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**Transformation of traditional urban spaces and its impact on quality
of life: A case of Mahabouddha, Kathmandu**

By

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DECLARATION

I hereby declare that the thesis entitled “**Transformation of traditional urban spaces and its impact on quality of life: A case of Mahabouddha, Kathmandu**” submitted to the Department of Architecture in partial fulfillment of the requirement for the degree of Master of Science in Engineering in Urban Planning, is a record of an original work done under the guidance of Dr. Kirti Kusum Joshi, Institute of Engineering, Pulchowk Campus. This thesis contains only work completed by me except for the consulted material which has been duly referenced and acknowledged.

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ABSTRACT

Urban change is a global phenomenon with widespread consequences on urban form and life across all geographical regions. Kathmandu valley has also not been immune to the global forces of urban change. Traditional urban spaces in the valley are degrading rapidly which is hindering the quality of life and social well-being of people. This research aims to analyze the transformation in the traditional urban spaces and its impact on the quality of life of people.

Traditional neighborhood of Mahabouddha is chosen as a study area. The research is conducted under pragmatic paradigm and uses both qualitative as well as quantitative methods. Perception survey was carried out at study area for quantitative methods, while literature, historical photographs and maps were studied for qualitative method.

The research concludes that transformation from low rise high density to high rise high density have made the lower floors of the buildings along with streets and courtyards very unhygienic as it barely receives sun light and proper air flow. Incompatible single uses such as parking have greatly reduced functionality of the public space. Hence controlling mechanisms for the physical transformation, restriction on inappropriate uses and management of commercial activities is essential for the traditional urban spaces to retain in functional quality and inherited spirit, ultimately improving the quality of life of the inhabitants.

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CHAPTER 1

1.1 Background

Cities are part of larger society that their spatial form is inter-related with the economic, social, cultural, political, and environmental structure of the society. History of the development of cities is the history of humankind. And every time at the new turn of development of civilization new demands of city residents emerge whose satisfaction engender transformation of urban space. The evolution of physical and electronic means of communication between locations, and rapid mobility, has transformed the urban form in modern times (Carmona et al. 2010). And it is natural, that urban planners and architects face new problems every time searching for the effective design solutions of urban development under the conditions of limited resources (economic, human and natural) that would most fully satisfy expectations and needs of the population.

Urban change is a global phenomenon with widespread consequences on urban form and life across geographical regions. Most of the traditional urban neighborhoods all over the world have suffered from a clear shift in planning and design characteristics, functional and behavioral aspects and even economic and environmental performance from traditional to modern. Traditional urban spaces have been contemporized coercively, because the acceleration in the functional and the technological variables are flowing more rapidly than the adaptability and acceptance of traditional space. Although the controlled mechanisms can result in positive transformations, uncontrolled transformations have damaged and deteriorated the inherited values and also made it difficult to achieve good performance of contemporary requirements (Hassan, 2018). These uncontrolled transformations have altered traditional street culture, eroded a sense of local identity, and created unusable urban spaces, raising major questions about the responsiveness of such spaces with people's needs and aspirations.

The Kathmandu city retained its medieval character until pre-modern period but the onset of haphazard urbanization since the political change of 1950 brought

tremendous changes. The historic city core of Kathmandu comprised of unique arts and architecture amidst vibrant culture, tradition and ritual practices. Its traditional compact planning boasts a fine provision of public spaces in their neighborhoods. Historically, a hierarchy of public space has been distributed over the entire town with each neighborhood. But today, this spirit is missing due to its deteriorating spatial quality. Traditional urban spaces of Kathmandu have mostly lost its characters and their basic components that maintained the cohesion and harmony. The degradation of urban space may have impacted the quality of life and social well being.

The quality of life (QOL) is considered important to determine the livability of an area. The concept originated from the west, and over the decades, the efforts to study the QOL has expanded to the developing countries. An overlooked dimension of quality of life is its relationship with transformations of urban space from the lens of urban planning. The change in urban space can serve as an indicator to several variables, such as land use change, population, infrastructure and environment (Carnahan et al. 1974). This research is aims to shed light on the spatial dimension of quality of life as it can assist the policy makers and practitioners in improving the balance between urbanization and living environment in the historic core of Kathmandu.

1.2 Problem Statement

Urban change is a global phenomenon with widespread consequences on urban spaces and life across geographical regions. Kathmandu Valley, the cultural, economic and political center of Nepal, has not been immune to the global forces of urban change. Following the political change of 1951, the valley was open to migration from other parts of the country and was exposed to globalization (Basyal&Khanal, 2001). This resulted in rapid and diverse growth of population and transformation of urban structures in the historic core.

Since 1950s, the historic city core of Kathmandu is undergoing rapid urbanization. Urbanization and migration in Kathmandu valley is growing in an exponential rate. This has led to the transformation of urban spaces in historical, political and structural context. The transformation has led to the loss of spatial relation, linkages and

accessibility that used to exist between buildings, monuments, spaces and people. Due to increased globalization of retail trade and industries, the city core is attracting more investors, consumers and immigrants. The current trend of precedence of economic interests over traditional values is changing mentality and values of society. Commercialization has posed some serious threat to traditional urban fabric as it has caused drastic changes in land uses, functions and cultural values.

A problem central to this research is the transformation of traditional urban spaces and its impact on the quality of life and social well-being. The transformation has led to loss of spatial relation, linkages and accessibility that used to exist between buildings, monuments, spaces and people. With this modernization, the traditional infrastructures are being treated as mere aesthetic objects and lost their functional value. Like once functional rest houses and common water systems are losing their significance in today's modern society. The original diversity of urban fabric and activities is gradually disappearing. Traditional urban spaces are degrading rapidly, undermining the urban morphological character. The need for new buildings, broader roads, high market value of land and the urge to copy other developed modern cities are threatening the traditional structures even more. Their legacy of sustained urban life and environment with unique socio-cultural, ecological and communal characters has gradually faded from the people's mind. Now, many people regard traditional space and values as a hindrance to their modern life.

The high-rise buildings over the traditional buildings, encroachments, illegal construction are turning traditional urban areas into slums, drastically reducing the quality of life (Ranjitkar, 2006). The pleasant surroundings, the traditional urban landscape and traditional functional monuments are being demolished for the sake of new things. The degradation of traditional urban spaces is not only hindering the quality of urban life but also social well-being. People are deprived of places where they can meet and interact with neighbors. The level of social interaction has reduced dramatically, and a sense of community is deteriorating. This has negatively contributed to isolation, feeling of low confidence and fear among residents leading to neighborhoods being less hospitable for humans to live, build a family and develop a community. Furthermore, indigenous people who used to live in the

traditional towns are now migrating outside the traditional town boundaries for the bigger and modern house. This also leads to weaken the ties with the place and the community and has a significant impact on the continuity of intangible cultural heritages, as younger generations could not feel the traditional ties (Toffin, 2008).

The regulatory bodies are unable to cope with the consequences of such growth resulting in transformations of urban structures including public spaces. These negative consequences cannot be addressed through the existing legal and institutional frameworks of the urban development and traffic management authorities. Moreover, there is lack of research to explain the nature of changes in traditional urban spaces and its impact on the subjective wellbeing of people.

1.3 Need of a research

As previously indicated, the past century has witnessed severe consequences regarding quality of life due to spatial and social transformation of cities at a global scale. While a growing number of studies in the west have attempted to address these problems, the issue of changes in neighborhood urban space has failed to receive adequate attention in the developing countries. Majority of the previous work in this regard has been conducted at a broader scale and the QOL at a detailed scale has not been examined. The perception of QOL varies across regions, countries and even cities (Sirgi& Cornwell, 2002). In addition, an overlooked dimension of QOL is its relationship with the transforming urban space from the lens of urban planning. The evidence for connections between quality of life and spatial factors remains inconclusive, especially with respect to the immediate living environment. Since the transforming urban space can influence several variables of QOL regarding the physical environment, examining its relationship with the QOL is very critical. This research thus acknowledges the need to look at the issues of urban change and its impact on quality of life from the contextual point of view and place specific perspectives. The contribution of this research is to shed light on the spatial nature of quality of life by studying the relationship between the transformations of neighborhood urban space and quality of life.

1.4 Importance of a research

The research is important because it attempts to fill the gaps and examines impact on the quality of life due to the transformation of traditional urban neighborhood. The research findings may assist the policy makers, urban planners and designers in addressing growing problems of degrading quality of life due to urban change. The findings are also likely to contribute to devising “copingmechanism” for the adverse effect of change, and may be extended to similar traditional settlements in Nepal or other geographical regions with comparable characteristics.

1.5 Research purpose

Traditional settlements of Kathmandu valley responded to the nature, economy and social relationships however in the modern times as the technological variables are moving more rapidly than the acceptance and adaptability of traditional space, the balance between the economy and social relationship is affected. Current trend of precedence of economic interest over traditional values is degrading the spaces along with the quality of life of inhabitants.

Majority of previous work on quality of life has been conducted at broader scale, quality of life and its relationship with transforming immediate environment has been mostly overlooked. The main purpose of this research to know the extent to which quality of life has been affected by the changing environment and also to come up with mitigation measures to improve quality of life.

1.6 Research question

How have the traditional urban spaces transformed and how it is impacting the quality of life of inhabitants?

1.7 Objectives

- i) To analyze the spatial/morphological and socio/economic changes in the traditional urban spaces.
- ii) To understand and analyze the perception of well-being and its relation with the transformation of immediate environment.

1.8 Expected outputs

Throughout the research, many variables are expected to be discovered that affects quality of life with its relation to change in urban environment. Both the variables obtained from the literature as well as the perception survey of the inhabitants would be considered to form the output statistics. The degrees of learning from them would also be compared with the observations as well. Finally the consolidated variables output would provide determinants and the degrees that transformation of urban space is affecting the quality of life. Such a study could assist a lot more researchers planning to build a better neighborhood in municipal level.

1.8.1 Scope

The scope would extent in terms of both the tangible as well as intangible changes in the urban environment including their impact on the quality of life and social well-being of people. The tangible aspects would include changes in land use, buildings and open spaces while the intangible aspects would include usages and perception of those spaces as well as social cultural aspects. The study identifies the relationship between those changes and the quality of life through environmental and social dimensions. The study also emphasizes on finding the mitigation measures to improve quality of life in traditional settlements.

1.8.1 Limitations

The study of the impact of transforming traditional urban environment on quality of life and its mitigation measures is a vast field with many dimensions, which cannot be covered by a single research. It is assumed that the research will pave way for other researches in this area. The study is limited in terms of time constraints, so the research has been limited to the case study area, total population of the study area was not known so study was limited to perception survey at the study area and interviews with the key personnel. In addition, the research only focuses on the spatial and socio-cultural dimensions of quality of life, so individual dimensions such as physical health, psychological health and economic dimensions such as like level of income, employment savings etc are not considered.

CHAPTER 2

2.1 Choice of Methodology

A methodology refers to the philosophy and framework that are fundamentally related to the entire process of the research. The choice of research methodology is based on aim of the research, epistemological concerns, norms of practice of the researcher and other previous work done in that particular topic (Buchanan & Bryman, 2007). Mackenzie and Knipe (2006) argue that methodology is the overall approach to the proposed research linked to the paradigm or theoretical framework to be used, whereas the method refers to systematic modes, procedures or tools used for the collection and analysis of data. A scientific paradigm is a framework containing all the commonly accepted views about a subject, conventions about what direction research should take and how it should be performed.

First objective which deals with the transformations of traditional public spaces, although the spatial transformations of a place could be more relative socio/economic transformation is more subjective in nature. Quality of life deals with the people's perception of well-being and its relation with immediate environment. It is 'a person's cognitive and affective evaluations of his or her life' (Diener et al., 2002, p.63) and is highly subjective as it could vary depending upon person's personal feelings and opinions. So epistemologically the first objective stated needed to be studied within post positivist paradigm. Post positivism focuses on researching issues in the context of involving experiences of the majority and announcing the results of what majority says is acceptable (Wildemuth 1993). It promotes the triangulation of quantitative and qualitative methods that explores the diversity of facts researchable through various kinds of investigations but respecting and valuing all findings as the essential components for the development of knowledge (Clark, 1998). Moreover, interpretivist/ constructive research could be carried out for the second objective. This would be based on the world of human experience just like Cohen & Manion (1994) suggests. In this sense, it is a modified realist ontology that believes the quality of life is composed of people's experience across the entire neighborhood where the study is carried out. The researcher here needs to see the facts of quality of life through the eye of the occupants of the case study area.

Phenomenology in this context studies the conscious experience as experienced from the subjective or user's point of view.

2.2 Research method

According to (Chava& David, 1996), research method is the blue print that enables the researcher to come up with solutions to research questions and problems, and guide him or her in various stages of research. Designing a study helps the researcher to plan and implement the study in a way that helps him / her obtain the intended results, thereby increasing the chances of obtaining information that might be associated with the real situation (Burns & Grove, 2001).

This study combinesthe use of both qualitative and quantitative methods. The qualitative aspect helped the study to interpret relationships between the study variables. The study was descriptive/qualitative because it will comply with the characteristics of descriptive research (Creswell, 2012). On the other hand, the quantitative method helped to know the comprehensive experience of the topic under study. It also helped gather more information quantitatively of what has been learnt from the other sources.

Quantitative data was easy to interpret and analyze. It helped in getting responses of the similar questions mostly closed ended from a large sample and those responses are qualified for conclusion to be drawn. This was quantitative study since it was concerned with the numbers and frequencies within which quality of life is associated with the transformation of urban environment. Survey strategies were used in gathering the necessary information which helped meet the objectives of the research. Survey method is an attempt to collect data from members of population in order to determine the current status of that population with respect to one or more variables. The research is done by asking questions to large groups of people (Holmes, et al., 2000).

Descriptive survey research method was used in this study. It is usually used in preliminary and exploratory studies to allow researchers to gather information and summarize, present and interpret data for the purpose of clarification (Burgess, 2003). They are useful for describing, explaining or exploring the existing status of two or

more variables (Mugenda&Mugenda, 1999). The survey design will be convenient since the researcher will use questionnaires as a tool of collecting data.

2.3 Data collection

Data was sourced from both primary and secondary data sources. Primary Data for the research was collected using various instruments such questionnaires, interview schedules, checklist and observation guide. Secondary data sources included; journals, articles, publications, maps and internet sources among others. This data will explicitly focus on the morphological and socio-economic transformation of the study area and its impact on the quality of life of people living there.

2.3.1 Primary data

Questionnaires

According to (Mugenda&Mugenda, 1999) questionnaires give detailed answer to complex problems. Additionally, questionnaires are also a popular method of data collection because of the relative ease and cost-effectiveness with which they are constructed and administered. Questionnaires give a relatively objective data and therefore, are most effective. The study used questionnaires which were administered to sampled population of residents of Mahabouddha estates to determine impact on quality of life due to urban transformation. The researcher will therefore prepare questionnaires for the sampled population. The information given by the respondents would be used to understand to what extent the quality of life is affected by the change in urban environment.

The wording of the questions, the options provided, ordering the sequence of the questionnaire were the most important parts to facilitate the interview. This step included initial questionnaire design, consultation with the supervisor, revisions and further consultations with the expertise, add-ons after review from the site constraints and more revisions after the pretest of questionnaires. Both dichotomous and ordinal scale was used for the questions. A three pointer Likert's scale was mostly used for rating the satisfaction levels and the reasoning was followed up for the satisfaction level

Interviews

An interview schedule is a set of questions that the interviewer asks when interviewing the respondent (Mugenda&Mugenda, 1999). An interview is a flexible and adaptable way of finding things out. Interviews generally yield highest cooperation and lowest refusal rates, offers high response quality and it is multi-method data collection that is it combines questioning, cross examination and probing techniques (Owens, et al., 2002). In this study, key informants were first identified and then interview guides were used to solicit information from ward chairman, ward members, members of the local club, members of the local guthi, local leaders to help understand their perception of urban transformation in the area and whether or not it is impacting the quality of life, their aspirations regarding the area is also discussed in the interview. With this data the researcher was able to understand the change of the urban space over time.

Observation

Observation is the process of collecting data directly by seeing, hearing, smelling and testing things as they occur in the real life situation (Bowen, 2009). Through observation, the researcher validated verbal reports by comparing them with the actual behavior. The study was able to observe the usage of the open spaces as well as other factors that cause misuse and disuse of the spaces such as pollution, congestion, haphazard parking, lack/inadequate of amenity, encroachment, poor maintenance among others. The study had a checklist to provide information about the actual condition and behavior to be observed on the open spaces and note the observations.

Mapping, Sketching and Photography

Historical maps are studied and overlaid with the existing maps to understand the change in spatial layout overtime. Old Photographs and sketches of the area were taken to understand the physical changes and the change in usage of the spaces.

Secondary data

Documents Analysis

Available materials and information from books, journals, articles, magazines or newspapers which added more information to the study were collected and studied. The information sourced focused on looking into the transformation of space and the parameters and elements of quality of life in context with the changing immediate environment in the Mahabouddha area.

CHAPTER 3 (LITERATURE REVIEW)

3.1 Urban space

City is the most comprehensive and complex entity created by human civilization. The city to be an urban place, as a place, which had taken the celebration of the civilized society, has to be acquiring the quality of urban or urbanity (Panditharathene, 2000). Urban spaces are those outdoor spaces that are among the buildings and allow communication, transit and social interaction of the inhabitants within the city. Urban space is the main tool integrating a city. Urban spaces are shared by the city-dwellers and various users, it consists the activities taken place and interwoven nature of activity patterns and serve as the environment in which they convey and relearn cultural accumulation. It is in the urban spaces, where the inhabitants perform important activities of their daily lives, shedding of public way past events, present and future, which marks the history of the city. Moreover, in the context of defining the urban environment city-dwellers acquire the experience of being a city-dweller as a consequence of their cultural identities, individual development and interaction with each other in these spaces (Inceoglu&Aytug, 2016).

3.2 Concept of urban open space

Urban open spaces are a significant contributor to urban sustainability at both neighborhood and city scales. They provide environmental, health, social services and economic benefits to the residents of the city. Just like sustainable approaches to urban development, it has a symbolic value for the community. The formation of open spaces is changing along with the change in conception of neighborhood due to the globalization and urbanization processes.

Health and wellbeing are key aspects addressed by the concept of open spaces while it has also been used to wrestler inequality in the modern society. Access to good quality and well managed open urban spaces encourages physical activity, positive mental wellness and healthy childhood development. Most research has shown that children with access to safe open and green spaces are more likely to be physically involved, and thus less likely to be overweight. Outdoor play and engagements buoys up healthy brain development and promoting healthy wellbeing through adulthood

within the city life. As people living in towns and cities have less access to the natural environment, an increasingly significant part of a healthy urban environment is the provision of urban and peri-urban open spaces and green areas.

3.2.1 The square

The square was in all probability the first way man discovered using urban space. It is produced by the groupings of houses around an open space. This arrangement provided a high degree of internal space control and facilitated ready defense against external aggression by minimizing the external surface area liable to attack. This kind of courtyard also came to bear a symbolic value and was therefore chosen as the model for building various holy places such as Agora, Forum, Temple courtyards, mosque courtyard etc. This spatial model also admirably suited for residential use. The inner courtyard or atrium corresponds to this in the private sphere. The courtyard house is the oldest type of town house. In spite of its undisputed advantages, the courtyard house has now become discredited especially because of people's preference of nuclear family instead of extended family and certain unease about one's neighbors. In the public sphere, the square has undergone the same development. Market places, parade grounds, ceremonial squares, squares in front of temples, churches, all relics of the middle ages, have been stripped from their original roles and their symbolic content, and in many cases are only preserved by conservationist efforts. Streets are universally seen in purely residential areas as areas for public circulation and recreation. Squares can be segregated into two types

Private / domestic squares

Domestic also known as private squares are those open spaces in the urban setting that are physically closest to home. These squares can almost be treated as an extension of the home. Private squares often may be related to a small group of families, a small block of flats for professional people or perhaps a small group of bungalows for the elderly. Private squares are thus shared physically by very limited number of households.

Neighborhood squares

Neighborhood squares are physically further away from home or unit of residence. This means that to use neighborhood squares one has to make a very specific decision to do so. These are relatively larger in sizes with multiple access making it more public.

Civic squares

The biggest number of urban squares discussed fall into the category of civic squares. These include large palace squares, commercial plazas and docks.

3.2.2 The streets

The street is a product of the settlement's spread from the central square to other available spaces. It provides a framework for the distribution of land, and gives access to the individual plots. Its character is more pronouncedly functional than the square. Its architectural backdrop is only perceived in passing. The street layouts in traditional towns were planned to the scale of the human being, the traditional street is unsuitable for motorized traffic remaining appropriate to human circulation and activity. However, in the present context pedestrian and traffic separation bring with it the risk of isolating the pedestrian areas. Solutions need to be carefully worked out which will keep traffic noise discomfort and exhaust fumes away from the pedestrians without distancing one zone from the other entirely. This means an overlapping of these functions, to be achieved with considerable investment in technological sphere, a price which the motorized society must be ready to pay.

Streets are universally seen in purely residential areas as areas for public circulation and recreation. Street space can only work when it's part of a system leading off the street by pedestrian access. According to Krier (1979) the following errors can unsettle the system of the street.

If it is not possible to enter those houses directly from the street but only from the rear. In this way, it deprives street of its vital activity.

If garages and parking spaces are arranged in such a way as not to impinge on the street space by the flow of human, traffic between car and house.

If play facilities are pushed out into isolated areas with the sole justification for maintaining the residential zone's intimacy. The noise of the cars outside the house is accepted, but children are prevented from playing noisily.

If no capital can be spent in public open spaces, on things such as avenue of trees, paving and other street furniture, provided that the visual appeal of space is the first priority.

3.2 Importance and uses of Urban open spaces

Urban open spaces are invaluable assets in maintaining ecological health in a highly developed urban matrix. Urban open spaces (natural or manmade) are vital part of landscape with its own specific set of functions which add to the quality of human life in many ways (Burke, 1999). These spaces provide social psychological services that are critical to the well-being of the urbanities and livability of the city. Thompson (2002) perceives urban open spaces as a place to celebrate cultural diversity, to engage with natural processes and to conserve memories. These are spaces that complement to the fabric of the urban area and provide necessary outdoor activity to improve the civic life of the residents. The contributions made by urban open spaces to the quality of people's lives can be summarized by the following:

- a) Basic life support, conserving air, soils, water, climate control and limiting adverse effects of flooding and pollution.
- b) An attractive out door environment for people to live, work, exercise and play.
- c) A stimulating environment, allowing creative and imaginative activities.
- d) Excitement and stimulation, a feeling of well-being to support physical and mental health.
- e) An informal environment that provides opportunity to learn and gain.
- f) Preservation of historical and landscape features.
- g) A critical resource for jobs and supports local economy.

Uses of open spaces may vary according to the type of open spaces. Open spaces in the urban areas need to function for an extremely wide range of uses. Firstly social and recreational purposes like gathering, playing, eating, health and fitness along with work related activities like buying, selling, mending, studying, health and fitness.

Secondly for religious and cultural purposes during special festivals and thirdly for ecological and environmental purposes like natural beauty, infiltration, carbon sinks, solar shading etc.

3.3 Value of Urban open spaces

Urban open spaces has been associated with various benefits such as ecological and environmental, political, economic, addition of aesthetic value and social benefits.

3.3.1 Environmental and ecological value of urban open spaces

The increase in hard surface and the reduction of percentage of land covered by green spaces has led to higher temperatures in towns and cities than the surrounding countryside, this phenomenon is known as urban heat island effect. Vegetation in an urban space helps to address this imbalance along with other environmental benefits to urban areas such as, an improvement of air quality and absorption of atmospheric pollutants, natural habitat protection, cooling the air and water and flood management.

