.

In the urban morphology of Dhaka one of the significantly integrated road is Panthapath that accommodates huge traffic globally.This increased natural movement obviously attracts commercial enterprises, as claimed by Hillier in his theory of natural movement (Hillier, 1996) Therefore, it is evident that the integration core coincides with the city's functional core (Figure 02). The integration core of 1997 consists of two reverse wedges inclined towards the west incorporating the newer growth centres at the

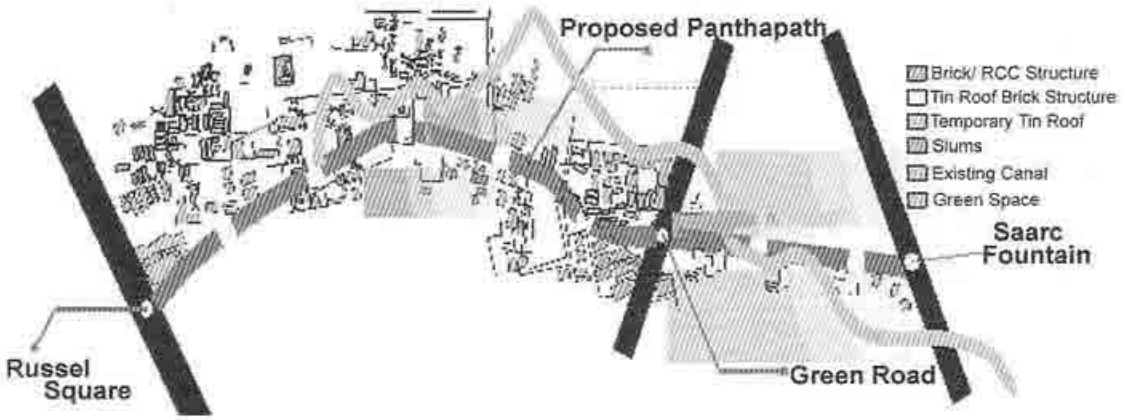


Figure: 4 Proposed Road by RAJUK in 1985.
The morphological evolution of Panthapath along the water channel is shown on the map.
Source: Rajuk,1985

location of Panthapath (Nilufar, 1999). However, the morphological structure has exerted impact on its elements like plot, block, circualtion and landuse. The pattern of development and transformation of plots are explained in the next section.

6. Transformation of Plot configuration and Land Use:

After the development of Panthapath suddenly the back-yards of the houses within a residential zone evolved as a commercial belt of the city (Figure 4). In this process, the plot size along the road and their configurations has faced major modifications. The plots which were along the road side, i.e. the commercial areas, and those which laid on the inner side, i.e. in the residential areas, both have spatially transformed.

6.1 Pattern of Development in roadside plots

It has been reported that before the insertion of Panthapath the plots along Begunbari Khal were mainly used for household activities in the residences or were slums (temporary shelters). However, land was put up on market and trading has been started with the proposal of a road in 1985. As a result, after the establishment of Panthapath in 1996, suddenly land use transformation was clearly visible. Within ten years time multi-storeyed mixed use structure with commercial offices and apartments, and even hospitals were erected. To find out the pattern of development and transformation through time, four plots were taken randomly from both side of the western segment of Panthapath. The road layout and the boundary of plots under case study along with their sur-

