Architectural Spaces as Socio-Cultural Connectors: Lessons from the Vernacular Houses of Lucknow, India

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Abstract

Vernacular Architecture has been a source of inspiration and learning all over the world. India has a rich repository of vernacular evolved over centuries of living corresponding to its existing diverse vibrant and myriad environments providing a good evidence for unearthing these lessons. In the contemporary context where most architectural practices are deficient in their connection to tradition and socio-cultural bearings, looking back to vernacular architecture is prudent and relevant. Within this premise, the Narhai settlement at Lucknow: a culturally and architecturally prolific city in Northern India has been taken as a suitable case for an in depth analysis. The objective of this study is to identify architectural spaces facilitating its interaction within the existing socio-cultural environment. It also aspires to take lessons from the selected spaces in influencing socio-cultural interactions giving rise to recommendations useful for similar socio-cultural domains.

Keywords: Vernacular, Lucknow, Man- Environment Interaction, House Form, Indian vernacular; Architecture Elements.

Introduction

India, like other traditional economies of the developing world is a land of numerous co-habiting cultures dating back more than 5000 years. It has been endowed with greatly evolved and complex heritage in arts, philosophy, literature and music beside others (Vellinga et.al. 2007). In the architectural context too, it has a rich repository of traditions going back to centuries. Consisting of myriad cultures and climates, the responses of built-form have also been diverse and varied. While traditional architecture in form of forts, palaces and the like has been popular and more discussed; Vernacular Architecture, are best represented by houses of different regions giving cues of existing culture, tradition and social values making them valuable sources for learning. Defined as 'ingenuous and smart solutions' that were created, utilizing a restrained choice of native and renewable materials by inexpensive construction and design practices (Manu, 2006:30) vernacular architecture has also been called the native science of building" (Oliver, 2006:28).

Vernacular: Meaning & Significance

Existing not as "individual responses but group solutions" characteristic of prevailing macro and microclimate, distinct materials and site-conditions, manifestations of a "complex interaction of potentialities of available materials, cultural skills, climatic conditions and economic levels of a place, attained, through a system of trial and error" over an extensive duration of time (Rappaport,1969;17). They are both regionally and socially specific since a "prototype that is responsive to local needs is developed by a community over the years" and carried ahead across generations. (Oliver, 2006;28). Being "built to meet specific needs" compliant to the ideals, economies and lifestyle of the societies that generate them, the house forms in specific have developed well over generations of living making them an impeccable source for knowledge (Oliver, 2006;56). In the contemporary setting, due to massive

urbanization, most migrating communities are losing sense of belonging in addition to experiencing detachment from their value systems. Consequently, indifferent architecture practices aspiring to solve tangible impersonal issues have also lacked their connection to the Indian context making them lack an overall integrity.

In addition to the above, numerous studies all over the world have been carried out for assessing the responsiveness of the vernacular to the prevailing climatic conditions. While some have traced the usefulness of "underground dwellings in Mediterranean climate" (Mulligan, 1983), others have discovered the "effectiveness of specific openings, courtyards and special elements" in the environments of Morocco (Baroum, 1983) and Saudi Arabia (Salloum, 1983, Talib, 1983). Furthermore while the appropriate climatic responses of the "old sections of cities of Riyadh and Jeddah" (Mofti, 1983) have been established, the "energy conserving aspects of other Islamic Saudi Arabian towns" (Elyas, 1983;381) have been also ascertained.

In the Indian context the environmental efficacy of the "step wells in hot-dry climates" has been corroborated by Ford and Hewitt (1996) whereas, the climatic appropriateness of "vernacular dwellings of Jaiselmer and Ladakh" has also been exemplified by (Krishan, 1996;220). Vernacular Havelis of Rajasthan (Gupta, 1985) in addition to Nalukettu houses of South India (Vyas, 2005) have been explored and verified for their climate responsiveness while the Wadas of Maharashtra (Kotharkar, 2008) and Pol houses of Ahmedabad (Agrawal, 2009) beside houses at Shahajanabad, Old Delhi (Prasad, 1998) have been acclaimed for their suitability to the prevailing climatic conditions. Apart from the urban vernacular, their rural counterparts have also been acknowledged and appreciated for their energy responsiveness significant of whom are the "Bhungas of Kutch; Toda huts in Nilgirs and houses at Chattera" (Young and Krishan, 2001).

Causative forces and Underlying Principles

The causative forces of vernacular form have included long periods of their establishment and slow rates of change in value and techniques combined with a sense of homogeneity as a whole between man and the environment. Furthermore, its eternal quality is resultant of the underlying consistency in value systems along with well-worked out construction techniques and systems. Moreover it has certain underlying principles that have been examined by researchers in their respective contexts. While some have emphasized on its collectiveness, management of resources, infusion of sacred and profane, including the art of constructing with perishable materials (Dayaratne, 2008); others have highlighted it for inherent sense of place, rich visual experience, intuitive open-ended and loose-fit nature and denotation of iconic values of that caste, civilization, status and culture (Ghosh). Having similar underlying meaning from varied nomenclature the vernacular architecture of diverse contexts can be analyzed for their myriad responses to the environment and social fabric.

Lessons from Vernacular Architecture

Even though the viability of vernacular practices in totality may be redundant in today's transformed societal context with most building and craft traditions becoming non-existent over time, it still has useful lessons that could be emulated in most contemporary environments devoid of spirit, belonging and "cultural identification" (Mohammad Hadi Zare, Farhad Kazemian; ?). Numerous scholarships have studied vernacular architecture of a region for its hybrid nature (Dayaratne, 2008), maintenance and upkeep issues (Singh, 2008), timelessness (Hifsiye, 2008) and amalgamations (Bose, 2008) but most significantly for their climate and environment responsiveness (Gulati, 2014). Furthermore, researchers like ENEA (1989), Knowles (1974), Behling and Behling (1996) have also assessed the past in backdrop of the use of solar energy in the buildings of varying civilizations, from pre-historic times to the contemporary, comprising the Chinese, Greek, American, Japanese, and Roman civilizations. In fact of late the "environmental appropriateness of the vernacular" (Vellinga et al., 2007;xix) has added to its allure, as knowledge from the vernacular has progressively been considered necessary for the growth of sustainable architecture.

