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Residential neighbourhoods in Kathmandu: Key design guidelines

Residential neighbourhoods developed using various techniques in Kathmandu by both the public and private sectors have not only provided a poor urban setting and failed to address socio-cultural needs, but are also poor at building a community and creating links to the built environment, with the result that the planned areas lack a sense of place and the inhabitants lack a feeling of home. Although traditional neighbourhoods in the historic core area had many features of a good residential neighbourhood in the past, they are currently undergoing rapid destruction. The residents of these neighbourhoods have little awareness of these issues. The existing legal and institutional frameworks are inadequate and ineffective and cannot address these problems, and so the formulation of design guidelines, their strict implementation, and enhancement of socio-cultural events including social networking are recommended for future residential neighbourhood development.

Key words: residential neighbourhood, socio-cultural environment, community, Kathmandu, design guidelines

1   Introduction

Residential neighbourhoods are the single most important planning component of cities. Housing is the single greatest urban land use, and a residential neighbourhood guides the urban growth pattern, provides places for socialisation and recreation, enhances economic sustainability, and expresses the vernacular architecture and daily activities of inhabitants. However, these multiple roles have been greatly ignored in the rapid urbanisation process and expansion of neighbourhoods in Kathmandu, the capital of Nepal. There is a growing demand for housing, infrastructure and public amenities. Planned development through three different land development techniques (site and services, guided land development and land pooling) have been unable to meet the constantly growing demand for land and housing. Implementation of the national building code and the Ownership of Joint Housing Act, 2054 (1997) (Nepal Gazette, 15 April 2003) was poor. The establishment of new organisations such as the Kathmandu Valley Town Development Committee (recently converted into the Kathmandu Valley Development Authority) and the Ministry of Housing and Physical Planning in 1988 (now the Ministry of Physical Planning and Works), including the recently established Ministry of Urban Development, have turned out to be inadequate and ineffective. The transformation of the traditional residential neighbourhood of the historic core area and the formation of new residential precincts (both planned and haphazard) in the peripheral areas still have not been critically reviewed. Against such a background, this paper critically reviews various residential neighbourhoods in Kathmandu from a comparative perspective. It has three objectives. First, it reviews various literature on residential neighbourhoods and then develops an analytical framework, which provides a basis for quantitative and qualitative comparison of various residential precincts. Second, it identifies numerous weaknesses in their planning and development processes. Finally, it draws conclusions and proposes some key planning guidelines for future healthy residential developments.

2   Theories of residential neighbourhoods

Throughout history, residential areas – from the grid layouts of Greek and Roman cities, to the organic towns of the Middle Ages, and the radial and circular plans of European cities in the Renaissance – have been considered valuable units in human settlements, (Colquhoun & Fauset, 1991). Pre-nineteenth century housing had a compact urban form, with community spaces (in the form of squares and plazas) and dwelling units acting as Figure and ground for each other. The industrial revolution accelerated the construction of mass housing (with insufficient floor space and facilities, inadequate sanitary provisions, and poor lighting and ventilation with little or no communal space) to accommodate the huge flow of workers into the city centre. On the other hand, the industrial revolution also caused urban sprawl, with low-rise and low-density new housing, mainly to cater to affluent citizens in suburban areas. To respond to the poor living conditions of workers in mass housing, Ebenezer Howard's (1850–1928) garden city concept in England and William E. Drummond's neighbourhood unit concept[1] in the United States proposed a new housing environment with a new urban society that not only influenced modern town planning, but also sustained the socioeconomic environment to a certain extent. Many new British towns and American cities adopted this planning philosophy in subsequent years. Before the Second World War, builders used to simply buy lots on already established city streets and built a few houses at a time, linking new settlements to the social and commercial fabric of the city. After the war, developers[2] replaced the builders and started planning large tracts of virgin land and building a huge number of similar housing units – aiming at maximising the rate of return and satisfying local codes and municipal regulations rather than addressing the community's diverse needs – over a brief period of time (Ford, 1999). The destruction of traditional street patterns and squares to accommodate the demands of the car, the rigid zoning of land uses segregating the functional activities of working, living and entertainment, the demise of the notion of the "public realm" in favour of the privatisation of development – all of these combined to create neighbourhoods that are antisocial and inhuman.

After the crisis of urban design in the 1960s, the spirit, values and virtues of the residential neighbourhood were rediscovered. The incorporation of resident participation and introduction of advocacy planning was advanced, leading to the formation of "new urbanism". It has advocated a balanced mix of human activities (dwelling, shopping, working, schooling, worshipping, recreating, etc.) within walking distance (a five-minute walk or quarter-mile radius) in neighbourhood planning with the formation of public spaces and a fine network of interconnecting streets (Duany & Zyberk, 1994). Others have sought to achieve a diverse, lively, safer and convenient public realm through mixed land use, high density and compact urban fabric (Yau, 2011), including the provision of local employment and a public transport system to achieve local identity, belonging to a community and sense of place (Lennard & Lennard, 1995; Roseland, 1998). An effective neighbourhood comprising a clear, complete and consistent political and administrative entity should therefore provide basic necessities of life and society: a small grocery store, a local park and playground, a meeting place either in the elementary school or in a recreation

centre that also houses community activities, a fire station, a post office and a police station. Broadly speaking, a residential neighbourhood can be described as follows: a) homogeneous areas sharing demographic or housing characteristics; b) areas that may have diverse characteristics, but whose residents share some cohesive sense of identity, political organisation or social organisation; c) housing sub-markets; and d) small areal units that do not necessarily have any of these characteristics (Coleman, 1978; Lachman & Downs, 1978; Rodwin & Hollister, 1984; Galster, 1987). These factors also make neighbourhoods desirable, as well as affordable to only certain demographic groups.

The socio-cultural perspective of the theory of neighbourhood focuses on community building. Because a neighbourhood provides a place for inhabitants to rear children, satisfy people's social needs and develop intimate friendships (Ho et al., 2012), it fosters community and civic pride (Von, 1978), enhances the "sense of security and belonging" and connects individuals to society through its support and facilities (Bartuska, 1994). Geographical proximity (locality), social completeness or cohesion (social criterion) (Davis, 1949), including sharing the basic conditions of a common life (community sentiment), are essential for forming a community (MacIver & Page, 1955). This is influenced by size, density and heterogeneity (Wirth, 1964). Therefore, a community requires a) a set of households that are relatively concentrated in a delimited geographical area; b) a substantial degree of integrated social interaction by the residents; and c) a sense of common membership or belonging together. Finally, a neighbourhood community can be perceived through the characteristics and views of its inhabitants (the micro-level approach) and through its formal organisation and institutions, which shape the community within a greater context (the macro-level approach) (Downs, 1981).

The neighbourhoods in the historic core of Kathmandu formed in the Malla period can best be illustrated from the socio-cultural perspective. Clustering of houses around a courtyard (the court type) together with vertically oriented houses provided higher density and formed a community space enclosed by housing units. The courtyards and Buddhist monastery (*vihara*) acting as "semi-private" spaces with socio-religious structures such as the temple, the shrine (*chaitya*), community taps, wells, and the rest house (*pati*) became stages for different age groups to interact during different periods of time: a place of worship for elderly people in the early morning, a venue for housewives to dry grain and wash clothes in the afternoon, a playground and a place for adults to watch people and converse in the evening. Semi-private spaces such as shared streets, alleyways along the sides of houses, yards around the house or areas within the home were perceived by women as theirs or as their children's legitimate and valued space, where they could chat

with their neighbours, keep an eye on children and observe the movements of the neighbours (Segovia, 1997). Similarly, religious structures such as the square platform (*dabali*) and rest house were used to display images of gods and goddesses, perform religious dances and plays, and for prayer (*bhajan* and *kirtan*). It provided an opportunity for the interaction of private and community life to enhance social bonds. This combined with significant places such as places protected by a demon (*chhwasa*) and private space in front of the house for public use (*lachhi*) to add cultural meaning to the streets and public squares (Shrestha, 2011).