3.3.2 Social value of urban open spaces

Well designed and well maintained open spaces bring communities together, provide meeting places and foster social ties that have become rarer in many urban neighborhoods. These spaces form an area's cultural identity, add to its unique character and give local communities a sense of place. The locals take pride in the environment in which they live (Woolley, 2003). They provide communities with a sense of place and belonging, recreational opportunities, health and fitness, events that reinforce social cohesion and inclusive society, and offers an escape from the stresses and strains of modern urban living that may feel compounded by the built environment. Some of the major social values of urban open space are

- a) Promoting physical health: Physical environment that people appreciate have a corresponding positive psychological effect. Public spaces also have therapeutic effect on users, as they also offer places for people to relax and break away from the busy network of streets. They also help improve physical

health by inspiring people to walk more and play sports and hence are very critical in the fight against lifestyle diseases like obesity.

- b) Foster social cohesion and identity: Public spaces serve as social catalysts in the society as they bring people together for various reasons and activities. They also provide ground for neutrality and expression of shared dreams, aspirations and fears. Squares are good example of public spaces where people learn to appreciate the differences and respect others. The way in which the interaction takes place and the context in which it happens is indicative of local identity.
- c) Foster democratic participation and social inclusion: Public spaces are open to all, regardless of ethnic origin, age, gender, race, political affiliation, and socio-economic status. They represent a democratic forum for citizens and the society where people meet as civic equals. Public space also provide space for human expression, they are the places that provide solace in disaster and solidarity in protest.
- d) Controls social ills: Beautification reduces social ills significantly since the city's beauty inspires civic loyalty and moral rectitude in the poor. Pleasant and active public space would mean more eyes hence reducing crime levels making it safe especially for women and girls. People respond to their environment and thus there is a direct correlation between the perceptions and behaviors of the people and the quality of their environment. In areas where public spaces are dirty, vandalized and visible neglected, decent people migrate elsewhere or become less visible, vulnerable people retreat to the sanctuary of self-imposed curfews while those with mischievous or criminal intent thrive and dominate. Where there is investment in public space and the desire to provide healthy, attractive, high quality inspiring spaces for communities, the opposite is true.

3.3.3 Economic value of open spaces

The presence of high-quality public spaces has a major impact on economic life of urban centers. As cities and towns increasingly compete with each other to attract investment, the presence of good parks, squares, gardens, streets and other public

spaces becomes an important marketing tool and an essential economic lever to attract new businesses first and then retain them. Corporates are drawn to places that provide well-designed and well-managed public spaces, attracting highly skilled staff and services in turn (Woolley, 2003). Their influence ranges from raising property values, increasing the business turnover for retailers, creating job opportunities, contributing to the regeneration of the inner city neighborhood, and promoting tourism (Kiruma, 2014).

- a) Increase in property values and local taxes: Evidence shows that a well-planned and well managed public space tends to raise the value of properties within its vicinity. Experience and research from around the world shows that investment in attractive, interesting and functional streetscapes yields significant economic benefits. In cities, high number of pedestrians has found to contribute to the local economy whereas areas with difficult walking conditions can deter both consumers and investment decision.
- b) Raising business turnover: A good public realm with sufficient walkability and comfort will greatly enhance sales for retailers by drawing more pedestrian traffic into the city. Pedestrian environments are bound to attract potential customers by mere convenience. As a result, there is a rise in business turnover in coffee shops, outdoor eateries, food courts and other retail businesses.
- c) Creation of employment opportunities: People who are employed to manage such public spaces, guide people and provide security are very important and vital part of public spaces like squares and plazas. Food is an important element in successful public spaces and it provides employment to food vendors. At the neighborhood level, public spaces offer the community employment opportunities, as trade activities carried around such communal gathering places by women groups and youth create the opportunities to make a living.
- d) Tourism: Many towns and cities depend on tourism to provide significant portion of their annual revenue. Public spaces especially those of architectural and aesthetic significance serve as important tourist attraction (Wolley, 2005). Monumental squares like Rome's St. Peter's square, the Spanish steps, Trevi

fountain and St. Marks's square in Venice continue to attract a large number of tourists from across the world.

- e) Public spaces as market places: There are numerous examples where public spaces have been converted into market places. This not only makes the streets lively but also increases sales as the relationship between potential shoppers and products become seamless.
- f) Aesthetic value of public space: Well-designed public spaces increase the value of the visual landscape and also contribute to the overall aesthetics of the environment, thus contributing to the overall image of the city. Kiruma(2015) states that besides being an element of beauty in a crowded environment, public spaces give users an enjoyable break; an opportunity to escape the normal urban setting. Thus, people feel good and refreshed being in these spaces as they appreciate the beauty of these places which also fosters an attachment to the spaces.

3.4 Transformation of Urban space

The original basis for cities was the need for people to come together, for purposes like security and defense; trade and exchange of goods and services; access to information, other people and specific resources; participating in activities involving joint effort or organization; and using specific equipment, machinery, etc. The essential factor was that activities required people to communicate, which, at least initially, meant being in the same place at the same time. The bringing together of people in space and time promotes an important social element which was subsequently taken as the essence of the 'urban' in a cultural sense.

Throughout the history changing life styles and changing desires of people, introduction of new materials and many other factors caused to evolve the interpretations given to the term urbanity (Panditharathene, 2000). In recent years urban environment have changed significantly, as have the ideas on how to design, change and improve them. The form and nature of the settlements have been significantly influenced by the use of technologies. Increased mobility through innovations in transport has been a key factor in changing the distribution of space activities and changing urban spatial form. While innovations in transport sector have

compressed space-time, allowing people to travel long distances in short time, allowing urban areas to spread out while advances in communications technologies have provided alternatives to co-presence in communication. Increased mobility both physical and electronic has reduced the need for the spatial concentration of activities and enabling the spread of activities. Traditional centralized mode of city form has evolved into a landscape of sprawling polycentric cities. The assumptions of centralized urban form and dominant central business district have become less tenable, and notions of 'city center', 'suburb' and 'city edge' less meaningful. Members of each residential unit 'create their own city from the multitude of destinations that are within suitable driving distance' (Fishman, 1987, p. 185).

Traditional urban space was regarded as the evolved state of urban form. The process of urban growth in traditional cities can be broadly divided into the 'organic' and the 'planned'. Most towns grew organically, often involving replacement of buildings on existing plots. Expressly planned settlements are exemplified in the medieval bestide towns of France, and in the plantation towns of Edward I in England, usually in the form of gridded plans including those built by Greeks and Romans.

With professional planners / architects taking on the work of building cities and developing theories of how cities should be, it was the renaissance that transitioned cities from organically evolved to planned cities which 'became to a greater degree a work of art, conceived, perceived, and executed as a whole' (Gehl, 1996, p. 43). Examples of consciously designed developments include squares and public spaces (e.g. the Place Vendôme and Place des Vosges in Paris); street systems (e.g. Sixtus V's plans for Rome, Haussmann's remodeling of Paris); extensions to existing cities (e.g. Edinburgh New Town, the Cerda plan for Barcelona); and the redevelopment of fortifications (e.g. the Ringstrasse in Vienna). Even planned cities subsequently accrued incremental and organic development, responding to the configuration of land ownership, and to the incremental evolution of road and other infrastructure networks (Kostof, 1991).

Urban development was constrained by a number of fundamental ways until industrial revolution, resulting in urban spaces modestly scaled by:

- Means of transport and speed limited to those of the pedestrian, horse and cart.
- Availability of construction materials. Each city was built using locally available materials, giving relatively consistent appearance.
- Building methods, usually limited to load-bearing masonry and timber construction. Such materials along with the absence of lifts to service high rise have restricted the height of a building. Only special structures like cathedrals, watch towers were built taller.

Change in urban fabric was usually gradual, enabling successive generations to derive a sense of continuity and stability from their physical surroundings. With the rise of capitalism and rapid urbanization, the older scale and pace of urban development was overtaken, particularly during the nineteenth century. Limiting factors on construction of buildings changed as industrialization introduced new buildings materials and construction techniques. Along with this other technological developments such as railways, the safety elevator, internal combustion engine and related social and economic innovations such as hospitals, large offices, hotels etc. also have also influenced the cities. Architects and engineers tried to create new plans and structures to meet new challenges and demands. Such ideas would become known as Modernism.

Modernism emerged in architecture and planning at the end of the nineteenth century and in the first half of the twentieth century. It was guided by the perception of the start of the new age and was driven by the machine age, in which society would reap the benefits of technological development and industrial production. Le Corbusier a Swiss architect and planner was the leading modernist in the design of the cities. New concepts and principles of urban space design and urban form were derived to tackle number of contemporary problems and explore opportunities. Traditional, relatively low rise streets, square and urban blocks were replaced by rational, usually orthogonal, distribution of slab and point blocks set in park land and open space. Urban space would flow freely instead of being enclosed by buildings (Giedion, 1971). Opportunity and political will to implement modernist came after 1945 post-war reconstruction in Europe, and later through slum clearance initiatives and as a consequence of road building schemes in all developed countries. Comprehensive

redevelopment, rather than incremental rehabilitation offered significant improvements over earlier urban form and was justified by claims and desires for progress and modernity. Quality environments and more efficient transport system were achieved with the new developments but it also destroyed historic street pattern and notions of urban space. The economic and social infrastructure were highly disrupted by this process of new redevelopment, large blocks simplified the land-use pattern removing nooks and crannies of the cities that housed economically marginalized but socially desirable uses and activities that gave variety and life to an area. Nevertheless, although often a painful process, the demolition of the physical, social and cultural structures of inner-city areas, mixed-use compact communities and poorer, working-class residential areas was accepted without serious question during the post-war period. There have been a variety of responses and critiques of Modernist theories regarding urban space architecture and the key strategies and outcomes of urban development. Contemporary urban space design has drawn much of its stimulus from these perceived shortcomings.

3.5 Historical of Urbanism in Kathmandu valley

With a history spanning more than two thousand years, the Kathmandu Valley has remained a major cultural, economic and political center of the region since its evolution. It could be said that history of ancient Nepal is mostly the history of Kathmandu Valley. There are two reasons for this. One is the lack of historical records for other parts of Nepal and other is that valleys colorful past easily out shines what is known about other parts of the country. There is also the fact that the name of the country is taken from what Kathmandu used to be known in earlier times – Nepal Valley. In ancient times, the valley is believed to have been ruled by several dynasties, the earliest ones being the Gopala, the Mahisapala and the Kirat. Very few historical records of this era exist and these suppositions remain a legend from the pre-historic times (Hutt, 1994; Korn, 1979).

Evidences from the 5th century onwards show that the Lichchhavi dynasty emerged as the first recorded rulers, who ruled the valley from 2nd to 8th century (Hutt, 1994; Korn, 1979). The Lichchhavis had migrated to the valley from the southern plains and are believed to have introduced the knowledge of the Vedic texts and the experience

of laying out larger towns on level ground. This period saw the establishment of towns and capital cities, based on definite models of urban form prescribed in Vedic texts (Shah, 2013). Lichchavi era also brought the first golden era of Nepalese art, architecture and culture. It was during this era that iconic tiered temples came into vogue and sculptors fashioned exquisite images of gods and kings.

Lichchavis were followed by Malla era, four cities namely Kathmandu (Kantipur), Lalitpur, Bhaktapur, and Kirtipur served as capitals of Malla confederation. These states competed with each other on arts, architecture, aesthetics, and trade, which resulted in massive development. During the Malla period, the valley developed as a major trade and administrative centre and also prospered in its rich social fabric and highly developed cultural patterns. Malla period had been marked by extraordinary achievements in urban planning, architecture, arts/crafts, infrastructure achievements, and the development of socio-cultural institutions for urban management. The city grew largely during this time. Most of the historic temples, monasteries, and buildings were built during this era. The glorious achievements made during this period can still be traced in the traditional city cores of the Kathmandu Valley in the arrangement of buildings, monuments, streets and public open spaces. The Malla rule came to an end in 1769, following the seizure of the Kathmandu valley towns by King Prithivi Narayan Shah as a part of his so-called campaign of “unification” of nation (ICIMOD et al., 2007). This paved the way for Shah dynasty and the Kathmandu valley became the capital of greater Nepal. Scholars claim that modern Nepal is believed to have had its beginnings since then (Hutt, 1994; Korn, 1979). The Shah kings ruled the entire nation for more than two centuries, without making a significant contribution to the development of art, architecture and culture as compared to the Mallas (Chitrakar).

For a considerable period of time in this history, the shah dynasty was interrupted with the rise of Junga Bahadur Rana as prime minister of Nepal in 1845, establishing the Rana rule for one hundred and four years until 1951 (ICIMOD et al., 2007). First major transformation of the overall landscape of the valley started during this period with the construction of many large neo-classical palace compounds of Rana rulers at the fringe of the old cities. Eventually, new settlements developed around the palaces since these areas provided facilities such as drinking water, electricity and good roads.

Thus began the process of sub-urbanization of Kathmandu and its encroachment on productive agricultural land.(Shah, 2013).While the political change of 1951 brought the king back to his throne, recently, the second people's movement has overthrown the Shah Dynasty, declaring the nation a republic in 2008. In the present context limited and insufficient development of urban infrastructure, particularly roads, led to an octopus growth pattern that followed roads linking one town to another or the towns to the villages in the hinterland. Today most of the agriculturally productive land between Kathmandu and Lalitpur are virtually buildup and the two towns make one physical mass. The process is now directing itself towards the third largest town of the valley, Bhaktapur, engulfing the mid-way town of Madhyapur municipality in the process. Current trends and plans will make all the five municipalities of Kathmandu and several other nearby 'urban villages' into one large mass of a megalopolis within ten years or even faster. (Tiwari, 1999)

3.6 The planning and design of traditional towns

The form of our traditional towns is result of organic growth over many generations. Yet they are more organized, efficient and culturally vibrant than most of modern settlements in the valley. The traditional towns responded to the nature, economy and social relationships. There was a unifying planning thought at work while planning these traditional towns and it was developed for the man, in his natural mode of movement, that of walking. That town was planned with priority of location for Gods and ritual festivals mediated circulation.

The most amazing planning thought applied in traditional towns of Kathmandu could be termed 'zoning by jaat'. The term 'jaat' this is often mistakenly understood as a function of religion or 'touchability / untouchability. Jaat structure is a result of occupation based division of society and 'jaat' is, above all, just a job indicator. This concept of 'zoning by jaat' ensured survival of the profession, reduced intra-town movement (concept of work place at home) and allowed growth of localized 'homogeneous communities'. The idea of locating small domestic industries together, which was practiced in our towns, is these days theorized in planning as required and logical for sustainability of small businesses and industries, achieving what is called

‘scale effect’. This was how social, cultural and economic zoning were done together in traditional towns through ‘jaat’ consideration.

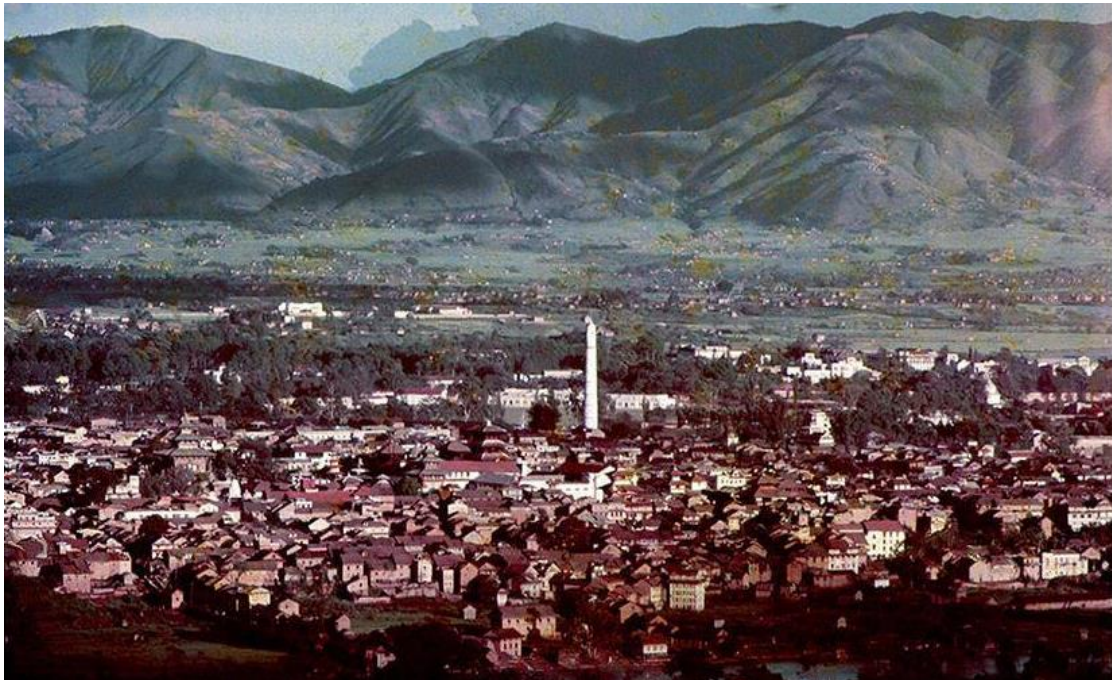


Figure 1 View towards traditional settlement of Kathmandu from Swayambhu, 1960s. Source: City museum Kathmandu.

Another interesting aspect of traditional town was the application of the cosmic image to the town. Borrowing from Vedic traditions and supplemented by Shakti cult, the towns were overlaid with a ritual based planning structure. The Malla town planners, thought best to use the ritual basis – for a society seeped in religion, this would almost look natural. Thus the Durbar Square became home of the key gods from all cults current in the society. Likewise, peripheral gods such as the Matrikas instead of walls also defined the town peripheries. Private buildings could not be built higher than the nearby temple. Town planning by-laws and building by-laws were thus mediated by Religious Rituals and a society seeped in religion never dared to break these ‘rules’. The town form and structure were never challenged until modern times when people did not fear gods (Tiwari, n.d.).

Two design aspects come to the fore while describing the design of the traditional towns, pedestrian scale of design and superb community spaces distributed around town. Both the aspects made the town respond and belong to communities rather than individuals. The traditional towns of valley exhibit a grand sense of a scale; they are

not just anthropometrically human but also designed for the pedestrian. The pace of pedestrian movement, capable of savoring details, was responded with plain surfaced buildings embellished with minutely detailed windows. The streets narrowed and widened, a great design feature, breaking monotony and bringing personality into the place.



Figure 2 Asan in 1920s (Temple dominating the skyline of the area). Source: Dirgha Man Chitrakar.

Three different types of communal spaces namely nodal spaces, street spaces created by varying widths and courtyards of varying sizes can still be experienced in the traditional towns. Informality characterizes nodal spaces and space-forming elements were dispersed to create an element of surprise to the moving viewer. Presence of unexpectedly large or small temples encouraged viewer to look upwards towards the sky and stone water conduit pits could draw viewer's attention downwards. Nodal spaces also served as market and social center.

According to Shrestha (2011) streets developed during the Malla period in the Kathmandu Valley were not only 'paths' for movement of pedestrian and goods, but

also a 'shared community space' with symbolic, ceremonial, social and political significance. Developed before the advent of the automobile, they were short, of irregular shape and equipped with community amenities such as temples and shrine, public taps and rest places. The street and house were designed to interact visually as well as physically through the building elements like Dalan and windows that faced down to the street. Streets were also used for specialized movements, like the movements of gods during festivals.



Figure 3 Traditional streetscape in 1968. Source: Johan Reinhard.

Another characteristic feature of traditional towns of Kathmandu is its courtyards. Courtyards of varying hierarchy and sizes are distributed all around the town; extensive use of courtyard form makes urban fabric of traditional towns a honeycomb like structure. The dimensions of these courtyards range from few meters to more than 75 meters, with dwelling blocks belonging to families of various clans built adjoining each other (Pant and Funo, 2018). Baha is the most dominant type of Buddhist courtyard; they are fairly larger sized enclosed spaces that are physically separated from the major streets. Bahas are private domains, which serve the various domestic

as well as social purposes. In addition to these daily activities, Bahas also has special functions during periodic festivals and Jatras (Tiwari, n.d.).



Figure 4 Itum Baha of Kathmandu 1968 AD. Source: Johan Reinhard.

3.7 Factors affecting the current urban growth and change

The end of Rana rule in 1951 not only marks a political change in the history of Nepal, but it also brought about several physical and socio-economic consequences, with a significant impact on the traditional urban settlements (Basyal&Khanal, 2001). Since then, the Kathmandu valley has started to experience the tremendous pressure of urban development due to several factors. Three major factors are: a) development of physical infrastructure; b) migration and population growth; and c) social change and modernization.

3.7.1 Development of physical infrastructure

The political change of 1951 was backed by several development initiatives that were considered as an urgent need in the advancement of the nation. Physical infrastructures such as the construction of Tribhuvan highway in 1956 and other

major highways by the end of the sixties were built as part of this initiative (Sharma, 1989; Subba, 2003). This facilitated the movement of goods and people between valley and other major areas of the country, including the terai region. By 1975, the present ring road encircling the two major towns of the valley, Kathmandu and Lalitpur, was built, providing linkage between the city core and the hinterland. Several roads within the valley built during the Rana rule were also expanded and upgraded (ICIMOD et al., 2007). With this, the Kathmandu valley which remained as a confined area for centuries started to establish a contact with other parts of the country. As a result, the urban landscape of the Kathmandu Valley began to transform dramatically, particularly, since the 1960s (Thapa et al., 2008). The urban transformation accelerated during the 1970s (ICIMOD et al., 2007) due to the rapid expansion of city cores and the emergence of urban sprawl that was made possible by improvement in mobility between geographical locations.

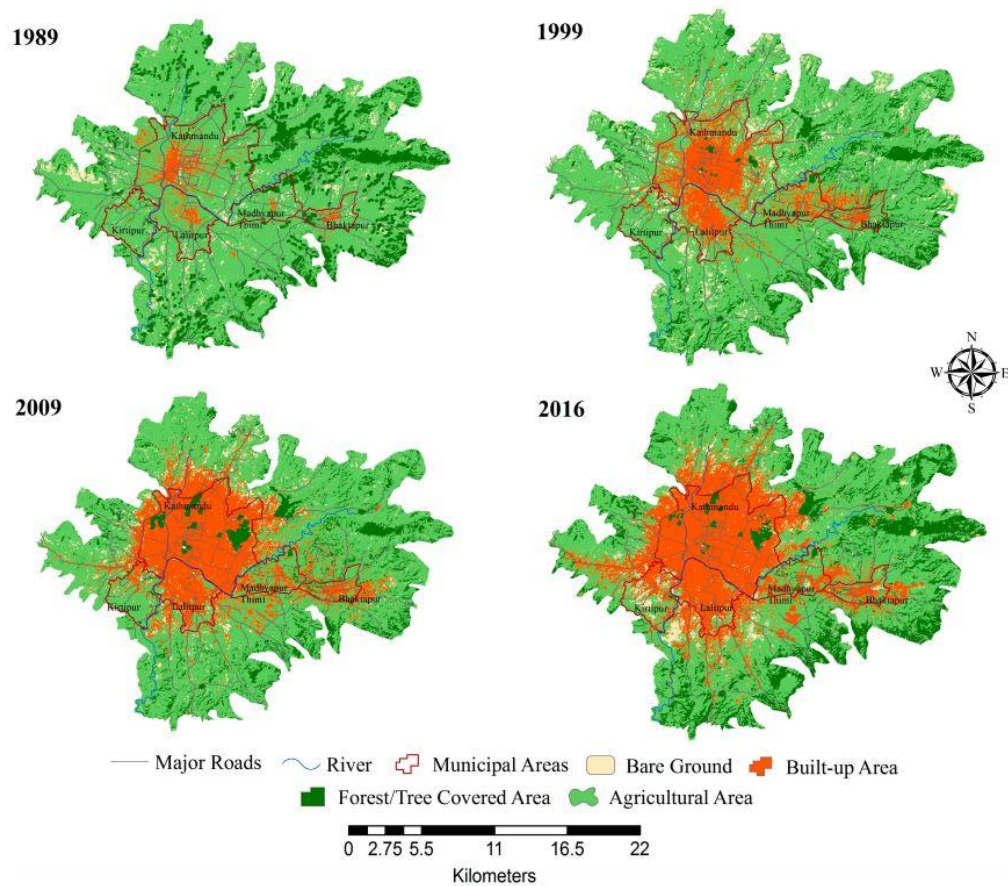


Figure 5 Land use change in Kathmandu valley from 1989b to 2016.

