AUTHENTICITY OF THE HOUSE FORM: WHAT CAN CONTEMPORARY HOUSING DESIGN LEARN FROM EVOLUTION OF PRE-INDEPENDENCE HOUSING TYPOLOGIES WITHIN THE CONTEXT OF KARACHI?•

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ABSTRACT

This paper documents and analyzes the evolution of three housing typologies within the context of Karachi: The Hindu *Ghar* (House in Urdu), the Colonial Bungalow and the Parsi *Khanay* (House in Persian), with respect to their response to the incorporation of indigenous social and environmental values and processes in the built form. Karachi, being a port city, has historically been the business center for the Hindu merchants and has been the colonial trading post in the 19th century. Both the Hindus and the Colonists have left an impact on the built form of the city, in terms of the evolution of certain housing typologies. The Parsis, a religious minority, absorbed different aspects of these impacts, and accommodated it in their house form.

The introverted Hindu *Ghar* is analyzed as an indigenous mixed-use development that evolved as a response to social, economic and climatic needs of the merchant class. The extroverted Colonial bungalow is investigated as a hybrid built form that was introduced as a foreign element but was adopted by locals and eventually became part of the native landscape.

The Parsi *Khanay* is reviewed as an example of the adoption of the Colonial style bungalow, which was modified to address social needs of an introverted minority community. The value and prominence of these pre-independence housing typologies is reviewed for the contemporary built form landscape of Karachi.

In studying the evolution of these typologies lessons are drawn with respect to urban morphology, sense of aesthetics, climatic response, use of technology, respect for traditionalism versus modernism, and incorporation of natural elements. The indicators that have been outlined for this analysis are as follows:

1. The relationship of the house with the urban morphology in terms of plot, building, streetscape, density, land use, open/ built ratios.

2. The response of these designs to local climate.

3. The usage of global versus local technology, materials, crafts and skills.

4. The incorporation and preservation of natural habitats, flora and fauna.

5. The amalgamation of local social values and sense of aesthetics versus global imagery.

A case study methodology has been undertaken for this research based on semi-structured urban interviews and morphological documentation. The key findings point towards many elements used in the design of these housing typologies, which were physically and socially responsive and help in drawing principles, which can be incorporated in the design and teaching process of contemporary houses within the context of Karachi, to create forms which connect to the local. The intention is that students and professional develop this understanding and are able to differentiate between origins and adaptations of local and global components of house design in order to make informed design choices in the context of Karachi.

Keywords: House, housing typology, bungalow, *khanay*, *ghar*, Karachi

INTRODUCTION

Theorists of the global city are at times critical of the global imagery of the built form, especially in the developing world context, because it only caters to the aspirations of the upper middle-income and decisions marginalize the urban poor. Theories about global cities focus on iconic built form, with emphasis on the image of the city being portrayed through certain architectural projects, which are designed by renowned architects, and are often symbolized, by tall office buildings, museums and stadiums holding mega events and making use of high technology and imported materials. The formalistic expression of this type of built form may not always be derived from within the local environment, but imported from a global context, thus this built form may lack connection to local reality and aesthetics. Eventually with time this built form gets integrated in the local context, and what emerges is a hybrid built form, which takes cues from the global imagery but is a local version, influenced by local social, economic, climatic and technological realities.

Built form, which is foreign at one time, but is adopted and integrated within the context over the years through a process of adaptation by local communities, becomes the vernacular of a region, as eventually it is a familiar part of the local environment. Colonial built form is an example of this (King, 1990, 2004). The hybrid form produced within colonialism makes a connection between local materials and skills and imported aesthetics and technology. The formalistic expression of this type is seen in churches, cemeteries, clubs, racecourse grounds, golf course and beach promenades, and the production of bungalows in the South Asian context. The scale is not limited to the built form itself, but extends beyond, in the form of parks and beach promenades.

Some other aspects, which theories on global cities highlight, are the reflection of aspirations of a global image in a built form that houses a local function. Thus, the relation between the global space and the local place (Al Sayyad, 2001) is important to explain along with the particularization of the built form through a celebration of the difference between the global and the local.

Sassen (2012: 85-93) highlights that 'localized forms' within global cities is 'what globalization is about'. She further explains that many of the economic aspects of a city are not mobile and are embedded in place. Thus the importance to 'recover place and production in analyses of the global economy' help explain the 'multiplicity of economies and work cultures in which the global information economy is embedded'. Multiple localizations are seen within a global

city, many of these 'localizations are embedded in the demographic transition evident in such cities'. The Colonial Bungalow is one such localisation and the development of its evolution helps understand the local and global process taking place within the city.

The focus of theories of vernacular built form is the historic fabric of the city, which is mostly mixed use and low rise in its character. The formalistic expression of these buildings and spaces rooted within the local environment, is the result of years of evolution and perfection, thus, it connects to the local sense of aesthetics. Other aspects of vernacular built form are the qualities of ecological and cultural diversity, reuse and recycling and participatory approach (Lawrence, 2006). Payne (2006) points out the use of knowledge about the vernacular for the design of appropriate and sustainable housing and settlements. According to him, the vernacular has many lessons to offer in terms of conceptions of space and systems of governance.

Theories about vernacular architecture points out the adaptation of the physical features of vernacular built form with a modern application. The emphasis in these theories is on adaptation to the physical and social features of the context, which in the view of the theorists point towards localness (Asquith and Vellinga, 2006; Oliver, 1997). Vernacular built form has also been termed the most authentic building form, by these theorists, as it stems from climatic and social requirements, addresses 'traditional patterns of space use, construction, design and symbolism' (Vellinga and Asquith, 2006:84), has been tried and tested over centuries and is often more sustainable than modern forms of building. The Hindu Ghar, reviewed here, is the vernacular built form, which reflects the social and economic realities of the old town.

Karachi, housing the main seaport of the country has attracted merchants and mercantile trading companies over centuries. The Hindu merchants settled in the city in early 18th century near the Kemari Port and traded goods across the sea with Muscat, leding to the development of port and the city as a trading center (Figures 1 and 2).

