

MULTIFACETED DIMENSIONS OF URBAN FORM TO REVITALIZING HUMAN INTERACTION IN DENSE CITIES

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Abstract

Cities are the place of contested living that voiced congested physical development within its defined territory. In the era of material aestheticism, the notion of form design only brushed up physical attributes, which excluding connectivity and integrity with the human. Mere its functional qualities a permeable urban form has the ability to generate social spaces within a dense shabby environment and correlate human with its functionality instead of differentiation and separation. Alternatively, traditional cities have the flexible spatial quality to subsume activities, mass gathering. The shop-front and terraced facades are replacing by the modern typology of designed that characterized closed parking, services at ground level. The research focuses on to illustrate subjective dimensions of urban form particularly urban blocks under an analytical framework. Along with this, it has minced the field practices that have been evident since last few decades under the local and national regulations. Often the lack of concern of professionals and enigmatic behavior of planning authorities seem to be causing spoliation of the sensitivity of built-environment. The outcome of the research can be helpful for a global-level understanding of physical form under neo-liberal market condition. Predominantly, mid-sized dense cities seem a holistic detailing of form design to enable human interaction with surrounding built-environment.

Keywords: *Built-environment Human interaction, Urban form*

1. Introduction

Cities are the most complex form of spatial organization in the view of morphological terms; it also has been defined as the center of commerce that attracts people to live within its congested premises. Although it's congested growth, every year a vast majority of downtown's people move towards the urban center to ensure secured life. This continuous influx gives pressure on the physical and nonphysical layout in cities from all dimensions, such as economic, cultural, environmental, etc. The city fabrics and the settlements have been continuously impacted at different scale by this continuation. For example, urban tissues, which subsume street, street blocks, plots, etc. at small scale and to some extent the construction materials of open space, and urban block (Kropf 1996). The uniqueness of every city is dependent on a coherent relationship with these attributes. Since the mid-20th century, the physical planning sector has been given considerable attention to promoting sustainable and planned urban development.

In modern days, the physical layout of cities constitutes under the mandate of the master plan, which initiated in the early 20th century to secured urbanization and ameliorates built-environment. At city scale, the urban form influences the morphological dimension that plays significant role in achieving social sustainability. Scholars from different disciplines have been defining urban form by using distinct lenses, such as, according to *Kevin Lynch*, urban form means large spatial pattern and permanent physical objects of cities in relation with size, density, and its grain. The spatial pattern of the city largely varies by the morphological pattern, such as linear or corridor, regional, etc. However, the correlation between the physical pattern of forms and physical activities are the key to produce manageable cities from a sustainable perspective. To satisfy the functional and environmental needs, the concept of the compact city came as a mode of spatial organization that reduces travel distance, effective to adapt climate change, and promotes congested living to ensure comfortable life. Many conflicts and debates have found in many literatures about its long term effect. Many indicators have identified to reduce this, such as, permeability, legibility, functional usability, connectivity, density, etc. are common attributes to tie the people to things and the people to people, and *Ali Madanipour* (2010:352) emphasized in understanding the connective activities of planning by time and space.

During physical planning of individual street block priorities given on inhabitants need, but the design is rarely reevaluated its performance to achieve the objectives that were set. In traditional cities, the social mix promotes the diversity that enables human interaction in a different form, however, the debate on social diversity often politically fraught (Bacon, 1974). Additionally, the emergence of modern technologies has impacted the living pattern through generating concentric and individualistic development. In recent days, along with academics, private sectors also participate in understanding the city form, and find the processes that allow social diversity and social mix to produce a lively environment.

The study can give criticize on the design evolution of urban form where the urban block in particular in the context of developing countries and bring forth the factors that actively responsible to generate an introverted and typified physical form. By reviewing local planning policies of the study area and several empirical studies a framework has developed to measure the role of urban block to generate human interaction in dense areas. It also figures out the current debates on modern planning and traditional pattern of urban growth.