The social system of a community of the same profession or clan living in the same locality in the neighbourhood strengthened the social network and labour efficiency, and cultural practices through the tradition of rituals and celebration of numerous festivals strengthened community bonds, thereby increasing not only mutual assistance and the concern for the overall community, but also enhancing the feeling of ownership and sense of belonging to the community. The social division of people based on their profession (*jaata*) and caste (the touchable and socially untouchable) and accordingly to the allocation of housing type, size and style within the town created a homogenous community within a heterogeneous city, with the guarantee of jobs and income.

The built structures comprised two basic elements – built blocks of attached three- to four-story houses clustered around courtyards and Buddhist monasteries (*bahal* and *bahil*) and a network of open spaces and narrow non-axial streets linking these blocks that act as Figure and ground for each other (Shrestha, 2011). The unifying elements of building elevation – an exposed brick façade, vertical wooden windows and a sloped roof with little variation in the roofline – together with the ratio of street width to building height within a range of 1:1 to 1:2 contributed to a sense of enclosure and a human scale on the streets. Visitors felt a sense of mystery, surprise, excitement and anticipation due to the sequential spatial events and singular composition. A common lifestyle, the use of locally available building materials and similar construction methods led to uniformity in architectural styles with small variation only in material quality, workmanship and facades. Community space in front of an individual house was part of the architecture, and without such a space individual structures could not function as a house. Traditional houses were also responsive to the climate. Warmer upper floors and courtyards were used during the daytime, whereas the top level and ground floor acted as a buffer zone to protect the occupants from cold winter nights. Minimum energy was lost due to the heavy composite wall (sun-dried brick and adobe), mud plaster inside, and composite mud and wooden flooring.

Table 1: Comparison of parameters of the selected neighbourhoods.

Parameter	KHP	GLP	SRH	MST
Location	Kuleshwor – KMC, ward no. 14 (urban area)	Gongabu – KMC, ward no. 29 (peripheral area)	Balkumari – LSMC, ward no. 9 (peripheral area)	Manjushree Tole – KMC, ward no. 21 (core area)
Project type	Site and services	Land pooling	Private housing	Ancient settlement
Planning area	522 ropani (26.5 ha)	280 ropani (14.2 ha)	45 ropani (2.3 ha)	100 ropani (5.1 ha)[4]
Development period	1977–1987	1988–1996	2002–	Malla period (thirteenth–eighteenth centuries)–present
Development agency	Government	Government	Private sector	

Note: KMC = Kathmandu Metropolitan City, LSMC = Lalitpur Sub-Metropolitan City.

Source: Department of Housing and Urban Development (no date); Department of Urban Development and Building Construction (2003); Kathmandu Metropolitan City (2001); Oriental Construction and Development (no date).

Individual experience, cultural background, the social setting and the physical condition determine the relationships between human experience, behaviour and built form (Proshansky, 1970; Yau, 2012) and these shape residential life. The notion of culture – as a system of shared meanings (Hall, 1966; Greetz, 1973) and public standardised values of a community (Douglas, 1966) – creates values and norms embedded into peoples' behaviour that shape the spaces and their use in everyday life (Coolen & Ozaki, 2004). After reviewing extensive literature on various aspects of the residential neighbourhood, a theoretical framework is developed comprising three components: a) the residential neighbourhood as a *place*: the size and shape of the neighbourhood, street network, open space hierarchy and architectural meaning, b) the residential neighbourhood as *people*: opportunities for socialisation, social networks and institutions, and c) the residential neighbourhood as *meaning* (linking people to the place): the sense of place (and community) and daily activities and cultural functions.

3 Methodology and selection of residential neighbourhoods

The methodology used for this study combines different techniques. First, extensive literature on residential neighbourhoods in Nepal and internationally was critically reviewed. Second, all the selected neighbourhood sites were visited many times to observe the various socio-cultural activities at different times. Third, a twenty-nine-item survey was prepared, focusing on various aspects of neighbourhoods. A sample survey of twenty-five households covering the entire neighbourhood was conducted in each case. Although the number of interviewees (twenty-five households in each study area with response rates from 90 to 100%) seemed low for such a study, nonetheless, considering the time and resource constraints, low public awareness and education, and the prevailing situation in which people were reluctant to share information, the response rate was considered sufficient to understand their feelings towards

Table 2: Comparative study of physical aspect of different neighbourhoods.

Parameter	KHP	GLP	SRH	MST
Total developed area	522 ropani (26.5 ha) (11.5 × SRH)	280 ropani (14.2 ha) (6.2 × SRH)	45 ropani (2.3 ha) (1 × SRH)	100 ropani (5.1 ha) (2.2 × SRH)
Total number of urban blocks	21[6]	26	9	4
Average urban block size	24.85 ropani (5 × SRH)	10.77 ropani (2.1 × SRH)	5 ropani (1 × SRH)	25 ropani (5 × SRH)
Total number of plots	842 (5.13 × SRH)	406 (2.5 × SRH)	164 units (1 × SRH)	1,376 houses (8.4 × SRH)
Plot numbers per urban block	40	16	18	344
Population density	159 persons/ha (1.1 × GLP)	143 persons/ha (1 × GLP)	356 persons/ha (2.5 × GLP)	1,185 persons/ha (8.3 × GLP)
Urban block orientation	Arbitrary (all directions)	East-west (mainly)	North-south (mainly)	All directions (due to courtyard)

the neighbourhood. Because not all the interviewees responded to all the questions, the percentage is calculated based on the total number of responses. Fourth, discussions with the staff working at municipal and ward offices, including local social institutions, were also carried out.

Four different residential precincts of Kathmandu were selected for a comparative study (Table 1): a) the Kuleshwor Housing Project (KHP), b) the Gongabu Land-Pooling Project (GLP), c) Sun Rise Home (SRH),[3] and d) Manjushree Tole (MST). They were planned and developed under different models in different circumstances. Their differences lie not only in site context, physical layout, population density and land use activities, but also in neighbourhood community.

Located in the urban area of Kathmandu Metropolitan City's (KMC) ward no. 14, the Kuleshwor Housing Project was developed by the government in the late 1970s as a "site and services project" to house government service holders. The Gongabu Land-Pooling site, located in the northern peripheral area of KMC's ward no. 29, was also planned by the government though its land-pooling technique in the late 1980s with the objective of controlling haphazard urban growth and ensuring basic services and social amenities in the developed area. Initiated by the private sector after the enactment of the Ownership of Joint Housing Act, 2054 (1997) (Nepal Gazette, 15 April 2003) Sun Rise Home is a private-sector housing project (targeting high and upper middle class economic groups), located in the peripheral area of ward no. 9 of Lalitpur Sub-Metropolitan City. Manjushree Tole lies in the historic core area of KMC's ward no. 21. It is an ancient Malla-period residential settlement that still houses many historical monuments and much cultural heritage.

4 Comparative study of the selected residential neighbourhoods

4.1 Residential neighbourhood as place

4.1.1 Size, scale and integration with the surrounding areas

A population range of 500 to 10,000 inhabitants or a minimum of 150 dwelling units (considered enough to sustain local retail outlets and an elementary school) is the basis for an effective neighbourhood (Gans, 1962). SRH, which comprises 164 units with a total population[5] of 820, is the smallest neighbourhood, whereas KHP and GLP are five times and two-and-a-half times larger, respectively, and MST is the largest community (Table 2). However, in terms of developed land area, MST is about two times larger than SRH, whereas KHP and GLP have an area that is eleven-and-a-half and over six times larger, respectively. Again, SRH and MST are two-and-a-half and eight-and-a-half times denser, respectively, than GLP (and KHP with a population density of 159 persons/ha, which is the least populated neighbourhood, with a gross population density of 143 persons/ha). Small urban blocks (no longer than 90 to 135 m) increase physical and visual permeability (Bentley et al., 1985), provide more street frontage and junctions, allow development of diverse land use and building types, and hence are suitable for residential developments.