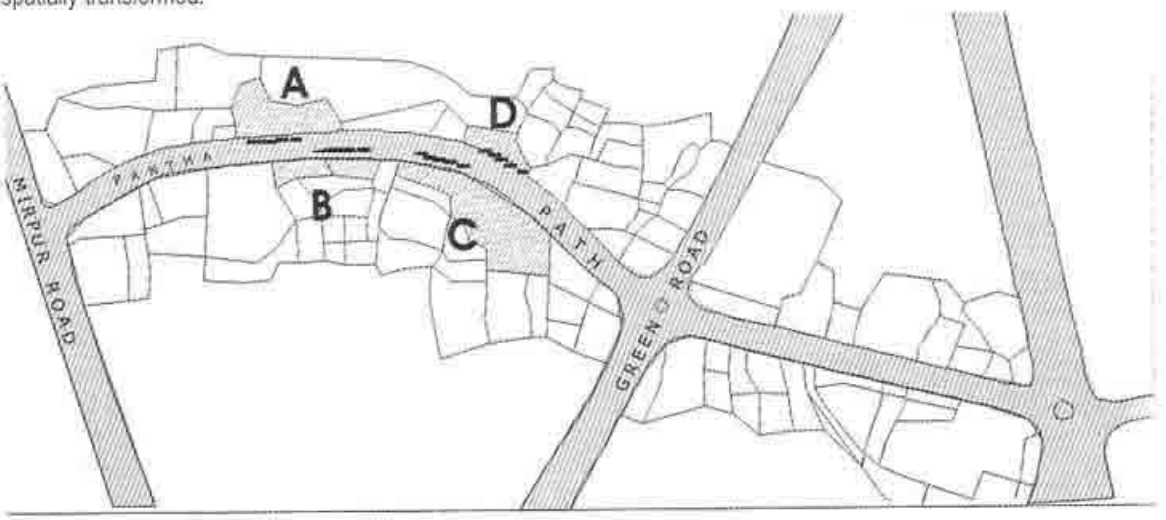


Figure: 5 Existing Road Layout of Panthapath and Surrounding in 2004. *Source: D.L.R office*

rounding areas are shown in figure 5. The following chart 01 represents the land use transformation of plots A, B, C, and D as well as their morphological evolution. This chart also exhibits the morphological transformation like plot division and changes of land use and erection of built forms in the selected plots from 1990 to 2007. However, the land use, land value and use of commercial spaces of study areas were found out by questionnaire survey which also determined the effect of transformation on their social and economic life.

It has been reported by the residents that the decision of Panthapath had been finalized before 1990 (some time after 1985), since then roadside small plots were amalgamated to form larger plots with the speculation of developing large scale commercial facilities. Hence, by 1990 most of the small plots were unified and formed undivided and larger ones in size. [First Column of Chart 1(a)] However, in 1996, after the development of Panthapath, those large plots were sub-divided in a number of plots as the previous conception of mega projects did not materialised due to lack of investment initiatives. Even the comparatively small plots (like road side plot D) were also divided into smaller parts. At present those plots are accommodating multi-storeyed commercial use and mixed use in the form of shops, corporate offices as well as hospital. These mega projects are being pushed in the economic plots of Panthapath in the dynamics of present land market and legislative weakness of the development controlling agencies (like RAJUK, DCC).

6.2. Transformation of Inner side Residential plots

Like the road side plots on Panthapath, the subsequent rows of plots in the inner part of Kalabadgan, Kathalbagan and Rajabazaar area had undergone spatial as well as social transformation after the development of Panthapath. As mentioned earlier, form the beginning, these areas were residential by nature. The following maps depict the pattern of transformation of residential plots. For Example area A1 and A2 of Kalabagan and Kathalbagan (Figure 6) is considered for this study. It had been revealed that during 1964, most of the inner side residential plots of this area were large in size. However, with the proposal of the insertion of the Panthapath, some large plots were divided under different owner. It is evident that mainly large plots (approximately one bigha[4] or more) in the inner parts of residential areas had faced such sub-division because of higher land value and need of residential plots with the densification of the area

