Hidden Morphological Order in an Organic City*

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Abstract: Dhaka, the capital of Bangladesh, has grown from a small trading town to a metropolitan city. With the passage of time an organic morphological pattern has been spontaneously developing here without any rigid planning proposal. Moreover, the spatial structure of organic cities like Dhaka is generally developed spontaneously in line with inhabitants' aspirations. Thus within the apparent spatial disorder of the 'natural city', people must have a territorial need for sense of a place. Indeed, the mohallas, the historic neighborhoods in old Dhaka, had a territorial base, which revealed a social segregation symbolized by geographical definition. It is crucial to identify the essential components of present urban morphology in order to sustain the urban condition necessary for the continuation of our cultural milieu amid rapid urban transformation. This paper analyses the visible form of Dhaka to identify its different territorial units that have distinct social as well as spatial identity in the image of its inhabitants. Within the apparent morphological disorder in an organic city as Dhaka, a 'tree' like mental organization exists in cognitive image of inhabitants. This paper gives an evidence of a community at local level in Dhaka defined by the 'territorial boundary'. This reflects inhabitants' particular need for identity and sense of a place within the organic city.

Key Words: Territoriality, Sense of a place, Neighborhood, Local Community, Organic City.

Introduction

Rapid population growth and physical expansion turned the medieval town of Dhaka into a metropolitan city. From historic time, the city has grown in an organic way with least planning intervention. Dhaka has two distinct parts - old and new. The historic part, the old Dhaka, has an organic morphology and it retains many traditional features. Historically the residential neighborhoods of old Dhaka, locally known as 'mohallas' , were considered by many to be a morphological archetype of this historic city. The traditional mohallas of Dhaka were unified under a panchayet,

Mohalla is a form of traditional neighborhood in Old Dhaka, a significant self-governing organization. In the newer extensions of Dhaka i.e new Dhaka, outside the historic core, similar organic morphological

patterns are prevalent which have been spontaneously developed without any rigid planning proposal. However, the social as well as morphological impetus of these newly generated extemporaneous areas still remain unknown as little has been extracted from their living urban fabric. The present status of the old part of Dhaka also remains unidentified. According to Geddes, "the diagnostic survey . . . seeks to unravel the old city's labyrinth and discern how this has grown up. Though, like all organic growths, this may at first seem confused to our modern eyes, that have for so long been trained to a mechanical order, gradually a higher form of order can be discerned - the order of life in development" (Geddes, 1919 as in Tyrwhitt, 1947, 26-27). To apprehend the 'order of life in development', this paper intends to reveal the morphological order of the organic city of Dhaka from its inhabitant's standpoint.

Growth of Dhaka and it's Prevailing Urban Pattern

With the passage of time the city of Dhaka has grown in a natural way. In four hundred years history, the

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medieval trading town of Dhaka has extended from one square mile in 1600 AD to a large conurbation (Dhaka Statistical Metropolitan Area, DSMA) of 522.34 square miles in 1991. Population has increased from 200,000 of 1640 AD to 6,950,920 in 1991. Dhaka has been facing a phenomenal growth for the last three decades. The city already appeared as one of the mega cities of the world by 2001 with a population of 10.71 million.

Today's Dhaka represents a composite form developed through the ages. Above the levels of technology and economic condition of the population, the patterns of 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. The ground plan of Dhaka shows a less systematic organic form possessing a kind of homogeneity and intricacy. However, some patches of planned interventions at times interrupt this homogeneity. In spite of all these factors, two dominant urban patterns are conspicuous in Dhaka: the historical core or 'old Dhaka' and the later development towards the north, known as 'new Dhaka'.

Like most medieval towns, the historical spatial structure of old Dhaka with it's haphazardly developed but compact built areas are the relics of the past. The natural endowment of its organic morphology is valued for its 'indigenous' urban pattern. Like many organic cities, the urban pattern of old Dhaka reflects the community spirit and the aspiration of its inhabitants. Indeed, the mohallas, i.e. the historic neighbourhoods in old Dhaka had a territorial base, which revealed a social segregation symbolized by geographical definition. The social control of the mohalla and the organizational structure of the Panchayet System used to be characteristic of Dhaka for nearly two hundred years until very recent times (Hollander, 1990). The system, which settled local social issues, law and order problems, is now nearly a legacy.