3.7.2 Migration and population growth

Nepal is recorded as one of the top ten fastest urbanizing countries in the world (UNDESA, 2015) and the Kathmandu Valley is one of the fastest growing urban regions in South Asia (Muzzini&Aparicio, 2013). The 2011 census recorded the population of the KV alone at one million (CBS, 2015) and is projected to double by 2030 (UNDESA, 2015). In the last 60 years, the urban population of the valley increased fivefold, from 197,000 in 1952 to 996,000 in 2001, and to 1.5 million in 2011 (Muzzini&Aparicio, 2013; Poudel, 2012). It currently consists of about 30% of the total urban population of Nepal (ICIMOD et al., 2007; Muzzini&Aparicio, 2013). The growth of population thus appears to be the major factor responsible for the urban growth and change in the Kathmandu valley. Migration has significantly contributed to this growth in urban population as compared to the natural growth.

Migration has emerged as an outcome of improved mobility, exerting a considerable pressure on urban growth (Sharma, 1989). In 2001, 42% of the populations living in the Kathmandu Valley were found to be migrants (Thapa et al., 2008). The migration into valley increased significantly due to Maoist conflict from 1996 to 2006 (ICIMOD et al., 2007). Apart from this there were several other pull factors that have attracted a huge influx of population to the valley from all over the country. Basic services such as electricity, water supply and sanitation, telecommunication, education, road and transportation are well developed in the valley as compared to rest of Nepal (ICIMOD et al., 2007). In addition, better job opportunities occur in the valley because most governmental, academic and financial institutions, together with health care facilities, are centrally located.

3.7.3 Social change and modernization

The growth of population in terms of migration and transient population led to the change in socio-economic profile and increased heterogeneity in urban neighborhoods in Kathmandu valley. Kathmandu valley is most complex in terms of ethnic composition, which is an outcome of internal migration (Subedi, 2010). Shah and Pant (2005, p. 9) observe that in the changing social environment, “old ties and beliefs are under severe stress, while the migrant communities of recent decades have yet to

evolve into communities”. They further argue “In this emerging social milieu, old dogmas still persist but are slowly being replaced by the practical realities of daily existence, thus forging people in many different ways. It should be noted that while the traditional communities were largely localized geographically to a place, the new evolving communities are based on other forms of affiliations beyond geographical limitations” (p.8).

Liechty (2003) argues that class is emerging as the dominant form of social organization in the valley. Therefore, in studying the transformation of urban space, the concept of multiculturalism and segregation are worth examining. In a diversified socio-economic profile, the use of neighborhood urban space and the resulting social interaction is an emerging context of the Kathmandu valley. This research has explored this emerging concept of diversified socio-economic profile, the use of neighborhood urban space and the resulting social interaction.

Globalization and modernization also has a significant impact on the socio-economic transformation of the Kathmandu valley. Prior to 1951, there was a high level of control over entering the valley for both Nepalese and foreigners (Shah & Pant, 2005). The political change ended the period of isolation and valley was exposed to globalization. In later decades, the increasing contact with the outside world facilitated access to the advancement in modern technologies. With the growing use of modern communication means such as television, internet, smart phones and other similar devices many social and civic activities that traditionally used to occur in public space have been shifted to a private space. Society have become more individualistic and people have become more introverted, this social change is also becoming evident as physical change with reduced use and meaning of public space.

3.8 Quality of life and its spatial relationship

The quality of life (QOL) is considered important to determine the livability of an area. The desire to improve the quality of life (QOL) in a particular place or for a particular person or group has been an important focus of attention for planners. It could be suggested that planning as a public activity is strongly motivated and justified in terms of contribution it can possible make to the QOL of citizens.

(Massam, 2002) Although there is little agreement among scholars and policy makers as to the precise definition of QOL and the individual components that comprise QOL. Yet many reports, planning statements and projects refer to the term QOL as either the ‘outcome’ of conditions – economic, environmental, social, aesthetic, civic or the ‘cause’ of impressions about QOL, and these impressions can influence the perceived or actual prosperity or attractiveness of a place.

Quality of life is a multi-faceted concept and interdisciplinary field of study. Glatzer(2015) states that positive and negative wellbeing, as well as future expectations, define quality of life. It is a multiscale concept representing the conditions of individuals and society. Lives people lead reflect their choices within the bounds of constraints and information. Families, communities and place of birth all influence people’s views about what is important in defining a quality life. Individual and collective memories and histories also play a major role in determining opinions about quality of life. Perceived quality of life is concerned with individuals’ subjective experience of their lives and hence varies among people and places. WHO defines Quality of Life as individuals’ perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment.

In the urban context, Shafer et al. (2000) define quality of life as the intersection of the dimensions of community (social), the environment and economics. They also mention that livability is the intersection between the environment and the social dimensions. When considering the environment and the notion of place in quality of life analyses, it is quite relevant to study quality of urban life as most of the world’s population lives in cities. The evaluation of urban quality of life has to consider the concept of a place as the geography where individuals and ground of individuals interact (Maranas, 2011). Matching individuals’ happiness to their physical surroundings is a means to understanding the influence of space on wellbeing (Brereton et al, 2000). The urban environment is related to the quality of place and

livability, through the integration of the quality of the local environment and the perceptions of urban dwellers. Jorgensen and Stedman (2001) argues that the sense of place is the experience based on attachment (sentiments toward a place), identity (beliefs associated to a place), and dependence (behaves toward a place). That means, different people may have different perceptions of a certain space, and the same spatial location may be perceived as different places. For this reason, it is important to emphasize on the way in which urban residents experience the physical spaces rather than just infrastructure (William, 1988). The sense of place is a social construction and, in this sense, is dynamic, may change over time, and can constantly be re-created by the experience of each individual. From this perspective, an urban space with quality-of-life can be expressed as a space with spatial relationships between social cohesion and a sense of place, which facilitates the better cooperation between citizens in order to create adequate livability.

Traditionally, urban planning has understood livability as the good conditions of the built environment but now ‘quality of society’ is thought to be a central part of the livability (Veenhoven, 2012). One of the equivalents for urban livability is having a ‘socially-vibrant’ urban neighborhoods that are composed of groups of people that collaborate, communicate, and participate together in solutions of the community’s problems. Urban planning needs to consider social equity and justice for livability beyond the traditional view of design and aesthetics.

3.8.1 Dimensions of Quality of Life

A number of researchers have reviewed literature on QOL and there is a general agreement that a meaningful definition of QOL must recognize that there are two interlinked dimensions to the concept, namely individual one and an environment one. Cutter (1985) has given an overview and defines QOL as: “... an individual’s happiness and satisfaction with life and environment, including needs and desires, aspirations, lifestyle preferences and other tangible and intangible factors which determine the overall well-being. When an individual’s quality of life is aggregated to community level, the concept is linked to exiting social and environmental conditions such as economic activity, climate, or the equality of cultural institutions. It includes both tangible and intangible measure reflecting local consensus on the community’s

values and goals.” The measurement of QOL is usually undertaken using either objective or subjective variables. Objective variables are particularly useful at neighborhood, city and country levels whereas subjective variables have been employed more at the individual level.

Personal health, personal hygiene, clothing, physical appearance, number of family members or employment are the factors which affect the standard of living attribute. The effect of physical attributes on the QOL can be measured by the assessment of the physical conditions of the environment through the analysis of physical characteristics of the building’s interior and exterior spaces. Besides the buildings, analysis of physical characteristic of public space together with the attractiveness and cleanliness of the place in general helps to determine the level of QOL. Links with the social environment, sense of acceptance and connection with family, friends, co-workers and neighborhood community is important determinants of social belonging and aspects for the assessment of social attributes.

In general, the assessment of the attributes mentioned above can help to clarify whether a person; physical able to get around, free of worry and stress or not, have own ideas of right and wrong, live in a poor or a rich environment, is close to people in his/her family and community, able to get professional services such as medical, social so far, have enough money, do things around his/her house, working at job or going to school, doing outdoor activities like walking, cycling, socializing etc. or being able to cope with changes in his or her life, which are major determinants to state level of quality of life.

Attribute	Facets incorporated within attributes
1. Standard of living	Physical health Personal hygiene Physical appearance and clothing of family members Purposeful activities to achieve personal goals Employment

2. Physical attributes	Physical characteristics of building interiors and exteriors Physical characteristics of public open spaces Attractiveness of place Cleanliness of a place
3. Environment	Freedom, physical safety and security Opportunities for acquiring new information and skills Participation in an opportunities for recreation/ leisure Pollution/noise/traffic/climate
4. Economic condition	Level of income
5. Level of Independence	Mobility Activities of daily living Work capacity
6. Social relationship	Links with social environment Relationship with family members Relationship with neighbors and community Social support

The QOL is computed by aggregating the scores of individual indicators/domains. The weights of the domains, however needs to be decided prior to aggregating. The weighting is usually based on the researchers' own judgments (Boyer & Savageau 1989).

CHAPTER 4 – CASE STUDY

4.1 Introduction

Mahabouddha area is located in the north-east boundary of the traditional town. In lies in the ward no 27 of Kathmandu municipality. The area is an ancient Buddhist site with numerous Bahas dotted with Licchavi chaityas. The presence of Licchavi era chaitya in Bahas in Mahabouddha area and its location being in edge of the traditional town suggest that these must have been initially built outside the Licchavi town as vihara and were later transformed into Baha. There are numerous Bahas in the area namely Mahabu Baha, Mahabukacha Baha, Hwakha Baha, Asan Baha and Dagu Baha with Mahabu Baha being the most prominent one. Along with these Bahas there are several other courtyards in the area.

The main feature of the area is Mahabu Baha which is the largest, most prominent Baha in the area. The main feature of this Baha is the large stupa, which stands in the center. Unlike other Bahas this Baha is not immediately enclosed by buildings but by low walls. There were just few buildings on the eastern side along with the shrine of Kwapadya and a pati (rest house). The walls around the Baha are surrounded by street which was then enclosed by buildings from three sides, none of which were built higher than the central stupa.

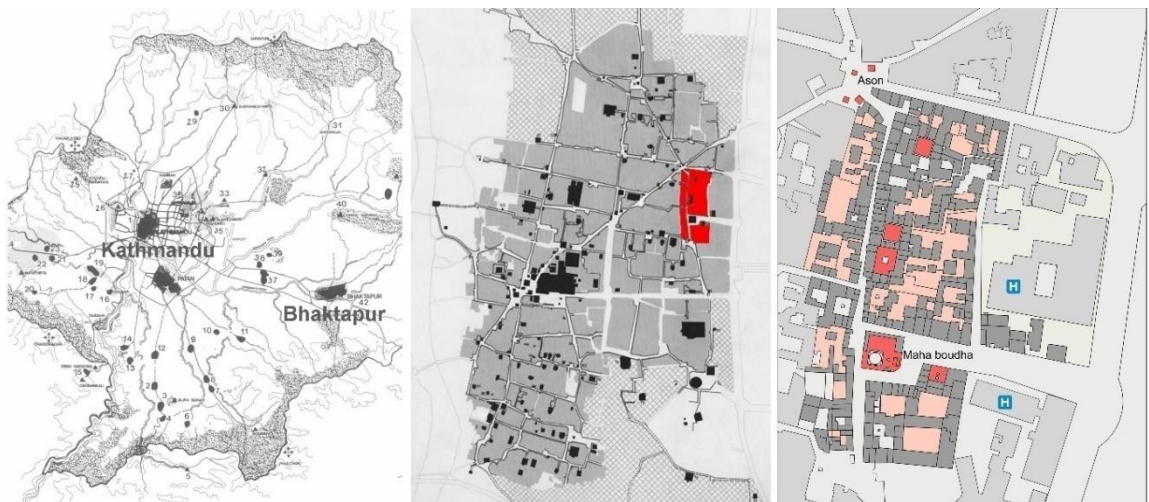


Figure 6 Location of traditional town of Kathmandu in the valley, location of Mahabouddha in the traditional town and Mahabouddha area.

4.2 History

The Viharas of Kathmandu commonly segregated into Baha and Bahi are Buddhist monasteries that were developed during the Licchavi period. The term Baha was derived from Sanskrit word vihara, a standard term for a Buddhist monastery. During the Licchavi period viharas were developed outside the town as a place for celibate monks known as sangha to live and practice dharma in a peaceful environment.

Late Malla period saw a major shift in living styles of Buddhist communities; the celibate monasticism was slowly transferred into household monasteries. As soon as the monks married, which was permitted in Vajrayana beliefs, they had to leave the Bahi and either found or join, another type of vihara known as the Baha (Korn,1976). This resulted in division of residential cells for individual family members of monks and courtyards were used for celebration of family related activities besides ritual and socio cultural functions (Pant 1994). Furthermore, under the growing influence of standard Hinduism and standard Jati system by Jayasthiti Malla, Baha became infact a caste meaning only the son of Shakya and Bajracharya is eligible for sangha and monasteries were no longer open for general people wanting to lead the life of a monk. The daily ritual (Nitya puja) in Mahabaha is performed by the members of sangha in rotation. Sangha of this Baha consists of five Shakya families. This is still the case today, as most of the Bahas are inhabited and tended by a sangha of Shakya and Bajracharya clan (Locke, 1985)

The term Baha-bahi also refers to a distinctive architecture typology which seems to have been handed down from the earliest days of Buddhism, and this can be traced in the stone cave monasteries of Ajanta and Elora of India built about two thousand years ago. The design elements of Baha and Bahi of Kathmandu shares similar pattern of those early monastic caves: a series of rooms built around an open courtyard with the main shrine of the monastery kept right opposite the entryway.

4.3 Site surroundings

Since the study area is at the edge of traditional town of Kathmandu it is surrounded by traditional town from three sides and modern road network on one side. North of the site is the historic ceremonial, residential and market square of Ason, famous for various festivals and tremendous varieties of items ranging from foodstuffs, spices, textiles and electronics. West of the site is Kel tole which is home to Jana Baha Dyo (Avalokitesvara, Karunamaya) a deity worshiped by both Hindus and Buddhist. South of the area is Wotu and New road which is also a vibrant market place. East of the site marks the end the traditional town boundary and connection to the modern road network. Bir hospital which is the oldest and also one of the busiest hospitals in Nepal is also on the eastern side. A new surgical block of Bir hospital is currently under construction in an area previously occupied by old building of NAMS nursing college. Right next to Bir hospital is Kanti path which is major north-south link road of Kathmandu valley. Also on the eastern side across the Kanti path is the temporary bus park which was shifted to Khullamanch for the construction of Kathmandu view tower at the old bus park. These various elements in the immediate site surroundings



Figure 7 a) Ason b) Jana Baha at Keltole c) Towards Mahabouddha from Kanti path d) Under construction surgical block of Bir hospital.

have greatly influenced the site of Mahabouddha.

4.4 Demographic data of the interviewees

a) Gender distribution

The sample size distribution for male and female is taken in relation to the general usage of the spaces in the area by both the genders. The male portion is taken slightly higher than the female portion as most of the shop owners as well as labors were men.

Gender	No.	%
Male	32	56.1
Female	25	43.9
Total	57	100

b) Ethnicity

As the place is within the traditional town boundary of Kathmandu Newars are still the major inhabitants in the place, considerable number of shops in the area are also rented by Newars hence majority of the survey conducted in the area is of the Newar caste. However, the diverse ethnic demography of the rented population are also represented in the survey.

Ethnicity	No.	%
Newars	35	61.4
Others	22	38.6
Total	57	100

c) Local / Rent

Even though Newars have habited the place for several centuries, most of the indigenous inhabitants have moved out renting the place to the people from outside the Kathmandu valley. Hence, the current demographics of the place is composed of both the locals as well as the rented population. It was very important to get the views of both section of the population so for this research so 54% of the locals and 46% of the people on rent is included in the sample population.

Locals / Renters	No.	%
Locals	31	54.4
Renters	26	45.6
Total	57	100

d)Age group

Age is a very important factor while conducting surveys for research, person's age often determines his/her knowledge and experience with the focus of the survey. Various variables under study could vary according to the age group of people hence it is important factor to consider. 58% of the survey sample was of people between the age of 18 and 49 whereas 42% of the sample is people above the age of 50. Questionnaire survey was not conducted for children under the age of 18 but their opinions were also included in the research through a focus group discussion.

Age group	No.	%
18 – 49	33	57.9
50 above	24	42.1
Total	57	100

e)Education

Most of the interviewees comprised of educated people, two third of total sample had received formal education at least up to secondary level. 28% of the survey sample had studied up to bachelors' level while two people had completed masters' level. On the contrary, 18 numbers of people out of 57, i.e. approximately 32% of the sample had education below secondary level or not attended formal education at all.

Level of education	No.	%
Under SLC	18	31.6
SLC / Intermediate	21	36.8
Bachelors	16	28.1
Masters and above	2	3.5
Total	57	100

4.5 Urban Transformation of Mahabouddha

The traditional settlements of Kathmandu valley retained its medieval characters until pre modern period but since then factors such as shift in economic base from agriculture to service and information, commercialization, rapid population growth, diverse lifestyle, availability of modern construction materials and technology, haphazard movement and parking of vehicles have drastically transformed the form and function of this historic religious area. Mahabouddha being located in the outskirts of the traditional town and in close proximity to modern road network has developed into one of most prominent commercial area in the city. The increased commercialization has resulted in loss of original symmetry and harmony of the physical environment. This change in land use created pressure on the buildings to extend upwards and towards the rear end of the plot. Commercialization has also increase vehicle density in the area which resulted in traditional streets and courtyards (Bahas) being turned into a parking space.

None of the Bahas in the Mahabouddha area has been preserved; many of them have lost its historical essence with extensive modifications for residential and commercial purpose. In most Bahas only the Dyochen that houses the main shrine of the Baha is able to retain some distinctive historical characters but most of them are in a depleted state due to lack of repair and maintenance.

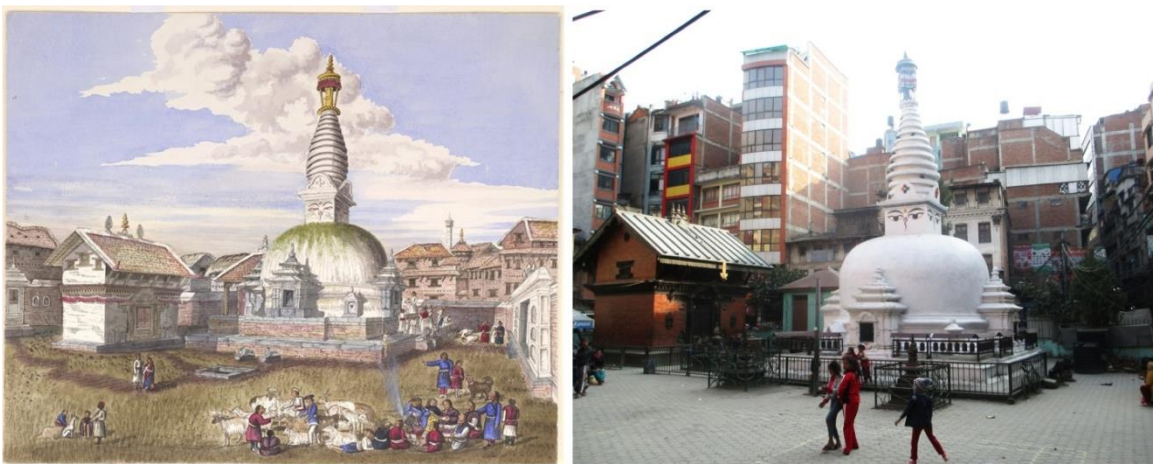


Figure 8 Mahabouddha area as painted by Oldfield in 1855AD and present.

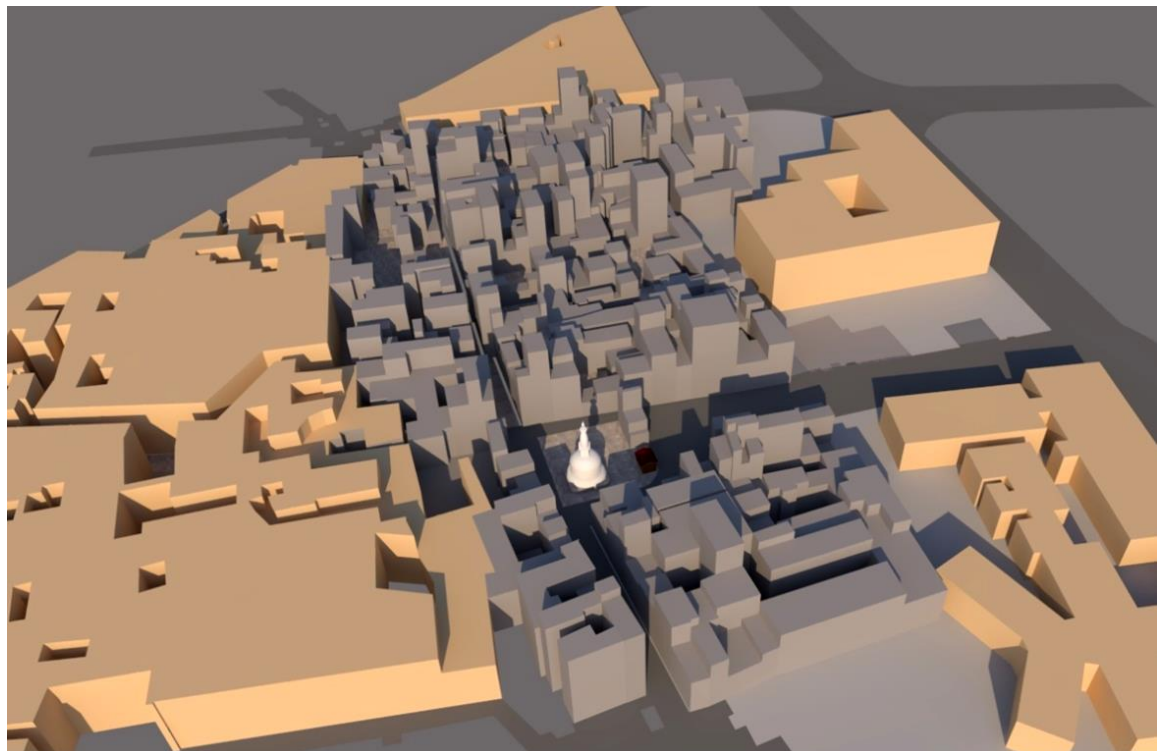
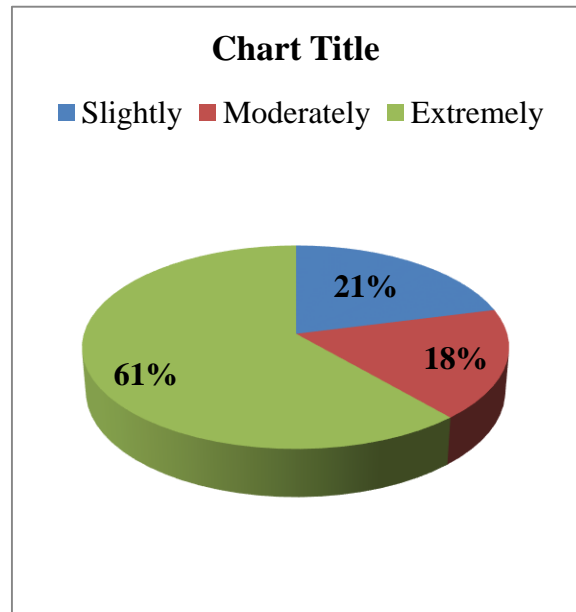


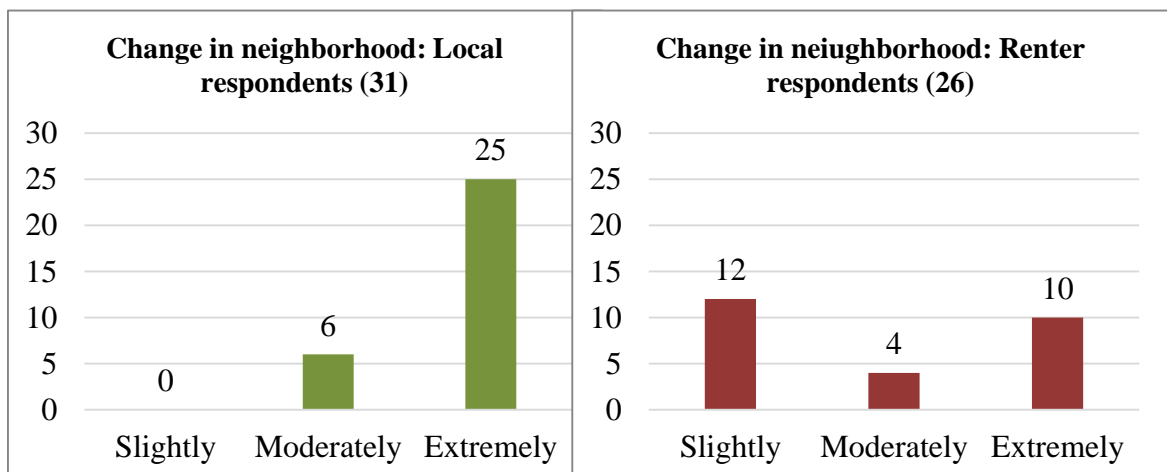
Figure 9 3D image of physical form of Mahabouddha before 1960s and at present.