Although the average urban block size in KHP and MST is about 25 ropani, there is great variation in terms of the total number of plots and the average number of plots in an urban block. There are 842 plots with an average of 40 plots in one block in KHP, whereas the corresponding figures are 1,376 and 344 for MST. Both KHP and MST consist of diverse urban blocks with an arbitrary orientation (Figure 1). Interestingly, the urban blocks in GLP and SRH are generally long and narrow, but are oriented in the opposite direction. Clear boundaries are necessary for neighbourhoods to establish and sustain their identity. Integration in terms of street layout, urban blocks, population density and land use with the sur-
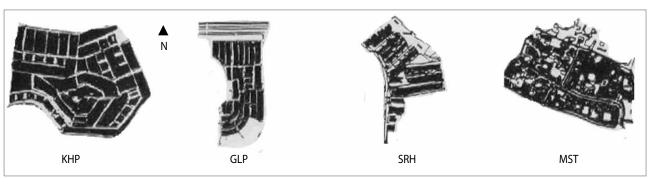

Figure 1: Comparison of urban fabrics (illustration: Bijaya K. Shrestha).
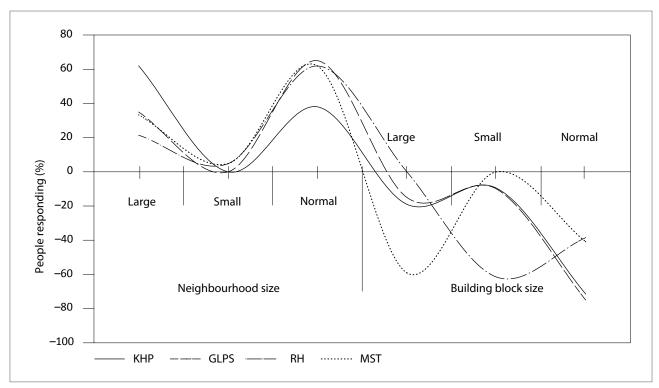
Figure 2: Scale of neighbourhoods.

rounding areas results in smooth transportation, orientation and views, ultimately reducing the clash between old and new developments.

Both KHP and GLP were planned to have urban blocks in a plot shape, including a geometrical street network forcefully juxtaposed with the surrounding haphazard (and spontaneous) growth of residential and commercial areas, whereas SRH is bounded by a masonry wall that cuts it off from the locality. None of these planned neighbourhoods has a clear centre and edges (except the boundary wall of SRH), nonetheless, a mismatch of streets and urban blocks at the interfaces with the surrounding areas provides a clue of the boundary of the neighbourhood. Moreover, major transportation routes such
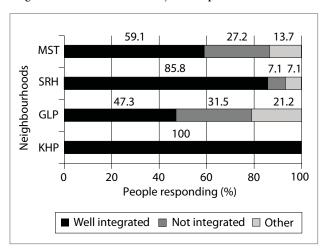

Figure 3: Integration with surrounding areas.

as Ring Road and the road from Thamel to Samakhushi Marg frames the location of GLP, whereas the roads from Kalimati to Kuleshwor and from Kalimati to Kalanki orient the locality of KHP. Only MST as part of an old settlement harmoniously coexists with the neighbouring areas with the Manjushree Temple and the activity nodes of Lagan and Jaishi Dewal, acting as the centre and edges of the community.

In the survey, the majority of respondents (62%) from KHP feel that they have a large neighbourhood, and a similar percentage of residents in the other three areas think that their neighbourhoods have an appropriate size and scale (Figure 2). Surprisingly, none of the residents living in KHP and GLP and only an insignificant percentage of inhabitants in the remaining neighbourhoods feel that their neighbourhoods are small. Similarly, except for SRH, only an insignificant percentage of inhabitants of the other neighbourhoods say that they have small urban blocks. Again, although a significant number of residents of KHP (100%) and SRH (85.8%) feel that their residential areas are well integrated with the surrounding areas, about half of the respondents of MST (40.1%) and GLP (52.7%) feel that their communities are not integrated with neighbouring areas (Figure 3).

4.1.2 Street and open space hierarchy

With symbolic, ceremonial and political roles, streets and open spaces are not only physical spaces for the movement of people and goods, but also spaces for multiple activities: socialisa-

tion and participation, exchange of services, enjoying activities, watching people and so on (Jacobs, 1993; Gehl, 1987). They can be evaluated on the basis of physical parameters, micro-climate criteria, amenities and activities associated with them (Heng & Chan, 2000).

The street layout in KHP and GLP fails to take into consideration the local site context, the mountain view and the circulation network of the surrounding areas. For instance, only a few streets in KHP are connected to the road from Kuleshwor to Balkhu and another single street leads to the road from Kalimati and Kalanki, where public transportation is available. Similarly, GLP is connected to neighbouring areas through a single street leading to the Ring Road on the northern part and a couple of streets linking to the road from Thamel to Samakhushi. Street networks in these developments have an inadequate circulation area (14.3% at KHP and 17.5% at GLP; Table 3), lack hierarchy and well defined connections, have poor visual and physical permeability due to long elongated urban blocks without cross-access and have a poor street junction design, making it difficult to turn emergency vehicles.

Failure to achieve a sense of enclosure due to variations in the setback, height and architectural character of the buildings on both sides of the streets, and the lack of identifiable activity nodes or any prominent structure at the street junctions combined with the absence of sidewalks and other basic amenities such as dustbins, benches, trees, street lights and so on have converted these streets into pedestrian-unfriendly places. Walking along these streets is monotonous, boring and confusing, and also dangerous at night, particularly for women. The traffic network of SRH consists of six cul-de-sacs 5 m wide all linked to the main street, which connects the entire neighbourhood to the outer public road. Although these internal streets are neat and clean, in good condition and have a ratio of street width to building height within the desirable

Table 3: Comparison of open spaces and streets in the neighbourhoods

Parameter	KHP	GLP	SRH	MST
Area allocated for open space (%)	4.4	5.2	4	10–12
Area occupied by street (%)	14.3	17.5	15.0	3–5
Street width (m)[7]	2, 3, 4, 5, 7.5	4, 6, 8	5	4, 6
Number of street junctions	40	51	7	8
Street width to building height ratio (approx.)	1:1.3	1:1.7	1:2	1:1.5

Source: Department of Housing and Urban Development (no date); Department of Urban Development and Building Construction (2003); Kathmandu Metropolitan City (2001); Oriental Construction and Development (no date).

limit (height:width = 1:2), they are hardly used for multiple functions other than for parking and connecting to each unit. The task of creating well-connected streets with activity nodes at the junctions and a landmark structure at the end is less relevant in the private housing scheme. The street network of MST (narrow, non-axial streets leading to courtyards and narrow alleyways, and then, finally, connecting to individual houses), which was developed before the advent of automobiles, had a well-defined hierarchy based on religious functions. The sense of enclosure, a human scale and sequential spatial events were achieved through keeping the ratio of street width to building height within a desirable limit (1:1.5), positioning a focal point at the end of the view corridor, and singular composition of buildings in terms of building height and bulk, architectural design, and the material and construction technology used. However, invasion of street spaces by vehicular traffic and parking, haphazard (re)construction of buildings and change of building use have all destroyed the earlier qualities of the streets in MST.

The planning and design of open spaces in all of the planned neighbourhoods are not satisfactory, whereas the multifunctional usages of community spaces in MST are under great pressure for numerous reasons. First, the amount of open space allocated in the planned areas is far less than needed to fulfil the various needs of different age groups (see Table 3). Urban open spaces totalling 4.5% of the total developed land in KHP and 4% in SRH, which are just one-third of the existing open space of MST, cannot accommodate the variety of functions: a quiet area for adults, a safe private area for women, recreation for young people and a playground. Second, the shape and location of these spaces are inappropriate and inconvenient. In fact, spaces with an irregular shape and size left over after plotting the service areas and street layouts in the best location are kept as open spaces (Figure 4). The open spaces in KHP (a triangular plot roughly in the middle and tiny rectangular plots on the periphery) and GLP (five different small rectangular plots along the power line) are of little use not only because of their fragmented nature, but also due to the streets with cars encircling them. Similarly, the isolated corner plot below the power line surrounded by parking plots allowed for a playground can never be a meaningful place. It is only in MST where open space and houses complement one another. Open spaces in the form of a monastery, courtyards and squares are part of residents' daily lives. However, changes in building typology and the penetration of traffic have not only damaged the open space network, but have also reduced its multiple usage.