The social as well as the spatial structure of the growing city has undergone major transformation with the changing patterns of the economic structure and the technological advancement. Even so, the contemporary part of new Dhaka seems like the representation of traditional indigenous urban developments in the

setting of a modern background. The formation of the major urban blocks and main streets in new Dhaka mainly followed the Master Plan of 1959. In spite of that, most of the localities of the city grew mostly in a spontaneous way and the resultant form is irregular, non-geometric and organic, with an incidence of crooked and curved streets and randomly defined open spaces. However, the socio-spatial impetus of these newly generated 'informal' development still remain unknown as little has been extracted from their living urban fabric. Nevertheless, this new-generation organic areas are generally developed according to the aspiration of the inhabitants just like that of the historic city itself. The generic similarities of the 'informal' areas with those of the 'indigenous' ones draw attention to the need for a systematic unfolding of this enigma in order to understand the order of life in development.

Territorial Need in a City - the Research Objective

'As accessibility becomes freed from propinquity, cohabitation of territorial place - whether in neighbourhood, a suburb, a metropolis, or a region or a nation, is becoming, less important to the maintenance of community relations' (Webber, 1964). Hence, it is argued that in modern cities social grouping is unimportant today since people live in a "non-place realm". However, the detailed ethnographic studies of urban communities support the proposition of social segregation as reflected by spatial isolation. The internal structure of a city emerges as a mosaic of local areas, which in fact mirrors the divisions and inequalities of society. Such pattern of spatial separation characterizing the residential areas of cities can also be considered as a particular case of the operation of territoriality, i.e. the need for identity and place. So far, it is suggested that community in the modern city is a small social system with its roots and ties to a locality (Pahl, 1970). These are actually the 'local communities', which are mainly formed through ecological processes of concentration and centralization of people of common characteristics (Herbert and Raine, 1979).

Traditionally local social organizations had taken sheer responsibility in urban management. With economic and technological development and rapid population growth, the social structure of growing cities has undergone major changes from a traditional to an individuated society. Even so, the importance of local community for social control and management cannot be disproved. At this point of present disorder and confusion, therefore, it becomes the responsibility of

the researchers to determine the nature of the existing socio-spatial structure of cities in order to define a local community for sustainable community development and urban management, and also to develop design guidelines for the built-environments.

Therefore, the present paper aims to identify the essential components of urban morphology and their organizational patterns within the global structure of Dhaka from its inhabitants' view. It has an abiding interest in analysing the visible form of the city in order to identify its different territorial units having a distinct social as well as spatial identity in the image of its inhabitants. In fact, such a perceived mosaic is categorically different from planners' or geographers' view where the urban mosaic is mainly delineated by objective social criteria. However, this aspect of territoriality is investigated in relation to social, functional and spatial aspect in another section of this research. It is also understadable that many other social dimensions of the urban form cannot be included due to limited scope of this paper.

The Cognitive Approach

A cognitive approach of behavioural type seems to be useful in delineating the territorial definition and related spatial character of the 'local areas' as perceived by the inhabitants in order to reveal the generic morphological rules in an organically developed city like Dhaka. Cognition mainly indicates how to understand the organization (Rapoport, 1977). Following Rapoport's idea, this present work uses the term 'cognition', which is a particular type of perception, in order to describe the way in which people understand, structure and learn the environment and use mental maps to negotiate with it.

Figure 1 : Kalabagan locality boundary

The principal research inquiry regarding the territorial boundary of local areas is explored here through an extensive field survey in Dhaka (Nilufar, 1997). Finally the study was launched on six local areas in Dhaka based on their phases of growth. Among these, three areas, namely Farashganj, Shankhari Bazaar, and Kasaitoli, were selected from old Dhaka and the other three, Kalabagan, Modhubagh, and Monipur, were considered from new Dhaka. For the questionnaire survey sixty respondents were taken randomly from each study area. A structured graphic technique complemented by a verbal description was undertaken. Finally both the verbal and the pictorial responses of this cognitive study were synthesized and analysed. The research method being inductive individuals' perception were accumulated and generalized. Such composite images illustrate a robust representation of possible boundaries as perceived by the inhabitants of each area. A comparison of the composite images represents the inner order or the organizational pattern of different types of local areas according to the inhabitants' cognition.

Local Area Cognition in Dhaka

The research reveals that within the intricate urban pattern of Dhaka, the city is being made meaningful by naming, classifying and ordering in a hierarchy of different territorial units in anthropological cognition. There remain three different types of territorial units in the cognitive image of the inhabitants of Dhaka. They are locality, neighbourhood (i.e. Mohalla or Para) and physical parts of a local area.