Change of environment overtime

More than 60% of the respondents felt that the place has changed extremely over the years. The drastic changes were felt more by the locals respondents as they have lived in the place for longer duration of time to witness the changes with 83.3% of the locals answering that the place has changed extremely. On the



contradictory, about half of the rented respondents especially those who have lived in the area for shorter duration have only witnessed minor changes while only few who have lived in the area for longer duration witnessed major changes. Respondents



mostly acknowledged the physical changes with modern buildings replacing the older buildings while few also mentioned the commercial change with the place changing into a Chinese market from a traditional agricultural market and copper/silver shops of Tamrakars.

4.5.1 Land use change

The increasing commercial activities have brought many changes in the morphological character in the area. Through time, change in land uses on the plot and in the building change created pressure to extend building upwards and towards the rear end of the plot. There were many open spaces in the in the form of various courtyards like Baha, Chowk, and Khyo (garden space).

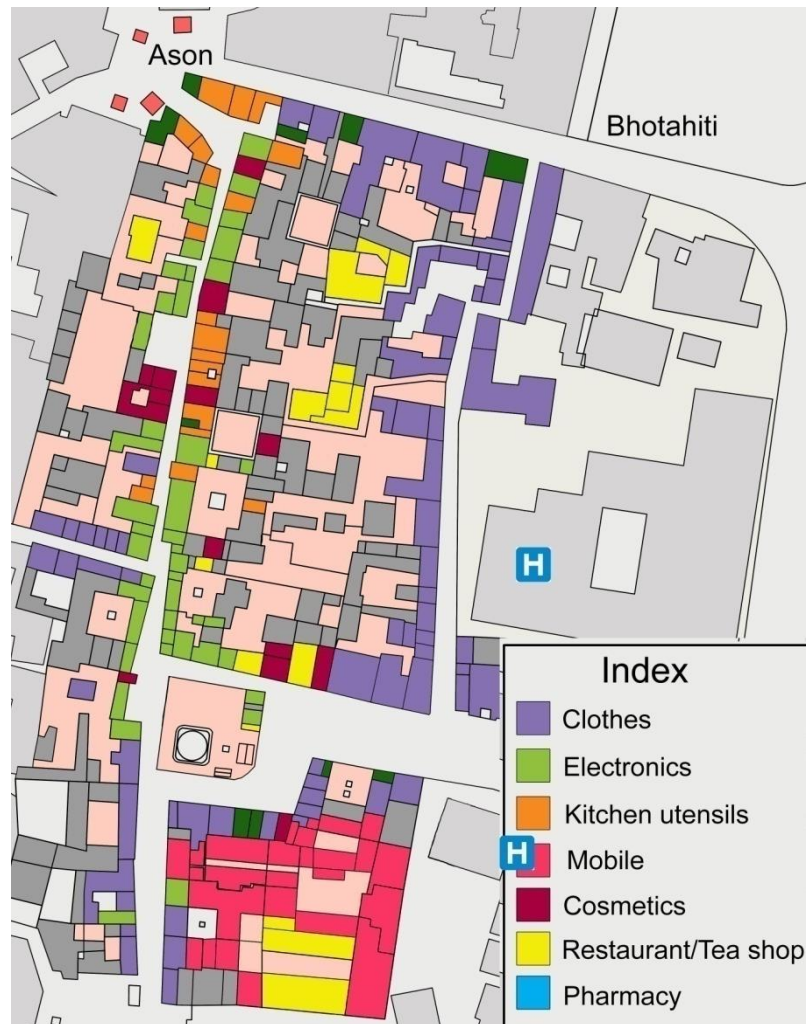
In addition to this plot patterns were also changed due to the social custom and legal provision of transferring parental assets equally to children leading to the division of original plots. Land use change also led to the construciton of buildings in previously open spaces, especially in the souther portion of the study area traditioanal open spaces in form of Khyo (Garden space) have been conveted into modern business complexes.



Figure 10 Comparison of builtup space in 1975 and at present.

Map source: Carl Pruscha, 1975

Mahabouddha area being at the edge of the traditional city and close to the modern road network has developed into a major commercial hub in the city. Almost all the buildings adjacent to the street are mixed used with at least its ground floor being used for commercial purpose while the area also has few commercial complexes. The study



of the layout of shops in the ground floor show a distinctive pattern which has become more prominent identify of a place in the present context especially among the younger generations. The whole of the Bhotahiti galli is lined up with wholesale clothing stores whereas shops selling electrical items and kitchen utensils line up the Jaruchen galli towards Ason with an occasional cosmetic or grocery shop. While there are very few shops in the buildings of inner courtyards, cafes and restaurants are mostly located in inner portions. Ground floor of buildings in inner courtyards is also used for stores. This case is totally different in the southern part towards wotu where even the inner courtyards are totally commercialized with mostly mobile shops. Commercialization has totally changed the traditional urban fabric in the area as it has caused drastic changes in land uses as well as functional and cultural values so much so that the identity of the place is changing from culture centric into business centric.

4.5.2 Buildings

In the past, common lifestyles, use of locally available building materials such as brick, mud and timber along with common construction methods resulted in uniformity of architectural styles. The buildings were three to four stories high with similar facades and were symmetrical to give continuity in elevation of the adjoining houses. All the buildings facing the courtyard and the street formed a continuous wall which were tied together by common design elements with little variation on building bulk, elevation treatment and roof line, thus not only reinforcing the visual scene but also adding to the sense of enclosure and volumetric definition. Rapid urbanization and increased commercial activities created tremendous pressure on the traditional buildings in the area; as a result buildings were extended vertically to accommodate commercial uses in its

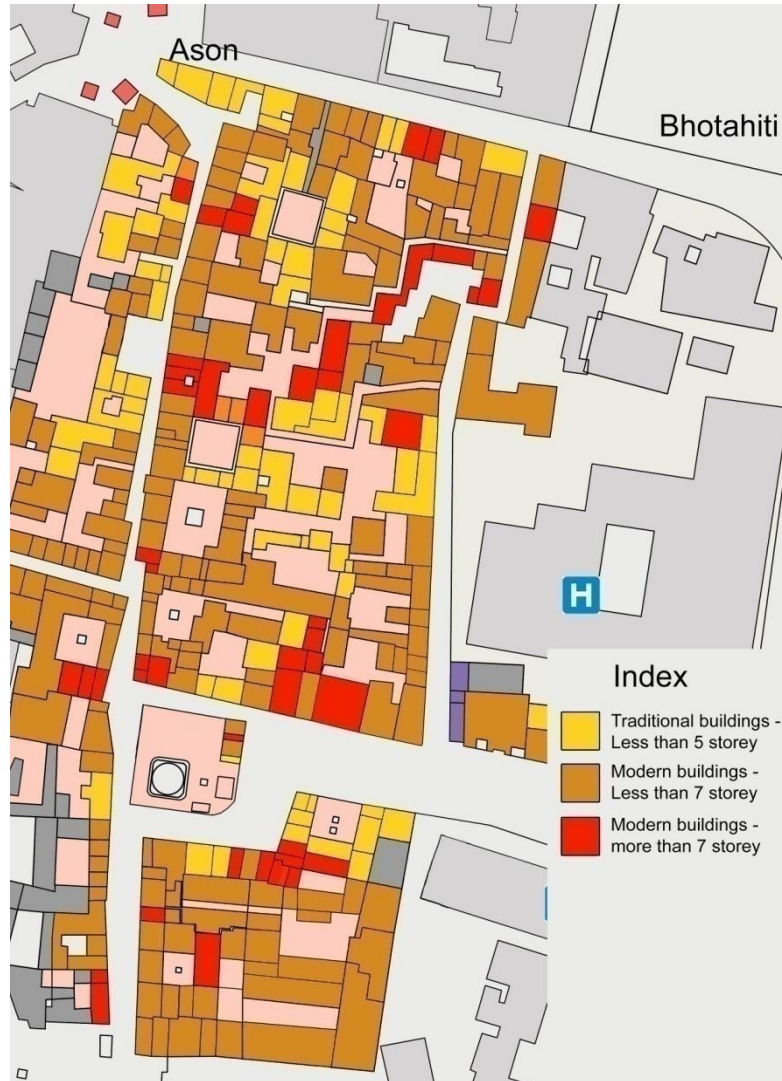


Figure 12 Property division and commercialization encouraging building height.



Figure 13 Types of building in the area, Type I - Traditional building with some alteration, Type II - Modern building up to 8 storey high, Type III - Modern building higher than 8 storey.

lower floors. Almost all the buildings in the area adjacent to the street have commercial uses in the lower floors; however, in some parts commercial activities have also penetrated inner courtyards. Small open spaces between the building blocks available in form of building setbacks, kitchen gardens have also been converted into high-rise buildings resulting in creation of spaces without adequate sunlight and

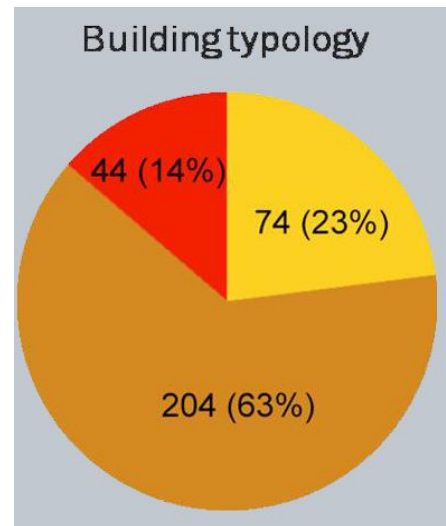


ventilation. In addition **Figure 14 Mapping of Building typologies**

to these, property divisions among family members and transition from joint family to nuclear family have encouraged vertical division of traditional buildings. This is also one of the main causes for vertical extension of buildings as divided house would require new staircase, circulation space that significantly reduces the habitable floor space.

Study of building in the area in terms of their characters, material used and height has given three distinctive types of buildings i) Traditional buildings

with some alterations. These buildings are generally of four storeys but some are five



storeys after the addition of one floor, some are characterized with carved doors and windows of Newar architecture while others are of neo classical style, floors separated by decorative cornices, the traditional roofing tiles have been replaced by CGI sheet. ii) Modern RCC buildings built within the permitted height limit of eight storeys as per the revised by laws. Most of them are cement plastered and painted with different colors while some are brick exposed iii) ModernRCChigh rise buildings which are built higher than the allowed eight storeys as per the revised bylaws, usually characterized by large aluminum glass panel windows.

The variations in height of buildings and design of facades have resulted in discontinuation of the uniform roofline and singular composition of the building façade eroding the feeling of enclosure in the courtyard and streets.

Description	No of Building	% of building
Traditional (less than 5 storey)	74	22.98%
Modern (More than 5 but less than 8storey)	204	63.35%
Modern (More than 8storey)	44	13.66%
Total	322	100%

It was observed that only 22.98% of the buildings were traditional and most of them were located in the inner courtyards. As buildings located in the inner courtyards were less viable to commercial activities, there was less pressure to replace them with tall modern buildings. While it was also observed that traditional buildings receive much less sunlight compared to the tall modern buildings making them less hygienic and habitable which may be the reason for most of them being abandoned by its owners. More than two third of the total building in the area were modern, almost all the modern buildings were built taller than five stories while 13.66% of the buildings were even taller than the permitted height of eight storey.

Apart from these private buildings, there are several other religious buildings in the area. Most of these religious buildings are KwapaDyochen which houses the main deity of the Baha (KwapaDyo) in the ground floor whereas upper floor are used for several religious functions. It has a unique architectural typology with carved doors and windows. Although few of these religious buildings in the area were recently renovated, Kwapa Dyochen at Mahabukacha Baha and Asan Baha were severely damaged during the earthquake and were found to be in a depleted state. Kwapa Dyochen at Mahabukacha Baha is barely standing with the help of shoring and also poses threat to the people living in the area. These Dyochen which were the main element of the Baha has huge religious importance and also held a community together. Deplorable condition of these religious buildings could contribute in further disconnecting people from traditional beliefs and could also disintegrate communities.



Figure 15 KwapaDyochen at MahabukachaBaha and AsanBaha in deplorable condition

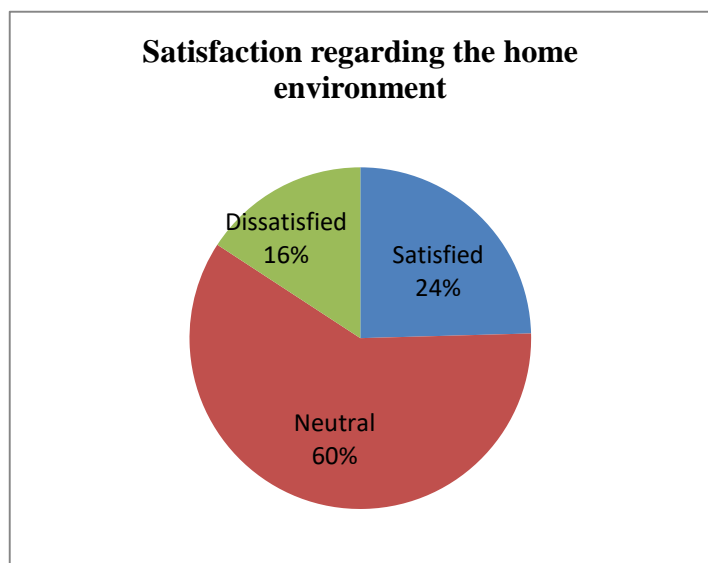
Physical fabrics offer visual pleasure, sense of orientation and act as a live history of the past, which can be perceived by direct mode. This opportunity was however lost at Mahabouddha area due to the haphazard construction of buildings without respecting the traditional architecture vocabulary of the surrounding houses.

The existing bylaws for Kathmandu valley have kept the area of Mahabouddha under 'Mixed old residential sub zone' and at present, it is the only legal document to

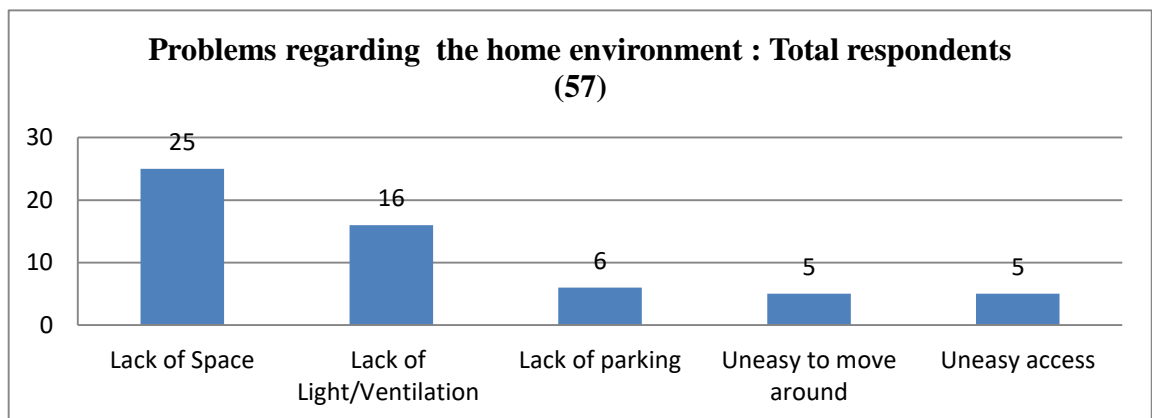
regulate its urban transformation process. In this particular zone bylaws previously allowed maximum height of 45 feet (5 storey) which has been changed in 2018 to allow maximum height of 75 feet (8 storey) but 13.66% of the buildings in the area are built even higher than 8 storey. By laws does not state anything about the design of the façade. However, the bylaw does restrict the projection of cantilevers on the streets and the courtyards which rarely seems to be followed in the area. The bylaws seems to be encouraging high rise high density, considering the commercialization in the area.

Satisfaction level and issues regarding the built environment

Only about one fourth of the sample population answered that they were satisfied with the house whereas about 60% respondents answered that they were neither satisfied not dissatisfied while 16% respondents said they were dissatisfied with the house. Lack of space and lack of proper light and

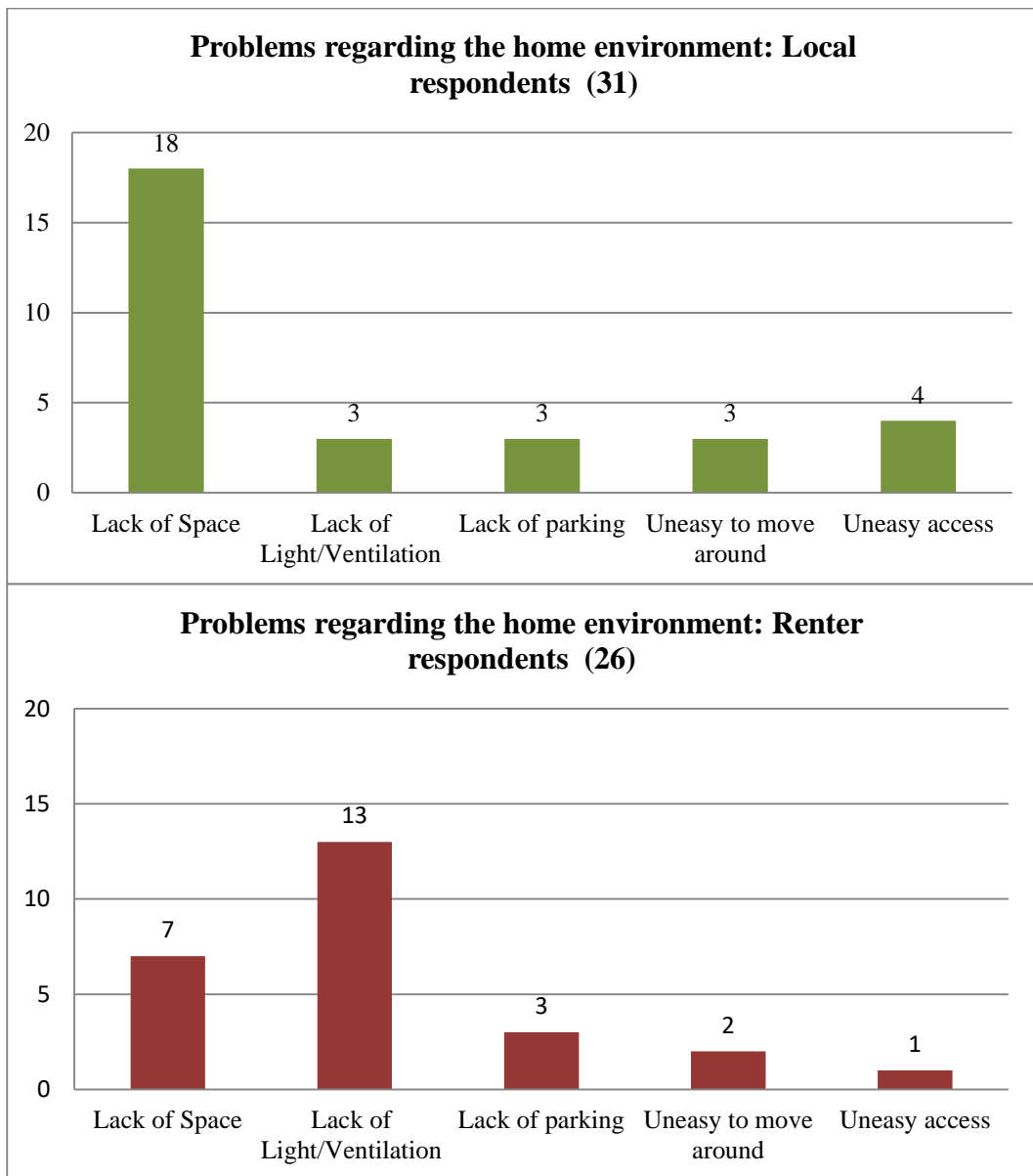


ventilation were identified as the major issues regarding the house. Property partition among the family members has reduced the area of the individual house whereas the increased height has reduced the light and ventilation especially in the lower floors. Other issues that were identified were lack of parking space, uneasy access and



difficulty to move up and down because of the increased height.

The problem of lack of space were felt more by the owners as they would have had larger floor area in the past which was reduced after the partition whereas the problem of light and ventilation were felt more by the rented respondents as most of them were living in the lower floors which receives minimum sun light.



4.5.3 Street

Traditional streets served both as a movement space and social space, principle mode of transportation were by foot which offered more forms of social interaction and exchange. But now, with the need to accommodate fast moving vehicles streets are simplified tools for transportation and have lost a meaningful stage for public life (Cupers et al, 2002). Change in land use, building transformation and the increasing number of vehicles has caused numerous negative effects on the form and function of streets in the area. The earlier ratio of street

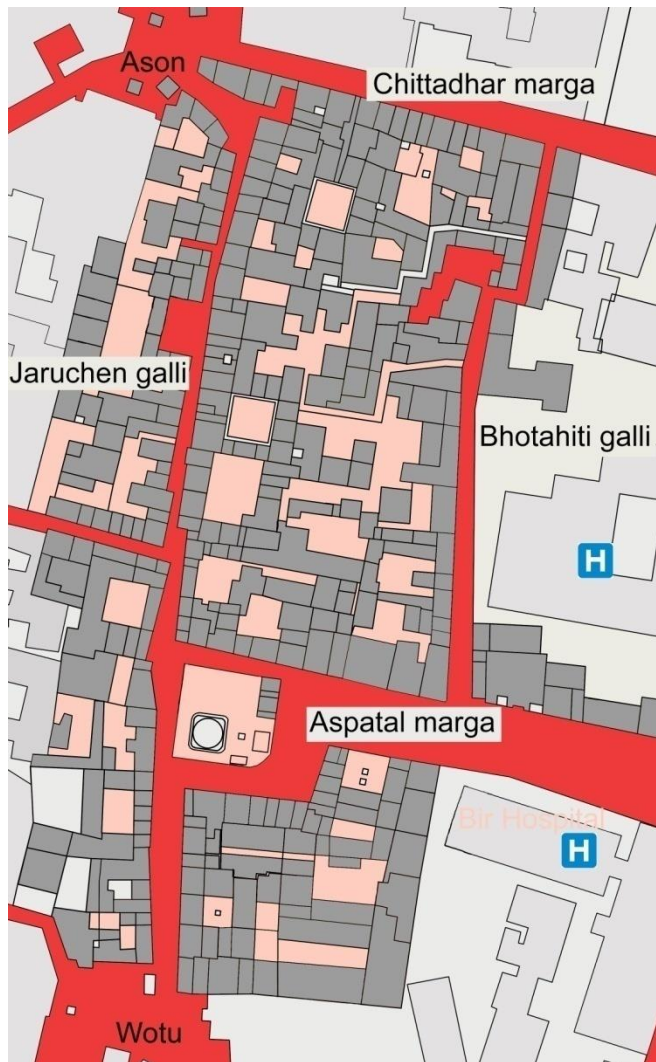


Figure 16 Streets in the Mahabouddha area.

width to building height, volumetric definition and the unity of the street scene have been completely destroyed by buildings of varying height and architectural style. The current streetscape is chaotic without any sense of place and identity (Shrestha, 2011).