In the survey, residents in the neighbourhoods have mixed reactions to the street network. The fair condition of streets with vehicular access to each house, low traffic, and hence low
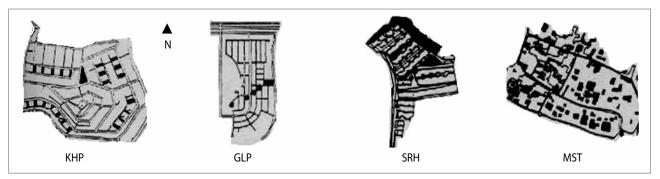
Figure 4: Comparison of street layout and open spaces (illustration: Bijaya K. Shrestha).

air and noise pollution, have made the streets convenient for the majority of residents in KHP (62%) and SRH (100%). A significant number of people in GLP (32%) and MST (54%) find the streets of their neighbourhoods inconvenient due to the conflict between cars and pedestrians, noise and air pollution, and the practice of discarding household and construction waste on the streets. About one-fifth of the residents of all of the neighbourhoods think that their neighbourhoods have average streets in terms of layout and other amenities. The majority of the community in all cases is aware of the utility of urban open spaces in their daily lives. However, a significant number of residents in KHP (62%), GLP (50%) and MST (73%) realise that the open spaces in their residential areas are insufficient and non-functional due to their poor location, irregular size and shape, and absence of basic amenities (Figure 5). Even in the case of SRH, 43% of the respondents are dissatisfied with the amount of open space available.

4.1.3 Architectural meaning

Building layout and design define housing density, promote the creation of public space and express the socio-economic status of inhabitants. Moreover, building typology should reflect climate conditions and social development. Because

building typology differs in each neighbourhood, its consequences are numerous. First, the layout of a building on a plot with a setback from all the sides – the pavilion type – in KHP and GLP has resulted in lower density with the creation of fragmented open spaces between buildings, which is hardly useful for anything else besides lighting and ventilating the building units, whereas the layout of a building around a courtyard – the court type[8] – in MST has resulted in higher density and the formation of community space enclosed by building units (Figure 6). There is a moderate level of density in SRH due to the layout of buildings in rows on the plot – the row-housing type – with a street in front and a minimum setback on the back.

Second, variation in the design of the transition spaces between the street and the individual private houses has created a chaotic landscape in KHP and GLP. On the same line of the street, some buildings have large building setbacks with boundary walls separating the public and private spaces, whereas other buildings front the streets with commercial activity on the ground floor. Moreover, there is great variation in the treatment of the transition space. The overall result is the formation of a monotonous, disorderly and confusing residential setting. Third, both KHP and GLP comprise three types of buildings,
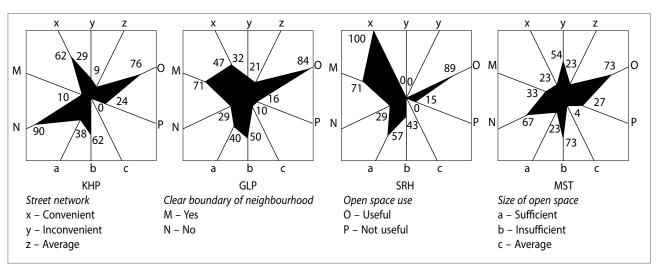

Figure 5: Comparison of residents' responses regarding the street network and open spaces.

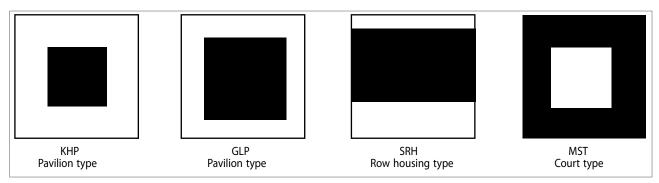| KHP | GLP | SRH | MST |
| Pavilion type | Pavilion type | Row housing type | Court type |

Figure 6: Comparison of building layouts on plots (illustration: Bijaya K. Shrestha).

indicating a change in social taste and the development of architectural style: a) load-bearing brick walls (either exposed brick or plastered with cement) with flat reinforced concrete roofs and projections reminiscent of a shrine (*chaitya*) over wooden door and window openings, mainly built during the 1980s, b) reinforced concrete column-and-beam structure with a variety of decorative elements (single- or double-height Doric columns, pediments, overhangs, and so on) on the facades (postmodern architecture), mainly developed since the mid 1990s, and c) reinforced concrete column-and-beam structure with a layer of traditional bricks, carved wooden windows, projecting roofs and so on, constructed in the last few years. Newly constructed buildings using different architectural designs and detailing, material and technology are difficult to relate to the existing surrounding houses.

The interesting design of individual units with uniform buildings set back in SRH has failed to produce a legible residential landscape due to repetition of the standard unit in a row on both sides of the streets without any reference point. The dwelling units in SRH, mostly two to three stories high and oriented on a north-south axis, are climatically ineffective because almost all of the rooms have one side window only with many spaces (dining room, living room or stairwell) without direct light and ventilation. Both the practice of renovating traditional buildings (the addition of a reinforced concrete floor on top of existing mud and wood structures, haphazard creation of door and window openings on the load-bearing outer

walls, etc.) and the trend of new house construction (different plinth and floor height with soft ground floors, floor projection from the second floor onwards, excessive non-structural decorative elements on the facade, large windows with the creation of short columns, etc.) have proved to be a disaster for MST because such activities have destroyed the earlier architectural composition, sense of enclosure of courtyards and streets, reduced light and ventilation for neighbouring houses and public spaces, and above all have significantly increased the earthquake vulnerability and risk of fire hazard (Shrestha, 2002).

In the survey, there is a contrasting reaction from the respondents regarding the performance of buildings in the neighbourhoods. The majority of respondents in KHP (71.4%) and SRH (64.3%) think that the buildings in their neighbourhoods are good (Figure 7). None of the inhabitants in these two cases feel that there are bad buildings in their neighbourhoods. However, the case of MST is just the opposite, where more than half feel that their neighbourhood consists of bad buildings. Eighty percent of the respondents in GLP think that they have just "average" (neither good nor bad) buildings in their neighbourhood.

Similarly, almost half of the residents in MST prefer either conservation of traditional buildings or new construction in the traditional style, whereas none of the respondents in SRH want to have new buildings in the traditional style in their

Table 4: Comparison of housing characteristics.

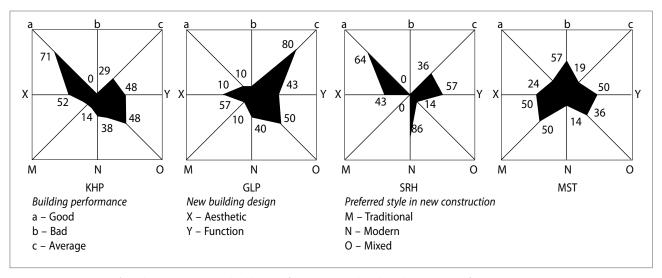| Parameter	KHP	GLP	SRH	MST
Layout on plot	Pavilion type	Pavilion type	Row housing type	Court type
Orientation	Arbitrary	Arbitrary but mostly on an east-west axis	Mostly on a north-south axis	To all sides due to courtyard
Access	Vehicular (few with pedestrian path)	Vehicular	Vehicular (private street)	Mostly pedestrian, some vehicular
Type	Detached/individual bungalow type	Detached/individual bungalow type	Mostly attached in row	Courtyards with shared walls
Stories	3–4	3–4	2–3	4–6
Light & ventilation	Mainly four sides but two for fronting street	Mainly four sides but two for fronting street	Only two sides	One or two sides only

Figure 7: Comparison of residents' responses to building performance, new building design and preferred style in new construction.

community. In the case of KHP and GLP, only a small percentage of residents prefer to have a traditional building in their neighbourhoods. Nearly half of the inhabitants of these communities would like to have buildings of a mixed type rather than domination of either traditional or modern structures. Eighty-five percent of people in SRH want to live in modern buildings, with only 15% preferring to have mixed-type buildings units (in style) in their neighbourhood. In MST the interest in modern buildings is low: only 14%. Finally, in all of the cases, residents are more or less evenly divided on whether priority should be placed on aesthetics or functionality in new construction.