The British recognized the importance of the city as a trading post and annexed it to the British Indian Empire in 1843. The British developed the infrastructure of the city and built many structures housing civic facilities. They also developed and expanded the port realizing its full potential for that time. This led to the expansion of the markets and commercial activities in the city and attracted various different communities to the city- these included the Jew, Irani,

Figure-1: Location of Karachi on the Arabian Sea
Source: www.googleimages.com (accessed 12/4/13)

Figure-2: Location of the two ports of Karachi on the Arabian Sea
Source: www.googleimages.com (accessed 12/4/13)

Lebanese and Goan merchants. Each community built living quarters for themselves according to their social and economic requirements. Many were influenced by the housing typology that was introduced by the colonial rulers - the bungalow; which according to King (1995: 7) was a 'physical, but also an economic, social and cultural phenomenon'. It was a foreign building typology that influenced the social, cultural and economic structure of the society over a period.

The Parsi *Khanay* was a hybrid built form, constructed in the early 19th century taking cues from both the Hindu *ghar* and the Colonial bungalow, fullfilling the housing requirements of an introverted minority community.

The Hindu *ghar* (house) within the old city was an introverted house, oriented towards the central courtyard that grew vertically in an incremental fashion and was flanked by other houses on either side within a mixed-use development.

CASE STUDIES

Case Study 01: The Hindu *Ghar*

The Hindu *ghar* was part of the dense fabric of the old city. Population density of Old Town has been recorded at 280 people per acre (Lari and Lari, 1996: 98) as compared to white town's density of one person per acre. The old city grew organically with narrow streets and small semi-public, semi-private spaces contained within mud brick architecture. Both Muslims and Hindus played prominent roles in the history of the city. Commercial and residential buildings and places of worship were intermixed and provided the residents convenient access to places of work and worship. The city was divided into *mohallahs* (neighborhoods), where *masjids* (mosques) and Hindu temples acted as the foci, while the Jumma *bazaar* (Friday market) held the central position of the city. The bazaar cut across from the *Khara Darvaza* (Sour water gate) in the west to the *Mitha Darwaza* (Sweet water gate) at the eastern fortification wall (Figure 3). Neither the walls nor the *darwazas* (gates) survive today, however the area of the city known as *Mitha Dar* and *Khara Dar* still exist which remind the inhabitants of the origins of the city.

The Hindu *ghar* was simple flat roofed, windowless structure employing construction system based on a frame of heavy wooden logs upon which short, interlaced wooden strips were placed to receive a thick layer of mud plaster (Lari and Lari, 1996: 184) (Figures 4, 5 and 6). Many wind catchers dominated the skyline of the Old Town. These acted as both wind sails and skylight. The flat roofs were used for
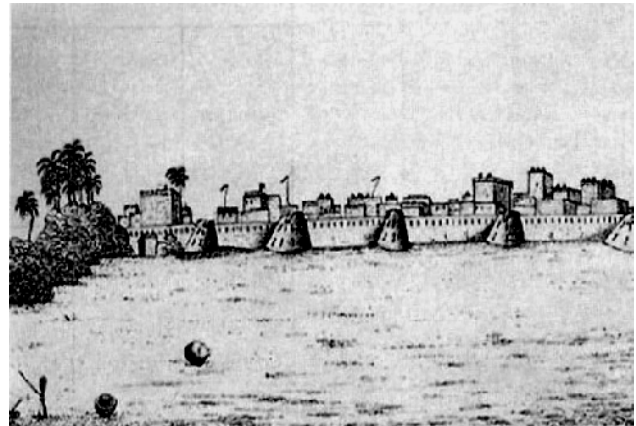

Figure-3: The old fort at Karachi, as seen in a sketch from 1830's showing the fortification wall and entrance gate
Source: www.googleimages.com (accessed 12/4/13)

sleeping and socializing during evening and night time. Many a times the ground floor housed shops owned by the Hindu merchants whose family occupied the apartments on the upper levels.

This introverted house prototype was also adapted for apartment buildings for native communities of the sub-continent, which were developed within the city at a later date. After 1857 the *Khafila Serai* (Caravan Quarters) became the centre for national and international trade in Karachi. After 1873 this area achieved a new image when major banks and trading companies constructed their offices here. A huge number of merchants bought land in the area and

Figure-4: Shops on ground floor and apartments on upper levels within the old city of Karachi

Figure-5: The introverted house in the old town of Karachi
Source: Archives at DAP NED UET

Figure-6: The dense urban fabric of the old city

developed housing. Many Hindu and Parsi merchants also started to develop their businesses in the Serai Quarters. They bought land from the government at nominal rates. The housing typology developed were mostly apartment buildings with apartments clustered around internal courtyards and each apartment under single ownership (Figure 7). The building height went up to ground plus two floors thus the courtyard received light throughout the day and became a pleasant socializing space. Each apartment had a covered area of 80 square feet with projecting balconies for maximum ventilation. The ground floor of the apartment building was used for commercial purposes and a mezzanine floor was provided for storage and offices.
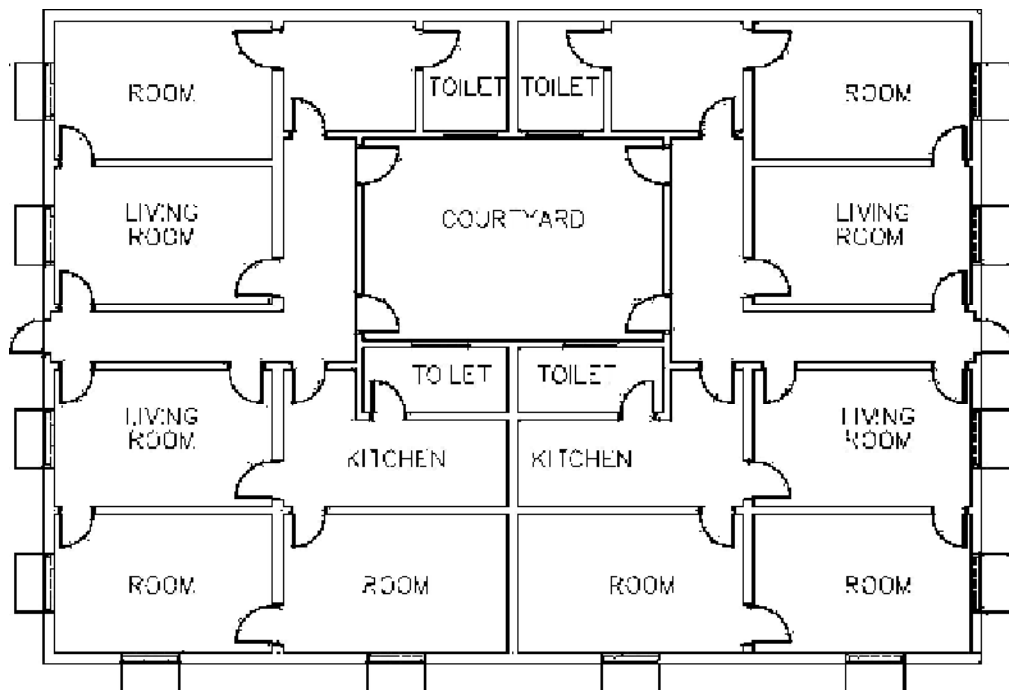