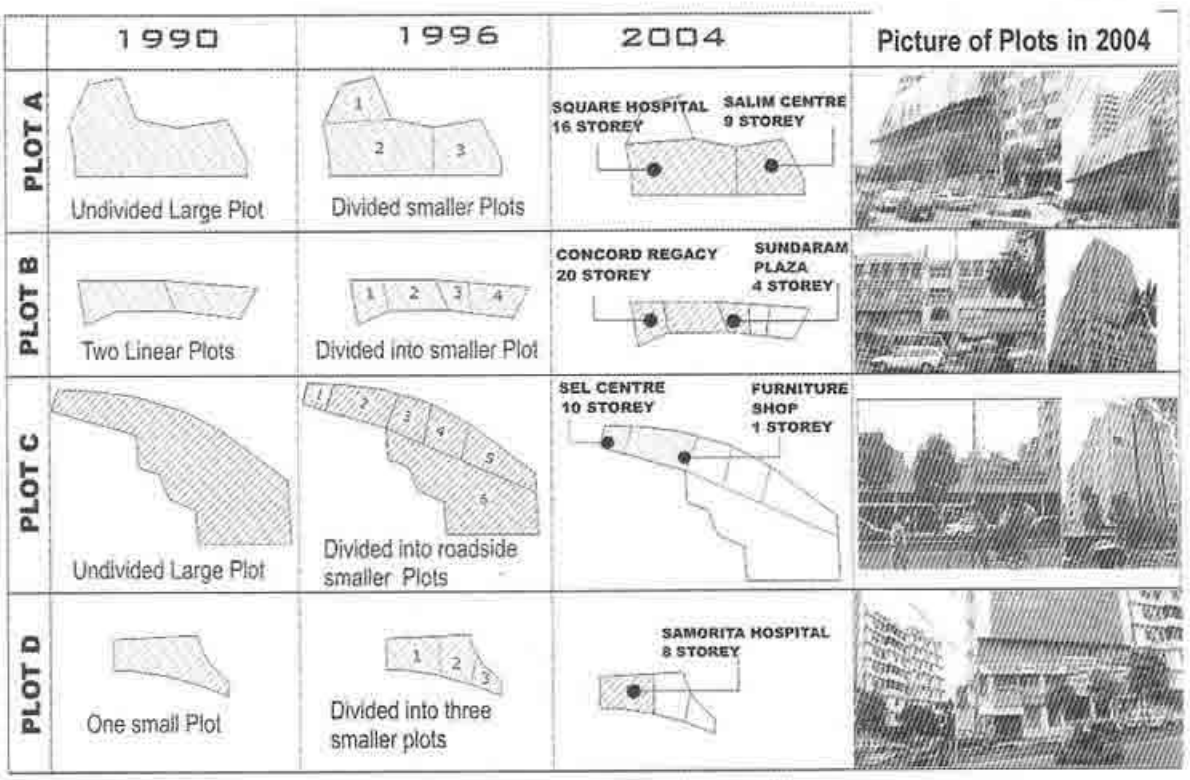


Chart: 01(a) Sequential changes and transformation of road side plot from 1990 to 2004
Source: Field survey 2004

Picture of PLOT 'A in 2004 (under construction)

Picture of PLOT A in 2007 (complete)

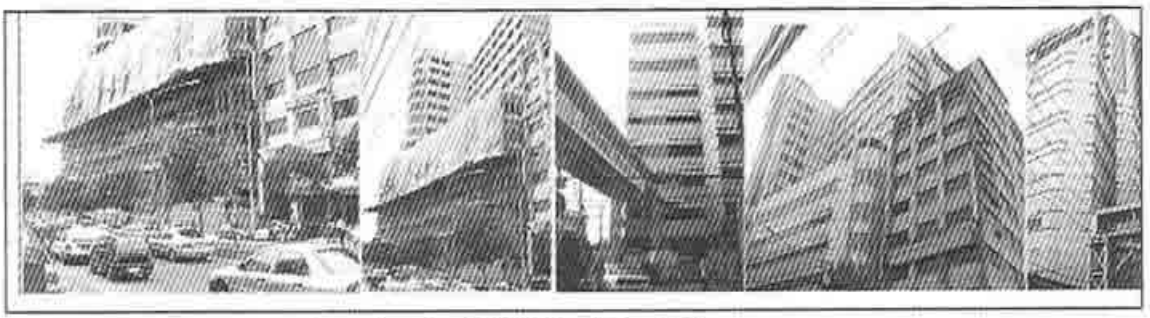


Chart: 01(b) Sequential changes and transformation of PLOT 'A' in 2004 and 2007.
Source: Field survey 2004 and 2007

(Figure 7a and 7b). It can be mentioned here that Kalabagan, Kathalbagan, Rajabazaar areas were always high valued spontaneous residential areas because of their position near Dahnmondi, the high class residential area of Dhaka.