In the context of Dhaka, people usually conceive larger areas with roughly defined boundaries as localities. Localities have strong agreement on their named

Figure 2 : Modhubagh locality boundary

identity and also have robust images in the cognition of the inhabitants. (Figure 1 and 2) In addition to their symbolic identity with the name, the objective social attributes (like economy, ethnicity) of the localities act as social labels to these physical areas which have distinguishable environment and ecological position defined by distinctive spatial characteristics within the city structure.

Within the localities, the neighbourhoods are conceived as relatively smaller and more intimate areas where regular social interaction take place. Indeed, neighbourhood is primarily a social phenomenon arising from cohabitation in a physical area. The English term 'neighbourhood' is commonly known as 'Mohalla' (in Urdu) or 'Para' (in Bengali) in Dhaka society. It is referred in literatures that historically both the Hindus and Muslims in Dhaka used to live in compact groups forming a remarkable system of neighbourhood organization, locally known as 'mohalla' or 'tola'. It is also stated that these old Dhaka neighbourhoods were the enclaves of caste or craft groups (i.e. ethnic or occupational groups) with a high level of mutual help and sharing within geographically defined territories.

Now a days, although the ethnic or occupational groups are not always attached to the historic mohallas of old Dhaka, the research found that the native people still use the term 'mohalla' to indicate a neighbourhood. Thus the historically renowned occupational and ethnic neighbourhoods, like Shnakhari Bazaar and Kasaitoli, are still remembered and their existence have certainly been agreed by the local people. However, some other historical neighbourhoods like 'Shabji Mahal' in Farashganj seems lost in oblivion. Although, there exist no historical evidence of occupation-based neighbourhoods in the new city, the concept of social neighbourhood, commonly known as 'para', is present here. This research argues that other than homogeneity of objective social variables (like economic status, ethnic group etc.), the paras in Dhaka actually denotes a set of people having regular social interaction (primary or face-to-face) on the basis of close co-residence in a physical area. Besides, the large physical extent of many 'localities' in Dhaka are subdivided conceptually into smaller segments by a fluid subjective boundary on the basis of their cardinal direction or noticeable differentiation. This spatial aspect is agreed as a neighbourhood at least in spatial terms; or sometimes emerges simply as a named identity with a subjective physical boundary. Thus a third type of spatial concept, i.e. distinctive parts of local areas, is emerging in Dhaka. This phenomenon is particularly evident in larger localities

in new Dhaka, which suggest that some subtle issue is taking place in the new city. The results support that the traditional neighbourhood concept is in extinction, and also suggest an evolution of a new or rather transformed concept of social space, which might attach a different socio-spatial notion other than the traditional concept of neighbourhood. Although the inhabitant's agreement on the existence as well as the physical boundary of these small-scale subdivisions is very strong, social interaction is found insignificant within these areas. This phenomenon indicates a possible transformation of the value attached to the neighbourhood concept in those areas. Considering all these, it is conjectured in this research that with the decline of social ties at local level such a spatial concept is emerging out of a human need for an intimate environment or for a sense of place, which has human reference within the large scale 'localities' in the contemporary part of Dhaka.

However, a comparison of the degree of agreement on locality and neighborhood boundaries directs to a conclusion that mohallas or neighborhoods are still the basic unit in people's perception in old Dhaka; whereas in new Dhaka localities are more prominent in cognition and neighborhoods exist subjectively as little social islands. The existence of neighborhoods and agreement on their names could be identified as a diminishing idea as the number of recognition of neighborhoods reduces in the newer areas according to their time of development. It is also revealed that the traditional neighborhoods in old Dhaka were mostly named after their occupation or caste. However, Farashganj shows a deviation from the other old Dhaka cases where many people name the neighborhood after the name of the lane or street. On the other hand, in case of Kalabagan in new Dhaka, people agree that the physical parts of the locality are neighborhoods with a named identity. However, a significant group in Modhubagh area considers the neighborhoods as a nameless identity. This transformation of social space from a named to an anonymous identity is also important which indicate subtle social changes in Dhaka.

Cognitive Elements and Morphological Character of Local Areas

This study distinguishes that the elements attached to the cognition of local areas are two folds - physical and non-physical. At the core of the understanding lies a territorial limit, which is either subjective for some people or objective to others.

This territory is focused at the centre and also bound-

ed at the edges. While subjective boundaries are present, centres are usually important landmarks or the road/ street itself, which articulates all the houses within the territory. On the other hand, when natural and man-made features break the morphological continuity they appear as objective edges.