4.2 Social aspect of neighbourhoods

The social aspect of a neighbourhood includes individuals' social network, the support they receive from others and opportunities for interaction with other members of the community, thereby not only increasing the mutual assistance and the concern for the overall community, but also enhancing the feeling of ownership and sense of belonging to the community. The social network refers to various persons with whom an individual maintains significant relationships (relatives, friends, co-workers and neighbours), whereas social support is the quality of the relationship (the advice, encouragement and assistance of all kinds that the social network provides to individuals).

4.2.1 Social network, social support and community institutions

The social system of a community of the same profession or clan in the same locality of the neighbourhood in the historic core of Kathmandu strengthened the social network and labour efficiency, whereas cultural practices through the tradition of

rituals and celebration of numerous festivals helped sustain community bonds and social support. The financial and institutional sustainability of the community and its socio-cultural activities were achieved through the *guthi* system.[9] However, such a unique situation does not currently exist in MST. The demise of the *guthi* system, erosion of cultural practices, beliefs and values, and socio-religious activities, disruption of social homogeneity (due to the out-migration of old neighbours and arrival of new residents), [10] changes in lifestyle (due to the transformation of society from agriculture-based to service and information–oriented), densification of population and building structures have all combined to weaken the traditional social network and reduce the scope of instrumental support (material and financial assistance, help with looking after children and household chores, etc.) and emotional support (encouragement, opportunities to express feelings, etc.). Instead, competition for using the same limited community resources such as courtyards, community taps and wells, invasions of personal privacy, and forced or unwanted interaction have caused the conversion of earlier neighbourhood ties into a situation with mental and social stress. The uncooperative attitude of neighbours – quarrelling with other members of the community even over minor issues, littering the paths and courtyards, disturbing neighbours' privacy in various ways – all of these are common scenes in old neighbourhoods like MST. Because the remaining three neighbourhoods were developed on virgin land in later periods, local community-based organisations (CBO), including the ward office, can play a crucial role in building social networks and community support. However, numerous such institutions (the Kuleshwor Club, Kuleshwor Housing Family Welfare Organisation, Self-Help Community Committee, etc. in KHP and the Housing Area Improvement Committee in GLP) are neither able to take on traditional institutions' roles nor capable of offering social support and community networking due to poor financial and

Table 5: Frequency of public participation in activities by the community and ward office.

Neighbourhood	Frequency of participation by community			
	Frequently (%)	Generally (%)	Occasionally (%)	Related to:
KHP	38.9	11.1	50	Sports
GLP	10.5	15.7	73.8	Cleaning local streets
SRH	33.3	16.7	50	Infrastructure and building maintenance
MST	18.2	31.8	50	Cleaning courtyards and pedestrian alleys, and sports

managerial capabilities, low community participation and little support from parent or government organisations. There is a community committee in SRH that concerns itself with building maintenance and infrastructure services rather than building social networks.

The survey reveals that nearly three-fourths of respondents in GLP and half of respondents elsewhere occasionally take part in the programs organised by the local ward and social institution (Table 5). About one-third of the community in KHP and SRH frequently visit the ward office, mainly for personal business. In all cases, most such activities are related to sports, cleaning the local area, celebrating New Year or the Deepawali festival, and so on.

4.2.2 Opportunity for socialisation

Community facilities, recreation centres and social amenities such as schools, health centres, day care facilities and others act as a platform for socialisation among the residents. If they are designed well, streets and open spaces can dramatically increase the level of socialisation by combining daily necessary activities (e.g., going to school or work, shopping, waiting for the bus or people, etc.), optional activities (e.g., taking a walk to get a breath of fresh air, standing around enjoying life, or sitting and enjoying the sun) and social activities (e.g., children at play, greetings and conversations, and passive contacts; Gehl, 1987). Finally, significant religious places such as temples, monasteries and so on, including socio-cultural events, facilitate interaction among different age groups. The absence of social amenities such as parks and sport centres, scenes of "incivilities" such as garbage accumulating on the streets and open spaces, dilapidated buildings, and so on have negative impacts on the residents' health (Cohen et al., 2000).

However, minimal socialisation opportunities exist in the planned neighbourhoods for numerous reasons. First, except for the allocation of a small amount of land for open spaces, no provisions for community facilities, recreation centres, social amenities such as schools, health centres and so on have been provided in KHP and GLP, forcing them to operate in residential buildings on an ad-hoc basis from year to year. Such practice, instead of developing an environment conducive to

socialisation, has created a new set of problems with parking, seismic vulnerability and chaotic streetscapes. A single high-rise structure housing a local grocery store and other activities in SRH provides little opportunity for socialisation among the residents due to its limited functions and services. The close proximity of commercial outlets, schools, community facilities including temples and monasteries, and houses in MST brought sustained life and vitality, and increased the people's interaction with others, but the gradual destruction of public buildings, rest houses, stone conduits and wells, as well as encroachment into the public spaces of the temple complex, courtyards or street squares, has reversed the trend. Daycare facilities, family-drop-in centres, after-school care facilities and so on, which are essential in today's lifestyle, do not exist in any neighbourhood.

Second, the absence of well-defined semi-public and semi-private spaces in the transition from public streets to private buildings, together with the failure of individual buildings to have meaningful spaces between the houses and street fronts due to the arbitrary orientation of houses, high boundary walls on the property line and variations in building setback, has contributed to the formation of dead spaces. This prevents interaction among neighbours and individual activities, and so social mixing and community support is hindered. The situation is no different in SRH, where individual units are directly linked from the street without any semi-private spaces and facilities around which neighbourhood relations might develop.

Because the physical enclosure of a homogenous community facilitates friendship and group formation due to the increased level of interaction and privacy that the enclosure allows (Festinger et al., 1950; Wells, 1965), numerous residential courtyards, street squares and monasteries including narrow short streets and pedestrian lanes in MST provide a unique setting for people to come together and interact. However, commercialisation of spaces, changing of ground floors and building occupancy, and destruction of traditional buildings have reduced social interaction and community activities by converting the multifunctional uses of public spaces into the single function of business activity.

Figure 8: Comparison of streetscapes for socialisation.

Third, although streets and open spaces provide a unique setting for socialisation among the residents, the existing open spaces and streets of the planned neighbourhoods offer little opportunity to attract residents and engage in multiple activities. Located away from the daily pedestrian movement network, poor physical and visual permeability, a lack of sense of enclosure combined with the absence of basic amenities such as benches, street lamps, trees and other vegetation, including a lack of protection from the sun and rain, have all discouraged people from using these spaces (Figure 8). As a result, the triangular open space in KHP is being converted into a volleyball court and water storage tank, whereas the tiny scattered spaces are mainly used for parking vehicles or for dumping construction and household waste. The open space in GLP is also experiencing a similar fate.

Street layout and building design both affect people's socialisation patterns as well as the nature of retail activity in the community. Communal courtyards, fences, and windows of houses facing or next to each other further offer opportunities for social interaction, blurring the boundaries between public and private spaces. However, both KHP and GLP lack such design attributes.