In this process, from 1964 to 1984 (before the decision of Panthapath), most of the large plots in the inner areas were divided into small pieces (minimum 2.5 katha) for higher land price and to meet the need of owner. During this phase, here the changes were almost reverse and small piece of roadside land were combined to form a large plot for commercial and business development. On the contrary inner side residential plots were divided into smaller plot. (Fig. 7a and 7b). This process of parcelling did not continue further, but they were rarely amalgamated to accommodate large scale residential projects in the inner part of the areas.

6.3. Land Use Transformation

Beside the observational survey, responses from the plot owners were valued, as the society can best explain their inner viewpoints as well as the practical impact of planning beyond theory. To understand the land use transformation of surrounding plots in Panthapath, a non structured interview and questionnaire survey was conducted among the user of some randomly selected plots. The result of this survey is represented by the following graphs. Graph 03 represents the use of commercial spaces on both sides of Panthapath, where majority were mixed use developments; furniture shops, market strips and building under construction for similar purpose were in trivial position. Graph 01 represents the change of land use with time in percentage from which it can be observed that in past vacant land and residential uses was visible along Begunbari Khal, but at present commercial uses

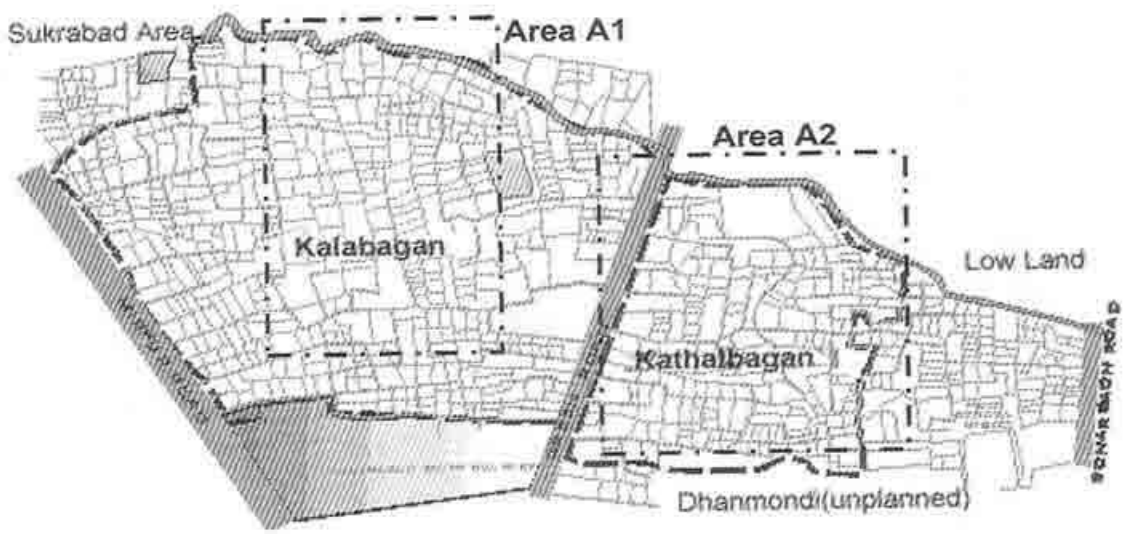


Figure: 6 Spatial Structure of Kalabagan and Kathalbagan area in RS map (1984).