The present study reveals that, in old Dhaka, the local features and local foci influence people many times to place the boundary along the local wavy lanes which are sometimes not physically distinct on maps. The local landmarks act as reference points and the inhabitants, particularly in smaller localities, consider the plot-boundaries as the co-ordinate system. On the other hand, in new Dhaka as local areas appear rather big in size; therefore, familiarity with local feature is unlikely. Some areas show a significant difference where arterial and local roads are mainly referred to as a boundary. Besides, a number of localities have a diffused edge being surrounded by adjacent localities without any distinctive physical boundary. However, where geographical barriers, like a canal or river, appear in close proximity people tend to refer those in some cases. The case of new Dhaka seems to be similar to the western culture where the co-ordinate sys-

by the framework of transportation.

The cognitive images of neighbourhoods are, on the one hand, a personal and unique inner representation and also show a tendency towards some norm formation and shared social and spatial experiences. All these seem to account for the agreement over the location of some neighbourhoods in Dhaka. (Figure. 3) One type of neighbourhood occurs here with a number of contiguous houses within a subjective boundary. Usually they include 20-25 plots on an average around respondents' own house. Another important type emerges where neighbourhoods extend along the individual lanes, sometimes along the dead-end lanes or part of a continuous lane which appear as isolated islands within the total spatial extent of the locality. The lanes mostly have named identity and sometimes branches of particular lanes are also included within the neighbourhood boundary. At times some landmarks, like a famous mosque, also reinforce such a local focus or the central axis. It is found that such central axis is not invariably the bazaar street as Khan (1982) described for mohallas in old Dhaka. In another type, neighbourhoods comprise a number of connected lanes.

A few contiguous houses   Along a road or lane   Along a part of a road

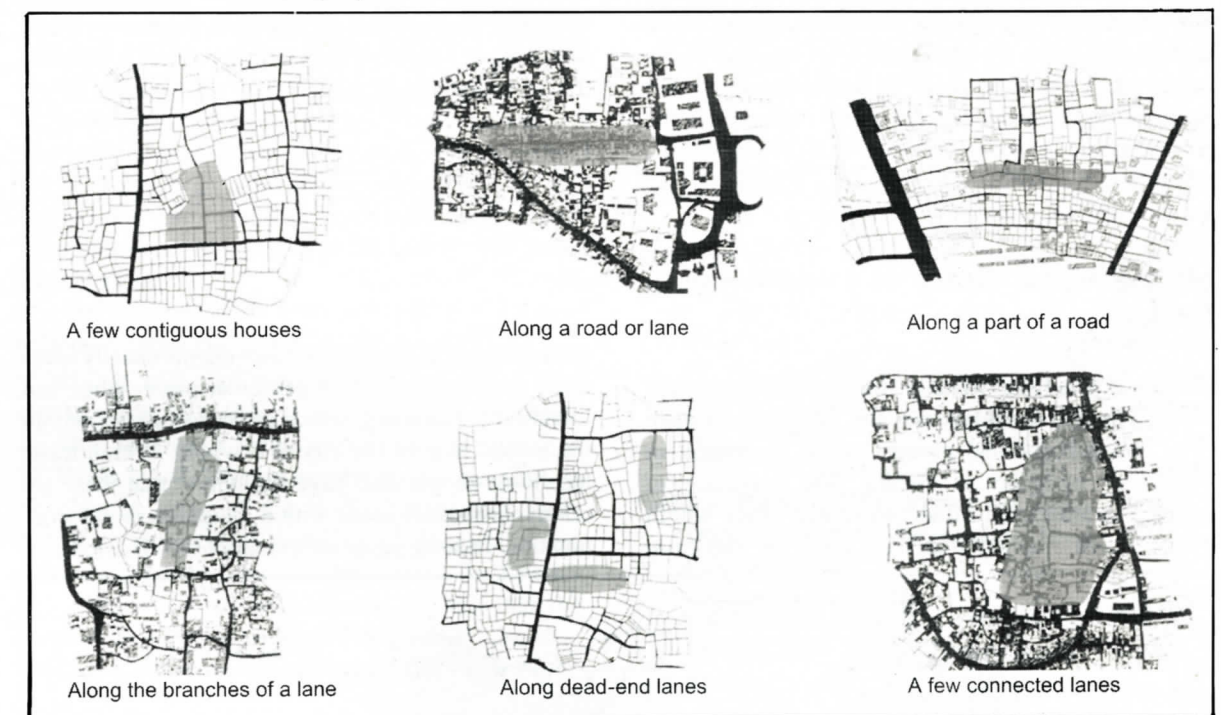Along the branches of a lane   Along dead-end lanes   A few connected lanes

Figure 3 : Morphological types of Neighbourhood in Dhaka.

tem is based on the path system (Rapoport, 1977). Thus the geographical extent of these new areas appear as 'natural areas' in Burgess' term as defined

[4] Only plots are evident from the cartographic maps. Mostly independent houses or multistoried building with a number of flats are constructed in each plot.