2. Urban form and sociability of space

In particular, 'urban form' is very popular term in many fields to describe the physical characteristics of an area by its size, shape, configuration, etc. where scale directs the process of analysis and illustrations. The openness quality of these physical forms offers people to engage with communal life and make a sociable space. Since few decades, the in-between spaces of neighbors and streets have been gained much attention in social science literature to comprehend human interaction with the surroundings. Numbers of analytical approaches develop to study urban form, spatial configuration and the human interaction at local scale; space syntax considers as one of most using method in urban design to study and improve the built-environment quality. Already, it has been observed that improved physical condition may have power to promote mass gathering, increase time spent of inhabitants where the blocks, streets, buildings play active role. The spatial arrangement of urban form contributes at morphology level, although, at localized scale but instigate all type of street side activities, such as, necessary, optional and social activities.

On the other hand, sociability of space indicates a kind of capacity to accommodate diversity that ensures people's participation in those activities. According to Henri Lefebvre, every society has a sort of uniqueness to produce own spatiality through both social practices and material conditions. Mobility is a crucial variable to measure the sociable character of space. The permeable space links this everyday task and transforms this space into a social space. Social interaction is the utmost to make the life healthier and happy. In today's hybrid city, the wireless community is developing due to excessive use of network where social safety means the using of cameras that ensure surveillance. In recent days, people like privatization, individualism rather participating in group activities, while high brick imperforated walls, metal gates and other barriers are using to protect physical territory. Social disorder is common in this type of gated community.

Alternatively, livability, interactive quality of spaces is influenced by the surroundings and its locational features from both tangible and intangible views. Sense of security and safety ensures the public participation, and consider as prerequisites to make lively urban environment while density has also impacted behind this vitality.

2.1 SPATIAL TRANSFORMATION OF URBAN FORM

The 19th century is known as the breeding time for industrial capitalism that brought up socio-economic changes in society, which directly affects the spatial transformation of urban form at a macro scale and urban block at the micro-level. As like developed countries, the morphology and typology has also been influenced by the market in developing regions. The traditional pattern of spatial arrangement has been replaced by the modern approaches of planning which have strict regulatory framework to control the

expansion. With time, those planning methods were futile to fulfill the dynamic needs of society and humans come to rearrange their spaces from own needs. Vibrant social spaces are rarely found in today's design human settlement at broader scale, and also in spatial arrangement of street blocks, plots or buildings. In that case, socio-cultural understanding of formation of urban form can contribute to revitalize urban vitality.

Particularly, this study elaborates and contends the role of urban blocks to increase social gathering and influence human interaction through providing services. Urban block can play meditated role to connect the social and spatial system. Unfortunately, today's urban blocks are unable to promote social gathering due to its rigidity of planning, enclosed boundary and lack of spatial permeability towards outdoor space. In traditional method people design based on needs rather following any typology and the layout varies usually. These variations have an impact on pedestrian movement by its flexibility, permeability, accessibility, etc. Jan Gehl (1980, 1987) mentions three types of activities generate at adjacent of pedestrian, those are necessary activities covers the everyday tasks, optional activities occurs if the time and place give a good environment and the social activities is the resulted of those two. But, the continuation of modern practices and capitalist market influence the shaping of plan and the form of building.

3. Methodology

The shaping of urban structures is guided by planning policies of local government primarily, market forces, the vision of the professionals and clients, etc. Two streets of Khulna, one has been grown organically and the other planned by the development authority, has selected to understand the relationship between the urban block and human interaction. Additionally, some individual building blocks have taken by their age of erection to illustrate the spatial transformation at the planning level. Spatial mapping, physical survey, informal discussion with professionals and stakeholders, photographs applied at field level to collect data.

4. Study area

Khulna is one of the fast-growing metropolis from the southern part of Bangladesh, and the 3rd largest city is being achieved the popularity in recent days for living due to infrastructural developments. The city has been expanding dramatically since last decade due to economic flexibility and living condition while the growth is taking place under a comprehensive master plan. The first master plan introduced in January of 1961, but the majority of physical structures do not follow the regulations properly while constructed, alternatively the master plan sometimes unable to meet the needs of dynamic physical growth.

In recent days the concern on social space in the field of physical planning is increasing rapidly, and the planners seek an idealistic approach, which can be flexible to cope with changes in societal needs. The land use has been grown organically at the very beginning that offers much diversity at planning and three-dimensional levels. Unfortunately, the modern approach represented a reverse that is not suitable for this context.