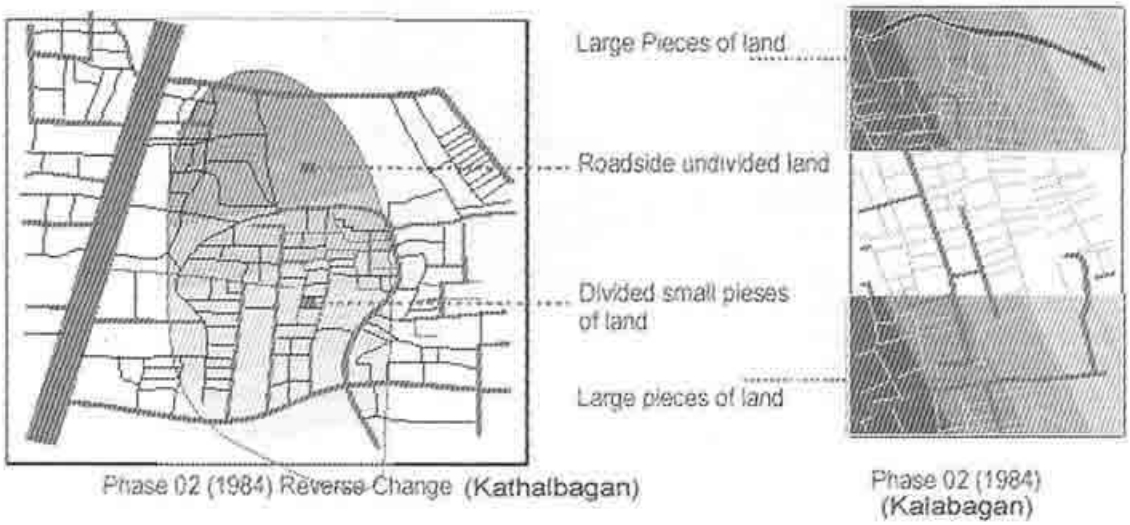


Figure: 7a. Transformation of inner side residential plot in Kathalbagan (A2) and Kalabagan (A1) Area, (1964); Source: Secondary data and Survey 2002.

are predominant. The growth pattern reveals that such transformation will further accelerate in future. It can be predicted that this transformation process may change the land use pattern and corresponding skyline of these plots and may evolve as an extended part of second CBD, Kawran Bazaar. However, one important aspect can be marked here that in the process of land adjustments, owners are seldom undertaking steps for amalgamation of small plot except before 1984. This may have strong relation with the economics of land market and the absence of development control in the context of city development.

From the present study, we also find that it is the central position, ease of communications and accessibility as being part of the global integration core has been transformed Panthapath as a commercial area and Increased the land value higher from 1996. In 1997-1998 the land value reached the peak position but since 2004 the value is quite stable (Graph 02). The changing land value in Dhaka shows a maximum rate of increase in Dhanmondi in the last 50 years (Hossain, 2000) and the Panthapath might have an indirect effect of that phenomenon.