It also became evident that subjectively defined boundaries have a fair degree of agreement in all cases. Therefore, it can be argued that the neighbourhoods are not only centrally defined but are also defined at the edges. It is supported by Ahmed's description that historically the houses in the mohallas were usually arranged in chunks or blocks separated from each other by narrow footpaths, patches of jungle and the deep pits (Ahmed, 1986). However, the subjective boundaries of local areas found at present are not always physical; therefore, they are not isolated as the quarters of Muslim cities as described by Rapoport and others.

So far, the present study cannot arrive at a categorization of neighbourhood shape as a great variety in shap is found. However, one of the dominant groups is found to be linear in shape and others are in general usually neighbounhods dessigned by planners is determind by population size and those by sociologists are decided by number of families. fat irregular areas. Whereas the present study shows that people tend to define their neighbourhood as an area whose size seems to be quite independent of the density of the people living in it. In Dhaka neighbourhoods are mostly within 3 to 6 acres varing from with population of area 500 to 6000. On the other hand, the localities of old Dhaka are around 10 acres and that of the newer areas on average is 80 acres. However, the neighbourhoods are relatively smaller than the western examples, whereas the localities of new Dhaka (about 0.6 mile radius) are more similar in size to the western neighbourhoods.

Morphological Order of Local Areas in Dhaka

Historically, in the extremely stratified class structure of the Hindus and Muslims, the members of each caste and occupational groups tended to cohabit in vernacular mohallas in Dhaka. The existence of extreme stratification often constituted cities within cities, which implied that each caste or sub-caste

lived in separate social worlds (Karim, 1956). It is suggested that a mohalla was created out of few houses, which belong to the geographical jurisdiction of a panchayet. Indeed, mohalla was defined as a basic unit of the medieval city of Dhaka; and it tried to establish a tie between land and community (Khan, 1982). This ghetto like society seems to had had its physical imprint as an urban mosaic represented a 'folk order'.

However, Khan claims that although the mohallas were identifiable social units, they were not closed one both spatially and socially but part of larger community of Hindu or Muslim mohallas (Khan, 1982). In the early 20th century Geddes identified that two dominant communities, Hindus and Muslims, were present in Dhaka. Probably these two communities were highly segregated at that time which motivated Geddes to suggest appropriate suburbs for each, one is the old town and the other is the new (Geddes, 1917). From a historical map (Hussain, 1980), it can be identified that the Hindu and Muslim communities in Dhaka were found historically as dominant social groups polarizing towards the east and west of the city but had major overlaps close to the center. Therefore the communities here had firmly anchored territorial base, which physically represent overlaps like a semi-lattice. (Figure 4) However, a possible basis for the local area structuring in inhabitants' view is clearly identified in the present research. It emerged that according to the inhabitants' perspective, the local areas are structured on the basis of the named identity of a place, the scale of the areas or the metric size, as well as social integrity and group cohesion.

In the old city of Dhaka, the respondents usually identified the local areas with particular place- name and identifiable boundary, which are the localities within the mental map of the city as a whole. Within those localities, people also have the notion that there are relatively smaller areas with a 'neighbourhood' connotation. In some cases such smaller sub-divisions are
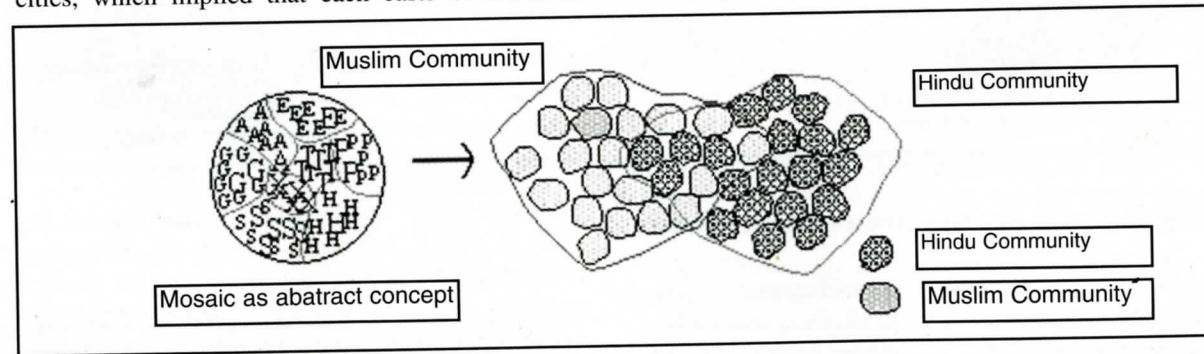