In the survey, the majority of people interviewed in KHP (57.1%) and MST (50%) did not feel that there was any suitable place or facility within the neighbourhood for building friendships with other members of their communities (Figure 9). The remaining respondents meet their fellow neighbours either at community buildings (community-based organisations or the ward office; 28.6% in KHP and 30% in MST) or on the street or in open spaces (14.3% in KHP and 20% in MST). Nearly one-third of those interviewed in GLP visit a community facility (e.g., a swimming pool), and another third interact with their neighbours on the streets and in open spaces; the remaining third have nowhere to socialise. It is only in SRH that more than half of the respondents go to the shopping complex and interact with their neighbours. However, such interaction is not frequent: less than one-third of the people in KHP and MST meet their neighbours and chat, mostly on the street on the way to work, and only one-fourth of the respondents of GLP and SRH interact on a daily basis. Weekly interaction is as high as 50% in the case of SRH (mostly on the weekend at the grocery store or in open spaces). In the rest of the cases it is generally on a monthly basis. Most such interactions are casual and are rarely converted into friendships strong enough to share feelings and seek help when in need. Finally, all of the neighbourhoods lack comfortable playgrounds, as mentioned by the majority of interviewees in each case.
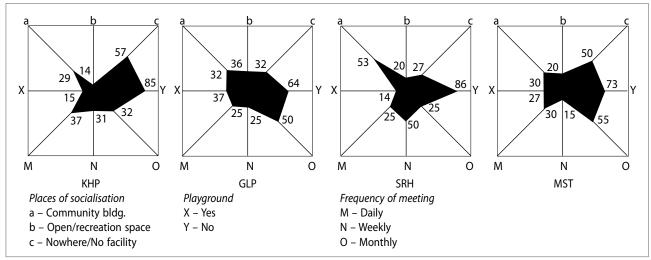

Places of socialisation
a – Community bldg.
b – Open/recreation space
c – Nowhere/No facility

Playground
X – Yes
Y – No

Frequency of meeting
M – Daily
N – Weekly
O – Monthly

Figure 9: Comparison of residents' responses regarding places of socialisation, frequency of meeting and availability of playgrounds.

4.3 Cultural aspect of neighbourhoods

The cultural aspect of the neighbourhood links the community to the physical built environment so that each member of the neighbourhood develops a strong feeling for the urban setting, understands other members of the community, and also feels a sense of belonging to the neighbourhood. Culture is a system of inherited conceptions expressed in symbolic forms, by which people communicate, perpetuate and develop their knowledge and attitudes toward life. It is intangible and can be defined in terms of shared meanings and shared conceptual maps.

4.3.1 Sense of place and community

Sense of place refers to the feeling of belonging to an environment and being part of a neighbourhood. Distinct features – either existing natural elements or man-made structures and shared experience in daily life – are important aspects that distinguish a neighbourhood community from other communities that do not have a connection to a specific locality (Hargreaves, 2004). Over time, the distinctive features of the place become significant to the people that live there, so that a relationship develops between people and an awareness of the local environment (Norberg-Schulz, 1980; Heidegger, 1993). Each person's relationship with the environment cannot be considered independently of the historical context and the accumulation of experiences of place over time (Wheeler, 1995). The combination of both material and intangible elements produces a single human experience that can be remembered, shared and communicated to become a social experience.

None of the planned neighbourhoods acknowledges this fact in the planning and development process. The scope of utilising the higher elevation of the KHP site and the surrounding mountains to experience nature as a backdrop in people's daily lives is hardly realised in the layout of the street network and orientation of urban blocks. Similarly, places such as Gongabu, the Samakhushi River and the surrounding mountains are not being addressed in the planning process for GLP, and local features such as the Manohara River, mountain views and so on are not taken into account in the layout of housing and design of building units in SRH. New high-rise construction has dominated temples and monasteries, and has obstructed many important view corridors and landmark structures, thus diluting the collective influence of such structures.

A good place is one that can be mapped mentally or has an easily remembered spatial organisation. Not only are the landmarks important, but well-defined paths leading to such structures are equally necessary. Thus good neighbourhoods should have not only a legible environment with identity, structure and meaning, but should also contain depth and meaningful historical layers: the perception, understanding and celebration of the passage of time (Lynch, 1972). Few entry points to the neighbourhoods, long, unconnected blocks without cross passages and confusing street layouts without any reference points, including the absence of any landmark structures, are the characters of the residential environment in KHP and GLP. The long, narrow blocks with identical building units connected by cul-de-sacs with surface parking in SRH do not offer a legible setting. Because outsiders are not permitted to visit the housing estate, this neighbourhood is generally out of local people's mental map. The changing colour of the flowers and the leaves on the trees along the street, and the celebration of local festivals and events in public spaces around the religious structures and similar activities, not only provide a backdrop for daily activities but also indicate the passage of time. However, these neighbourhoods do not offer the feeling of such a temporal layer. People living in SRH not only purchase houses, but should also be ready to live the "lifestyle" provided by the housing estate because changes to the outsides of buildings are not allowed. The combination of all of this has resulted in the separation of people from places. In the absence of movement, communication and socialisation, the task of achieving a sense of place and building a sense of community is too difficult. The social cost of development is very high, but the quality of life is low in these residential areas.

The traditional neighbourhood in MST has a legible urban form (a well-defined hierarchy of streets and open spaces with identifiable community nodes and landmark structures), rich historic resources and cultural values that provide meaning, order and stability to human existence (Lowenthal, 1975). Numerous activities associated with the celebration of different festivals and religious rituals in both public places and the buildings provide a pleasing environment, totally different from the daily residential environment. Finally, the chariot procession known as the White Macchindranath Jatra and the veneration of the living goddess Kumari at Lagan and Jaishi Dewal have further enriched the cultural meaning of the place. However, neglect of social artefacts, erosion of religious beliefs and faiths, and invasion of public spaces has resulted in a deterioration of the spirit of place in MST.

4.3.2 Community resources and performance of daily lives and socio-cultural activities

The provision of resources for people in terms of services and social amenities can help maintain a sense of place if they are positioned in a way that supports greater social integration. Moreover, the people in the neighbourhood should be able to perform their daily activities as well as enjoy social and religious functions in a safe and secure environment.
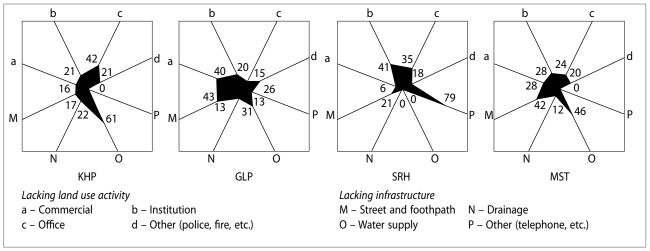
Figure 10: Residents' responses on lacking land use and quality of physical infrastructure.

Because common land and resources (a primary school, health centre, recreational and cultural outlets, parks and gardens, and similar public elements) are not provided in the planned residential areas (except allocation of minimum spaces for open spaces and, in the case of SRH, a grocery store), the task of taking responsibility and feeling ownership of community properties never materialises. Gathering and working together for the benefit of residents to create an opportunity for sharing experience is lost. Moreover, numerous local festivals and rituals cannot be performed in these neighbourhoods due to the lack of significant religious structures and places associated with them. This has reduced the belief and faith in cultural activities among the residents.

From the survey, it is clear that the community in each neighbourhood feels the lack of mixed-land use and social amenities in their neighbourhood. A substantial number (42%) of respondents in KHP think that "office" activity is lacking, and a similar percentage of people in SRH feel that an "educational institution" is missing in their neighbourhood (Figure 10). However, nearly the same number of residents in GLP feel that commercial activity is lacking in the area. Surprisingly, one-fifth to one-fourth of the respondents in each case feel that their neighbourhood lacks emergency facilities such as a police station, fire station, and so on. The remaining respondents are concerned about the lack of commercial, institutional and office space. Inadequate infrastructure provision and poor service affects residents' perceptions of the area and ultimately creates negative attitudes and behaviour towards the neighbourhood environment and other residents.