Besides aspects of sustainability and their relevance in making zero energy homes in desert climates (Alrashed, et al.; ?) vernacular architecture has also been examined for its useful application of materials and technology (Dayaratne, 2013) and their seismic resistance. (Akbar et

al;2017). Furthermore the analysis of vernacular architecture has contributed to assessment of its cultural compatibility (Rappaport) socio-cultural interactions with environment (Lawarence), the inherent socio-cultural values (Hoseini et al,2012) cultural expressions (Jayasudha, et al, 2014) including the continuity of traditional and vernacular aspects too (Kashikar et al, 2010). In the Indian context the vernacular house form has especially been studied for the social relevance of spatial organization in the pol houses at Ahmedabad (Lambe et al, 2016) in addition to role of specific spaces like courtyards in community interactions in varied hose types in different regions of India.

Aims and Objectives

The tenet of sense of place in vernacular architecture can be examined by its response to natural, climatic, socio-cultural and political aspects of the environment, in addition to regard for site, topography, prevailing materials and techniques. (Ghosh) Within this premise socio-cultural interaction between the residents of the vernacular houses both on the micro and macro level play an important role in its response to the social context. The climate, site and other aspects of the physical environment also influence its spatial organization and allocation of activities in specific areas of distinct nomenclature. The objective of this study is to identify the architectural spaces in selected vernacular houses that facilitate its interaction with the socio-cultural environment. Moreover it attempts to examine the impact of these spaces in the improved socio-cultural interactions in the specific community context with the purpose of developing recommendations for their use in contemporary but similar socio-cultural domains.

Case and Method

Having habited the city of Lucknow for more than three decades the author has also utilized personal experiences for selecting the Narhai settlement. Residing in similar quarters close to the neighborhood, lively interactions of the community have been explicitly evident and thus made a suitable case for an in depth enquiry. As an overview, this settlement consists of more than hundred courtyard houses of which a segment having 31 dwellings on site area of about 1.6 acres has been identified for detailed study. The occupants of each unit vary from 4 to 6 members predominantly engaged in service, with similar social customs celebrating festivals like Holi, Deepawali and Janmashtmi along with marriages and birthdays together. Having developed over the last hundred years in an urban context, this settlement has consistently adapted to the evolving context keeping the essence and character of the settlement intact deeming it vernacular in the true sense. Having been constructed jointly by the residents and trained workmen with locally available materials and techniques in an incremental manner, it has retained its coherence despite modifications in the original dwellings as per changing needs of the inhabitants.

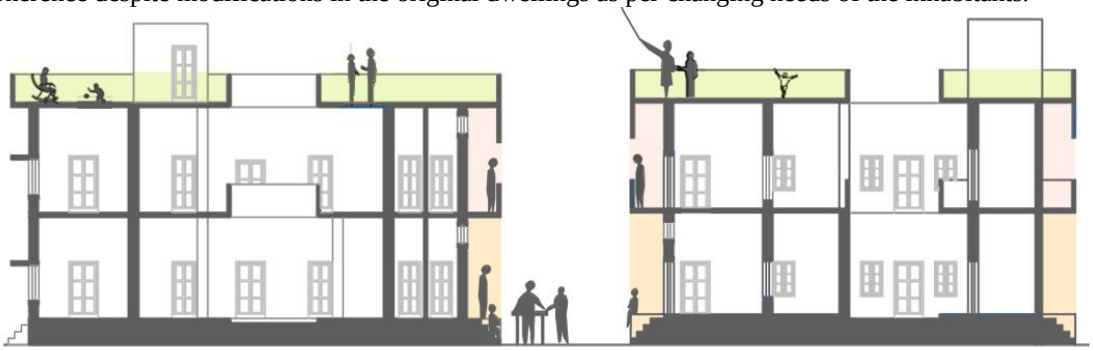


Fig. 1: Sectional elevation of the studied settlement showing the activities taking place in the outdoor and semi-outdoor spaces during winter days and summer evenings.
Source: Author

Fig. 2: Sectional elevation of the studied settlement showing the activities taking place in the indoor and semi-open spaces during summer days and winter evenings.
Source: Author

As the present study aspired to assess role of specific architectural spaces in the manifest socio-cultural interactions of the community the approach adopted was to examine real-life situations in a multi-faceted manner. The study was conducted by way of qualitative research over an extended time period. Initially the selected neighborhood within the community was well documented in form of architectural drawings, photographs and sketches. Activity patterns were studied informally by way of participant observation, field notes, conversation and informal survey with the residents as well as graphic sketches of the same (fig.1, fig.2). After the identification of spaces promoting socio-cultural interaction they were examined in detail for their role in promoting suitable co-relationship attributes conducive to activity and usage pattern. Care was taken not to be overly intrusive in the residents' life and activities with the underlying idea of observing without interference for obtaining accurate results. After the space analysis their adaptation in the contemporary context was considered where similar activities could be fostered by way of useful architectural design strategies. The final outcome was in form of recommendations and suggestions useful for design of housing in contemporary context of the city.