There are four major streets in the study area Aspatal marga, Jaruchen galli and Tukebamarga. Aspatal marga is the widest road in the area that links MahabuBaha with Kanti path which is the the main north-south road of Kathmandu. This road is the main reason for the place being developed as a commercial hub as all the goods for the various shops are brought through this road in mini trucks. Cars and bikes are haphazardly parked on either side of the road and the portion of road in front of Mahabukacha Baha is used as taxi stand. As access for the four wheelers is restricted from Mahabu Baha they have to make a U turn to go back creating more congestion.

The other prominent street in the area is Jaruchen galli which links Mahabouddha with the historic market square of Ason. The historical significance of this street is greater compared to other streets in the area because most the Bahas lie along this street. However in the present context the historic essence of this street is eradicated by haphazard building construction. The increased height of the buildings and variations in building facade has destroyed the earlier ratio of street width to building height and the sense of enclosure. The general trend of projecting floors from the second floor onwards have reduced the light and ventilation in this street, with artificial lights from the shops being its major source of light when the shops are closed this street is dark even in the daytime making it uncomfortable for pedestrians. The street around the Mahabu Baha is also occupied by parking, vendors and shop owners occupy street in front of their shop to display goods, and people shop directly from the street all of this has reduced pedestrian comfort on the street.

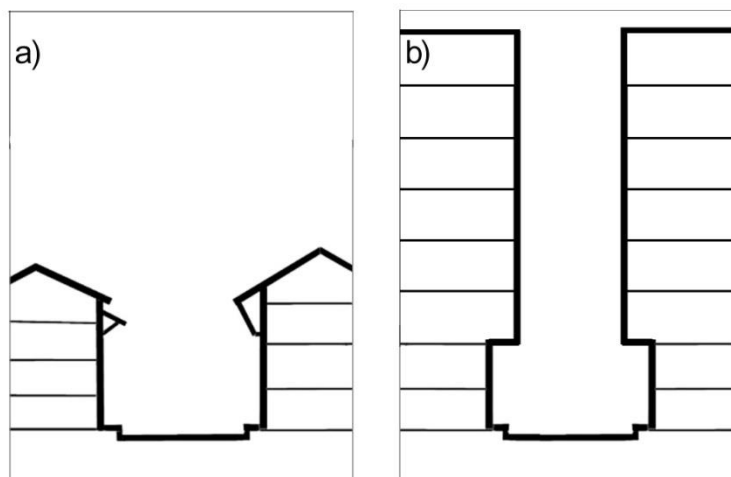


Figure 17 a) Traditional street width to building height ratio
b) Street width to building height at present.

Haphazard conversion of 3-4 storey residential houses into 7-8 storey mix-use structures and commercial activities without considering the infrastructure capacity has attracted extra traffic in the already congested area. The ratio of street width to building height is not within the desirable limit and hence there is no sense of

enclosure

and

street

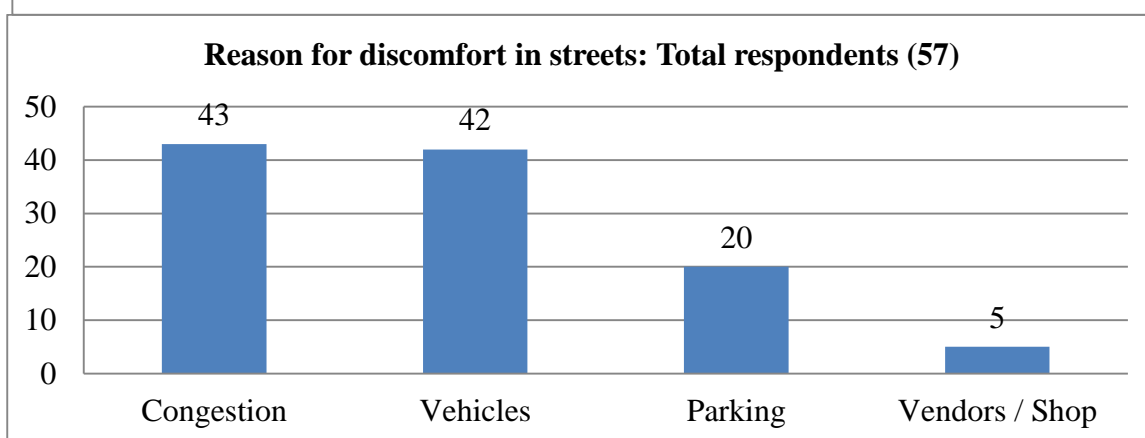
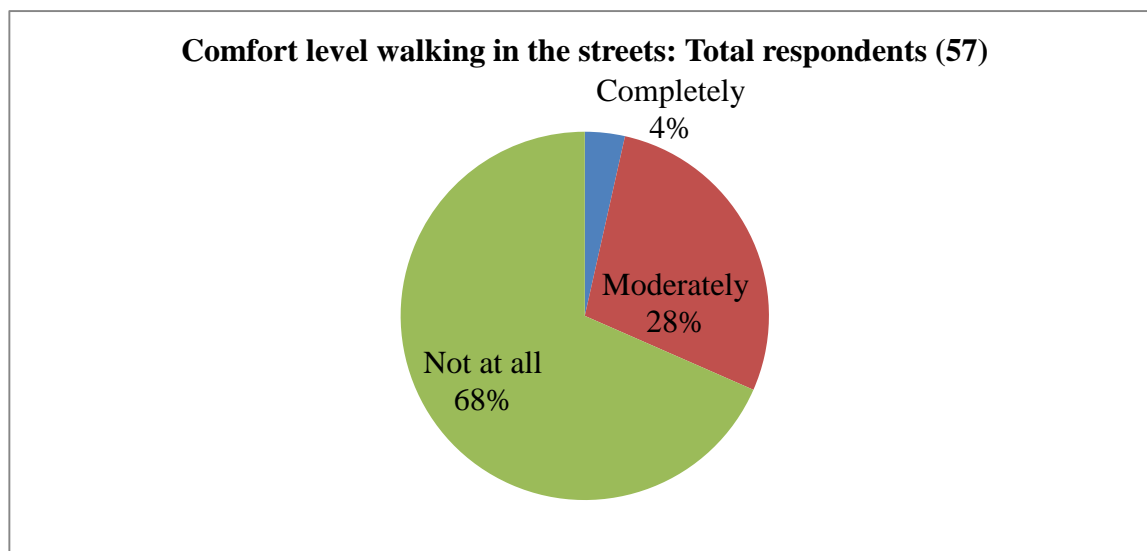
definition.



.Figure 18 a) Hapzard parking and taxi stand in front of MahabukachaBaha b) street around the MahabuBaha c) Way towards Wotu d) Jaruchengalli on saturday when shops were closed.

Comfort walking in the streets

More than two third of the respondents felt that it was not at all comfortable walking in the streets of the neighborhood while only 3% felt it was completely comfortable and 30% respondents felt it was moderately comfortable. Discomforts walking in the streets were felt slightly more by female respondents compared to their male counterparts. Congestion and vehicles in the narrow streets were identified as major reasons for causing discomfort in the streets. Excessive commercialization even in the narrow streets and the inner courtyards has increased the congestion. Many people mentioned that the streets are almost impossible to walk during the festive season.



Chet Prashad Dhungana who is years old and has been working as a labor in the area for more than 30 years said, *“It is very difficult to walk in the streets during the peak hours in the morning and evenings and almost impossible to walk during the festivals due to congestion. The problem is also intensified due to haphazard parking and it is especially difficult for us as we are stuck in the street with the heavy load in our back.”*

Maharjan who owns an electronic shop inside Mahadev chowk says, *“The display of the goods outside of the shop in the already narrow street has intensified the problem so shop owners shouldn’t be allowed to do that. As the four wheeler access is only up to Mahabu Baha the goods has to be unloaded there and carried manually to different shops which is very difficult due to congestion so specific time in the morning should be allocated for that activity.”*

4.5.4 Courtyards (Bahas and chowks)

One of characteristic feature of traditional towns of Kathmandu are its courtyards (Nep. Baha, bahi, chowk, nani) distributed all around the settlement. These courtyards are part of street network and were the focus of social settings used for various daily activities such as children playing, washing clothes and dishes, drying grain, sunbathing and socializing. In addition, courtyards were also used to conduct feasts during important social events along with other special functions during religious functions. Although the traditional courtyards in the area are still intact, haphazard infill and encroachment in many ways have destroyed the earlier urban form and the balance between built up and open spaces.

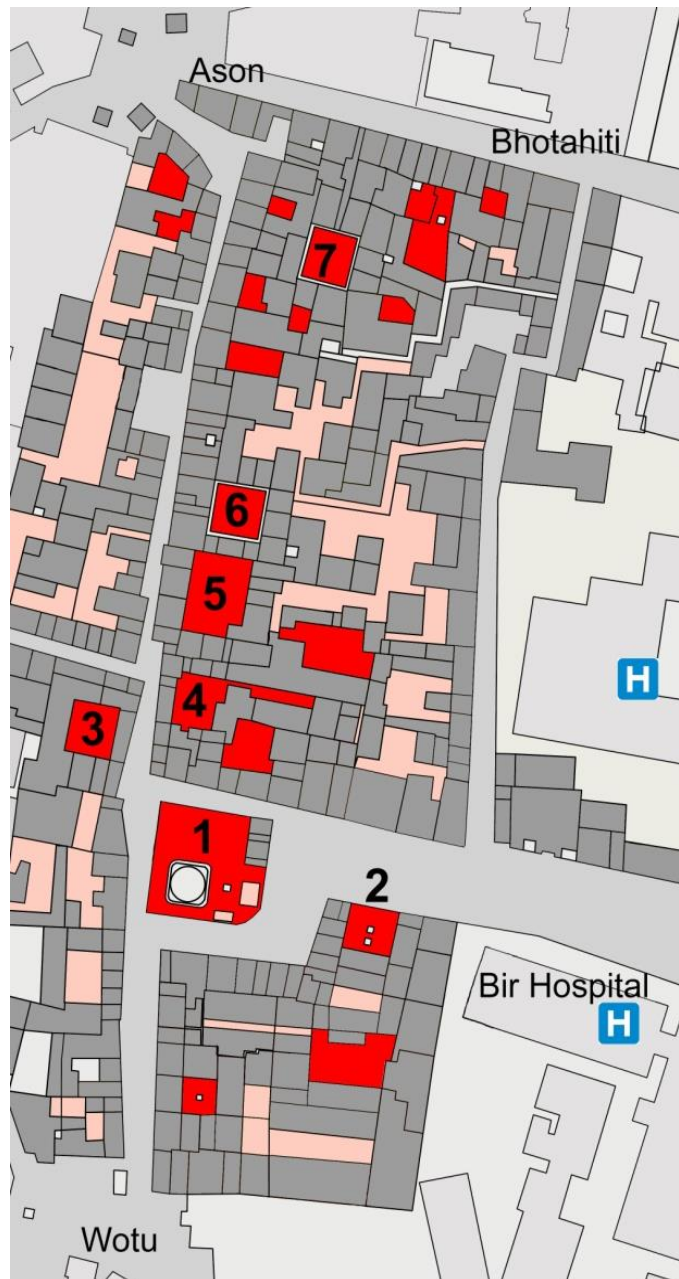


Figure 19 Mapping of courtyards in the area.

Mahabouddha area also has many courtyards most of which are *Bahas* with 1) *Mahabu Baha* being the largest and the most prominent one. Other major courtyards in the area are 2) Mahabukacha Baha, 4) Mahadev chowk, 5) Okha Baha, 6) Ason Baha, and 7) Dagu Baha. Most of the courtyards in the area are seriously affected by the immediate built environment, commercialization and modern transportation needs. Increased height of the buildings beyond the desirable limit has blocked the light and

ventilation in the courtyards making them dark and damp. The sense of enclosure of the earlier period has been converted into a sense of suffocation. Lack of light also has a psychological effect, as people perceive it as unsafe and restrain themselves from using them. Business activities have also been extended into inner courtyards and they have been invaded for incompatible commercial uses such as providing seating for the café / teashop, displaying commercial items and parking. Invasion of courtyards by incompatible singular use of parking has reduced its functionality for other activities while the business activities have reduced the level of privacy, discouraging people to use it for daily activities and socialization. As most of the courtyards are left totally isolated and empty during the evenings after the shops are closed, it has encouraged some illegal activities such as use of drugs. Such illegal activities have also raised safety concerns for the people living in the area. All of these factors are making courtyards undesirable for relaxation, socialization, communication and celebration of events, hampering the scope of bringing people from different walks of society together ultimately weakening the social ties and public life.

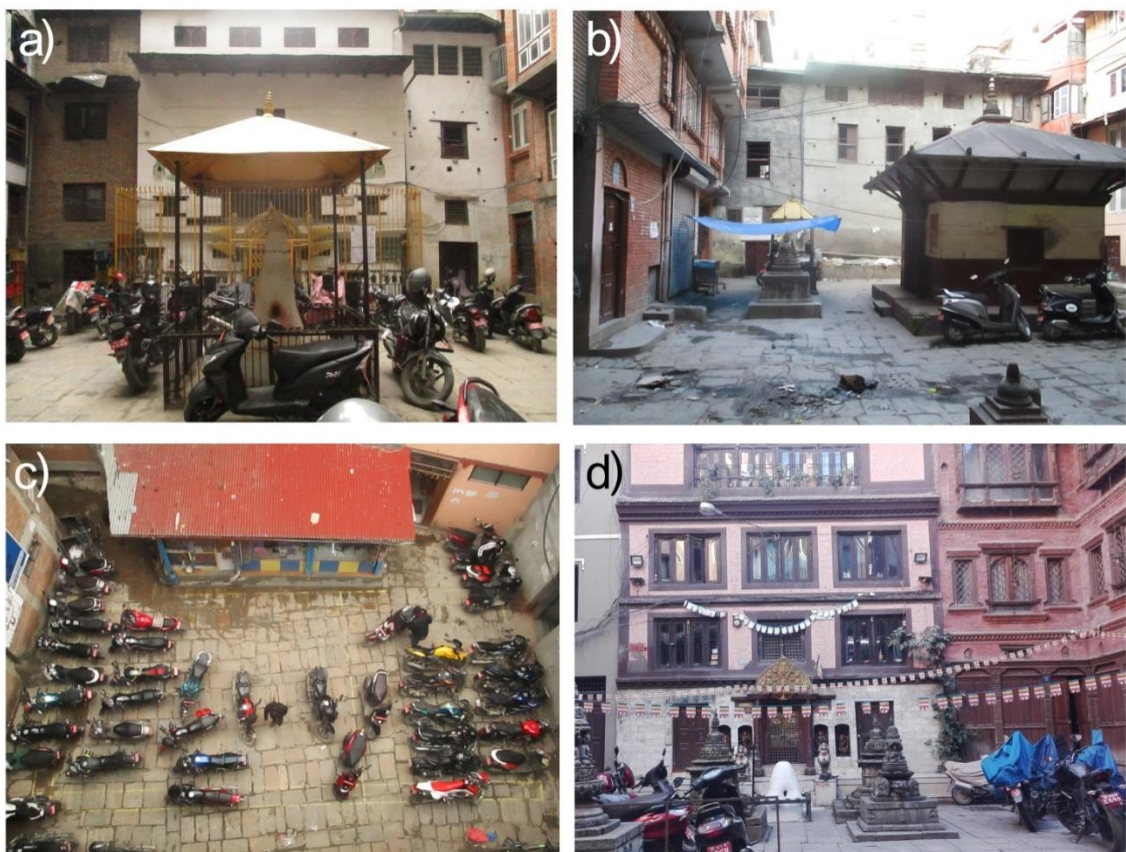


Figure 20 a) Bikes parked at Asan Baha, b) Deserted looking Mahadev chowk c) Bikes parked in one of the courtyards in the area d) Dagu Baha

Mahabu Baha is the biggest and most preserved Baha in the area, it serves as a major lifeline for people living in the area for various reasons. Buildings do not immediately enclose this Baha like other Bahas, it is enclosed by walls and streets from all sides. Even though the surrounding buildings are tall, it does not block the light and ventilation in this Baha. Parking is also restricted in this Baha for outsiders and only five Shakya families who reside inside the Baha are allowed to park their bikes. Baha was previously used for selling agricultural products, a temporary shed was also built and in the recent times was occupied by vendors, however after the protest from the locals vendors have been removed from the Baha, and commercial activities are restricted at present. Traditional pati that existed in the Baha have been converted into shops by one of the guhthi and the local shakyas are currently initiating to restore the pati. Restrictions of shops and vehicles have made this Baha more spacious for various other activities. This is the liveliest and vibrant Baha in the area, filled with people from different walks of life. With most of the other courtyards in the area occupied with parking, this is also the only courtyard where children could play freely. Children from all around the neighborhood gather during the evenings and weekends to play here.

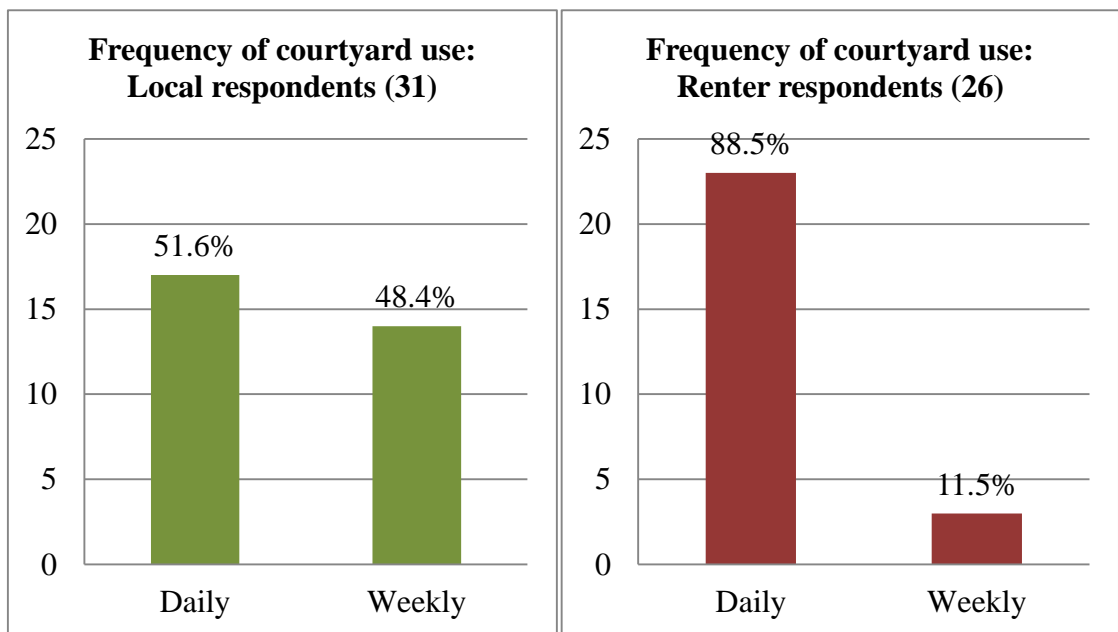


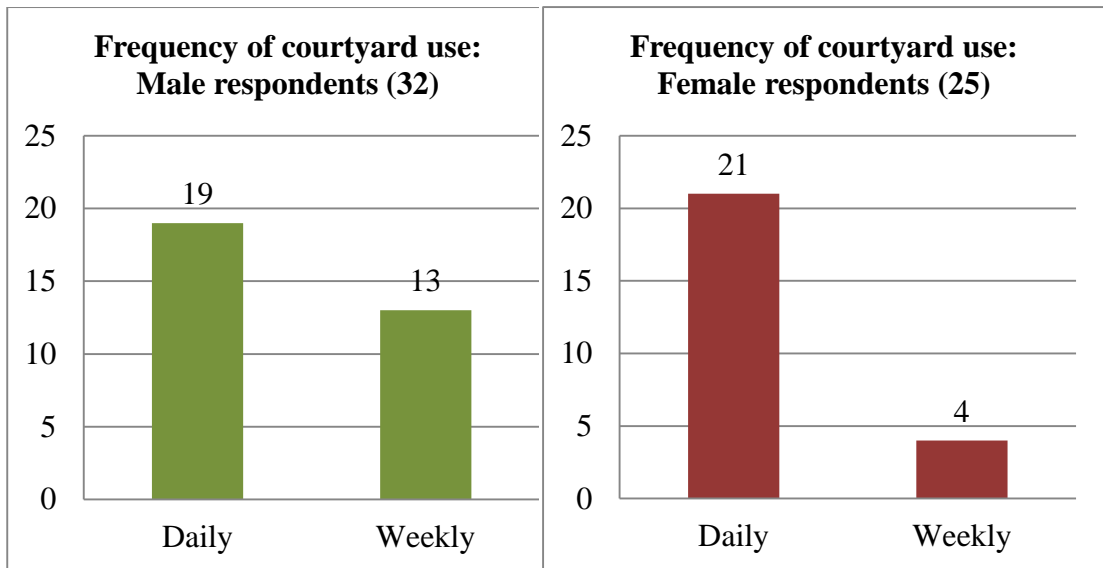
Figure 21 People sun basking and socializing at MahabuBaha b) Pulkisi dance being performed during Indra jatra at MahabuBaha

Frequency of use of courtyards

More than two third (70.2%) of the interviewees responded that they have been using the courtyards on a daily basis while only 29.8% responded that they use it weekly

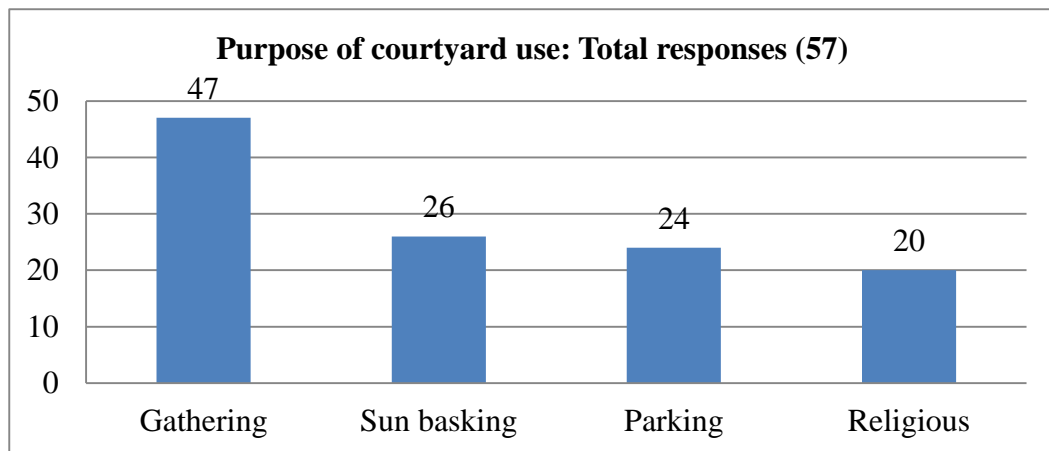
and none of the interviewees responded that they don't use it at all. This reinstates the fact that courtyards are integral part of the life of the people in the area. It was found that the rented respondents were using courtyards more frequently than the locals did with 88.5% of the rented respondents using it daily while only 51.6% locals were using it daily. This is because the people on rent were mostly living on lower floors of a building so are physically close and more connected to the courtyards. Most of them also live in a cramped space with limited or no sunlight so some of their daily activities like washing and drying of clothes, sun basking were also shifted to the courtyard while the owners live in the higher floors and are gradually losing their connections with the courtyard. Courtyards being used for household activities is the reason for female respondents using it more frequently than their male counterparts, with 84% of female respondents using it daily while only 54.3% male respondents were using it daily.