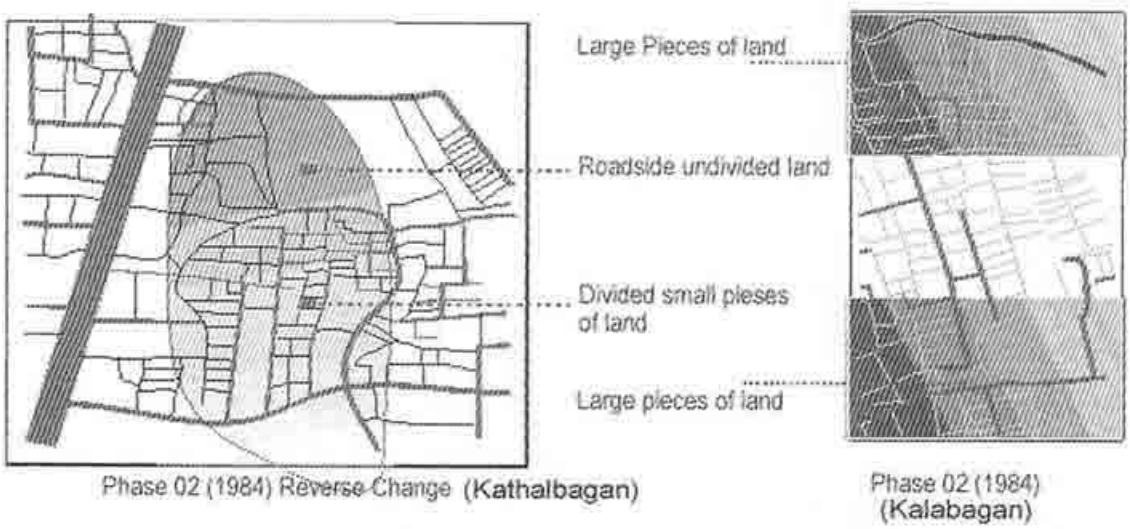
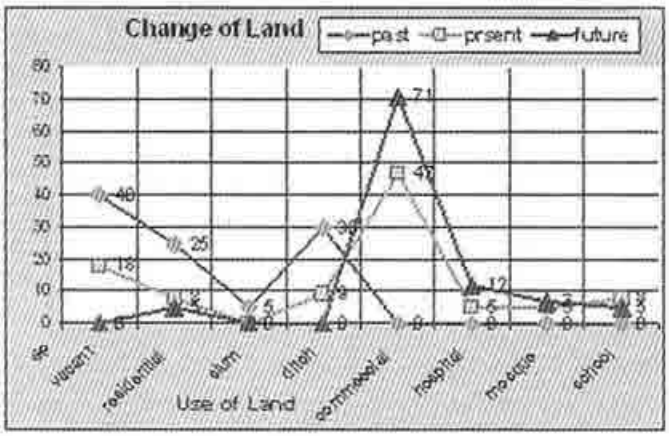
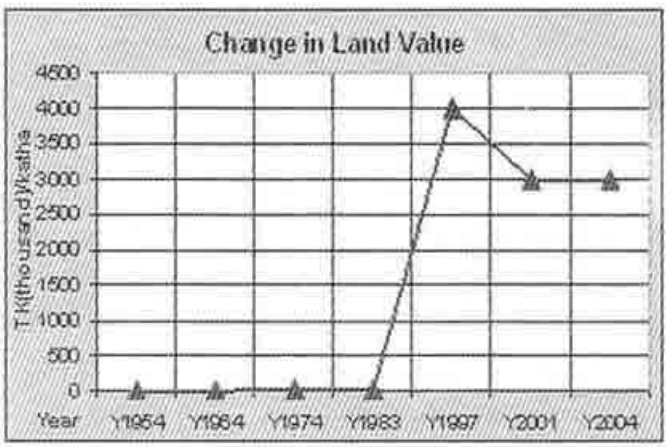


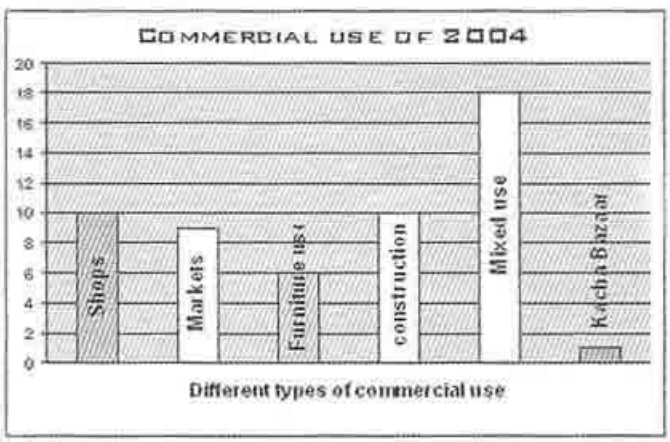
Figure: 7b. Transformation of inner side residential plot in Kathalbagan (A2) and Kalabagan (A1) Area, (1984); *Source: Secondary data and Survey 2002.*



Graph: 01
Change of Land Use
Source: Field survey 2004



Graph: 02
Change in Land Value
Source: Field survey 2004



Graph: 03 Commercial Use of land
Source: Field survey 2004

Besides these, the location of another CBD Kawran Bazaar also accelerated the morphology and transformation of Panthapath to be developed as commercial belt for the Dhaka city. Due to the change of land use and tremendous increase of land value, the road side plots were sub-divided into small but highly dense multi-storeyed structure (Chart 01).