Such perceptions were confirmed by the survey in each neighbourhood. A significant percentage of respondents (61%) in KHP are dissatisfied with the water supply, and the remaining people are divided over the issues of poor streets and drainage. Problems relating to the streets and water supply are a

major concern of the residents in GLP and MST, whereas in SRH the main issue is the unavailability of telephone lines. An irregular and insufficient water supply is a problem faced by all of the residents except for SRH. Lack of maintenance, dumping on the sides of streets, the absence of footpaths and so on are reasons for dissatisfaction about the streets in KHP and GLP, whereas the lack of trees and other plants is the main reason for not liking the streets in SRH. Because the neighbourhoods in KHP and GLP have only a few isolated shops for daily necessary items, the residents need to visit nearby places: residents of KHP often go to Kalimati, Kalanki or Kuleshwor, and inhabitants of GLP go to Thamel, Gongabu Chowk or Shamakhushi. In a situation in which the majority of residents are still struggling to meet the basic needs of their daily lives against problems such as inadequate water supply, a poor drainage system, dilapidated street conditions and so on, the issue of socialising with neighbours and sharing experience, beliefs and values with them is of little importance.

The safety of residents and their properties is a major concern in these neighbourhoods. This could be achieved through mixed land use, building and street layout, police and fire protection, visibility, lighting and appropriate landscape treatment, including the concepts of "eyes on the streets" (Jacobs, 1961) and "defensible spaces" (Newman, 1972). Both KHP and GLP barely satisfy any of these criteria. Numerous features (single-purpose land use, streets without sidewalks, without identifiable nodes and disconnected from the houses through gates and walls, and a lack of community amenities) have all combined to promote a strong sense of insecurity. Dark streets, empty lots and groups of young men hanging out on the street corners have limited the use of street space by women, particularly at night. The gated community of SRH does not welcome outsiders. Traditional neighbourhoods like MST provide a unique setting for safety and security. Enclosed courtyards and short, narrow streets with many activities at the street level fulfil the criteria

Table 6: Comparison of community safety feeling and crime in the neighbourhoods.

Neighbourhood	Safety (%)		Social crime (%)			Return home (%)	
	Yes	No	Theft	Vandalism	Drugs/prostitution	Before 8 pm	After 8 pm
KHP	81.0	19.0	100 (36*)	0	0 (22*)	83.4	16.6
GLP	26.3	73.7	44.4 (15*)	27.7	27.9 (150* + 50**)	70.5	29.5
SRH	92.8	7.2	0	0	0	75	25
MST	86.3	13.7	57.1	28.5	14.4	68.1	31.9

Note: (*) Number of cases of drug abuse in the entire ward, (**) number of prostitution cases in the entire ward.

of "public eyes on the street" and "territoriality and surveillance" to enhance security. Moreover, the semiprivate spaces of the courtyards or house fronts are not only where women nurture the neighbourhood and family ties, but they also help shape, define and police the boundaries of the neighbourhood.

It is clear from the survey that, although majority of the communities (except GLP) feel safe and secure in their neighbourhoods, there are cases of social crimes. All the respondents in KHP that feel unsafe in the neighbourhood mention theft as a major social problem (Table 6). Residents of MST are most concerned about theft, vandalism and drug abuse in their community. Only residents of SRH have not so far experienced any sort of social crime in their housing estate. Both the resident survey and the crime record of the entire ward demonstrate that GLP is the least safe neighbourhood. The majority of residents (74%) mention the social problems of theft, vandalism, drug abuse or prostitution in their neighbourhood. Finally, in almost all cases, more than 70% of residents (68.1% in MST) generally return home before 8 pm. The poor safety record coupled with little activity at night has promoted the psychological feeling of an unsafe residential environment among the residents of all the neighbourhoods.

Except for the residents of SRH, more than half of the respondents in each neighbourhood prefer to have a playground, whereas less than one-fifth of the community in each case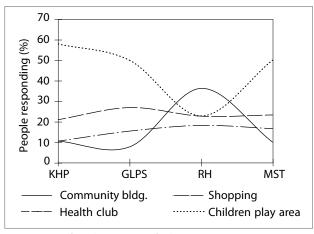 think that they need shopping activities in their neighbourhoods (Figure 11). About one-fourth of the interviewees of each neighbourhood mention a need for a health club. Residents of SRH give first priority to the construction of community buildings other than the existing grocery store. In the remaining cases, only about 10% of respondents believe that they need to have a community building in their neighbourhoods.

Similarly, numerous features that the residents characterised as the most-liked and least-liked features in their neighbourhoods can be categorised into four groups (Figure 12): a) neighbours, b) the local environment, c) physical infrastructure and d) cultural facilities. The three most-liked features for KHP residents are their neighbours (36.3%, friendly and helpful), followed by the local environment (27.3%, higher elevation, green belt with open space, etc.), physical infrastructure (21.2%, planned area, vehicular access to each plot, etc.) and cultural facilities (15.2%, social gathering and celebration of festivals). However, a significant number of respondents cite disliked features such as physical infrastructure (53.6%, poor water supply and drainage, dilapidated condition of streets, dense concrete construction, lack of health clubs, etc.), the local environment (25%, poor use of open space, lack of playgrounds, absence of greenery, etc.) and neighbours (21.4%, self-centred, less participatory, disturbing others, etc.). In the case of GLP, the most-liked features include physical infrastructure (46.3%, swimming pool, vehicular street, etc.), followed by the local environment (23%, peaceful with open space, some beautiful bungalows, etc.) and neighbours (23%, cooperative, friendly, helpful, supportive, etc.). However, the majority of residents dislike the same features: physical infrastructure (52.2%, narrow and poor condition of streets, lack of greenery and meaningful open space, poor water and electricity services, etc.) and neighbours (30.4%, selfish, quarrelling, disturbing others, littering the streets and open space, etc.). In the case of SRH, the majority of the respondents (76.6%) mention physical infrastructure as a liked feature versus the 50% of respondents that dislike the same feature. However, nearly 42% of inhabitants dislike the local environment versus the 17% that dislike the residents. Reasons for disliking the local environment are cited as the monotonous, boring and dead residential environment, lack of community buildings, insufficient greenery and lack of a park area. It is only in MST where the majority of
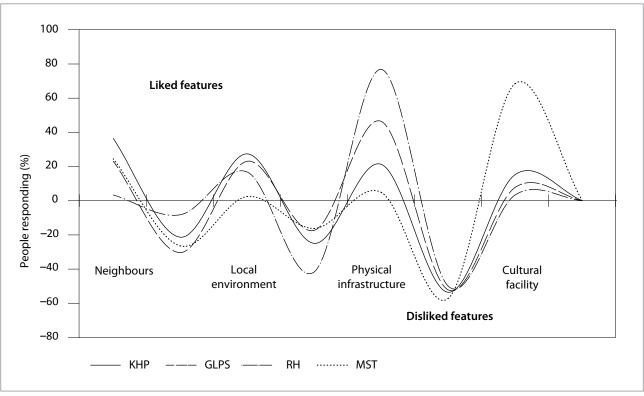

Figure 11: Preferred community facilities.

Figure 12: Most-liked and least-liked features.

the inhabitants (68.4%) mention cultural facilities (the Manjushree temples, monasteries, local festivals, traditional professions and traditional buildings) as the most-liked features of the neighbourhood. In the remaining three cases, an insignificant numbers of respondents mention cultural facilities as a liked feature of their locality. The neighbourhood of the core area (MST) suffers from the poor condition of infrastructure (57.2%, dilapidated condition of the street, tall concrete buildings, leaking drainage, etc.) and bad neighbours (26.5%, uncooperative, gang fights, negative attitude towards people that are renting, etc.).