Historical Context: Lucknow City Morphology and House Form

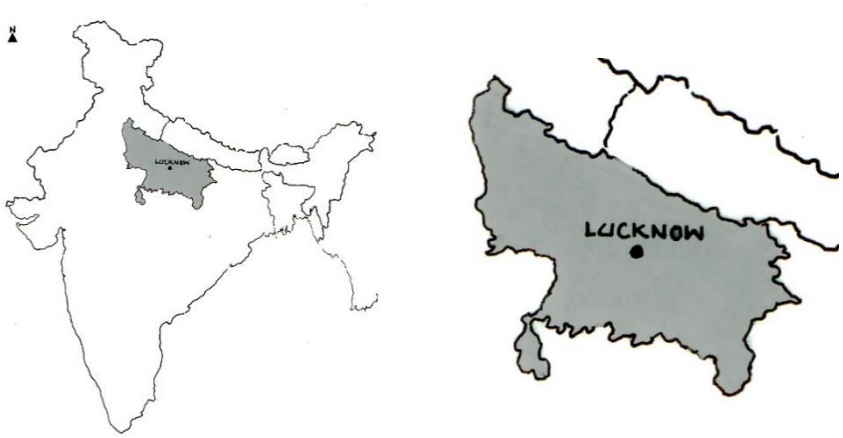


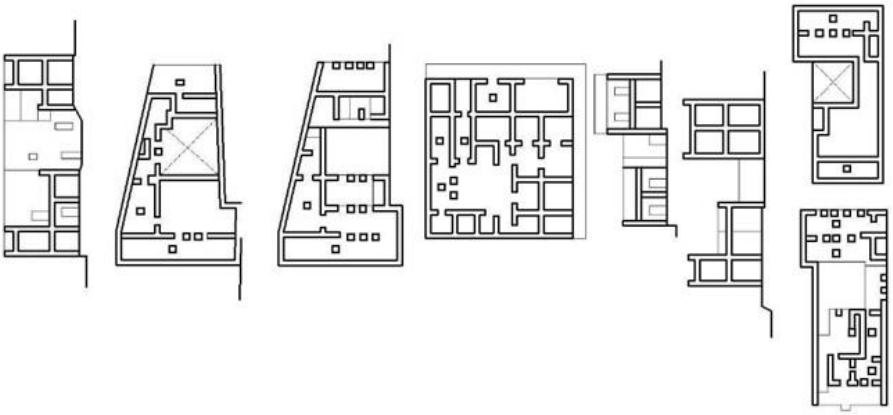
Fig. 3: Location map of the city with respect to the country
Source: Author

Lucknow, considered a fine North Indian city both culturally and architecturally, is densely populated with a thickly knit fabric (fig. 3). It has experienced diverse rules ranging from the Hindus, Mughals and Nawabs followed by the British and post independent developments that have left a deep seated mark on the city's architecture in particular. Due to the sporadic and organically layered development, the city's morphology is markedly diverse comprising of three distinct generic house types. These include the downtown city courtyard houses, the colonially adapted bungalows and the clustered mud houses on the fringes of the

city, all having sustained over generations and still habited by families unwilling to `change quarters to newer areas. They have evolved after numerous checks and balances over generations of living, having utilized locally available materials besides being culturally contextual and thus can be called vernacular in the true sense of the word (Arora, 1992).

City Courtyard Houses

The city houses inhabited by both the Hindu and Muslim population have been organized as introverted centripetal inward arrangements. Consisting of one or two courtyards depending on the socio-cultural and primarily religious aspects, they have opened from narrow shaded streets within dense built contexts. Minimal vegetation, absence of water bodies and a flat topography form the external siting conditions of the generic city house. The open built configuration has been fragmented with approximately eighty percent built-up area resulting in limited solar access. With square or rectangular plan forms having varying orientations, all the city houses have had one to two and even three shared walls with the neighboring houses being partially double to even triple storied in some cases (fig.4). In all cases, flat terraces on all floors



have been invariably present even with limited fenestrations opening to the outside and optimum ceiling heights. The spatial organization has been in one or two bays around the courtyard(s) while the external material finishes were normally matt. Construction materials utilized for walls were brick with lime surkhi mortar plastered with mortar or stucco whereas the roofs were either made of timber joists or jack arch roofs. Transition spaces like verandahs of varying widths and heights were intermittently present while door window configurations including presence of ventilators was distinct. (Jones, 1985).

Fig. 4: Varied house forms of Core Urban Houses at Lucknow
Source: Das, 2003, p.130

The Narhai Settlement: Location and Evolution

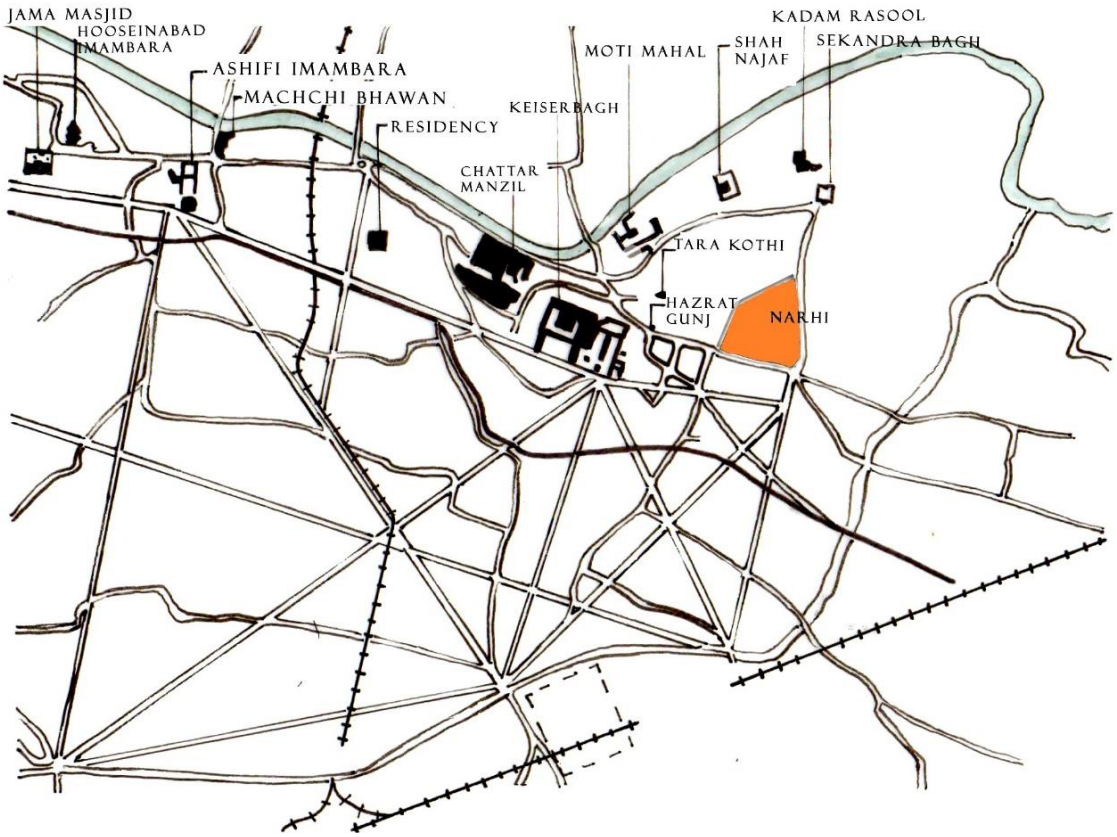


Fig. 5: Location of the settlement studied with respect to major landmark of the city
Source: Author