From the survey of the study areas, it is also clear that there is a drastic change in the development pattern and built form. On Plot B, a four storey market building and a twenty storey mixed use and on Plot C one storey temporary furniture shops and a 10-storey office building is developed side by side. There is also a change in vertical land use as office space and other functions took place on top floor of the built form that is more than 15 or 20 storey high. Therefore, it is clear that total Panthapath is transformed as commercial and mixed-use area. Following discussion tries to unveil some of the major causes of the

transformation in order to predict the future situation as well as the possibility of applying development control to keep the liveability of inner plots as well as the plots along Panthapath.

7. Reason for Transformation:

From present study, it has been revealed that certain major morphological transformation took place with the insertion of Panthapath within the existing urban grid of Dhaka. This paper only focuses on the transformation of plots and their land uses, both in the inner part as well as at the outer edges of Kalabagan and Rajabazaar areas adjacent to Panthapath. The following discussion tries to unveil the reasons behind the transformation and morphological changes from waterways to the road. For analysis, the emerged spatial pattern along with the users' responses are considered mainly.

7.1 Densification and Expansion of Urban areas

The part of Begunbari Khal which remained low land and served as water retention area and drainage channel since a long period of time became an arterial road of Dhaka, Panthapath, in the process of densification and expansion of the exiting city. It can be considered as a case of natural infiltration of the urban areas with the growing demand of city dwellers. The natural depression was suddenly acquired and developed as a transverse connection in the urban morphology of Dhaka. It was assessed that if the connection of flowing water was maintained from Begunbari Khal to Dhanmondi Lake then an important road should be developed on Government Khas land. This was the basic idea for developing one of the major transverse roads Panthapath by maintaining the flow of water channel in box-culvert.

7.2 Concentration of Communication

In any urban system, the movement pattern is essentially guided by the configuration of the street grid which phenomenon is termed as 'Natural movement'[5]. In addition, in any urban space the configurational property that assumed to be associated with different degrees of functional importance are important enough to have significant effect on movement pattern and the distribution of built form attractor (B.Hiller, 1992). This theory primarily justifies the morphological transformation that appeared along Panthapath during last decade.

As Dhaka lacks shortage of east-west connectors or transverse arteries and Panthapath did the same, therefore, the morphological transformation of the urban grid of Dhaka with the insertion of Panthapath is very significant. From the very beginning Panthapath became part of the spatial integration core thereby played an important role in Dhaka's movement pattern as being part of the shortest possible routes of the whole city, supported by the theory of Space Syntax. Thus the spatial position of the road ensured the greater accessibility to the surrounding areas. As a result this road holds concentration of circulation, in so doing the demand for higher order functions along the road became undeniable.

7.3 Central Location

According to Hiller, configuration may have an effect on both through-movement and to-movement in urban grids, which are independent of built form attractors. Logically the presence of attractor can influence the presence of people, but it cannot influence the fixed configurational parameter, which describes its spatial location. The transformation of the Panthapath as a major commercial street within a very short period of time perhaps had been preferred by the geographical centrality of the area. It's central position within the city geometry confirmed the proximity to the Second CBD, Kawran Bazaar, and high class residential area of Dhanmondi. Moreover, the availability of surrounding residential areas , like Kalabagan, Rajabazar, Dhanmondi, and commercial area like Kawran Bazaar, Farm gate etc. within the catchments area made this area to be potential for developing as a commercial road with non-residential activities. All these locational aspects exerted multiplier effect[6] on the transformation process of Panthapath.