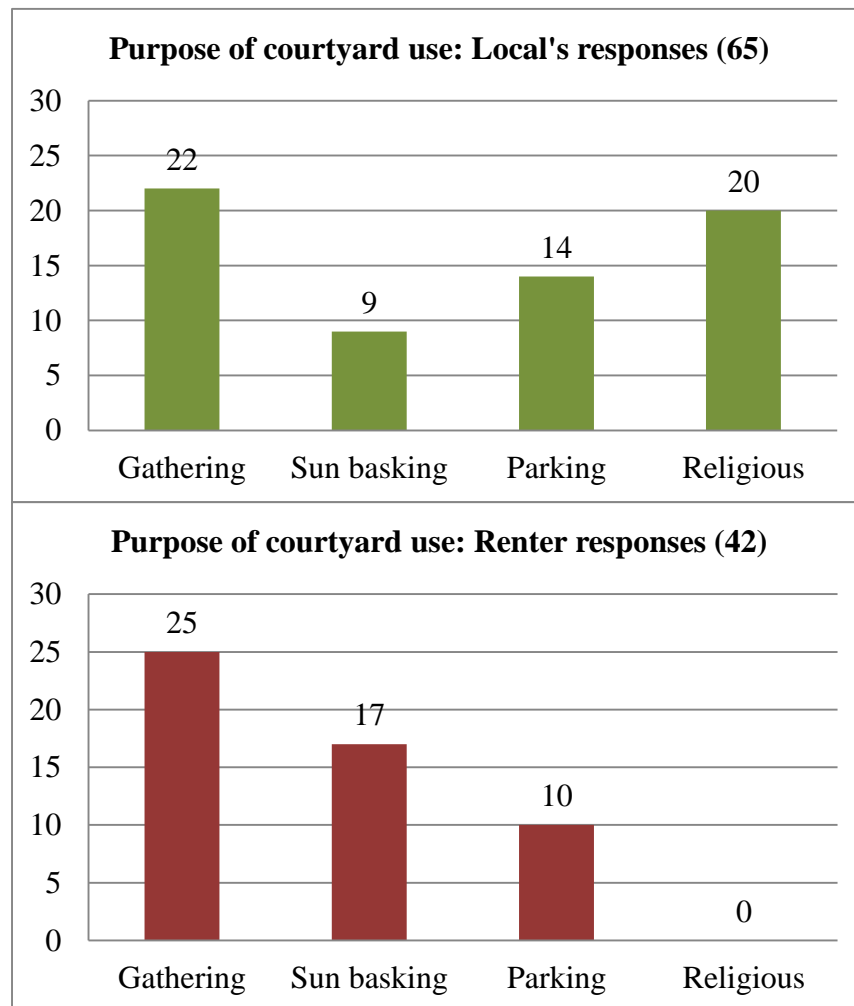
Purpose of use of courtyards

Leisure activities like social gathering and sun basking were the most common activity in the courtyard with 39.2% of the sample population using it for social gathering and 21.6% using it for sun basking while the courtyards were also used for parking by 20% and for religious activities by 15.8% of the sample population.



As per the questionnaire survey, social gathering was the most common activity in the courtyards followed by sun basking, parking and religious activity. While leisure activities were mostly concentrated in Mahabu Baha other courtyards in the area were used for parking. While courtyards were commonly used for gathering and parking by both locals as well as renter respondents, rented respondents were using it more for sun basking than the locals. Renters in the area mostly live in the lower floors of a building and does not have access to the upper floors. Since lower floors rarely

receive sunlight, they had to come out to the courtyards while the locals reside in the upper floors, which receive enough sunlight. Through the questionnaire survey, it was also found that only local people were using the courtyards for any kind of religious activity while the rented population was largely unaware of the religious importance of the courtyards.



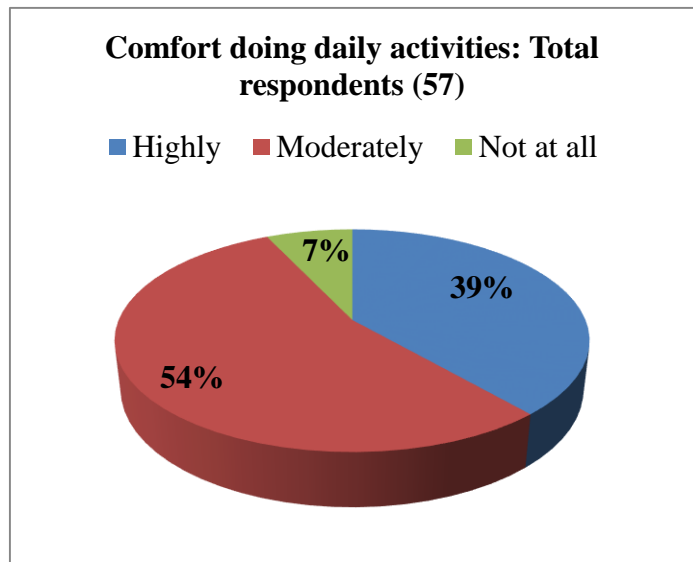
During the focus group discussion most of the children said that they play daily in the courtyard during the evening after school while few of them said they only play during the weekends and holidays. Mahankal School is very close to Mahabu Baha and students from the school play daily on the courtyard. Karate class is also conducted every day in Mahabu Baha from 7am to 8am by the local club and most of the male kids in the area take part in it. The children around the Mahabu Baha also

said that courtyards were the best aspect of the neighborhood as it allows them to play.

4.6 Perception analysis

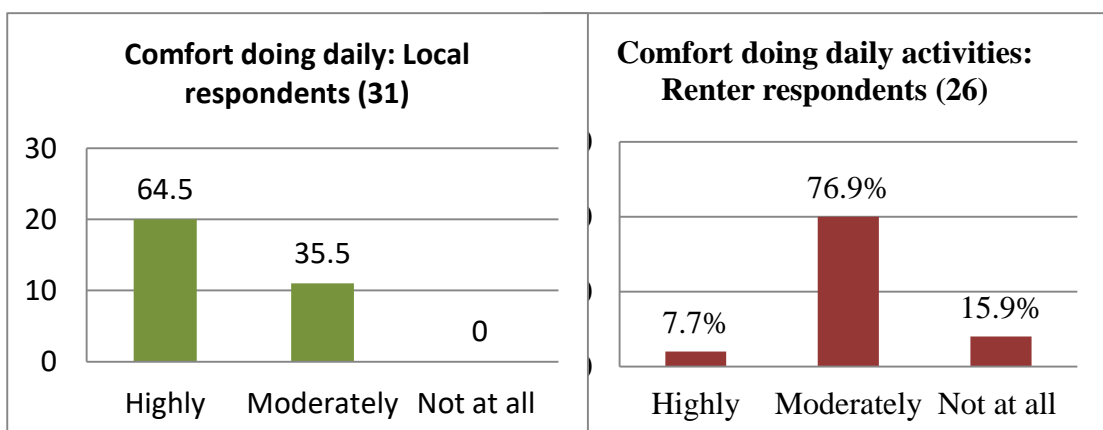
4.6.1 Comfort doing daily activities in the neighborhood

Little more than half of the respondents felt moderately comfortable doing daily activities while 38.6% of respondents felt highly comfortable and only 7% respondents felt it was not at all comfortable. As per respondents having historic market of Asan, Bus Park and Bir hospital in the near proximity have made daily life much easier. All the daily



grocery items and other items are easily available at Asan, having bus park nearby have improved mobility whereas having a hospital nearby have made daily life easier especially for the elderly for their regular medical checkups.

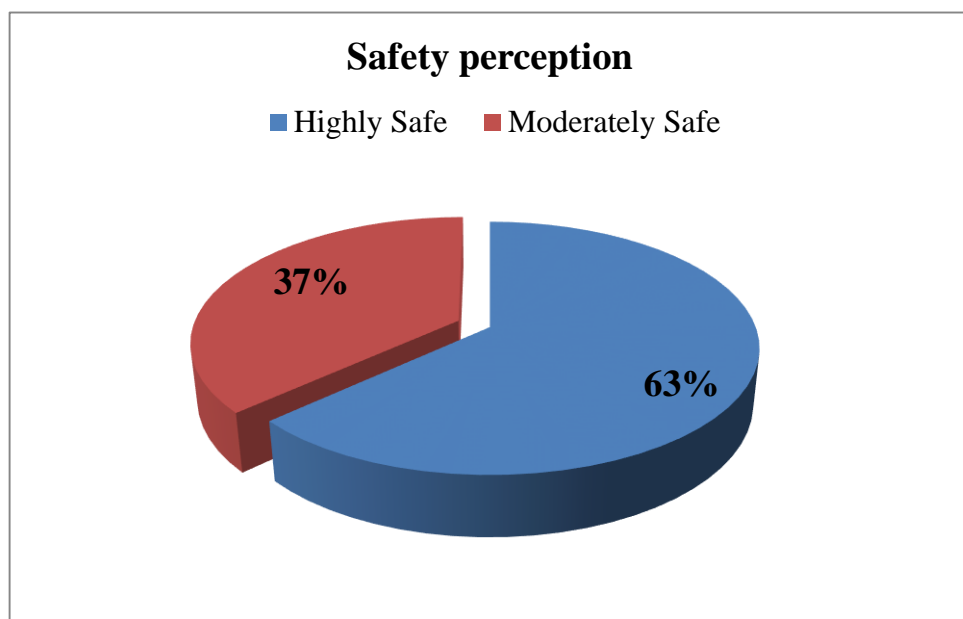
Local respondents felt more comfortable doing daily activities in the neighborhood than the rented respondents. 64.5% local respondents felt highly comfortable while only 7.7% renter respondents felt the same and 15.9% renter respondents felt not at all comfortable doing daily activities. Locals felt more comfortable because they knew



the place and people better than the renters.

4.6.2 Safety perception

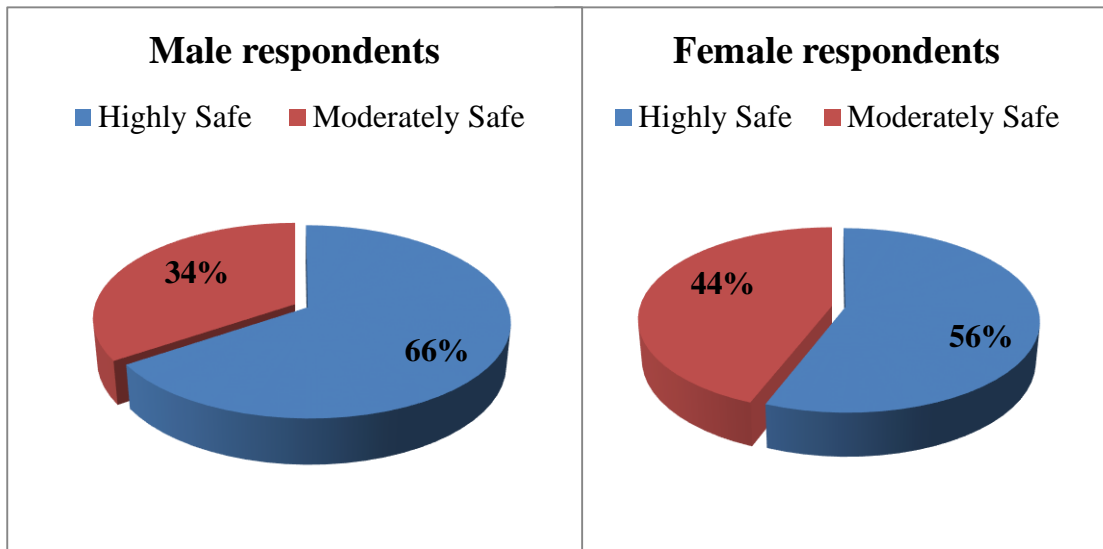
About two-third of the representative sample felt that the place was highly safe while little more than one third of them felt it was moderately safe and no respondents felt that the place was unsafe. According to the respondents, the case of robbery and theft has not occurred in the area for many years and the presence of Bir hospital nearby makes the place safer even at nighttime as the emergency of the hospital and pharmacy would be open all night. Having hospital nearby also has psychological effect that makes people feel a lot safer knowing that even if something happens the hospital is just one-step away, anything will be immediately taken care of, and if the life of a person is connected or concerned with the situation then it can be saved. They also said that the private night guards are deployed at various places making the place safer. However, people did say that even though crime rate is minimum in the area it feels unsafe to walk in the streets during the evening and night after the shops are closed, as it would be dark and lonely. The other concerning thing regarding the safety according to them is illegal activities happening in the evenings like the smoking of weed and use of drugs by the youngsters. The children also highlighted this during a focus group discussion that they have seen youngsters using drugs in the area and some of addicts tried to approach them so they feel the place is unsafe



because of the same reason.

Gender wise safety perception

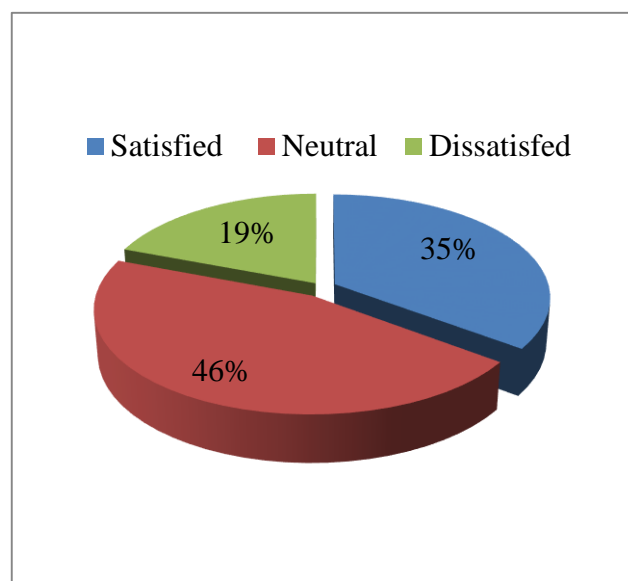
Male respondents felt the place was safer compared to the female respondents with 66% of them responding that it was highly safe while only 56% of the female respondents felt the same about the place. The streets and courtyards are poorly lit so

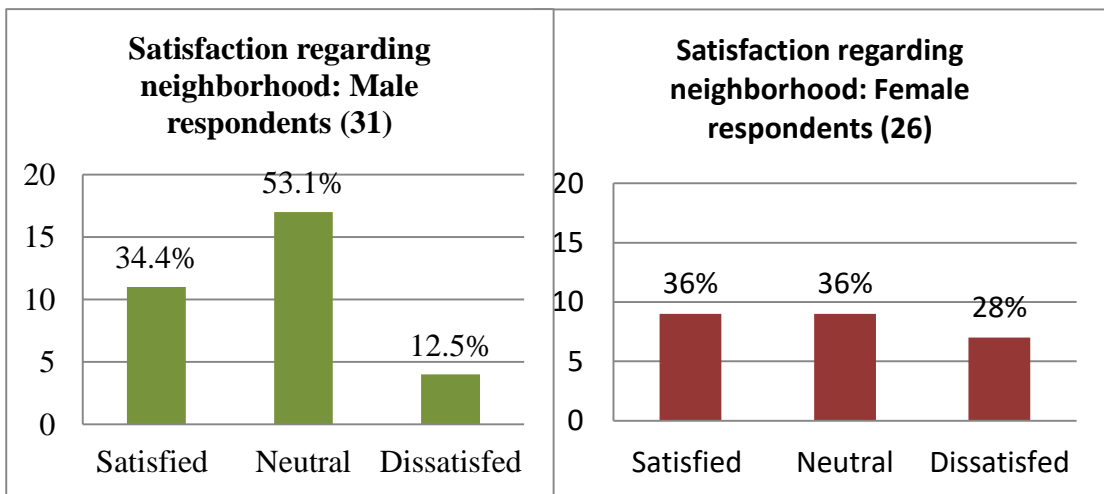
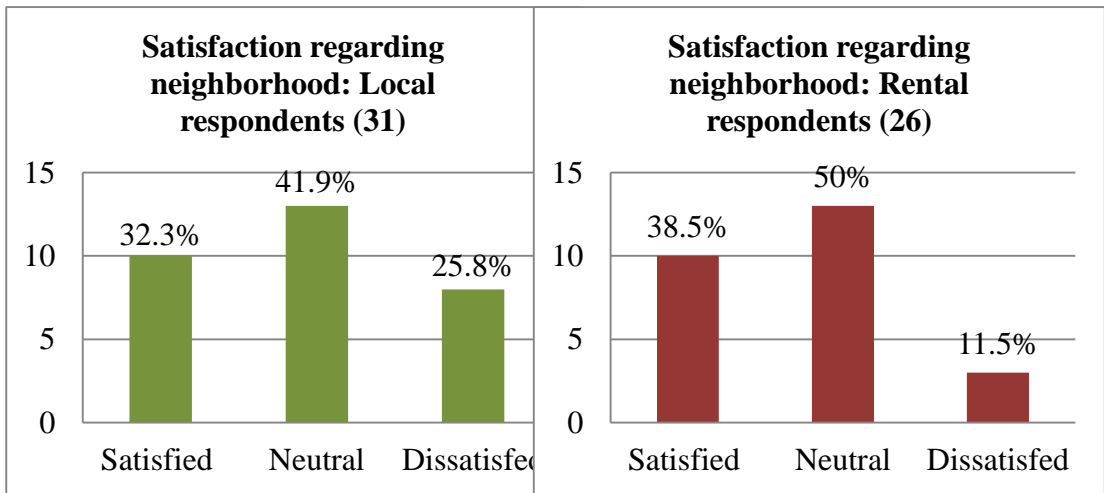


it is uncomfortable to walk in the streets and go to the courtyard after the sunset especially for women.

4.6.3 Overall neighborhood satisfaction

Almost half of the interviewees were satisfied with the overall neighborhood while 40% people were neither satisfied nor dissatisfied and 16% of the people were dissatisfied with the neighborhood.

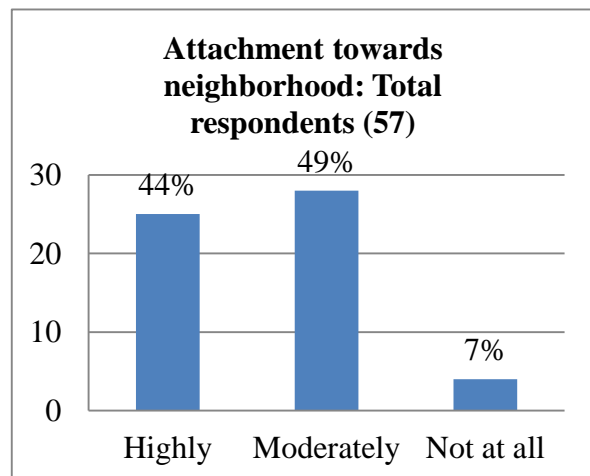




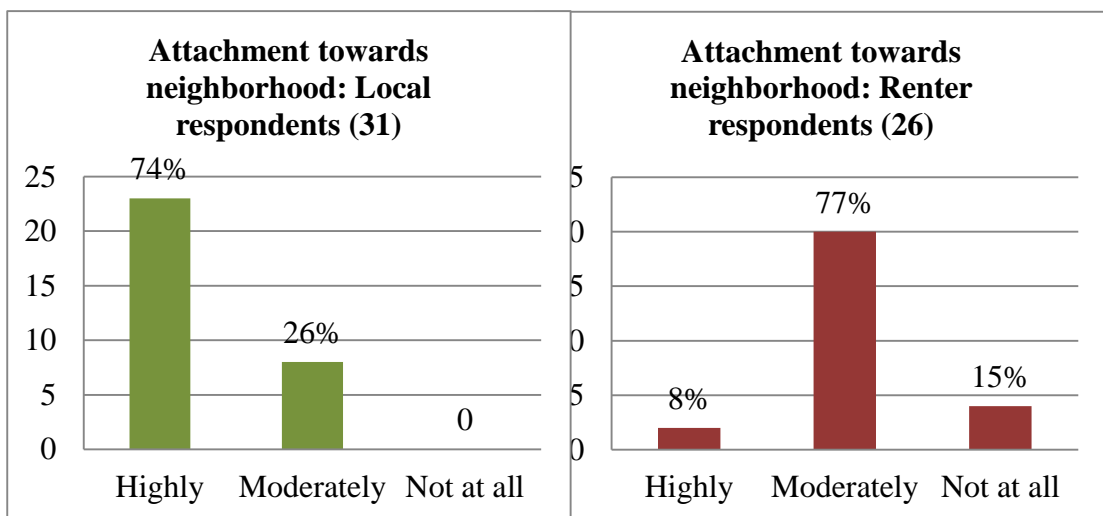
More local respondents were dissatisfied with the neighborhood compared to the renters. The main reasons for their dissatisfaction are excessive commercialization diminishing residential quality, loss of historical and cultural significance and inadequate urban services. It was also found through the perception survey that female respondents were more dissatisfied than male respondents.

4.6.4 Attachment towards the neighborhood

Almost half of the interviewees said that they were moderately attached with the neighborhood while 44% responded that they were highly

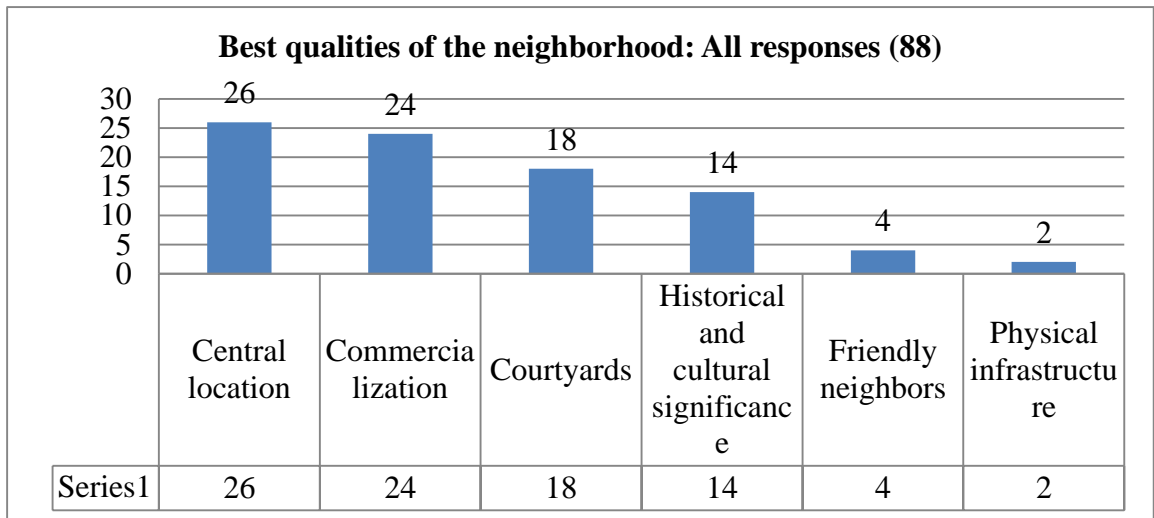


attached and only 7% of the interviewees said that they were not at all attached with the neighborhood. Locals were more attached with the neighborhood with 74% answering that they were highly attached. Locals have deeper ties with the place as many of them were born and raised there; higher attachment is also associated with the religious and cultural linkage with the place while most of the rented population have recently shifted in the neighborhood for commercial reasons and also don't have religious and cultural linkage hence are less attached towards the neighborhood. Only 8% of the respondents on rent felt high attachment with the place while 77% felt moderate attachment and 15% felt no attachment at all.