The origins of Lucknow were located in the Chowk area near river Gomti. Here is where the earliest vernacular settlements came up. As the city grew and the advent of Nawabs followed by British ensued the city grew in a South Easterly direction along the Gomti and new found areas like Hazratganj and Cantt came up in the early 19th century (fig. 5). These carried forward the legacy of previous developments and both the Bungalow and courtyard type houses were built depending on the cultural affiliations of owners. Numerous Hindu families had acquired land in these areas where they started building in consonance with the community. Narhai settlement was a similar case situated very close to the main Hazratganj area where a large group of Hindu families built their houses in an incremental manner. Although the courtyard house form was adapted from the previously developed cases in the city it was built more geometrically, specifically to cater to the needs of the large group of inhabitants.

Siting and Street Orientation

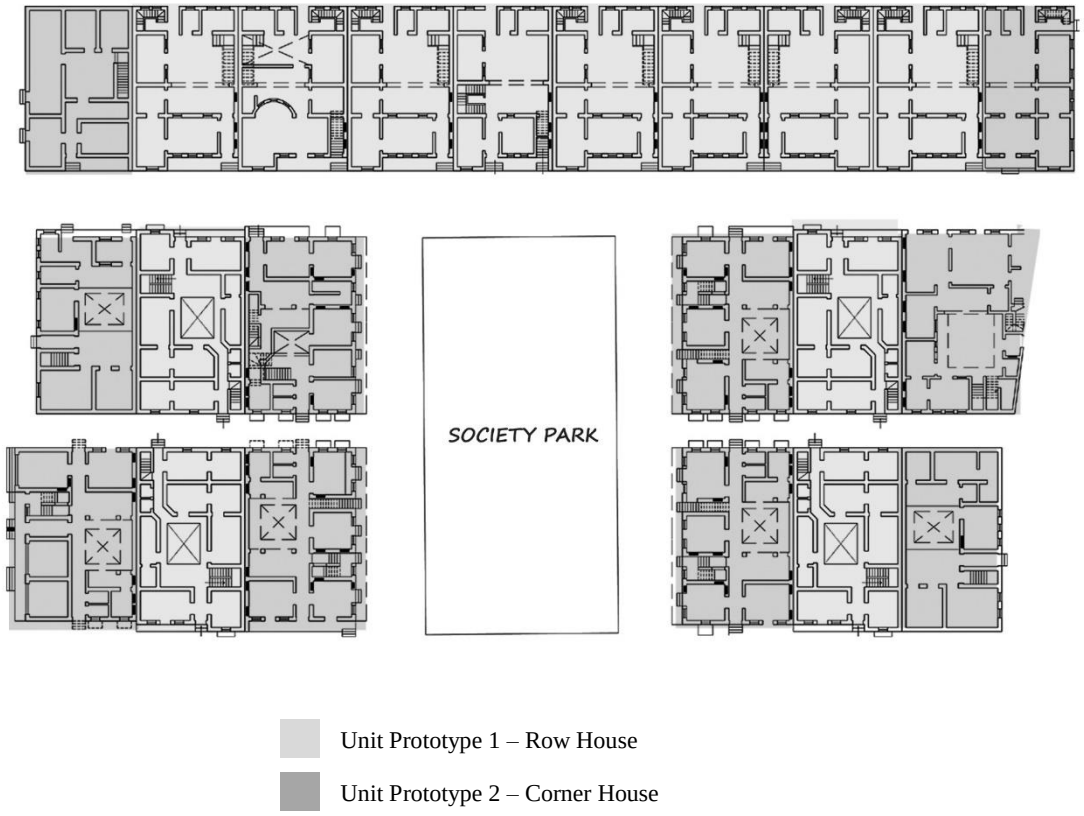


Fig. 6: Elevation, Plan & Section of Prototype Unit 1 (Row House)
Source: Author

The siting constitutes of row houses with shared walls arranged along streets with an almost centrally located large green park resulting in a built to total area ratio of 1:1.7. The land form in this area is flat with more open areas and presence of trees and vegetation in the dispersed park type areas. The streets are positioned in the North-South direction with maximum houses facing East or West (fig. 7). A hierarchical clustering with existing social order is evident with the corner park facing houses being larger having access from three sides while the comparatively smaller units have been placed abutting the streets (fig. 6). Existing as spatial connectors the streets in this settlement have varied proportions and scale with width to height ratios ranging from 1:3 and 1:2 influencing the spatial quality.

Fig. 7: Site Plan illustrating the street orientation of the studied settlement
Source: Author

The spatial configuration of each rectangular dwelling unit consists of a small centrally placed courtyard or aangan (width to height ratio 1:2.7) surrounded by single bay of rooms having transition verandahs (varying ratios of 1:2 to 1:3) on both sides. Accessed by chabutras (approximately 900 mm high) from the street side, the dwelling units are constructed of locally available bricks with lime surkhi plaster and flat slab roofs constituting terraces finished with mud phuska waterproofing. Finished externally with lime stucco plaster, the entire settlement has stucco patterns painted a bluish lime matt texture. The roof form is flat with projecting terraces and balconies whereas the facade is a unified whole consisting of pilasters, jharokhas, balconies and windows complete with stucco ornamentation typical of the regional architectural style (fig.8, fig.9).