5. Assessing framework of Urban Form

Studying urban form is the key to make the cities more comfortable for living and to maintain a cohesive societal relationship. Jane Jacobs, an influential activist from America had emphasized on the heterogeneous character, small blocks, and the mix of aged buildings, which are responsible to make an interactive environment (Jacobs, 1961). Additionally, mixed-use development influences the vitality of life by opening up the options to users, she added. The thought of Jacobs influences the social issues of space, however, *Kevin Lynch* (1981: 47), identified the factors which control the spatial arrangement and integrate the objects with activities (ref). The interrelationship between these attributes opens up another term, 'urban diversity'. On contrary, the disciplinary perspective takes the scale as the base

indicator to describe urban form as a whole. Urban geography and urban architecture generally synthesises the urban form at detail level that contributes to development of urban planning and design. The study takes several empirical articles as a reference to identify the dimensions responsible for enhancing human interaction; however, an analytical framework has been formed to evaluate the space making the role of urban form. Multi-dimensional qualities of urban form tie up human behavior and spatial characteristics to ensure cohesive societal development. Multifaceted characters, mainly the subjective qualities have assessed by (Functional, Spatial, Temporal and Natural) these four dimensions with some indicators.

Dimension	Functional	Spatial	Temporal	Environmental
Indicator	Mixed use Diversity	Flexibility Accessibility Permeability Liveability	Visual image Aesthetic view	Open space Vegetation

Figure 1, Framework for assessing urban form (Source: Omeir, 2017, Ghaedi & Mahdavinia, 2014)

5.1. FUNCTIONAL DIMENSION

The efficiency of space depends on the quality of its workability and how it provides services to the users. Functionality is the prerequisite to increase spatial efficiency, Jane Jacobs, emphasizes the heterogeneous character where mixed-use and diversity plays a vital role to make the vibrant gathering. These attributes are not only influenced social gathering but also ensure the active participation of different social class in the assembly. In both ways, this diversification helps

In most cases, the mixed-use quality evokes different types of land uses which are directly connected with the human needs and ensure active sharing within different stakeholders. From the definition about the urban form of *Kevin Lynch*, the first studied area *Nirala no.1 road*, shows different land uses that have been being developed since last two or three decades. Figure 2, presents diversified functions have grown to satisfy the users. Initially, the area was developed as residential purposes which have been transforming into a mixed land use zone through time factor (Figure 2a). At neighborhood-scale, the functional diversity provides services to dwellers all day long that make the area more vibrant at a different time of the day. Particularly two major crowding develop at *Nirala no.1 road*; one is at early morning where people come to buy fresh vegetables which have grown at the pedestrian level. On the other hand, during late afternoon some other services, such as roadside snacks, moveable seasonal fruits have developed. Along with these, coaching, individual doctor chamber, grocery shops have generated at the ground level of the buildings that make bridge connectivity between neighborhoods to the neighborhood.



Figure 2, The left one showing the land use of Nirala (a portion) and right one showing land use of 2nd phase of Sonadanga (Source: Authors constructed)

An alternative scenario has found at 2nd phase of *Sonadanga* residential area, although, both areas have been developed by Khulna Development Authority under the constitution of site and service scheme. Due to the location in respect of the city, the land price is growing tremendously since last decade which does not allow different social class. A recent study shows that mostly the upper-middle class and middle class can afford this living cost of *Sonadanga* and these categories have a similar choice about the spatial level which reflects by way of their living. Only a few diverse functions have developed, which are not sufficient to attract gathering (Figure 2b). Mostly those functions are being developed by the own interest of the owner, although the development authority does not permit mixed-use growth in a planned residential area.



Figure 3, The ground floor is using for different purposes based on community needs, (Source: Authors constructed)

5.2. SPATIAL DIMENSION

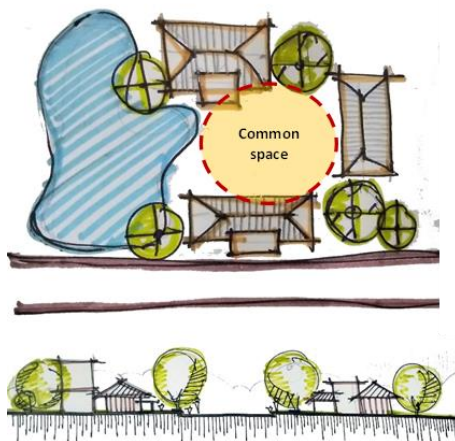


Figure 4, The layout (top) depicts blocks are sharing a common place for gathering (bottom), (Source: Authors constructed)