7.4 Financial Benefit

Accessibility to adjacent plots from a major thoroughfares usually generates the business and commercial activities because their increased land value. Thus financial benefit of the location as well as spatial position accelerated the morphological transformation of Panthapath. The owners of the surrounding residential plots were agree to sell or developed their plots as a mixed-use high rise for better financial return. Thus the adjacent community as well as the land owners get the direct result of it's financial potentiality.

7.5 Lack of Development Control

The process of morphological transformation at plot level unveils an important issue of uncontrolled development pattern in the spontaneously grown areas of Dhaka. Here we find large scale building projects are being erected in plots which are relatively small for those developments. This is true both for commercial as well as residential plots. As a result mega projects, like hospitals and mixed use are being constructed in the plots which can not sufficiently accommodate all the service facilities. Besides in the residential part, plots are being overbuilt and no open spaces are left for the community, even the residents of the houses. All over the area, the resultant effects of densification phenomenon is vigorously alarming.

8. Conclusion:

In the conclusion, it can be stated that the location of Panthapath in the urban grid has the crucial effect on it's morphological transformation. Some locations have more potential than others do, because they have more multiplier effect and this will depend on the structure of the grid and how they relate to each other. As Panthapath gained the credit to be located in the central part of the city, some higher order activities (commercial functions) of the city invaded in this area. Higher densities of development take the advantage of accessible space and act as multipliers on the basic pattern of natural movement.

With the shifting core of Dhaka city Panthapath is evolved and urbanized with time and the after effect of transformation is visible on immediate side of the road. It has been found out that ease of accessibility and communication accelerates the mode of development pattern and transformed the state from residential to commercial zone. Thus the roadside plot, land use and land value is ever changing with these transformations. It's impact was also visible in the inner part of the residential areas where initially the morphological transformation of plots showed a reverse process. However, in all parts, subdivision and densification is the ultimate representation.

It can be concluded that in any commercial zone the configuration works as a more dominant influence on movement. As commerce and shopping depends on natural movement and attracts more people for trade and commerce thus Panthapath was developed as one of the most important transverse commercial belt with in the urban grid. The road was evolved for the need of communication and movement. Thus natural movement attract commercial uses to be developed here, and that is why residential zone transformed to the mixed-use commercial zone.

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End Note :

[1] An earlier version this paper has been presented by Ms. Farhana Ferdous in 1st Urban Design International Congress (UDIC1), Isfahan, Iran, 4-6th September 2006. The present content of the paper has been updated with substantial adjustment for the journal.

[2] 'Space syntax' takes an urban layout of a city or part of it and analyses the available routes to decide which are better integrated within the network and therefore easily accessible to the public. This graphical representation of Syntactic analysis is a key in determining the pedestrian movement; land use, density and land value. Space Syntax is pioneered among the newly proven techniques for regenerating urban areas through urban design. It is a design tool that predicts patterns of pedestrian movements in towns and cities by using axial lines as representations of urban systems. It allows factors such as 'connectivity', 'integration', and 'permeability' to be objectively measured. This allows the impact of design proposals to be forecast in advance, for example in terms of how these will affect existing patterns of pedestrian movement, space use, economic vitality, and safety. (Hillier and Hanson, 1984).

[3] The theory of Space Syntax defines the degree of spatial order, which exists in organic and planned layouts, by analysing their spatial configurations. In this theory, ***integration*** is a spatial measure accounting the relative depth or shallowness of any spatial system as seen from any particular point within it. The set of most integrated street are collectively known as global integration core for a city (Hillier and Hanson, 1984).

[4] 1 katha = 720 sq ft., 20 katha =1 bigha.

[5] Natural movement is the proportion of observable movement along line that is produced by the structure of the grid rather than the special attractor. The theory of Natural movement proposes that the distribution of the built form, which generate and attract movement in an area, will be determined by the grid configuration itself. (B.Hiller, 1996).

[6] Every location within the urban grid has a crucial effect. Some locations within city have more potential than others because they have more of a multiplier effect and this will depend on the structure of the grid and how they relate to it. Such locations will therefore tend to have higher densities of development to take advantage of this and higher densities will in turn to have a multiplier effect.