Fig. 8: Intricate stucco and ornamentation details depicting the typical regional architectural style
Source: Das, 2008, p.71

Fig. 9: Plan & Section of Prototype Unit 2 (Corner House)
Source: Author

Spatial Configuration

These houses were built in a part fashion with the Ground floor having single bay rooms grouped around a courtyard with kitchen and toilets. As the needs arose, verandahs were added to the inside of the courtyard and staircase leading to the upper floors was constructed. The rooms on the first floor were added with or without verandahs and similarly the second floors were constructed. Furthermore, it seems to be responsive to the existing climate conditions of variable seasons along with the immediate site location and surroundings. Even in the contemporary context, the social fabric and character of the place appears to have similar dynamism and vibrancy, it may have had in its original conception. With all the afore-mentioned attributes, the Narhai settlement at Lucknow has been studied in particular for its favorable socio-cultural interaction with the environment having the objective of identifying spaces that may be adapted from the contemporary housing at Lucknow.

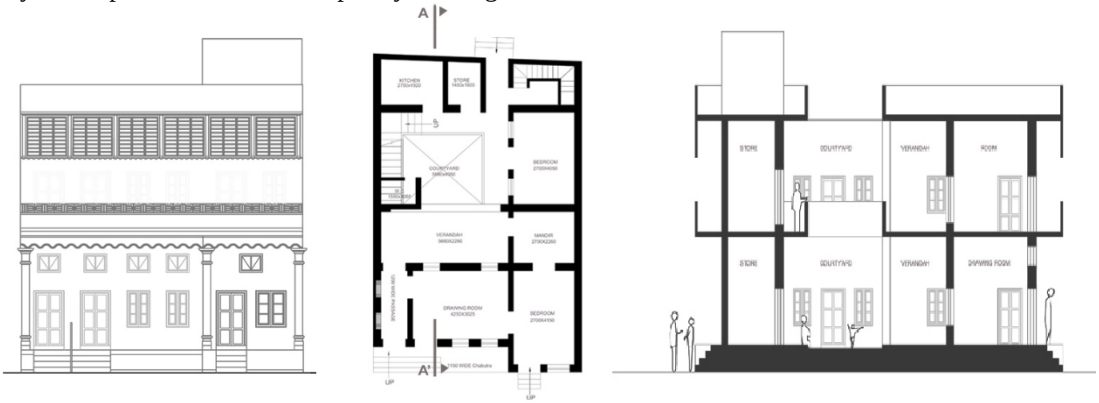


Fig. 10: Elevation, Plan & Section of Prototype Unit 1 (Row House)
Source: Author

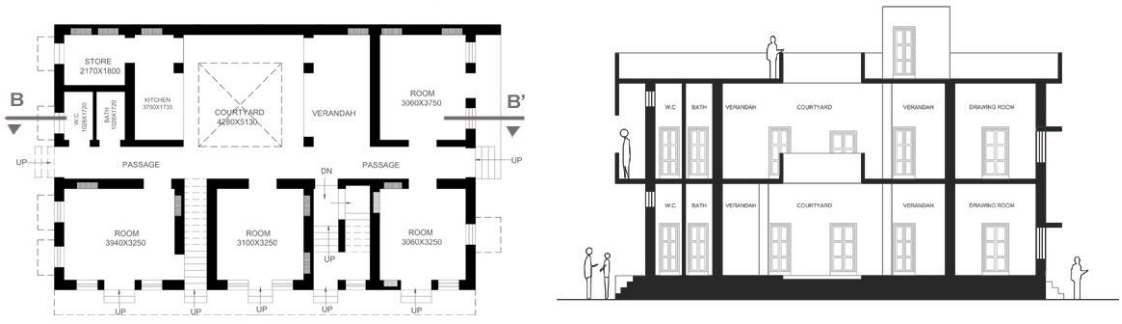


Fig. 11: Plan & Section of Prototype Unit 2 (Corner House)
Source: Author

Spontaneity, Variation & Dimensional Control

In the previous segment of this paper the principles underlying in vernacular architecture especially in the Indian context have been discussed. In the Indian context the tenets of sense of place, Spontaneity, Variation and Control along with an open ended relationship hold special significance (Ghosh) and are examined in this settlement. The principle of Sense of Place includes suitable response to existing climate, site and topography prevailing materials and techniques. It also includes favorable socio-cultural interaction to the existing environment and community. The second significant principle of vernacular evident in the Indian context has been its rich visual experience, resultant of intrinsic spontaneity and deviations including variations in prototype, elements and scale beside a multitude of interlaced themes. Thirdly, vernacular has not lost its veracity despite intuitive open-ended and loose-fit nature due to regulatory processes of the evolved cultural prototype, use of limited common materials, assembly of elements, dimensioning control and proportioning systems. As the fourth determinant, Indian vernacular has characterized a stable equilibrium which is additive, changeable and open-ended and can be constricted or loose fit as required in contrast to rigid, high style modern architecture minimizing space personalization. Finally, most vernacular processes of building have been deeply rooted in

the existing notions of religion and social values at large, thus signifying icons and values of that caste, civilization, status and culture. (Ghosh, 1998, pp. 7-20).

Evident Principles of Vernacular Settlement

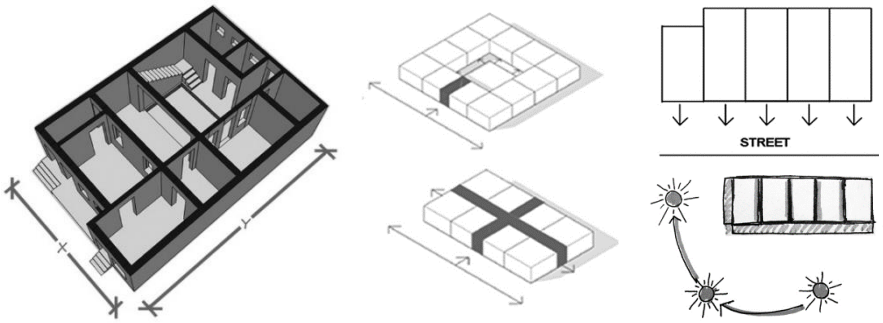


Fig. 12: Evident principles of vernacular settlement observed in Narhai, such as prototype identification, clustering pattern, shape & form interacting with the street and environment
Source: Author