Figure-7: Plan of Bhagwan Das Mansion in Kafila Serai Quarters with internal courtyard

The construction was carried out in Gizri stone with use of teak wood for doors and windows. Although the walls were load bearing but the roof was laid in reinforced cement and concrete to allow for further floors to be laid in the future and also because wood was comparatively expensive. The facades were adorned with stone carving which was unique to this region because it was the local craftsman's interpretation of the classical order of proportion and geometry.

Case Study 02: The Colonial Bungalow

The colonial bungalow originated in the British cantonment. Cantonments tried to 'replicate conditions at home' (Lari and Lari, 1996: 65). 'Within a short time the immigrant culture manifested itself through symbols which were designed to impress and overawe the native population. The churches and town halls with their tall spires and clock towers unequivocally declared the supremacy of the alien culture' (Lari and Lari, 1996: 65). The colonial bungalow, 'both in name and form originated in India, a fact more easily recognized since the creation of Bangladesh. Yet though the name was given by India- from the Hindi or Mahratti Bangla, meaning 'of or relating to Bengal the dwelling it came to describe was primarily European' (King, 1995:14). Initially it was a 'product of cultures in contact, an indigenous mode of shelter adopted and adapted for Europeans living in India' (King, 1995:14). It was inspired by a simple Bengali peasant hut and transformed to meet the requirement of European governing class. The walls of this hut were constructed of mud and the roof was made out of thatch. With time it became a symbol of European power and influenced the life style, architecture and urban form of India. According to Desai and Desai (2011: 26) over time the bungalow became a symbol of 'commercial and the military might of India'. 'Thus, bungalows constitute a very special and unique typology in India, with a strong cultural/ historic position as representatives of a by-gone era. Historically they symbolize the individualization of private property, a concept new to the collective lifestyle of traditional societies in India. Over a period of time they were absorbed into Indian society, the imperial roots long forgotten' (Desai and Desai, 2011: 27).

The bungalow was a free standing, courtyard less outward facing, one or two storey structure, which was located away from the native city and mostly in the suburban areas (Figure 8). The adoption of western domestic kitchen equipment, furniture and sanitary fittings resulted in introduction of new typology of interior spaces; the drawing room, the dining room and the living room. The Indian upper class was westernized over time and started using cutlery, tableware, cooking utensils, water closet, bathtubs, dining table and sideboards. Social habits like drinks, afternoon tea, and cricket were also introduced in the Indian social life and concepts like interior decoration were presented for the first time. Thus through the introduction of the bungalow in the Indian landscape there was an impact on the living patterns and social behavior of the native people related to cooking, eating, hygiene, the serving of meals and relaxation (King, 1995:51).
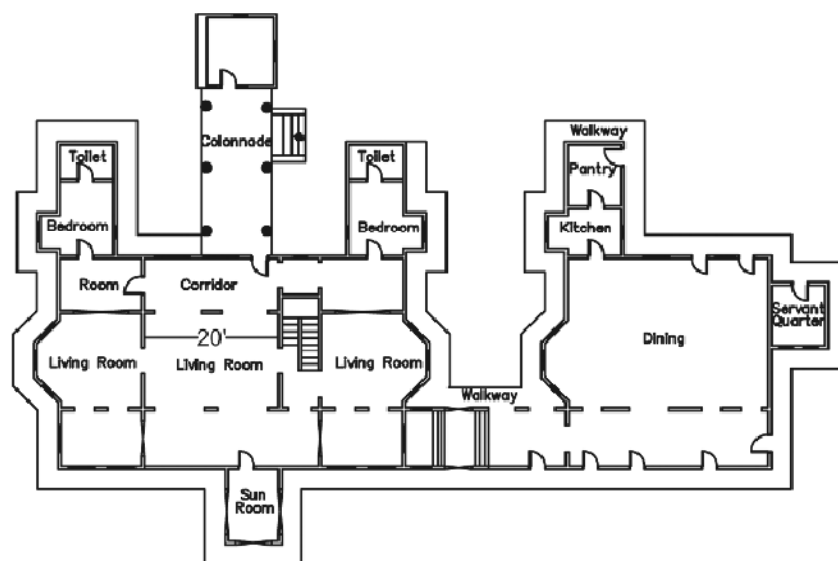

Figure-8: A typical bungalow plan for Karachi

The general planning principles employed for the bungalows in Karachi were similar as elsewhere in the British Empire with longitudinal plans, verandas on front and rear of the built form to keep the climate comfortable and to provide easy access, thick walls with internal voids for ventilation and exhaust, internal wooden staircases leading to the first floor, timber flooring throughout the building, wooden pitched roof to support a large span without houses to be used as stables. The general plot size was 4000 square yards, with 35% of area covered with the built form. The bungalows had extroverted planning with divisions between formal and informal spaces. The formal spaces covering the maximum built form area accommodated the private, semi-private, and public activities of sleeping, dining and entertaining. The informal areas housed the informal activities of cooking, ironing and domestic services. The strict differentiation between the spaces for the two types of activities was intended to keep the domestic staff away from the spaces occupied and used by the British owners of the houses.