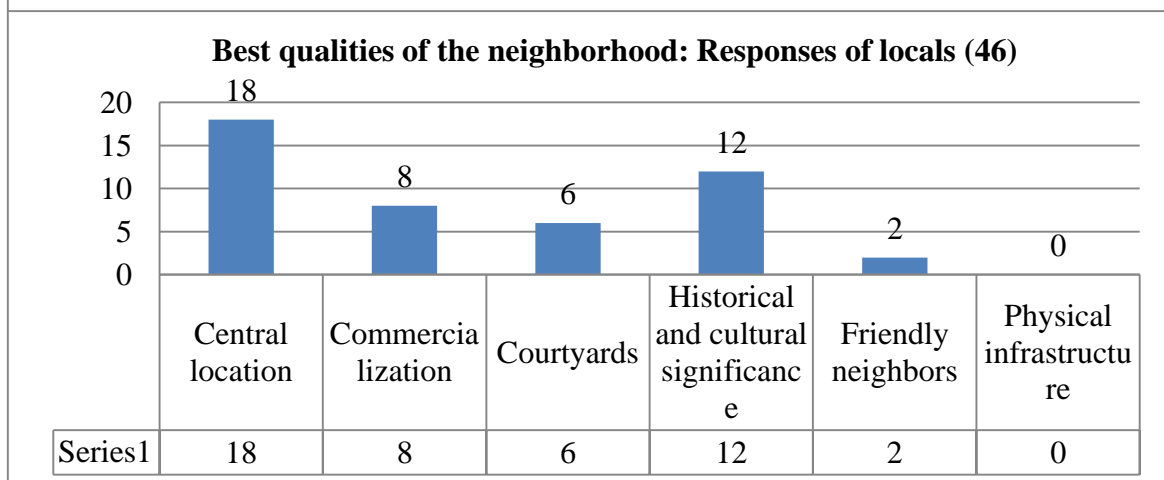
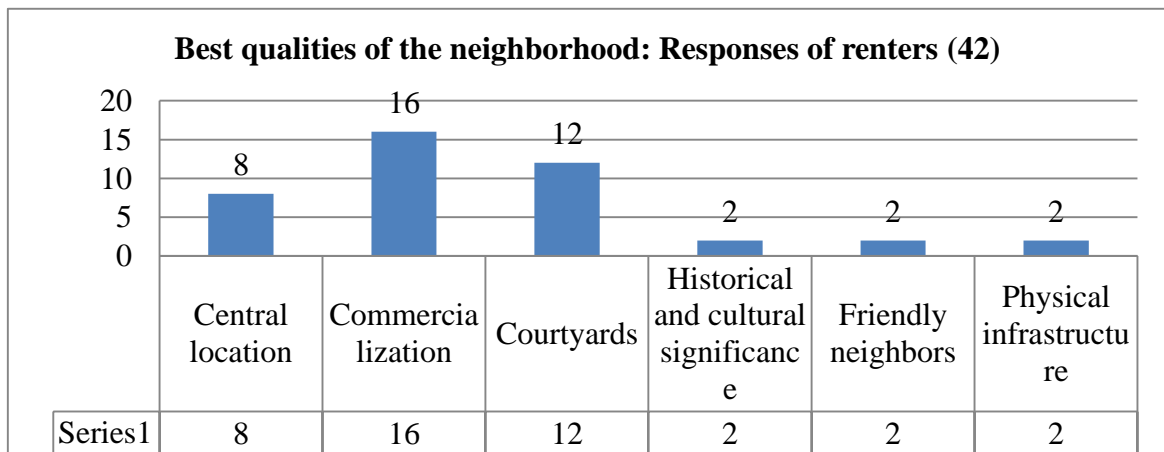


4.6.5 Best qualities about the neighborhood

Most of the respondents recognized central location of a place as its best attribute; they said that central location along with presence of Bus Park, historic market of Asan and Bir hospital in near proximity have made life easier. People mentioned that having a bus park nearby have made it easier for them to move around the town while all the daily grocery items and other items are easily available at Asan and Bir hospital in the near proximity has made daily life much easier especially for the elderly for their regular medical checkups. Followed by this, commercialization, provision of open space in form of courtyards, historical and cultural significance was identified as the major positive things about the neighborhood.

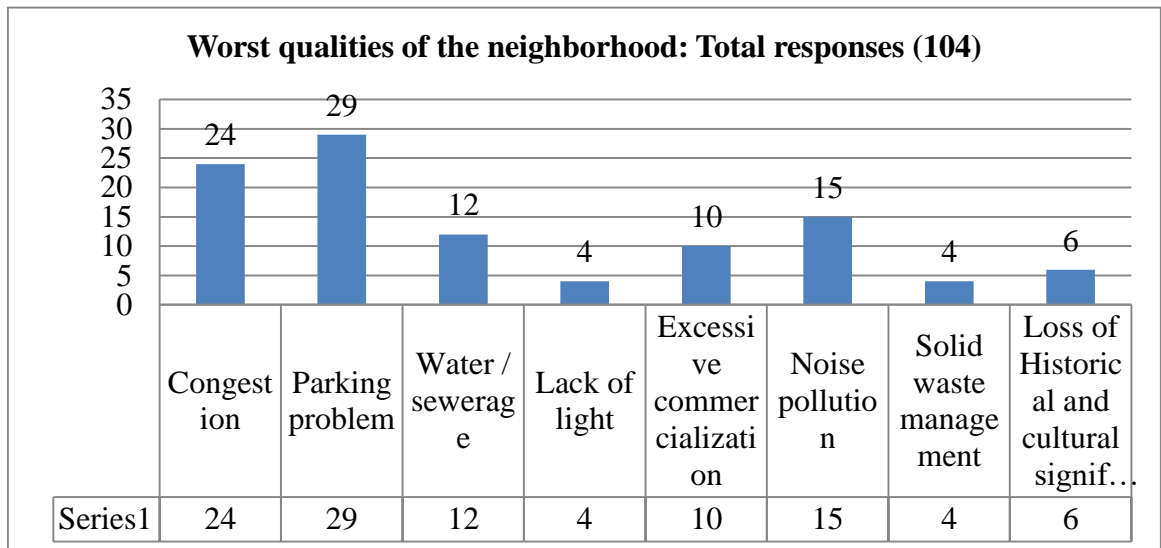


More local residents responded that central location along with the historical and cultural significance of the place to be its best attributes, while the people on rent associated more with the commercialization as most people have rented for commercial purpose and provision of open space as the best thing.



4.6.6 Major issues about the neighborhood

Most of the respondents felt unmanaged parking and congestion to be the major issue in the neighborhood. People agreed that the large influx of people is necessary to sustain the commercial activity in the place but felt that it could be lot managed. Other problems that people associated with were noise pollution, lack of drinking water, sewerage problem, excessive commercialization and loss of historical and cultural



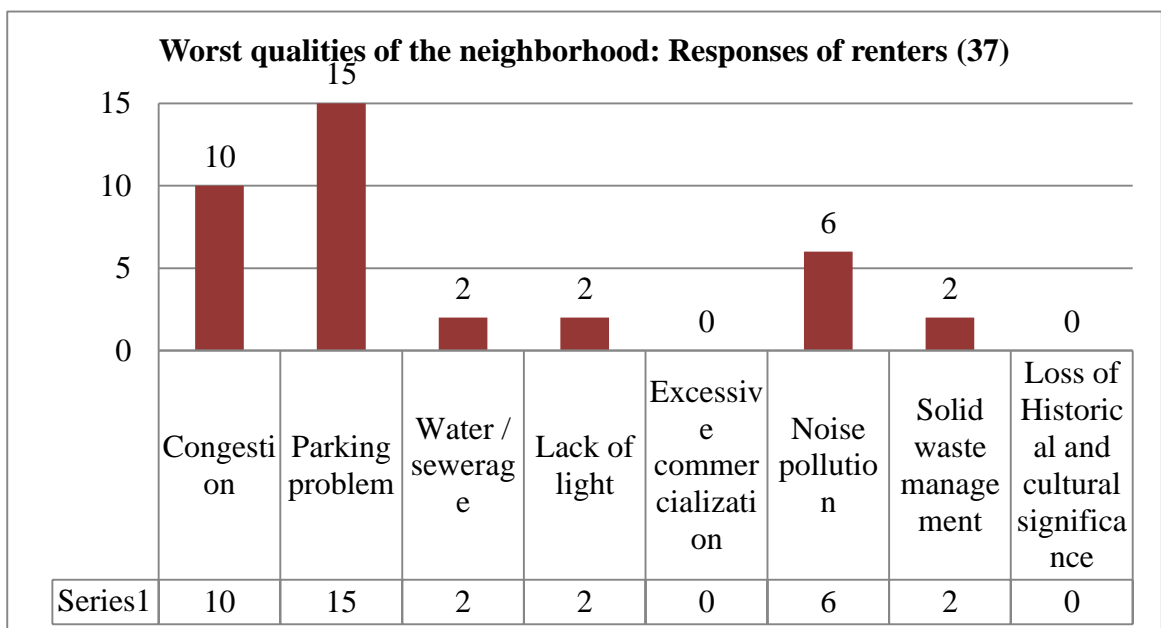
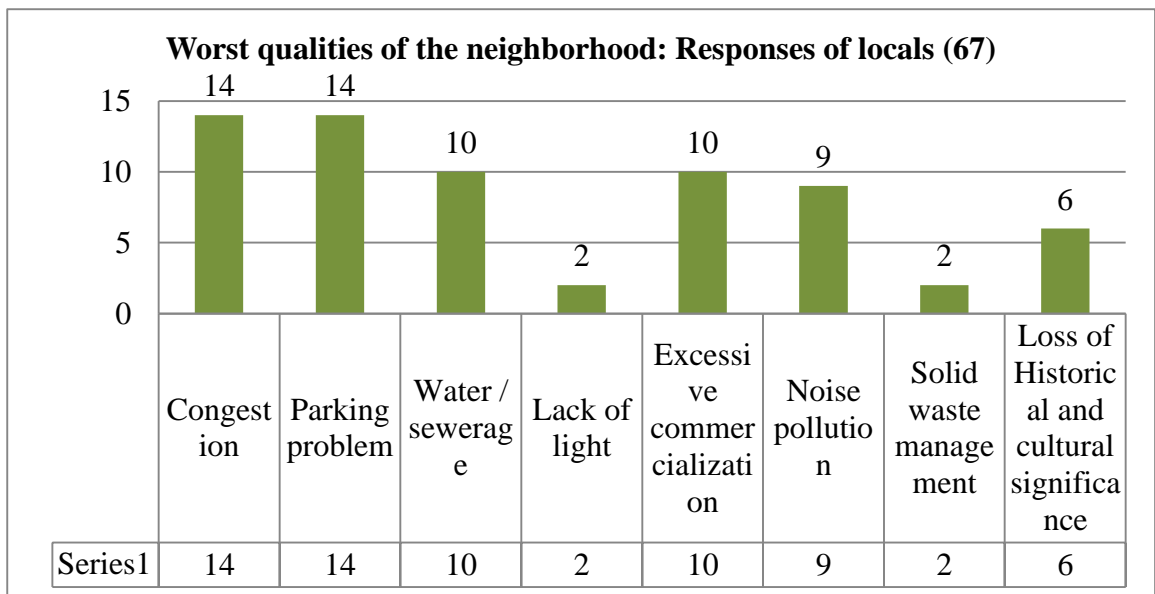
significance.

Locals as well as the renter respondents felt the problem of congestion, unmanaged parking and noise pollution however, the problem of lack of drinking water and regular sewerage blockage were felt more by the local respondents, as they are more responsible for it. This also highlights the fact that the increased density in the area is creating pressure in age-old infrastructure that was not upgraded to meet the new demands of the place. The problem of excessive commercialization along with loss of historical and cultural significance was felt only by the local respondents. Commercialization was the very reason for most of the renter respondents to move into the place and they are also not much aware about the history nor are culturally associated hence did not share the same concern regarding that as the locals.

Selina Bajracharya who lived in Asan Baha said, *“We regularly face problem of sewerage blockage in the area, in every two to three months sewerage is blocked resulting in overflow. The foul smell from the overflow creates a big nuisance, which*

also could be hazardous to health, and we have to deal with it for several days until the blockage is cleared.”

Another resident of Asan Baha, Chandan Das Rajbhandari said, “Problem of sewerage is severe in the area. I think the main reason behind this problem is the population density; more than forty-five people are living in some of the rented house and age old sewerage system was not designed for such high population density, along with this many eateries restaurants dispose all of the waste into the sewerage resulting in blockage of sewerage every few months.”



4.7 Socio-Cultural aspects

4.7.1 Social activities

Mitra Yuwa Club is the local youth club and is the most active social organization in the area. Most of the local youths in the area are the member of the club and it has been actively working in the area since its establishment in 1967 AD. The club regularly organizes social events such as blood donation programs, health camps, cleaning campaigns, relief programs, awareness programs etc. Apart from the social events club also conducts various cultural and religious programs in the area, especially during the Jatras. The club has its own building behind Mahabukacha Baha, which is currently rented to various shops as well as to the ward office and is the main source of income for the club. The club also collects minimal amounts ranging from 100rs to 500rs from shops in the area to conduct religious programs in the area. The club is also partially responsible for the parking management in the area.



Figure 22 a) Health camp for elderly at MahabuBaha b) Blood donation program at MahabukachaBaha organized by MitraYuwa Club

4.7.2 Cultural and religious activities

Newars are the major ethnic group living in the area, since it's a part of traditional town of Kathmandu. Different communities within the ethnic group such as Shakya, Bajracharya, Maharjana, Tamrakar, Tuladhar, Vaidya, Kapali etc live in the area however considerable number of rental population from different ethnic group also inhabit the area. Buddhism is the major religion in the area although Hinduism and its influence also prevail. All major festivals that are celebrated in Kathmandu are also

celebrated at Mahabouddha however there are some especial place specific festivals and rituals that are discussed below.

4.7.2.1 Nitya puja

Every Buddhist Baha had some common religious exercise each day known as Nitya puja. One of the main features of this worship is Buddha puja, which is the worship of the main image of Buddha enshrined in the Baha the Kwapa Dyo. In the past, the Nitya puja was performed at every Baha in the area however at present the Nitya puja is only performed at Maha Bu Baha and has been discontinued at other Bahas. The Nitya puja is performed by the initiated male members of the five Shakya families residing in Baha, known as Sangha. This Nitya puja is done in rotation, previously the rotation was done from eldest to the youngest member through the entire roster but nowadays anybody from sangha who is available and willing performs the service. A daily puja is performed in MahabuBaha every morning (shortly after sunrise, time depending on the time of the year). The shrine of kwapa-dya is only opened for the Nitya puja and is closed rest of the day. The attendant on duty is called dya-pala or dya-pa. Before the earthquake of 2015AD the dya-pala of Mahabu Baha also used to perform daily rituals in Mahabukacha Baha but this has also



Figure 23 Main shrine of Buddha at Maha Bu BahaDyochen

shows the relation between the tangible heritage and intangible heritage and how the destruction of one leads to the fading out of the other. In the modern times due to lack of knowledge and interest especially among the younger generation of the initiated members, lack of funding for the Guthi and busy schedule of the initiated members have greatly impacted the continuation of this custom.

Guna Kaji Shakya (Bare of MahabuBaha) said *“There is no funding for the Nitya Puja from the government, I am doing Nitya Puja every day and special puja during special occasions on my own funding. The MitraYuwa Club does provide some funding for special puja during the festivals. Also there are only three members who have the knowledge to perform the puja and younger generation are not much interested. I don’t know how long I can continue the Nitya puja.”*

4.7.2.2 Gunla, Panchadan and BahiDyoboyegu

Gunla is a month long annual festival of the Newar Buddhist. Gunla is the name of the tenth month in the Nepal sambat which corresponds to the mid of July to mid of August in the Gregorian calendar and the whole month



Figure 24 Tamrakargunlabajankhala playing devotional music at MahabuBaha.

to the Buddhist. During this festival devotee observe fasts, recite Holy Scriptures and visit Swayambhu and other Buddhist sites playing devotional music known as Gunlabajan. It is believed that the festival is celebrated to alert, and in the meantime, save the people from natural calamities such as floods, and landslides that occur during the monsoon season. Throughout the month, there used to be special observances at the Bahas of Mahabouddha but now it is limited to few specific days, as most of the daily customs have died out. Following are the two customs that are still observed at the Bahas during this month.

4.7.2.3 Panchadaan

Panchadan is a festival of offering which is observed on the fourteenth day of the dark half of the holy month of Gunla. During this day the Buddhist families offer five different things which include rice grains, wheat grains, salt, money and money while also



Figure 25 Tamrakar family of Maha Bu Kacha Baha offering panchadan

displaying traditional artifacts and images of Buddha in the Bahas. Throughout the day the members of Shakya and Bajracharya clan of the town come and collect their share of offerings. At the end of the day the Phu bare comes and touches all the remaining offerings with a Bajra which marks the end of the ceremony. In Mahabouddha pachadan is still observed in few Bahas while families of some Bahas have discontinued this custom, also the number of Shakys and Bajracharyas coming to collect the offerings has reduced as most of the wealthy members and the younger generation no longer follows the tradition.

4.7.2.4 BahiDyoboyegu

Different buddhist families exhibit the image of Dipankar buddha, together with scroll paintings depicting life stories of Buddha publicly in Bahas on the ground floor of a Dyo chen or even private houses hence it is known as Bahi Dyo boyegu (Bahi – courtyard, Dyo – deity, boyegu – exhibit in Nepal bhasa). Images are displayed in almost every Bahas in the area which is visited by thousands of members of Gunla bajan khala (musical groups of various tole) along

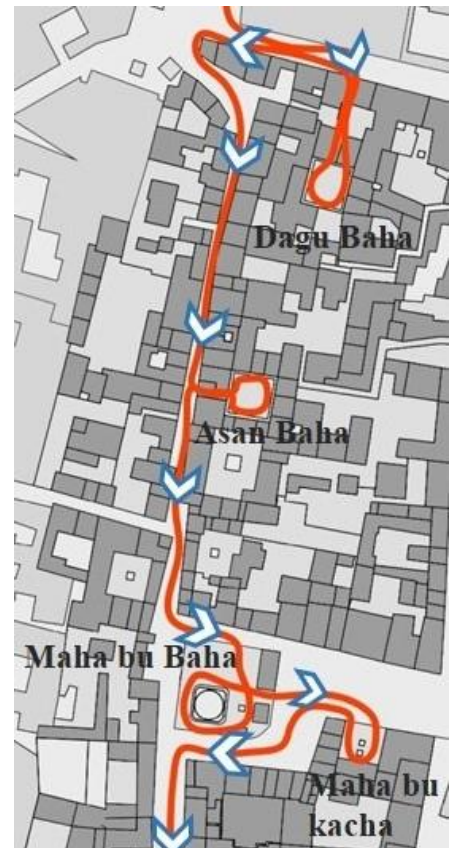


Figure 26 Route for BahiDyoswawonegu

with their musical instruments (Locke, 1985). During this occasion the Bahas are also cleaned and the chaityas in the Bahas are also decorated with golden jwelleries. But at present due to the fear of theft, lack of funding and lack of interest the number of Buddha idol and jwelleries exhibited for the festival has decreased.



Figure 27 a) Chaitya at Baha decorated with golden jewelries b) Devotees lighting lamps and playing devotional music

4.7.2.5 Paya (Khadgajatra)

Paya is one of the major festivals in Mahabouddha where devotees from different clans take out a parade impersonating warrior deities carrying a Khadga (sword) with them. It is observed on Dashami, the tenth day of Dashain where guthi members from Maharjan and Tamrakar clan conduct separate Paya procession.

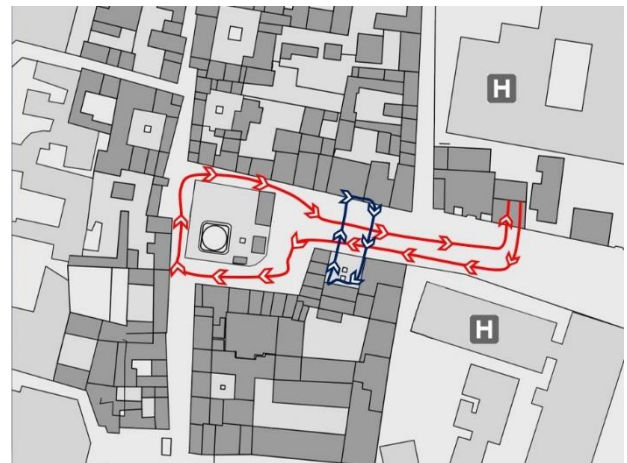


Figure 28 Route for Paya procession

In these processions the elders of the community

lead the procession with about twenty people following them. The Paya of Maharjan clan is taken out from Ajima Dyochan in front of Bir hospital, the procession also concludes in the same Dyochan after taking round of Mahabu Baha whereas the Paya of Tamrakar clan is taken out from Agamchen in Mahabukacha Baha and only taken round of the same Baha. The Paya is regarded as the victory procession, celebrating

the triumph of good over evil following the legend of the victory of Goddess Durga over Mahishasura, the demon. Even though the Paya procession is uninterrupted every year, its continuity is getting difficult each year.



Figure 29 Paya procession of Maharjan clan

CHAPTER 5

5.1 Findings and conclusions

5.1.1 Environment

While the physical transformation of the place was widely acknowledged, some locals and people who have been doing business in the area for a long time also mentioned about the commercial transformation of the place from traditional market of agricultural grains and jewelry shops of Tamrakars to the present Chinese market (khasa bazar) which have displaced the traditional shop owners.

Home environment

Because of tremendous pressure created by rapid urbanization and increased socio-economic activities the buildings in the study area have changed drastically over time. Through the site study, it was found that changes mainly occurred on two levels: conversion of residential uses into commercial or mixed used and three to four storey high buildings into seven to eight storeys. This conversion of the traditional space from low-rise high density to high-rise high density has numerous negative consequences on cultural aspects and microclimate of a place, which has ultimately affected the quality of life of people. Vertical division of the building because of the property partition created the need for placement of essential functions such as staircase and toilets in already partitioned building reducing the habitable space. Lack of space was identified as the major issue regarding the home environment during the questionnaire survey, with locals associating with it more than the people on rent. It was also the main reason for locals to move out from the area. Most of the modern buildings in the area have gone against the building bylaws and expanded the room by projecting the floor towards the street and courtyard from second floor onwards. The projection of floors has increased the floor space to some extent but has reduced the light and ventilation, which is identified as the second major issue regarding the home environment. Increased heights of the building have significantly reduced the sun light and ventilation especially in the lower floors, making the space less hygienic and habitable. Lack of sunlight and ventilation combined with the use of modern

construction materials have intensified the problem as reinforced cement concrete with brick walls and cement plaster are not preferable from thermal comfort point of view. Lack of sun exposure on a long-term basis can have detrimental health effects like weak bones, foot deformities, some cancer, depression, skin problems, weight gain and cognitive issues. Mostly the rented population feels the brunt of this as most of them live in lower floors some of which does not receive sunlight at all and they do not have access to upper floors and terraces. Increased dampness with insufficient light and ventilation has made the interior spaces almost unlivable during winters. It was observed that rented population spent most of their daytime at MahabuBaha, which is the only courtyard in the area that receives proper sunlight.

Outdoor environment

Outdoor environment like streets and courtyards were the foci of social activities in the traditional towns and most of the daily activities took place in the courtyards, however vertical expansion of the area with the construction of tall buildings with projection from second floor onwards has significantly reduced the light and ventilation on the streets and courtyards. As a result, the streets and courtyards that were used for socialization and other daily activities have become less habitable and hygienic.