Figure 4 : Morphological Order in Historical City of Dhaka

viewed only as physical parts of localities. The results show that although theoretically modern cities need to have continuous fabric rather than a cellular one to provide possibilities of social interaction and to prevent segregation (Lynch, 1981); the cellular ideas persists also in new Dhaka at least in resident's cognition. This present study suggests that both the localities and the neighbourhoods or the parts in a local area seem to result from a fundamental human need. People identify localities as a reference or an identity in the city, which is a physical unit with named identity. On the other hand they prefer immediate boundaries at human scale, which are either perceived neighbourhoods or parts of local areas. Thus, the cognitive search reveals an order like nested hierarchy, which happens to appear in three, levels both in old and new Dhaka at least in morphological terms. (Figure 5)

groups, the structure of modern societies as well as the functional pattern of the inhabitants of contemporary cities are not confined to these spatial units as defined here as localities, neighbourhoods and physical parts. Indeed, this paper gives an evidence of 'local community' only defined by the territorial boundary, which reflect inhabitants' particular need for identity and sense of a place in a city. It extends that such spatial organization can play a positive role in social organization. Therefore, this finding seems important to define the urban development strategies for maintaining sprit of a place. Hence, an assertion of inhabitant's sense of a place with territorial definition and an unfolding of their hierarchical order in their mind would be helpful to develop design guidelines for the future built-environment in unplanned cities like Dhaka.
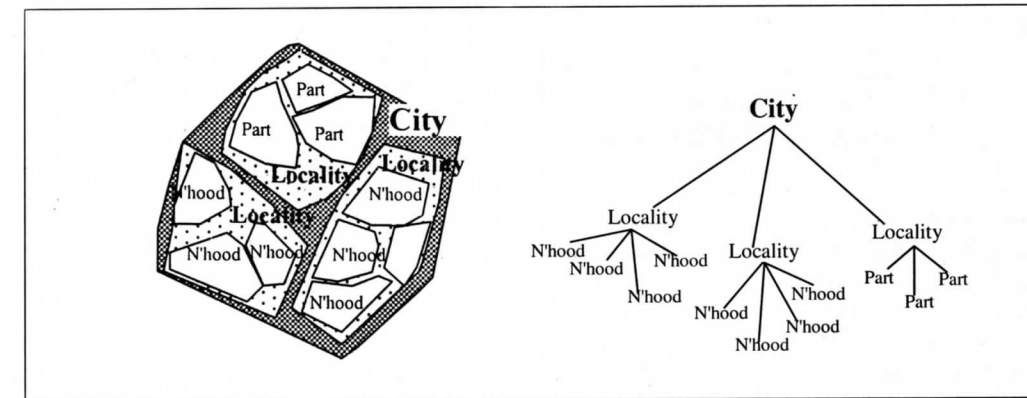

Figure 5 : A nested hierarchy-Morphological order of local areas in inhabitant's cognition

Conclusion

Both the 'indigenous' and the 'informal' urban patterns of historic and contemporary parts of Dhaka city appear physically like a 'semi-lattice' or multiple overlaps. In spite of such a visual chaos as oppose to the hierarchy of different regular spatial elements in the planned cities of the world, the present study unveils a hierarchical ordering of physical areas, which is perceived by the inhabitants. In Lynch's view such an order in one's mind is valuable than the visual order; and it helps to comprehend and deal with larger and more complete wholes (Lynch, 1981).

The orderly arrangement of localities and neighbourhoods, one within the other; and the physical parts of a locality being equal to the neighbourhoods may be an outcome of the limitation of human mind, which cannot easily encompass the complexities of a semilattice. However, it is utterly agreed that unlike the traditional closed society of caste and occupational

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