The Narhai settlement was examined against these principles with emphasis on the socio-cultural interaction of the residents both at micro and macro scales. While sense of place was evident in its favorable responses to existing composite climate and topography by way of compact, mutually shaded clustering pattern and narrow shaded wind facing streets (fig. 12). The row houses were oriented North South preventing direct solar gains, whereas shared walls and organization of rooms with central small courtyard flanked with wide verandahs were conducive to natural ventilation and minimal heat gain and loss. The total built form was narrow with tall facades and wide eaves keeping the solar radiation at bay constructed with high thermal capacity materials of bricks and lime surkhi mortar finished with stucco plaster that is a trademark technique of this region. The interaction between the residents and existing socio-cultural environment at the macro scale is manifest in the conducive hierarchical organization of units as per their size and placement where larger houses having access from three sides are located closer to central park and narrower edges of smaller ones abut streets resulting in improved contact and happenings. This is also due to suitable spatial enclosure, built edges, desirable pedestrian movement along with appropriate scale and proportions of the open and built.

In the Narhai settlement the attributes of spontaneity and variation are evident in the form of deviations within the prototype unit, where corner units are different to the park and street facing ones, both in size and spatial organization. The units facing the park are larger being a corner plot, with staircase placed away from courtyard and the front and corner rooms being much larger than the street facing units. Moreover most fenestration, doors windows and

ventilators open towards the park side too. In addition the diverse façade elements including pilasters, jharokhas, balconies have been arranged having varying sill and lintel heights of contrasting intricacy resulting in a unique non-symmetrical composition. Alongside variation, simultaneous control in form of the sizes and proportions of courtyard, balcony, jharokhas, verandahs, chabutras and terraces has also resulted in an inherent order within this settlement (fig. 13). What's more, use of similar material and construction techniques coupled with an evident dimensional control in form of similar frontage sizes, placement of doors, windows and ventilators have also strengthened the underlying organizational restraints here.

Fig. 13: Street Elevation showing the evident Dimensional Control in the fenestration
Source: Author

Incrementality of the Prototype

The open ended form relationship being the primary quality of vernacular architecture is evident in the Narhai settlement by way of its incremental growth over years of habitations (fig. 14). A similar pattern of development was observed in almost all units where the initial phase constituted of construction of two front rooms faced by chabutra to the street and verandah leading to rear courtyard on the Ground Floor. The second stage was addition of other rooms on the Ground level including the staircase. As the family grew the first floor was constructed on similar pattern as ground level with courtyards and verandah intact and a balcony constructed over the chabutra towards the street. In case more additions were to be made the second floor followed the same pattern but in almost all cases it constituted of just a mumty above staircase with the terrace used for other activities. The unit still has scope for expansion and incrementality if needed.

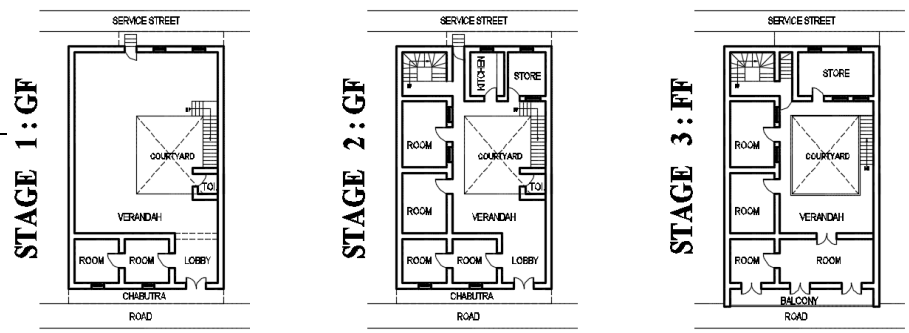


Fig. 14: Stages of Incrementality of Prototype Unit 2 (Corner House)
Source: Author

The qualitative study of this settlement with extended observation and informal inquiry exhibited the presence of vibrant socio-cultural interaction both at the unit and neighborhood level. In light of the same the primary objective of this study was to examine role of various spaces and their spatial configuration in the facilitation of socio-cultural interaction. Consequently the task was to first identify the spaces promoting interaction in the specific socio-cultural context and examine them architecturally for their activity patterns. In addition the study also aspired to take lessons from Narhai settlement useful for contemporary context

After a detailed scrutiny of the house form with respect to its surroundings the spaces that were significantly important in the informal socio-cultural interaction were identified as the courtyards, verandahs, chabutras, balconies and terraces. These have been analyzed in depth for their location, use or associated activity patterns, size, proportions and scale to ascertain their significance along with derivations that may be useful for contemporary upcoming design schemes at Lucknow.

Spaces Promoting Socio-Cultural Interaction:

1. The Chabutra:

Fig. 15: Elevation and Section of a typical Chabutra setting illustrating the activities on the street
Source: Author

The Plinth platform or chabutra acting as a significant transitional element leading to the house from the street fulfils functional as well as social purposes. While its average height from the street is 900mm its width is 1200mm with the width to height ratios being 1:3. The length varies but is mostly continuous in the street facing side. It is inhabited mostly during winter days and summer evenings where residents also exchange conversations with visitors and neighbors besides spending leisure time watching street activities. Informal inquiries have revealed that women of the house buy vegetables or other useful items from hawkers standing or sitting on chabutra while the elderly rock chairs keeping an eye on kids playing nearby. Most interactions with the neighbors happens here in the morning and evening of summers when men going and returning from work stop and share experiences. Winter afternoons have the sun filtering in giving space for warmth and discussions over tea. This space will be useful in the contemporary context with similar proportions however its placement is only suggested to be in the front façade or near activity areas (fig. 15).