The kitchen was thus placed away from the main house linked via corridors and having a back entrance for the cook and his helpers. Besides social segregation, the distance of the kitchen from the main house also enabled smell and other fumes to be exhausted in the exterior open spaces. Verandas surrounded the bungalows where the colonial owners had tea in the evening. The verandas also housed the staircases connecting the lower floors to the upper level. There were external staircases at the rear of the bungalows for access of the servants to the upper levels. All the toilets had rear entrances for cleaning purposes to ensure social segregation between the owners and servants.

The dominant features of the bungalows of Karachi were the Corinthian Order and tracery work carved in sand stone. Wooden battens were used to articulate the top of the arches and on the edges of the roof. The entrance portal was expressed as an added feature to the main form. It served as the parking space for the vehicle. Some other distinct features of the Bungalows of Karachi were the projected round balconies, louvered and French windows and French doors with glass panels (Figure 9).

Case Study 03: The Parsi *Khana*

After the Bombay Town Planning Act of 1915, the Karachi Municipality decided to prepare proposals for Town Planning Schemes for the planning of peripheral areas of Karachi (Lari and Lari, 1996). The development of Jamshed Quarters was a part of this scheme. It was the first planned residential area for the growing middle class. It was initiated by the

Figure-9: View of a Colonial bungalow still present in Karachi

Parsi Mayor of Karachi, Jamshed Nusserwanjee and is for obvious reasons named after him. Under this scheme, land was provided free of cost to Cooperative Housing Societies and the construction of houses was financed by Cooperative Banks.

The Parsi Colony was initiated in 1924. According to Lari and Lari (1996), it is one of the initial residential areas in Karachi developed near the White Town. The Parsis applied for land to be provided to set up a cooperative society. It was developed exclusively for the Parsi Community over an area of 96,000 square yards. The land for Parsi colony was bought on lease for 99 years and was controlled by Cantonment and maintained by Karachi Municipal Cooperation. The location of the Parsi colony was central to the city and even today it enjoys a strategic location.

The Colony's main aim was to provide housing on co-operative basis and to create an ethnically homogenized environment. Most of the occupants of the Colony belonged to the middle class Parsi community who lived and enjoyed the peaceful open surroundings of the locality. They hoped that their children and their grand children would enjoy the same peace and continue to live in the houses, which they had built but this never happened as the political divide of the country in 1947 altered their social and economic status, followed by migration to the west by vast majority of younger generation in search of greener pastures.

The initial plans of Parsi Colony were drawn on 58 plots, each measuring approximately 1000 square yard with wide roads and an amenity plot in the center for a garden and a library. The plots were allotted to those who became the members of the Society, but it was the society's policy not to recover the cost of land from the plot holders but only to recover the rent payable to the authorities. This accelerated the construction of houses (Ahmed et.al., 2015).

Figure-10a: Bungalow Parsi Colony Karachi
Source: Archives at DAP NED UET, Karachi

Figure-10b: Birdeye view of Parsi Colony Karachi
Source: Archives at DAP NED UET, Karachi

By 1926 first houses were built and classified in three categories. Those who built the houses entirely at their cost were categorized in Class "A", those who built the houses half at their cost and half by borrowing money from the society were categorized in Class "B"; and those who built their houses by borrowing the entire cost from the society were categorized in Class "C" (Figures 10a and 10b).

This low-rise bungalow style residential development for middle income Parsis with a strong emphasis on community living, stone structures and strong cultural heritage became a hallmarks of the community.

CURRENT STATUS OF THREE HOUSING TYPOLOGIES

Case Study 01: The Hindu *Ghar*

Change of land use, urban pollution and inappropriate renovation efforts have resulted in the loss of many architectural gems of the city. The Hindu *ghar* in the Old Town is being replaced by new buildings. These new buildings are generally ground plus six (Figure 11). The use of these buildings remains as retail on the ground floor and apartments and offices on upper floors, although many of the old structures today house storage facilities on the upper floors, instead of residential units. The aesthetic language of these buildings is different from that of the stone structures, because of their concrete construction. Glass facades adorn many of these buildings. The windows of these new structures are of aluminium, thus, there is discontinuity in the aesthetics set by stone structures with wooden windows and trellises. Residents are generally not pleased about the new construction, as they believe it has taken away the character

of the area. Although the individual buildings are being replaced by newer construction, the area retains its character because of the organic urban morphology with narrow streets.

The urban scale of Old Town also remains pedestrian friendly with each quarter covering an area of 0.5 km (Figure 12). This still provides ease of communication, especially when the streets are congested with traffic. The meandering streets also provide a sense of security and privacy for the residents and the streets remain shaded most of the day (Figures 13a & 13b). The residents feel a sense of connection within