5. Weaknesses of the neighbourhoods

5.1 Inadequate and ineffective physical planning and (re)development

In all three planned areas, the physical layout (street layout, urban block and plot configuration) is guided by the singular element of the individual plot (either to be returned to the landowners in the case of GLD or the formation of standard plots in KHP), aiming to create a maximum number of serviced plots. After the completion of land plotting and demarcation of the street network, the individual landowner builds the buildings and defines their usage based on the existing building bylaws.[11] This ends the planning process. In the private housing scheme of SRH, the design of the built environment reflects the developer's desire to maximise profit rather than

fulfil community needs. These developments even fail to fulfil the basic criteria of a neighbourhood such as provision of a primary school or a health centre within walking distance. There is no consideration for identifying distinct features at the site, contextual study for integration with the surrounding areas, layout of a well-defined hierarchy of interconnected short streets and open spaces for multiple functions, continuity of architectural meaning to achieve a legible urban setting, creation of socialisation and recreation spaces, and building a community in the neighbourhood. Such a myopic vision of focusing on an individual plot and building on it can never create a healthy residential environment. The urban transformation process of MST (replacement of the traditional building stock with new incompatible high-rise structures, changing building occupancy and land use on an ad hoc basis dictated by market forces, and the invasion of public spaces and streets by vehicular traffic) is neither successful for maintaining the traditional townscape character nor capable of fulfilling the present needs of the community. As a result, the destruction of the traditional unique residential environment of MST has continued unabated.

5.2 Low opportunity for socialisation

Allocation of individual land use for housing without the provision of social, community and emergency facilities, failure of physical planning resulting in the formation of poor street and open space networks, and isolated building struc-

ture without creating meaningful spaces in street fronts and for the surrounding houses, combined with the inability of social institutions to enhance the social network, have reduced the opportunity for interaction and socialisation among the residents in the planned areas, thereby not only minimising mutual assistance, but also degrading the sense of place and community. Moreover, the densification of population and vehicles in MST (resulting in the replacement of old buildings by new commercial activity) and the invasion of public spaces by business activity together with the haphazard transformation of building patterns have decreased the socialisation opportunity and eroded the earlier social system and cultural practice that sustained the neighbourhood for many generation. In terms of social aspects, these planned developments are inferior to the spontaneously grown residential settlements.[12]

5.3 Poor sense of place and belonging to community

A poor physical setting in combination with low opportunity for socialisation has separated people from places in all of the planned neighbourhoods. As a result, people's interaction with their built environment as well as with other members of the community has become minimised. The residents of these communities still face the problems of inadequate water supply, a poor drainage system and poor streets and open spaces in their daily lives. Finally, they find it difficult to perform daily rituals and socio-cultural activities due to the lack of religious amenities. The overall result is the development of a poor sense of place and a low level of feeling of belonging to the community.

5.4 Inadequate and ineffective legal and institutional frameworks

No legal vehicle is currently available to guide the planning and design of new residential development and regulate the redevelopment of the old settlement. The Ownership of Joint Housing Act, 2054 (1997) (Nepal Gazette, 15 April 2003) focuses on permission to build housing, sell it, ownership transfer, and so on rather than regulating the master layout plan, infrastructure development and individual building construction. The only legal apparatus for controlling such development at present is the existing building bylaws. Hence, land-use allocation, open spaces and street layouts, the provision of social amenities, infrastructure development and so on are carried out on ad-hoc basis that differs from project to project.

Five tiers of government institutions responsible for land development and urban development have not only failed to prepare a master layout plan with the allocation of mixed land use and area calculations, but have also proved to be weak in monitoring individual building construction and infrastructure provision. They are also not successful at preventing the destruction of the traditional neighbourhood of MST. The scope of planning a new residential precinct with mixed land use, allocation of social and emergency amenities, and controlling individual building construction and infrastructure provision, including integration of disaster-mitigation components into master layout planning and the design of buildings to achieve a safe, secure and healthy neighbourhood, has been lost.

6 Conclusion

If the analytical framework developed here and the qualitative and quantitative analysis are taken as a basis, then the residential precincts of Kathmandu studied here are not a success story. In a true sense, these planned neighbourhoods are "placeless" and their inhabitants are "homeless". It is a setting of many individual private cells, where members of individual families eat, sleep and to some extent socialise among their relatives and friends. These planned developments illustrate many things. First, (except in the case of MST) they are the best development example of how one should not design a residential neighbourhood in the future at any cost. Second, this shows the inadequacy and ineffectiveness of the existing legal apparatus and institutional capability for planning, development and management of residential areas. Third, it symbolises the loss of an opportunity to build a safe and vibrant neighbourhood community that not only maintains continuity with the past but also fulfils today's needs. Finally, it illustrates the failure to recognise the unique character of the old neighbourhood in the core area as well as its destruction and deterioration. Last but not least, it also demonstrates residents' low level of awareness of their neighbourhoods. Because the existing inadequate and ineffective legal and institutional frameworks cannot address these problems, the formulation of design guidelines, their strict implementation and the enhancement of socio-cultural events including social networking are recommended for future residential neighbourhood development. Recommended planning and design guidelines for healthy residential neighbourhoods are:

a. Physical aspects

- Identifying the natural and historical features of the site that have collective meanings and then incorporating them into the layout and built design;
- Developing a legible master plan juxtaposition of streets and the open space network with building design and details, not only to provide an appropriate scale and size, and variety of public spaces, but also to achieve a desirable density, diversity and lively urban setting;
- Ensuring the provision of social and emergency ameni-

ties in appropriate locations in terms of both quality and quantity;

- Designing individual 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.

b. Social aspects

- Developing community-based institutions at the local level that enhance the social network and social support;
- Developing a clearly defined spatial hierarchy (public space, semi-public space, semi-private space and private space) in which residents have clearly identifiable places where they can socialise, work and relax. It is also necessary to create functional and human-scale spaces for different age groups of the society that can be used at different times in a variety of ways, thus producing a livelier and safer public environment.

c. Cultural aspects

- Designing places and promoting activities or events at which residents can learn customs and traditions as well as gain unifying values and beliefs, thereby strengthening community ties and mutual dependencies;
- Providing community amenities and diverse facilities in an appropriate location and ensuring that people can perform their daily activities conveniently and comfortably, and are also able to celebrate rituals and festivals in a safe and secure environment.

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Notes

[1] The term "neighbourhood unit" was coined by William E. Drummond and later expanded by Clarence Perry in 1929.

[2] By the 1970s and 1980s, private developers were engaged in constructing shopping and office complexes, community facilities such as parks and promenades and so on, thus playing an ever-increasing role in designing public places.

[3] This housing estate located at Balkumari in the Lalitpur Sub-Metropolitan City is easily accessible from many activity centres of Kathmandu.

[4] For the purpose of the comparative study, the area of Manjushree Tole studied is approximately one-third of the entire ward area because the demarcation of a clear boundary is difficult in the core area.

[5] An average size of five members per household is assumed.

[6] A few blocks subdivided by pedestrian paths are not considered.

[7] Horacio Caminos and Reinhard Goethert (1978) recommended 20% as desirable and 30% as a maximum proportion for circulation,

whereas the World Bank Project often uses a 20 to 25% Figure for a circulation area in housing development projects. To allow emergency vehicles, the main street should be 8, 6 or 4 m wide with corresponding right of way of 10, 7 or 5 m.

[8] A hypothetical model demonstrated by Martin Leslie and Lionel March (1972) revealed that the courtyard-type building layout can achieve five times more accommodation than the pavilion-type and one and two-thirds more accommodation than row-housing-type layout.

[9] This was an organisation financed in perpetuity through land grants and it effectively channelled individual wealth into public endowments.

[10] Many newcomers from various castes, such as Brahmin, Cheetri, Gurung and so on, living in the neighbourhood are either engaged in business or on a temporary rental basis.

[11] There are some extra clauses for the Kuleshwor Housing Development area such as a front setback of 2 m from the edge of the street and a 2 m setback from the sides for window openings and a total height restriction of 12.2 m (four stories).

[12] In spontaneously developed areas, inhabitants create access (alleyways or narrow vehicular streets) and other amenities with the help of neighbours, communicate with them through terraces, windows and door fronts, whereas many necessary daily items are easily available within walking distance without crossing the vehicular street.

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