2. The Jharokha or Balcony:

Fig. 16: Elevation and Section of the Balconies/ Jharokha illustrating the interconnectivity between two units across the street
Source: Author

The next most important space fostering interaction is the Jharokha or the Balcony on the upper floor of the unit facing the street. Varying from 450 mm to 1200 mm in width, its proportion with respect to height ranges from 1:2.8 to 3.6 appearing to be narrow at certain places. This element is a significant connection from the inside to outside world and vice-versa. Acting as a buffer space, this space is used for drying laundry, pickles and papads apart from residents soaking the winter sun and summer evening breezes sitting and standing in its domain. The narrow streets also offer conducive interaction through the projected balconies that serve as setting for socialization with neighbors. Women usually are seen with a cup of tea or coffee enjoying their free time and also cutting chopping vegetables on a stool while chatting with neighbors. This space also becomes a useful tool to call the vegetable hawker or vendor to sometimes buy things by hanging a basket below. In contemporary Housing these could be utilized effectively for interaction especially in mid-rise to low-rise structures provided their widths were increased to an optimum of 900mm and was covered from top (fig. 16)

3. The Aangan:

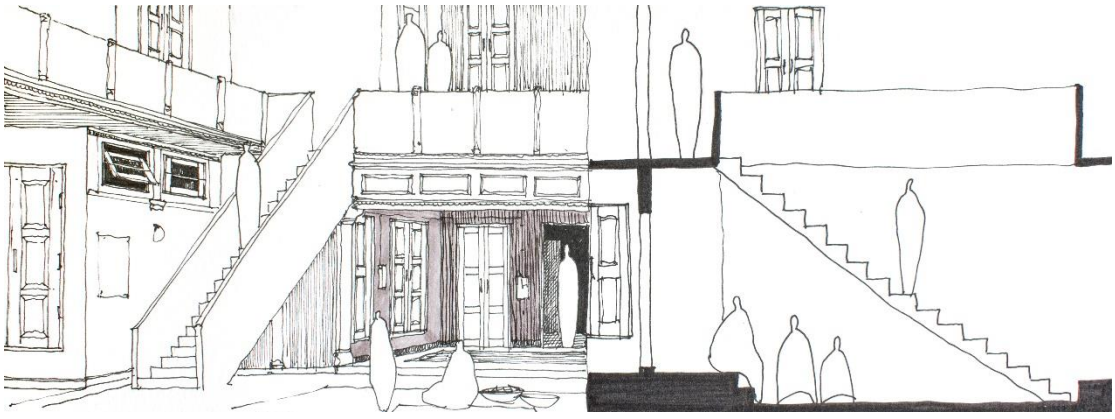


Fig. 17: View and Sectional Elevation of the Aangan illustrating the activities taking place in such indoor open spaces
Source: Author

Besides the afore-mentioned spaces, the open to sky courtyard or aangan serves as an essential space for socio-cultural interaction and activity in the generic house type. With larger height to width proportions varying from 2:1 to 3:1 this mutually shaded space serves a classic

response to existing composite climate conditions of extremely hot summers and balmy monsoon evenings. Having single bay rooms around it, it works as shaft for improved ventilation in livable spaces. Utilized as spill-over space outside kitchens it is utilized also as a semi living area or for drying laundry and utensils. Most of the family interaction takes place in the aangan where women completing their chores spend time with other family members and children. This multifunctional space becomes a sleeping area in summer nights and winter afternoons with foldable cots and useful space for small festival gathering within family. This could be a valuable addition in contemporary housing and although their proportions in some cases come across as too narrow suggestions include keeping width to 3m and ratios not more than 2:1 (fig. 17)

4. The Verandah:

Fig. 18: View and Sectional Elevation of the Verandah illustrating the activities taking place in such semi-open spaces
Source: Author

Verandahs have also formed significantly important elements in this house type. These act as internal transitional spaces shading the peripheral rooms from both the inside and outside. With proportions varying from 1:3.5 to 1:5, these are multi-functional spaces opening onto the courtyard and streets depending on their location. While from the outside they are an extension to the chabutra, on the inside they are the buffer between rooms and the courtyard. Well ventilated and shaded from the harshness of summer and winters these verandahs are havens of activity and interaction. While the inner ones are spill over for rooms and courtyards where the residents conduct their daily tasks at different times, the outer verandahs perform similar function as chabutras. They assume relevance in the contemporary context too owing to the informal Indian living style but find more suitability in low to mid rise housing. Wherever they may be used their width should not be less than 900mm for improved activity and multi-functional usage (fig. 18)

5. The Terrace:

Another important space forming an indispensable part of this generic type of house is the terrace present in varying levels due to the flat roofing system of the built form. This multi-functional space is used for sleeping during summer nights and sun-bathing in winter afternoons. Moreover, it is used for varied household chores like drying clothes, pickles, papad, aachars apart from flying kites or conducting other recreational activities So they perform the function not just for hosting large gatherings and social functions but also enhancing the economic activity of the inhabitants.

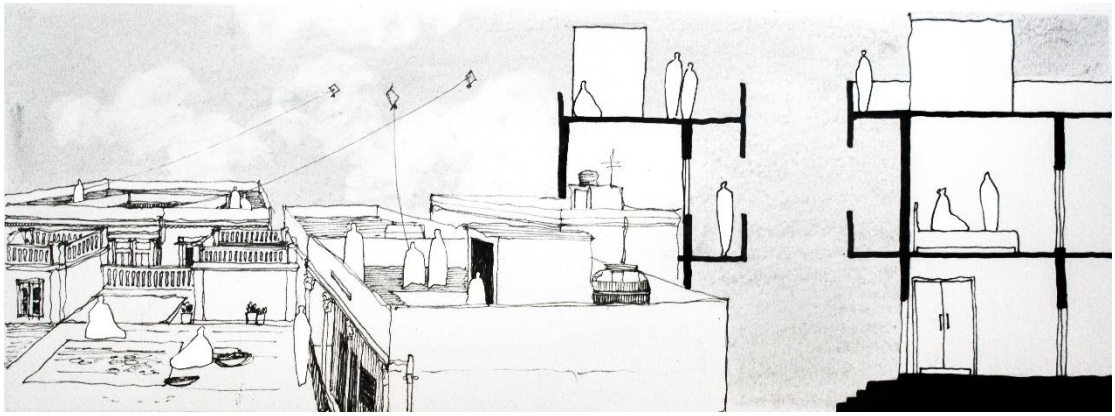


Fig. 19: View and Sectional Elevation of the Terrace demonstrating the activities taking place on the terrace
Source: Author

The terrace provides for a pattern of activities above the street level depending on the season, the time of day and occasion and is a great medium for social interactions and bonhomie between next door neighbors and even across the street. The low parapets facilitate the physical passage of kids and sometimes adults to the other side without going downstairs easing playing and chatting together that is very intrinsic to the culture of the settlement. In the contemporary context large terraces are a luxury and they should be planned on multi-levels even if in smaller sizes to facilitate multi-functionality and formal and informal socio-cultural interaction (fig. 19).