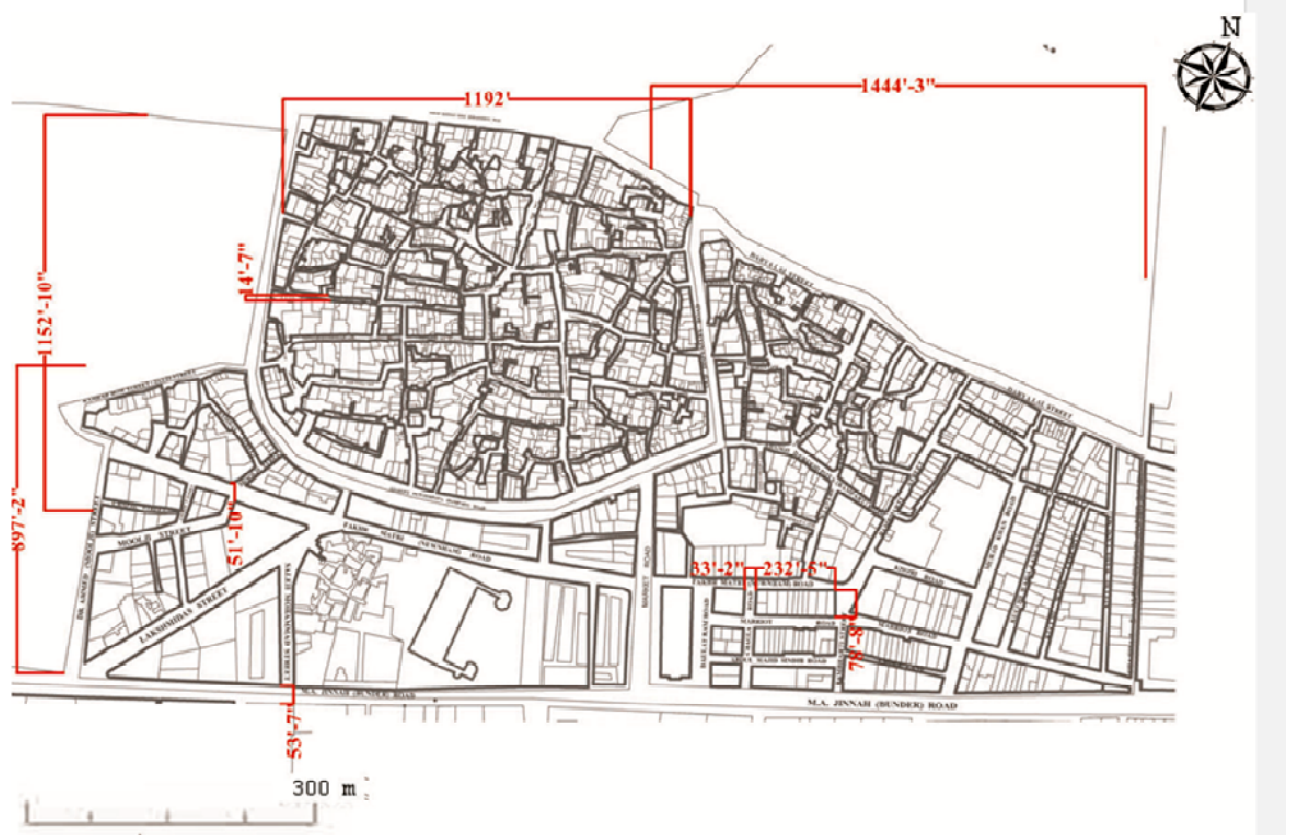**Figure-11:** A new building recently constructed in the Old Town

Figure-12: The urban scale of the neighbourhood
Source: Base map provided by Heritage Cell, DAP-NEDUET

Figure-13a: Image showing the streets of Old Town

Figure-13b: Congested street of Old Town

their neighbourhood, as the streets become an extension of the apartments. Women and children can also be seen socializing from balconies of their apartments.

With the densification of the locality and ad-hoc development, the light and ventilation for many of these buildings has however been blocked and the residents complain of hardships they have to face when there is interruption in the electricity supply. With the densification of the locality over the years,

the narrow streets have been deprived of sunlight and are dark during most parts of the day.

The locality, is defined by the markets present in the area by the stakeholders, rather than by jurisdictions or roads. Thus, the changes in the local government structures do not impact upon the association of the residents and shop owners with the locality. They continue to identify the different areas in the locality with the pre-existing structural setups.

Figure-14a, b, c, d: The recently constructed bungalows of Block 5 Clifton

Some of the communities that originally inhabited the area, like the Memon community, continue to live in the locality and have developed a strong sense of ownership, belonging and connection with the place.

Case Study 02: The Bungalow

Many of the bungalows built during the Colonial era still survive in the city today, but are in need of renovation and repair. They are recognized as an integral part of the history of the city and many of them are part of the listed heritage buildings. Many of these originally built bungalows are located in Clifton; high income area of the city which was originally developed by the colonialists as a suburban neighborhood on the Arabian Sea. The bungalow, however, still survives as a typology and is seen being built throughout the city in different sizes, although with the change in the material (from stone to concrete) the aesthetic language has changed. Block 5 Clifton is a high income residential neighbourhood in Clifton. The dominant built up typology here is also ground plus one bungalows, mostly on 500 to 1000 square yards plot sizes (Figures 14a to d). With the recent rise in the real estate value however, a trend of sub dividing the larger plots into smaller ones is observed.

In the Colonial tradition, many parks dot the locality making open built ratios as low as 50:50. The secondary roads are as wide as 25 feet as car ownership is high within the area (Figure 15). As the locality is dominated by large plots the residents are not seen socializing on the streets, because all

Figure-15: The recently constructed Parks of Block 5 Clifton

Figure-16a: The Band Stand

Figure-16b: Mohatta Palace

Figure-17a: The Dolmen Mall

Figure-17b: The Bahria Icon

these houses have lawns within their plots, and elders mostly socialize there in the evenings. Children play within their houses or in the nearby parks.

The monuments of the colonial period still stand within the locality (the bandstand, Lady Lloyd Pier and Mohatta Palace) (Figures 16a & b) but these have lost their importance and have been replaced in importance by the new building typology of the mall and mixed use residential and commercial towers (Figures 17a and b).

The urban form of Block 5 Clifton is based on regular plot divisions, in the same language as the Colonial Cantonment (Figure 18). The residential plots are mostly 500 to 1000 square yards. The secondary streets are as wide as 22-7", providing easy access to vehicular traffic. Access
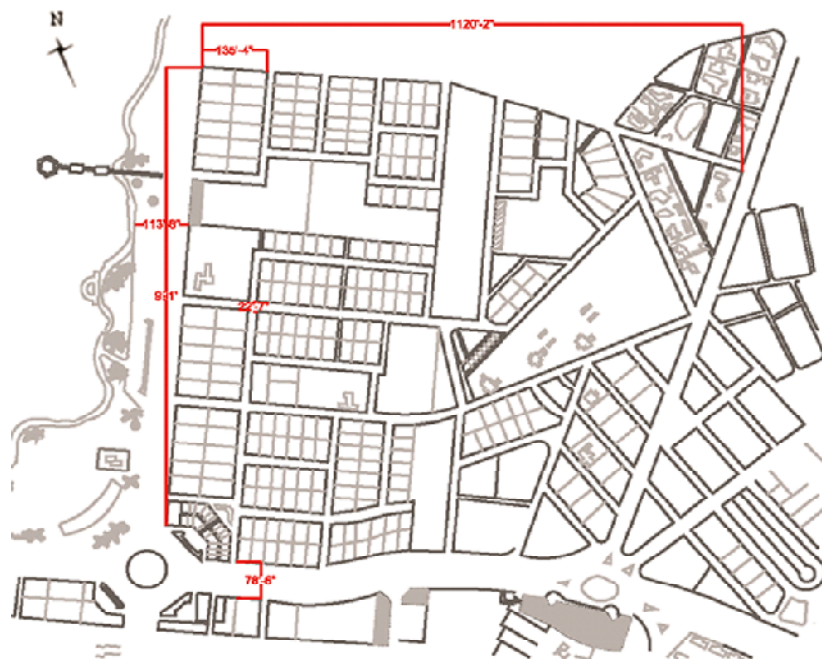