Courtyards

Along with the built environment an effect of modern transportation needs were also seen in the courtyards as Asan Baha, Okha Baha and Mahadev chowk along with other courtyards in the area are used for parking. Parking occupies large space in these courtyards leaving hardly any space for other social and daily activities. Commercialization also has its effects on the courtyards as business people have extended their business activities in the inner courtyards as well, it was found that courtyards have been encroached for incompatible commercial activities such as providing seating for the café or teashop, and displaying of commercial items. Surrounded by tall buildings from all sides with reduced light and ventilation the courtyards in the area have converted the earlier 'sense of enclosure' into 'sense of suffocation' whereas the incompatible commercial uses have reduced the level of privacy discouraging people to use it for socialization. Lack of proper lighting in the

inner courtyards has also encouraged illegal activities like use of drugs among youngsters during the evenings. Such illegal activities have also raised safety concerns for the people living in the area.

Mahabu Baha, which is also the biggest Baha in the area, is the major lifeline for people in the area for various reasons. Buildings do not immediately enclose this Baha unlike other Bahas, the layer of buildings only comes after the road. Even though the surrounding buildings are tall, it does not block the light and ventilation. Parking is only allowed to the residents of four building in the Baha while commercial activities are also restricted. All these factors make Mahabu Baha very lively and vibrant with people from various parts of the area coming to the Baha for socialization. With most of the courtyards in the area occupied with parking this is also the only Baha where children could play freely.

Streets

Streets in the area were found to be extremely crowded throughout the day until the shops are open and were almost deserted in the mornings and evenings after the shops are closed. With tall buildings blocking the light, Jaruchen galli and Tukeba marga were found to be dark even during the daytime when the shops are closed. Even though Aspatal marga is lot wider than other streets in the area, more than half of this street is occupied with parking and taxi stand. There is huge demand for parking space as it is a commercial area and because the nearby Bir hospital does not have its own parking space. Along with these factors, loading and unloading of goods on any part of the street at any time and encroachment of street space by hawkers, shop owners have significantly reduced pedestrian comfort in the streets. Most people in the area especially the elderly citizen find it extremely uncomfortable and difficult to walk in the streets of the area. The labors in the area that carry commercial goods manually into different shops have also faced the problem more as they are mostly stuck in the street with heavy load in their back.

Leisure and recreation

Open spaces created in the form of courtyards were traditionally the foci for all the leisure and recreational activities. However, most of the courtyards in the area were

found to be used for incompatible activities like parking and commercial activities leaving hardly any space for leisure and recreation. With surrounding buildings blocking the light and air, most of the courtyards were found to be dark and damp discouraging people to use for leisure and recreation. Mahabu Baha was the only courtyard in the area which was lively and vibrant. Proper light and ventilation, better visual and physical access, restriction of incompatible activities have encouraged people to use it for various forms of leisure and recreation. Daily leisure activities like social gathering and sun basking is very common in this Baha, it is also extensively used for various social and religious events. This is also the only open space in the area where children could play freely, Baha was found to be filled with children during the evenings and weekends playing different games and sports. However, as Mahabu Baha is the only courtyard among many which is currently used for recreational activities, it could be concluded that with the loss of functionality of public space, the opportunities of leisure and recreation is very limited in the neighborhood. The level of social interaction among the residents is decreasing with an adverse effect on sense of community.

Safety and security

The neighborhood was found to be highly safe with minimal case of theft, robbery and violence. The presence of Bir hospital makes the place much safer as the emergency of the hospital and nearby pharmacies are open all night and there is constant movement of people even at night time. Presence of hospital also made people and especially elderly feel more secure with a belief that anything related to health issues would be immediately taken care of. The increased safety of the place is also due to the private night guards which are deployed as the area is highly commercial. The only concern regarding safety in the neighborhood is illegal activities among youngsters like the use of drugs. Most of the courtyards in the area are dark and unattended after the shops are closed, which have encouraged such illegal activities.

Cleanliness and pollution

Noise pollution was identified as of the major problems in the neighborhood. Streets in the neighborhood are mostly crowded and with no restriction on vehicles, people

and vehicles have to share the same narrow street which creates a lot of chaos and noise. Frequent sewerage blockage and its maintenance also creates lot of nuisance due to the foul smell and digging of street. Municipality employees collect solid waste every day so the place was found to be fairly clean during the observation.

5.1.2 Individual

Ease and efficiency

Most respondents said they felt ease and comfort doing the daily activities in the neighborhood, major reason for easement was the central location of the place with market square of Asan, Bir hospital, Bus Park all being in the near proximity. As locals had better knowledge and understanding of the place they were more at ease doing the daily activities compared to the renters. However, as pedestrian movement was compromised due to commercialization, people felt extreme difficulties walking in the streets of the neighborhood. Discomfort on the streets was felt especially by the elderly and over congestion, vehicles, and unmanaged parking were identified as main reasons for causing discomfort on streets.

5.1.3 Social cultural aspects

Social bonding and neighborly relation

Social bonding and neighborly relation seemed fairly good in the neighborhood apart from few disputes regarding land and property. The bonding between locals with locals and renters with renters was good however there was some social gap between locals and renters.

Social activity

MahabuBaha is the foci for social activities in the neighborhood and everyday social activities like gathering, sun basking playing of children etc. mostly takes place at this Baha. Other courtyards in the area have been invaded by incompatible uses and very limited social activities currently takes place in those spaces. Most of the social events in the neighborhood is organized by local youth club named Mitra Yuwa club. The club regularly organizes various social events such as blood donation programs health

camps, cleaning campaigns, relief programs, awareness programs etc. The club also conducts various cultural and religious programs in the area especially during Jatras and festivals. While the cultural and religious programs are only reserved for locals, social events are participated by both locals as well as renters. Such frequent social events is helping to strengthen the community bonding in the neighborhood by bridging the gap between locals and renters.

Social support

Social bonding in the neighborhood is nice and people in the community do support each other, however MitraYuwa club takes the lead in conducting relief programs at a time of need or during crisis situation. The club actively participated in rescue operations and debris clearance after the Gorkha earthquake of 2015. Even in recent crisis situation caused due to the spread of COVID-19, club distributed food items and also served meal for several days to the needy people, especially labors working in the area.

Cultural and religious activity

Mahabouddha area is culturally very vibrant, all the festivals and Jatras celebrated in Kathmandu are celebrated here as well. Buddhism is the major religion in the area however Hinduism and its influence is also seen. MitraYuwa club also organizes cultural programs and functions by collecting money from the shops in the area. But in the recent times, religious activities in the area are declining due to many reasons such as commercialization, gentrification, lack of fund and lack of interest. Along with these reasons, deplorable condition of religious buildings (Dyochen) in the area has also impacted the intangible cultural aspects associated with it. Many customs and festivals have been shortened and simplified while some of the customs have diminished completely. Culture and festivals forms an important part of identity of a place and also helps in community bonding hence its preservation is very important.

CHAPTER 6

Recommendations

There are no cities in the world, which could resist change, as change is inevitable so Kathmandu valley is no different. As other historic cities, it also faces the pressure of urbanization and globalizations, development and environment.

Act and policy

Building Bylaws

Kathmandu municipality amended the building bylaws in 2018, which changed the maximum building height in the area from 45 feet (5 stores) to 75 (8 stores). Even though most of the modern buildings in the area are above five storeys very few of them are of eight stores. This change in the bylaws would encourage more people to increase the height of their building, which will result in higher density and more congestion that would create more pressure in already chocking urban services in the area like water supply, sewerage and waste management. The increased height of the buildings will also worsen the problem of light and ventilation in the streets, courtyards and in the lower floors of the buildings making these spaces even less hygienic and habitable. Increasing building height without proper safety considerations also greatly increases risk during hazards like earthquake and fire hence this amendment in the bylaws should be reviewed. As the area is commercial and rent is remarkably high, greater floor area would mean greater benefit to the owner. In this scenario, KMC could also provide some incentives or facilities to the owners in some way for lowering building height or aware them about the negative consequences otherwise they will be motivated to defy rules. Bylaws also restricts the construction of cantilever balcony or room over the public street and courtyards however this rarely seems to be followed in the area as most of the modern buildings have extended rooms by projecting floors from second floor onwards which have significantly reduced the light and ventilation. Even though demolition of already constructed buildings that defied the bylaws seems impractical, KMC should be more concerned for strict enforcement of the bylaws in the future.

Urban design guidelines and redesign of houses

The historical essence, volumetric definition and unity of the street scene in the area have been destroyed by buildings of varying height and architectural style. Building bylaws is the only legal tool at present to regulate the new construction as well as check the vertical division and haphazard renovation and it doesn't seem adequate. Urban design guidelines should be developed for the renovation and reconstruction of houses in the area. Urban design guidelines would encourage designing of buildings that not only respect the traditional architectural vocabulary, but also respond to the climate and immediate surrounding buildings and the streets, thereby complementing the residential environment. The scope of the guidelines should also include the façade treatment for the existing modern buildings which do not comply traditional architectural vocabulary. The guidelines should be applied through flexible means such as building consensus among local leaders, local government including community, providing incentives for guideline followers and punishing defaulters.

House pooling

One of the main reasons for vertical expansion of buildings in the study area is property partition among family members, which resulted in division of traditional buildings. Habitable floor space in these divided buildings is significantly reduced, as the divided house would require new staircase, circulation space encouraging owners to build higher. House pooling is a multi-ownership housing concept which could be introduced in the area. In this concept buildings, along with the ownership would share internal and external infrastructure, such as the foundation, walls, beams, staircases and plumbing. By sharing infrastructures, one can get extra habitable as well as rentable spaces. Lower floors could be rented for commercial purpose while upper floors could be used by the owners for accommodation. However, the multi-ownership of the house should only be shared among the extended family members otherwise it will further encourage gentrification. The original footprint of the buildings should be maintained to preserve traditional footprint and the relationship between built environment and open space. The facade of the buildings should reflect

traditional architecture and since lots of intangible aspects such as traditional practices and rituals are associated with the buildings, the design through the house pooling should duly consider those intangible aspects.

Tax and Revenue

Kathmandu Municipality have passed “Kathmandu municipality finance act 2018” in order to set rates for various local taxes and to collect them. As per the act, KMC collects property tax, land tax, rent tax, business tax, parking charges and other taxes. Property tax rate should be set as per the height of the building, with higher rates with each additional floor from fifth floor. The higher tax rates would also discourage construction of tall buildings. The Rent tax is currently set at 10% of total annual rent amount. Mahabouddha is highly commercial area with very high rent, rent tax has a huge significance in overall revenue generation but KMC is largely inefficient in collecting tax. With no effective monitoring mechanism owners are paying much less tax producing fake documents showing rent amount to be Rs.5,000 / Rs.10,000 per month where in reality the rent amount in the area ranges from Rs.50,000 to Rs.1,00,000. KMC should devise monitoring mechanism for more effective tax collection, which would subsequently increase the overall revenue. Revenue thus generated should be spent in maintenance and up gradation of various infrastructures in the area.

Heritage restoration

KwapaDyochen at Asan Baha and Maha Bu Kacha Baha which were the main element of the Baha and held the community together is in a depleted state and posing threat to the people as they are badly damaged after the earthquake and are barely standing with the help of shoring. Traditional pati of Mahabu Baha that was converted into a shop has to be restored in its original form. There have been some notable restoration projects in the area in the recent past like the Restoration of AjimaDyochen and KwapaDyochen at Mahabu Baha and this heritage restoration process has to be continued with other depleted religious buildings. Restoration of these Dyochen can also help reestablish the lost connections with the past cultures especially among

the younger generations. Preserved structures also add character and charm, enhance neighborhood pride, and foster strong identity among generational residents.

Safety and security

Most of the courtyards in the area are accessed through an under pass of a private house. However in many cases houses which provide an underpass was found to be in dilapidated state which are more vulnerable during disasters. So, KMC should survey the situation of the connections to the courtyards and find ways to retrofit and strengthened the dilapidated buildings to ensure safe access. Also, most people are unaware of these inner courtyards and inner alleys so maps should be prepared and placed at appropriate locations showing connections to inner courtyards and inner alleys.

Preservation of intangible heritages promotion of cultural and religious activities.

It is not the tangible components of the place but rather the intangible components that make the place culturally lively and unique. Rituals, traditions, festivals are integral components of heritage which are not only integrated with the social life an identity of people but also establishes connection of people with the place hence should be well recognized. The local people along with the local club who are putting the effort out of their social customs and traditions will not be able to survive for long if government does not intervene to support, letting the community to take the lead. Certain percentage of the revenue generated form the rent tax should allocated for the continuation and preservation of intangible heritages.

Management of Commercialization

Unloading and transportation of goods

Mahabouddha being a wholesale market large quantity of goods are brought and stored in various stores in the area every day. Currently the process of unloading and transporting of goods is very unmanaged and done manually during any time of the day. This unmanaged way of unloading and transporting of goods is adding up to the congestion of the area and making lives difficult for everyone. Allotting specific time

in the morning for the unloading and transporting of goods when the place is not much crowded and introduction of some material handling devices would not just reduce the congestion but also makes the work lot more effective and efficient.

Encroachment of streets

Encroachment of the streets is major problem in the area with most of the shop owners occupying sidewalk or street in front of their shop to display goods, and people shop directly from the street. This has also contributed in congestion of the streets reducing pedestrian comfort and ability of people to walk freely in the neighborhood. Any kind of encroachment of streets for commercial purpose or otherwise should be strictly prohibited and the violators should be fined.

Parking management

Kathmandu Metropolitan city had introduced Smart parking system at Aspatal marga of Mahabouddha since July 2019. Although this system has helped to manage the parking problem to some extent, there is still huge demand for parking and most of the courtyards in the area are used for parking. Multi storied parking building and parking lifts especially for two wheelers should be introduced to address the huge demand for parking. Parking in streets and courtyards should be restricted and punishing mechanisms for violators like paying fines should be implemented.

The research concludes that changes in the immediate built environment and incompatible uses of the public spaces have impacted the quality of life of people. Transformation from low rise high density to high rise high density have made the lower floors of the buildings along with streets and courtyards very unhygienic as it barely receives sun light and proper air flow. Incompatible single uses such as parking have greatly reduced functionality of the public space, leaving hardly any space for social and recreational activities. Indigenous inhabitants are losing their ties with the place and the community which has significantly impacted on the continuity of the intangible cultural heritages. Excessive commercialization, haphazard construction of buildings and incompatible uses are deteriorating the urban spaces and the quality of life of people. Hence controlling mechanisms for the physical transformation, restriction on inappropriate uses and management of commercial activities along with

parking is essential for the traditional urban spaces to retain in functional quality and inherited spirit, ultimately improving the quality of life of the inhabitants.

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ANNEXES

Questionnaire

Introduction

Enumerator's name

House / Tole no:

Date:

Time of record:

Respondent's demographic information:

- | | | | | | |
|-------|---------------------|-----------|---------------------|-------------|--------------------|
| i) | Name / Contact info | | | | |
| ii) | Gender | Male | Female | Others | |
| iii) | Age group: | 18 - 34 | 35 – 50 | 50 - 69 | Above
70 |
| iv) | Level of education | Under SEE | SEE
Intermediate | / Bachelors | Masters
/ Above |
| v) | Occupation | Business | Service | Student | Others |
| vi) | Ethnicity | Newar | Others | | |
| vii) | House ownerships | Own | Rented | | |
| viii) | Vehicle ownerships | Bike | Car | N one | |
| ix) | Vehicle parking | Courtyard | Street | House | Others |

Environment

Q To what extent do you think the physical environment has changed over time?

Not at all Slightly Moderately Very
Extremely

Not at all Moderately attached Highly attached

Q. Do you plan to move out of this neighborhood in the near future?

Yes No Don't know

Level of independence

Q. Do you feel comfortable walking in the streets of the Neighborhood?

Not at all Moderately
Completely

- If not then what do you think has caused discomfort for you to walk around the neighborhood?

Congestion Vehicles Shops/vendors Parking
Lack of light Others

Q. IF no what do you think have caused discomfort for you to walk around the neighborhood?

Congestion Vehicles Parking Vendors / shops
Lack of light Unsafe

Q. Do you feel comfortable doing daily activities in you neighborhood?

Not at all Moderately Completely

Social relationship

Q Are you satisfied with your ability to socialize with your friends/neighbors/community members?

Not at all Moderately Completely

Q. Are you involved in any community organization in your neighborhood?

Yes No

- If yes what is the name of this organization?

Q. Do you use public spaces in your neighborhood (Baha, chowk, streets) for social activities?

Yes No

Q. How often do you use public space for socialization?

Daily Weekly Monthly Only during special
function or festivals Never

Q Do you feel comfortable using public spaces for socialization?

Yes No

Q For what purpose do you use the neighborhood public space (Courtyards)?

Gathering Sun basking Parking Yoga/exercise/sports
Commercial purpose Don't use at all

Q Do you take part in Jatras (festivals) that happen in the neighborhood?

Yes No Don't know

Q Do you take part in other social events other than jatras and festivals?

Yes No Don't know

Opinion on the neighborhood

Q What are the two best things about your neighborhood?

Q What are the two worst things about your neighborhood?

Q What changes do you wish for your neighborhood in the near future?

Site planning and design of residence (based on observation)

Q Building type? **Traditional (< 5storey)** **Modern RCC (Less than 7 storey)**
Modern RCC (More than 7 storey)

Q Building use?

Residential Mix use Commercial

Q Access to the building?

Small courtyard Big courtyard Narrow alley
Major street

Q Orientation of the building / facing of the main façade:

Q Number of storey?

Q. Number of rented floors?

Q Functional use of ground floor?

Residential Commercial Institutional Others

Q Number of rented floors

Results of questionnaire

A. Environment

A1 To what extent do you think the physical environment has changed over time?

Description	Total respondents		Locals		Renters	
	No.	%	No.	%	No.	%
Slightly	12	21.1	0	0.0	12	46.2
Moderately	10	17.5	6	20.0	4	15.4
Extremely	35	61.4	25	83.3	10	38.5
Total	57	100.0	31	103.3	26	100.0

A2 How satisfied are you with your neighborhood? (pollution, noise, congestion, comfort etc)

Description	Total respondents	
	No	%
Satisfied	20	44.0
Neutral	26	40.0
Dissatisfied	11	16.0
Total	57	100

Description	Locals		Renters	
	No.	%	No.	%
Satisfied	10	32.3	10	38.5
Neutral	13	41.9	13	50.0
Dissatisfied	8	25.8	3	11.5
Total	31	100	26	100

Description	Male		Female	
	No.	%	No.	%
Satisfied	11	34.4	9	36
Neutral	17	53.1	9	36
Dissatisfied	4	12.5	7	28
Total	32	100	25	100

A3 What are two best things about the neighborhood?

Description	Total responses		For local		For Rent	
	No.	%	No.	%	No.	%
Central location	26	29.5	18	39.1	8	19.0
Commercialization	24	27.3	8	17.4	16	38.1
Courtyards	18	20.5	6	13.0	12	28.6
Historical and cultural significance	14	15.9	12	26.1	2	4.8
Friendly neighbors	4	4.5	2	4.3	2	4.8
Physical infrastructure	2	2.3	0	0.0	2	4.8
Total	88	100.0	46	100.0	42	100

A4 What are two worst things about the neighborhood?

Description	Total respondents		For locals		For Renters	
	No.	%	No.	%	No.	%
Congestion	24	23.1	14	20.9	10	27.0
Parking problem	29	27.9	14	20.9	15	40.5
Water / sewerage	12	11.5	10	14.9	2	5.4
Lack of light	4	3.8	2	3.0	2	5.4
Excessive commercialization	10	9.6	10	14.9	0	0.0
Noise pollution	15	14.4	9	13.4	6	16.2
Solid waste management	4	3.8	2	3.0	2	5.4
Loss of Historical and cultural significance	6	5.8	6	9.0	0	0.0
Total	104	100	67	100	37	100

A5 Are you satisfied with the design of the house.

Description	Total respondents		Locals		Renters	
	No.	%	No.	%	No.	%
Satisfied	14	24.6	5	16.1	9	34.6
Neutral	34	59.6	21	67.7	13	50.0
Dissatisfied	9	15.8	5	16.1	4	15.4
Total	57	100	31	100.0	26	100

A6 Problem regarding the house.

Description	Total respondents		For Local		For Rent	
	No	%	No	%	No	%

Lack of Space	25	43.9	18	58.1	7	26.9
Lack of Light/Ventilation	16	28.1	3	9.7	13	50.0
Lack of parking	6	10.5	3	9.7	3	11.5
Uneasy to move around	5	8.8	3	9.7	2	7.7
Uneasy access	5	8.8	4	12.9	1	3.8
Total	57	100.0	31	100.0	26	100.0

A7 How safe do you feel in the neighborhood?

Description	Total respondents		For Male		For Female	
	No	%	No	%	No	%
Highly Safe	36	63.2	21	65.6	14	56
Moderately Safe	21	36.8	11	34.4	11	44
Unsafe	0	0.0				
Total	57	100	32	100	25	100

A8 How attached do you feel towards your neighborhood?

Description	Total respondents		For Local		For Rent	
	No	%	No	%	No	%
Highly	25	44	23	74	2	8
Moderately	28	49	8	26	20	77
Not at all	4	7	0	0	4	15
Total	57	100.0	31	100.0	26	100.0

Level of Independence

B1 How comfortable do you feel walking in the streets of the neighborhood?

Description	Total respondents		Between 18-49		Above 50 years	
	No	%	No.	%	No	%
Completely	2	3.5	2	6.1	0	0
Moderately	16	28.1	13	39.4	3	12.5
Not at all	39	68.4	18	54.5	21	87.5
Total	57	100.0	33	100.0	24	100

B2 Reasons for discomfort on streets.

Description	Total respondents	
	No	%
Congestion	43	39.1
Vehicles	42	38.2
Parking	20	18.2
Vendors / Shop	5	4.5
Total	110	100.0

B3 How comfortable do you feel doing daily activities in the neighborhood?

Description	Total respondents		For Local		For Rent	
	No	%	No	%	No	%
Completely	22	38.6	20	64.5	2	7.7
Moderately	31	54.4	11	35.5	20	76.9
Not at all	4	7.0	0	0.0	4	15.4
Total	57	100.0	31	100.0	26	100.0

C Social relationships

C1 Frequency of Courtyard use

Description	Total respondents		Males		Females	
	No	%	No	%	No	%
Daily	40	70.2	19	59.3	21	84
Weekly	17	29.8	13	40.7	4	16
Total	57	100.0	32	100	25	100

Description	Locals		Renters	
	No	%	No	%
Daily	17	51.6	23	88.5
Weekly	14	48.4	3	11.5
Total	31	100	26	100

C2 Purpose of courtyard use.

Description	Total responses		For Males		For Females	
	No	%	No	%	No	%
Gathering	47	40.2	29	40.8	18	39.1
Sun basking	26	22.2	10	14.1	16	34.8
Parking	24	20.5	18	25.4	6	13.0
Religious	20	17.1	14	19.7	6	13.0
Total	117	100	71	100.0	46	100

Description	For Local		Renters	
	No	%	No	%
Gathering	22	33.8	25	48.1
Sun basking	9	13.8	17	32.7
Parking	14	21.5	10	19.2
Religious	20	30.8	0	0.0
Total	65	100	52	100

General comments during the thesis defense

Professors	Comments	Address of comments
Dr. Bharat Sharma	Along with the revision of By-laws, urban design guidelines and redesigning of facades of buildings that do not comply with the traditional architecture should be recommended.	Addressed in page no 81
Mr. Suresh Prakash Acharya	The concept of house pooling could be one of the recommendations, as one of the major reasons for vertical expansion is property partition. However in the house pooling, ownership should only be shared among the extended family members and many design considerations has to be made to incorporate intangible aspects.	Addressed in page no 81.
Dr. Sudha Shrestha	Timeline of urban transformations should have been presented. Satellite images could	Satellite images are only available form

	have been used to show transformation.	2001 AD however research deals with transformation since 1950s hence old maps were used instead of satellite images.
Dr. Ashim Bajracharya	Demographic data should have been presented to know the rate of population growth, which will help to understand transformation better.	Since the study area was just a part of ward no 27, which is the smallest administrative unit exact population of the area could not be known. Also there is no proper data for renter population.