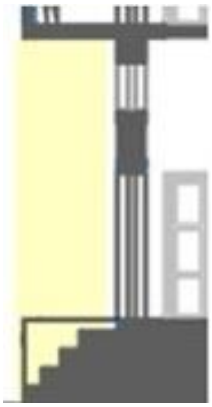
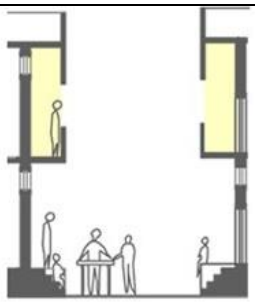
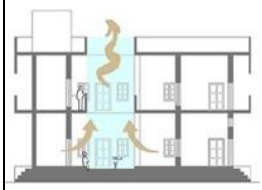
Conclusion

Taking lessons from the vernacular architecture has been considered prudent in many societies of the world. Irrefutably the lessons from the vernacular cannot not be undervalued as it has been investigated for historical, geographical, anthropological archaeological and romantic aspects though "more interpretative is the work of architects" who look to re-construct the virtues of vernacular practices without replicating them because for them, the "vernacular is the source of inspiration" (Oliver, 2006, p.10). The vernacular architecture in diverse contexts has been examined for its inherent responses to the surrounding environment including the physical socio-cultural and politico-economic domains. Furthermore it has exhibited useful application of available material and techniques along with demonstration of a sustainable model in that surrounding. In addition vernacular has also been scrutinized for its expression of cultural identity, and socio-cultural interactions with the environment too.

This study selected an existing vernacular settlement in the Narhai area of Lucknow city in India for an in-depth analysis of the socio-cultural interaction to the existing context. Subsequent to its examination of response to climate, material and techniques, spontaneity, variation control and open ended form relationship some specific spaces were identified for scrutiny. Within the house form at Narhai the chabutra or platform, Jharokha or balcony, aangan or courtyard and terrace or chatt were selected for their role in improved socio-cultural interaction in the settlement. They were analyzed for their location, activity and usage, size, proportion and scale with the purpose of adapting them for contemporary housing context (table 1).

The study ascertained that the chabutra has performed its role as a transitional space and social facilitator in most seasons at varying times of the day used differently by diverse age groups. Its proportions were deemed suitable after analysis and recommendations of placing it only on front facades or near activity areas were found useful. On the other hand the Jharokha or balcony has facilitated significant connection from the upper levels being used simultaneously as a buffer and multi-activity space that changes quality with varying seasons and time. Its width was found to be narrow at places and increasing it while shading the top were considered prudent for contemporary usage. On the same lines the aangan or courtyard has served as a classic response to the composite climate enabling comfortable informal interaction within the family doubling as a spill over multi-functional space although increase in its size and proportion shall deem it fitter for use. Then again the verandah has performed the role of buffer space

both from the inside and outside improving accessibility and transition in addition to being considered comfortable in almost all seasons by the residents and is suggested to be wide enough for multi-functional activities. The chatt or terrace present on varying levels of the house form has emerged as one of the most vital spaces of this house form that has encouraged the economic activity of the residents while becoming a comfortable haven in hostile climate conditions. Resultantly it has facilitated social interactions and bonhomie with neighbors becoming grounds for larger gatherings and physical accessibility too. In all this study of a small settlement has given an insight of spaces in the house form that have been significant in creating useful socio-cultural interaction within the community. Lessons and recommendations from these may become basis of their adaptation in the contemporary housing context of the city and aid in imparting the same sense of belonging and identity.

Diagram	Space	Measurements
	Location	**Review**
	User/ Associated Activities	**Suggestions**
	**Chabutra**	W : H = 1 : 3 Height = 900 mm Width = 1200 mm
	At the entrance on the ground floor	Well proportioned Level of chabutra was optimum
	Acts as transition space Users exchange conversations with neighbours Used for sitting during winter days and summer evenings Women use space as platform, to perform overspill activities of kitchen, keep an eye on children	Same proportions could be used. Preferably on front façade
	**Balcony**	W : H = 1 : 2.8 -7.6 Width = 450 mm – 1200 mm
	Projections in the façade on the upper levels	Balconies in some houses were too narrow
	Connection between inside/ outside. Acts as buffer space. Used for drying laundry, pickles Used as sitting /socialising space for summer evenings	Width should not be less than 900mm
	**Courtyard**	W : H = 1 : 2.7 Width =1800mm (min)
	On the ground floor	Some courts were too narrow, tall like shafts. Effective management of light, air was missing

	Acts as good responsive space for Composite Climate Used as place of relaxing, playing for kids, spill over kitchen space etc. Used as a spiritual centre with the sacred Tulsi plant	Preferred W : H = 1 : 1 - 2 W = 3000 mm
	**Veranda**	W : H = 1 : 2.8 – 5.75 Width = 600mm - 1200mm
	Around the court	Some verandas were too narrow on upper floors
	Acts as transition space Shades peripheral rooms Acts as semi living area, around the court Most interactive space indoors	Width should not be less than 900 mm
	**Terrace**	Parapet height = 975mm
	Roof plate of the house	Essential element for enhancing social interaction.
	Used as summer slumber space, winter sun bathing space Used for activities such as drying clothes, making pickles etc. Used to feast and celebrate occasions like kite flying etc.	Could be provided on multiple floors

Table. 1: Comparative analysis of elements contributing to social interaction
Source: Author

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