Figure-18: Urban scale of Block 5, Clifton

Figure-19: A house being demolished in Katrak Parsi Colony, Karachi

by traffic is a primary requirement of the locality as car ownership is high. Amenities like schools, clinics and parks are integrated within the residential fabric and are not necessarily located on the periphery or the primary roads.

Case Study 03: The Parsi *Khanay*

Many houses in Parsi Colony are being demolished, because they are either too large to maintain or its inhabitants have migrated abroad and are not interested in returning to Karachi (Figure 19). Many apartment buildings are seen popping up on the plots on which once aesthetically pleasing bungalows

existed. As a result the overall morphology of the locality is changing and the city is losing a building typology, the Parsi *khanay*, which narrates tales about a homogenous community dwelling within a hetrogenous city.

DISCUSSION AND ANALYSIS

Having described the three housing typologies and their current status, the following section analysis them with respect to their initial response to urban morphology, climate, technology and social setups. Conclusions drawn from this analysis are used to assess the validity of these typologies in the contemporary housing design and the strength of some of the principles adopted in these typologies of housing.

1. The relationship of the house with the urban morphology

The Hindu *ghar* was located in the old town of Karachi and was densely packed within the irregular meandering streets. The plot divisions were irregular, as the locality had grown organically over time with no attempt to any formal plan implementation. It had narrow streets enclosed within fortification. The only concept of communal open spaces were the public squares formed either by the culmination of roads or open space surrounding mosques and shrines

Figure-20: The urban morphology of the old town

Figure-21: Bungalows in Karachi in the early nineteenth century
Source: www.googleimages.com (accessed 23/12/13)

thus the built up density was high as compared to the colonial white town (Figure 20).

The white town besides having a grid morphology possessed several landmarks that enhanced its urban characteristic. 'Each quarter could boast its own focal point' (Lari and Lari, 1996: 166) (Figure 21). The urban vernacular belonging to the Colonial Era has examples of the bungalow type and walk up apartments - within a gated compound with communal open space on ground level for social activities of the residents. The bungalow typology introduced by the British, (which according to King (1995) was based on the concept of separating the local servants from the colonial masters of the house) was a ground plus one single-family home surrounded by landscape and enclosed by low height boundary walls. This typology was also used for 'inspection, forest, canal and irrigation' offices of the colonial rulers. This led to the development of the Public Works Department's (PWD) vernacular version where the 'central room, with its flat roof was higher than the veranda and to ensure ventilation and a cool breeze at ceiling level, windows were high up in the 15 or 20 feet high walls' (King, 1995:45). The urban morphology was thus based on regular plot divisions, wide streets to accommodate carriage and vehicles, low rise and low density development with adequate compulsory open space around the built forms to provide for adequate ventilation. Parks, gardens and beach promenades were also introduced by the British within the colonial white town as recreational areas for leisurely stroll of the white men and women.

The overall urban morphology of the Parsi Colony was similar to the British white town development, with bungalows on large plots having an orthogonal development and communal spaces for the community's social interaction (Figure 22). The Colony also had similar characteristics as the Old Town as it was developed as an introverted urban area with ring roads passing around it and no thorough fare. Thus, it secluded the Colony from the rest of the city and

Figure-22: Bungalows in Karachi in the early nineteenth century
Source: www.googleimages.com (accessed 23/12/13)

retained its peace and quiet. This was comparable to the Old Town being enclosed within a fortification wall having no through access.

2. The response of designs to local climate

In Karachi's Old Town the use of screens and louvers made in wood has been common, firstly because it cuts out the glare and lets the breeze in, and secondly it provides a sense of privacy in dense urban fabric of the old city, which is welcomed in the introverted way of life. Traditionally the courtyards within the houses also worked as efficient climatic solution for the densely packed houses of the Old Town and provided spaces for social interaction for the households. The high density and narrow streets also helped in keeping the glare and heat away from the streets as during most part of the day the streets were shaded by the built form.

The bungalow on the other hand was oriented to catch prevailing breeze with rooms side by side and doors and windows opposite to each other to let the breeze through. The plan of the bungalow was generally kept simple with the built form surrounded by verandas. The verandas took the stores, servant rest spaces and were used as walkout social space for evening tea (King, 1995: 45). Thermal controls like thatch roof with tiles, chicks (blinds made of bamboo and split) for keeping the glare out, wooden screens, tatties (screens made of sweet smelling grass fitted to doors and windows) which were splashed with water to have a cooling effect and fans made out of cloth and rotated by domestic staff were incorporated in the European bungalow. The walls of the bungalow were 10 feet thick, which also acted as insulation.

The big scale of the bungalow was a prerequisite as it was a ground plus one structure surrounded by landscape on all sides thus the sprawl was essential for cross ventilation. The 'compound was simply an extension of the bungalow's internal space, an outdoor room, fulfilling a variety of social, political, cultural and psychological needs' (King, 1995: 34). Thus the bungalow was 'centrifugal' with space flowing from the central living space towards the veranda and onto the landscape in the surrounding compound quite in contrast to the courtyard houses of the native city which were centered around an internal court (King, 1995:34). The fan was introduced in the veranda by the British, which is still used as a climatically responsive solution for the terraces of modern houses in Karachi.