At settlement and individual plot level, the layout of urban form plays a pivotal role to increase the vitality of the space, and ensure active participation of users throughout all day and even in the night. These characteristics of spaces allow all age group to unfold their communal life and stimulate interaction between diverse social groups. Flexibility at the spatial level implies the degree of opportunities to the inhabitants to inhabit in diversified ways. At settlement level study area, *Nirala* no 1 road, shows that varied functions, such as grocery shops, pharmacy, educational coaching, doctor's chamber, etc. have developed to serve the entire dwellers of this residential area and outsider as well. Besides this, many street vendors also generated at the roadside which directly affects to tie up diverse social class. According to emphasized on this flexibility which is ideal to make an active public space that open to all to exercise their activities.

The opposite character has been evident in *Sonadanga* 2nd phase; mostly at settlement level the area is unable to produce an active environment due to fewer types of functions. The everyday spatial practice depicts their pattern of living and choices, and mostly a certain income group avails this cost of living. Although some functions have developed unable to encourage people to gather due to the absence of a

diverse social group. The absence of diversity also does not meet the needs of different age group, similarly; (figure 5) shows a common pattern of layout makes the area more monotonous. Mixed-use ensures the accessibility of different aged group, such as, adolescent, working people, retired, etc. that produce an active place in different periods. In urban place making this crowding is vitality ensure safety and security of a place which exists in Nirala no: 1 road. The vibrancy averts crimes, social unrest and increases social surveillance that implies a key indicator in designing public realm, however, is significant to welcome all social groups to participate in diverse activities.



Figure 5, All blocks (*Sonadanga*) are showing same kind of monotonous façade and spatial development (*Source: Authors constructed*)

Regardless of, the permeability of space at settlement and plot-level enhances human interaction because of its transparency. This quality exposes the inside happenings to the outsider and merges external activities with indoor spaces. The layout of the ground floor and the mix of functions extend the indoor space to outside space that produces a harmonious relationship with surroundings. In *Sonadanga*, most buildings have a similar type of functions at ground level that brings monotony in the built environment. Mostly, an identical high boundary wall constructs outside of the buildings to ensure security, although it works as a separator. These settings generate social disorder between social class and unable to produce a liveable environment.

In the traditional method, the urban blocks always were maintaining a central place that used for social interaction and several activities performing at different times of the day and night (Figure 4). The openness, permeability, accessibility of this space allows all social class to ages people in the gathering, but in present urban blocks are aligned with focusing on the road only. In that case, roadside activities enhance by the connectivity with the ground floor and front façade of the road. Unfortunately, today's street blocks are introverted, which could not make any dialogue with this roadside scene.

5.3 TEMPORAL DIMENSION

Temporal dimension connected with visual attributes of the physical object. In modern era, the professionals were concerned in functional layout and the usability of spaces, although some argued that the modern form (physical) derived from needs of users. In recent days, experts are working on physical fabric from city and neighbourhood scale, however, *Collen 1996*, talked about the language between forms and surroundings, which he called as 'art of relationship'.

In urban design field, the experience of spaces is deeply interconnected with the human perception about place. Sometimes the physical fabric brings nostalgic environment to dwellers. The paths, nodes, edges are also crucial to widen legibility of space and extend the spatial practice. The survey shows similar elevation treatment from architectural perspective and common materials have used for finishing work at front side of the buildings from both *Nirala* and *Sonadanga* area (figure 5). Most of the buildings from both areas are aesthetically rich but people do not feel comfortable to spend time due to its massive scale and spatial quality at 2d level, alternative scenario has found in some structures that are grown organically. *Lefebvre*, defines this space as a social product.

As a whole, the visual image/transparency works as catalyst behind human interaction where colour, finishing materials, openness are significant variables. In some cases, aesthetically pleasant buildings

have extra monetary value that also influence people's gathering, along with, front side terraces improve visual permeability and makes the buildings as part of surroundings.