The Parsi *Khanay* followed similar design principles as the colonial bungalow with the major difference being in the scale of these houses (Figure 23). These houses were on a smaller scale - half the size of the colonial bungalow and had formal spaces on the ground level and private spaces on upper levels. Some of the Parsi houses also had internal courtyards, thus they became an amalgamation of the introverted Hindu *ghar* and the extroverted Colonial bungalows.
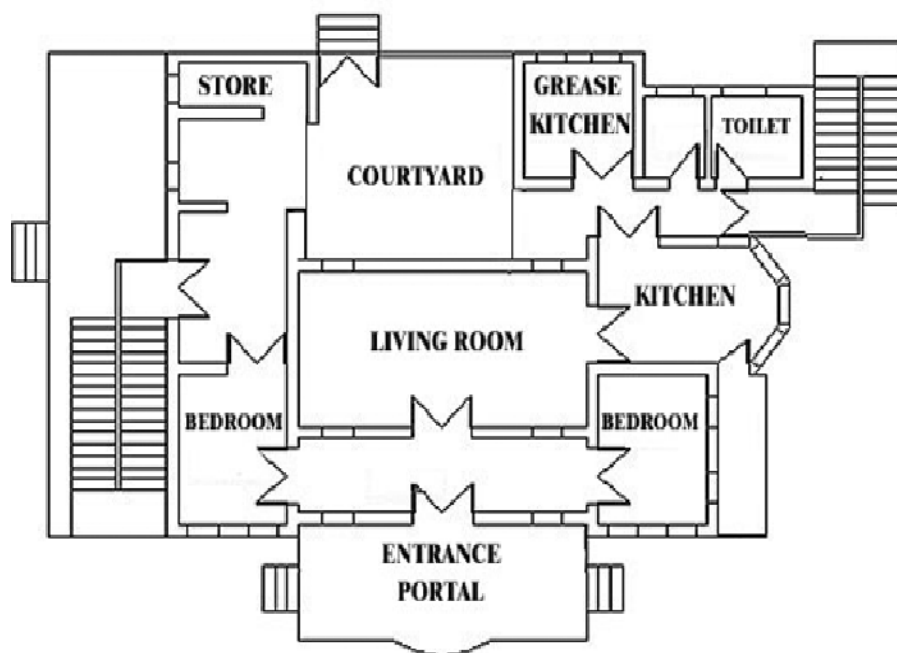

Figure-23: A house plan within Parsi Colony, Karachi

3. The usage of global versus local technology, materials, crafts and skills

The British introduced a new standard of brick size 9'x 4.5'x 3' (Cooper and Dawson, 1998) in the sub continent in the early 19th century. They also introduced steel girders, cement and corrugated iron in the region. Before these materials were introduced all construction in the Old Town was done in either brick or stone. Mud plaster mixed with cow dung or straw was used as insulation in rural areas. Terracotta tiles and burnt bricks were used in more affluent houses in the city. The roofing was made of thatch, straw or bamboos woven together. The Hindu method of construction was largely trebeate embellished with plastic molding of figures, humans and animals (Khan, 2003).

Glass was introduced in the sub-continent in the 1920s into the traditional buildings as a colored decorative item by the British (Cooper and Dawson, 1998: 40).

Stone was mostly used in the plinth and foundations of the domestic Colonial buildings - as it was readily available in Karachi and is steadier than brick and does not require reinforcement. Stone was mixed with rubble or lime mortar for further strength and to make the houses earthquake resistant. Local artisans were employed to execute Gothic designs on the facades of bungalows. Once this craft was learned it was applied indiscriminately on various other forms within the city. What this resulted in was the development of a new vocabulary, as Kamil Khan Mumtaz (1985: 147) puts it 'When the traditional Sindhi stone carver turned to European classical architecture, he fashioned forms that would have delighted even the most outlandish Italian mannerist.' In order to illustrate this statement Kamil Khan Mumtaz describes the apartment building in Karachi in the following words, 'Here, carved in the yellow sandstone of an apartment's facade at Karachi, are Michealangelesque giant-order columns in the central bay rising past diminutive pilasters to the height of the two lower storeys; rustic masonry and rustic columns and pilasters; renaissance balustrades; a mannerist roof-line of broken pediment, scrolls, vases and spheres' (Mumtaz, 1985: 147-148) (Figure 24).

4. The incorporation and preservation of natural habitats, flora and fauna.

The old city where the Hindu *ghar* was located had a high density (280 persons per acre) and lack of open green spaces. The British however, 'bought with them love for flora and fauna and adorned their empire with majestic buildings, weaving together elements of the Central Asian and Persian
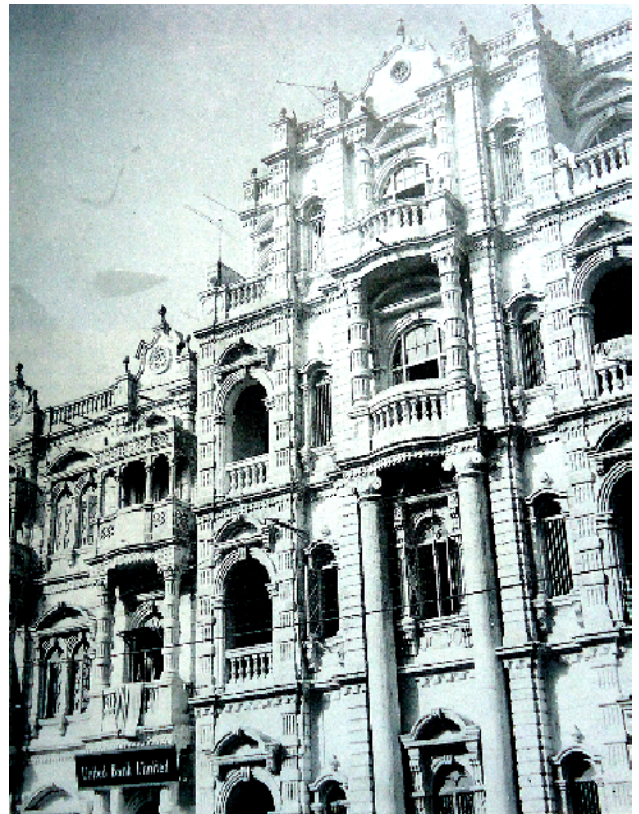

Figure-24: Apartment building in Karachi
Source: Mumtaz (1985: 147)

cultures with indigenous Hindu craftsmanship' (Lari and Lari, 1996: 56). Initially few areas were designated as parks (Burns Garden and Zoological Garden) within Karachi but eventually the city experienced the construction of parks (a foreign typology before the British introduced it in the sub-continent) and walkways along the beach. The Bandstand and Lady Lloyd Pier in Karachi are examples of these (Figures 25a and b). The white town was also adorned with heavy tree plantation. Many of these trees still survive.

The Parsi Colony was developed in a similar tradition as set by the white town. The density was kept low and many trees were planted on the sidewalks and in the park. Today the old shady trees make the microclimate pleasant. They keep the temperature low, and work as sound barrier and filter pollution from the surrounding areas.

5. The amalgamation of local social values and sense of aesthetics versus transcultural imagery.

The Hindu *ghar* was a direct response of native social and aesthetic values but both the colonial bungalow and the Parsi *Khanay* produced form and vocabulary, which was an

Figure-25a: The Bandstand, Lady Lloyd Pier

Figure-25b: Frere Town Hall constructed by the British

amalgamation between local and global sense of social norms and aesthetics. The colonial bungalow for instance took form and architectural elements from the Bengali peasant hut and translated it into an integral element of the bungalow as it suited the social requirements of the English men and women who occupied the bungalow. The Bengali peasant hut was an extroverted building type surrounded by semi-covered gallery on the exterior, which was used as an extension of the living and working space. According to King the origins of the gallery around the built central core was inspired by the Bengali peasant hut in which they originally existed and were not a European addition. What is however, not clear in its origin is whether the same roof projected over the balcony as well or a separate roof covered the balcony (King, 1995: 24-30). King quotes from Kipling's account that 'the double roof bungalow with a clerestory was a later mid nineteenth century development of the earlier version where the roof covers both living rooms and verandas, as an extinguisher covers a candle, and which admits light through the doors only' (King, 1990: 28). The incorporation of the base of the veranda into the foundations of the built form of the bungalow was also a feature adopted from local Bengali peasant hut (King, 1990).

Having adopted from the Bengali Hut the bungalow introduced new design elements to cater for the social segregation between the Europeans and the natives and to address the living patterns of the white people. The absence of the sewerage system combined with the local caste system in India ensured location of sanitation on external walls with rear access for servants. The concept of attached bathrooms, carriage porch to shade the vehicle used by the officers and

dining and drawing rooms was introduced in the bungalows. The servant quarters were also part of the bungalow compound but were located towards the rear end where they were not visible (King, 1990). These architectural elements were adopted in the Parsi *Khanay* as they were designed with attached toilets with rear access for servants, separate dining and drawing rooms and car porch.

Lessons for contemporary housing design in Karachi

The following design lessons can be drawn from the analysis above of which contemporary designers and students should become conscious and should be able to understand their origins:

1. Organic layouts of the urban morphology of the Old Town of Karachi were replaced by orthogonal grid plotting.

2. The introverted house form was replaced by the extroverted form of the bungalow.

3. The introverted open spaces (courtyards) were turned inside out to be replaced by the lawn/ garden.

4. Climatically responsive elements of the Old Town were incorporated in the bungalow design, which includes the wooden screens, jalis, ventilators and bamboo blinds. A new element in the form of a fan in the veranda of the bungalows was introduced which was adopted by later houses.

5. Flora and fauna was used extensively which offered privacy to the occupiers of the bungalows and also helped bring down temperatures.

6. The incremental development on small plots of the Old Town was replaced by capital-intensive development of the bungalows. The Parsi Colony however, offered a subsided process through which housing could be acquired by a community having common ethnic origins.

7. The use of the rooftops for outdoor activities was lost to low density development of the bungalows.

8. The change in life style and social patterns of the locals was reflected through introduction of dining room, drawing room and dining table, credenza and sofas as compared to eating and socializing while sitting on the floor. This change was accompanied by the introduction of the carriage porch/ garage to house the vehicle and attached toilets with rear access for servants.

9. The Parsi *Khanay* was one typology which consolidated the principles, learnt from the Hindu introverted house and the extroverted colonial bungalow and created a hybrid form, which was situated in a detached plot with a private lawn but also housed an introverted courtyard.

10. Monuments as focal points were integral part of the Colonial planning, which was adopted as a principle in the post-independence master plans of Karachi.

11. The technology introduced by the British - a new standard of brick size, glass, steel girders, cement, corrugated iron and lime plaster - are still used in the contemporary building construction in Karachi.

12. Parks as an urban open space were introduced by the British for the first time in Karachi. Today they form an integral part of housing design in the city with 5% of the land use allocated to open spaces in any housing development according to the Karachi Building and Town Planning Act (2004).

Contemporary housing design adopts many of the principles introduced by the three types of houses described here without consciously understanding the origin and significance of these ideologies. A conscious decision to adopt and innovate certain design principles in the contemporary housing design can add to the value and innovation to the design practice in the context of Karachi.

CONCLUSION

This paper documents and analysis the evolution of three housing typologies within the context of Karachi: The Hindu *Ghar*, the Colonial bungalow and the Parsi *Khanay*. The three types of houses are analyzed with respect to their response to the urban morphology, local climate, usage of technology, response to natural habitats, and the amalgamation of social values and sense of aesthetics.

The introverted Hindu *Ghar* was an intrinsic part of an indigenous mixed-use development that evolved as a response to social, economic and climatic needs of the Hindu merchant class. The extroverted Colonial bungalow was developed as a hybrid built form that introduced a foreign aesthetic language but connected well with the society's social setups and was adopted by locals and eventually became part of the native landscape. The Colonial bungalow was embedded in a new urban morphological vocabulary of the gridded town, which was also adopted and used by the urban developments of the future.

The Parsi *Khanay* adopted the colonial style bungalow, and modified it to address social needs of an introverted minority community. The conclusions drawn point towards the various principles adopted in the design of these typologies and the values that contemporary housing design can learn from if architects, professionals and students consciously engage in the design of houses having understood the origins of various principles.

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