5.4 ENVIRONMENTAL DIMENSION

Green spaces are inexorable for designing good public spaces that welcome inhabitants to gather and spend quality time. It not only improves the societal relationship but also important to maintain environmental coherence within the city. Besides the park and large open spaces, the front greenery at plot level contributes to the community level in many ways. Most of the buildings in *Nirala no:1* have small green spaces at the front side, and importantly this space visually and physically permeable (Figure 6). A low height wall or railing constructs to protect the trees from the animal. These types are influential for promoting human interaction.

Although, buildings from the present time do not keep open space for maximizing spatial usability, on the other term, capitalize the monetary value. Specifically the real estate companies take advantages from land, even violates the construction rules and regulations during construction time. Absence of open spaces brings monotonous built environment at plot and settlement level. Similarly, the vegetation types impact on human psychology



Figure 6, Road side vegetation promote the human interaction and mass gathering (*Source: Authors constructed*)

and promote human gathering. Dwellers prefer to plant flower trees to embellish and make the structure as part of the surroundings. Roadside trees, particularly at pedestrian level, accelerate the everyday spatial practices at a different time of the day and night. Different aged and social group gather to take rest, for gossiping or playing that makes a lively environment, (Figure 7).

6. Discussion

Field survey and discussion with stakeholders was the key for this research. Different types of data have collected and analyzed by using different methods. After that, a discussion has made based on these below,

6.1 PLANNING APPROACHES, REGULATIONS AND AUTHORITY

As like other cities, in Khulna the physical growth, urbanization has been controlling by the development authority, named Khulna Development Authority (KDA) since 1961 under a comprehensive master plan. From the beginning of introducing car-centric planning, approaches are not suited with this traditional city and failed to produce liveliness at the neighborhood level, albeit, the traditional way of making space attracts the people to participate in diverse spatial activities. At ground level, a shop designs to serve the community and make the pedestrian more active.

The construction rules and regulations are only emphasizing on building height and road width, which is futile to make hierarchical spatial order. Even though, the survey shows maximum house owners do maintain the construction rules properly, rather convert all remaining area with paved surfaces which kept for open green purposes.



Figure 7, Permeability of urban form makes the environment more amiable for spending leisure time (*Source: Authors constructed*)

6.2 PROFIT CENTRIC CULTURE

As mentioned earlier, the profit centric approaches of KDA promote a typified build form, and population growth has impacted unplanned development. Last 12-15 years the land price has been escalated 3 to 5 times in respect with regular price, as a result, land developers take maximum advantages while planning for selling of property. Based on the area, such as, Sonadanga, Nirala, Boyra the price of per square feet of floor varies immensely from 3500-6000tk that works behind the development of distinct social class in an area.

As a result, every square inch is very important real state companies form profit, where parking at ground floor also kept for selling. KDA emphasizes only in making of plot and road, rather considering individual urban block as production of social spaces.

7. Conclusion

Today's cities are the most complex area of living that has been continuously expanding through urbanization and infrastructural development. Absence of proper management and human-centric planning approach makes this congested living more critical. Large open space, green area, sociable environment all are missing in today's urban area, although, those had seen in traditional cities which has been generated by the everyday spatial practice of people. To ameliorate the present urban living and improving human interaction the connected disciplines are working together, such as the field of architecture extends their concerned from design and construction of the single building to the community and whole city fabric.

In this complex living, the urban form is a subtle part but it plays a crucial role in making sociable built-environment, where a commonplace connects both subjective and objective qualities of life. Study of the present spatial pattern of urban form reveals critical insight about current growth and particularly the modern typology of building the fabric. Mostly, professionals from different field are also responsible behind packed growth of urban form with the unfriendly built environment. Most of them emphasize the physical fabric at individual plot level rather considering subjective aspects and social attributes of community which interwoven strongly.

Alternative scenarios have found in traditional build form, owner consciously design according to needs that capable to generate social gathering, and in the dense area, this shop and front terrace spaces are animating social life all the time. Vitality is largely dependent on the density that makes the area a liveliness character, where diversity, mixed nature of space, facilities, and options are an integral part. In the last decade, the physical development in Khulna has appeared as a threat from the socio-spatial and socio-cultural continuum. Although, density is an obvious fact for present cities while a combination of cultural components of community and human behavior pattern with physical structures can produce a sociable built-environment.

8. Citations and References

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