

**COLONIAL TYPOLOGIES IN CONTEMPORARY NEIGHBORHOOD DESIGNS  
IN NEW DELHI.**

by

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## **ABSTRACT**

Amos Rapoport defines tradition as something that is transmitted over time. He states, "some parts of this tradition (e.g artifacts) may be accepted and others (e.g life styles or social arrangements) may be rejected. Thus different parts of tradition may change differentially and in different ways, so that, certain essential elements continue and are combined with new ones , as is often the case in developing countries." (Rapoport, Attributes of Tradition, Dwellings, Settlements and Traditions, pp. 84, 1989)

British colonial architecture in India developed as a continuum over time. Owing to a series of specific historic conditions, colonial traditions have become an intrinsic part of today's Indian architectural tradition through a selective, process that accepted certain colonial patterns and rejected others, to suit life styles and activity patterns.

This research attempts to identify the processes of *acculturation*, *cultural transformation* and *accommodation* demonstrated in the organization and design of the built environment, through a study of the evolution of the "British Colonial Style" of domestic architecture in India, and its influences on contemporary housing developments in New Delhi.

The research hypothesizes that during the colonial era, a style and pattern of urban residence (in this case that of a suburban elite) was introduced by the British people, which in the post-independence era has become a reference model and status symbol for the Indian upper middle class, whose life styles and residential patterns substantially continue to reflect colonial patterns.

A Pattern Language (Alexander et al, 1979) has been used as a method to develop a "pattern language" of both the British colonial model of housing settlement and a contemporary housing development in New Delhi. Comparisons made between patterns in the colonial model, and similar or modified patterns in the contemporary housing development, identify the influences of colonization on contemporary indigenous building tradition.



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## CHAPTER 1

### INTRODUCTION

Colonization has had a marked influence on the native cultures of a large number of countries, which constitute the developing world. Colonial cities have a characteristic architectural and spatial pattern, brought about by cultural transformations of both the colonial and native cultures. Every colonial city provides the ideal situation for examining how the distribution of social and political power affect the form and function of the city and, how the values, beliefs and institutions of both the colonial and native cultures, govern the provision which each culture makes for its human and social needs. The colonial city therefore, has distinct areas where the built environment provides these culture specific cues for behavior. Through time, these cues which were the code or the "language" of the colonizing culture, have been assimilated into indigenous traditions, with accompanying changes in socio-cultural patterns, as can be seen in the post-colonial city. The post-colonial city therefore, provides an ideal situation to study how values of one culture were transmitted, and their impact on the urban forms of the contemporary indigenous society.

Delhi, the capital of India, is an excellent example of a post-colonial city with a deep rooted cultural history, which is a rich amalgam of both Indian (hindu and muslim) and the British colonial culture. The dominance-dependence relationship between the British and Indian people, enabled the British to establish a distinct social and spatial environment, suited to their cultural values, life styles and world view.<sup>1</sup> Through a process of cultural transformation each culture adopted and transformed elements which were traditional to the other. These cultural transformations are manifest in the built environment of the city. Two different cities, the original walled city of Old Delhi (Shahjahanabad) and New Delhi, the Imperial capital of the British Raj, stand today among the ruins of earlier settlements and enormous urban growth that has taken place since independence in 1947.

The gradual change in the traditional life styles and activity patterns of the Indian people in the post-independence era, is influenced

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<sup>1</sup>Anthony D. King defines the dominance-dependence relationship as one where the colonial society has the political power, with physical force being the ultimate sanction in the colonized society (King, A.D., Colonial Urban Development, p. 25, 1976).



largely by rapid modernization and the colonial culture inherited from the British. Over time, these changes have become an intrinsic part of Indian tradition and culture, and are manifest in the spatial organization of their built environment. However, modern trends in architecture and speculative building have led to a gradual homogenization of the built environment. The rich spatial character of the city is no longer reflected in contemporary developments. Contemporary architecture in Delhi tends to be an incontextual patchwork of incongruous elements borrowed from various architectural styles in different historic eras. The built environment is not conceived as an organic whole because landowners and architects continue to treat buildings as isolated objects standing in abstract space. Architects have emphasized personal styles of artistic expression and architectural concepts which are alien to any established building traditions, colonial or native, i.e. the lay person cannot relate these concepts to the physical elements around him/her.

This thesis studies the influences of British Colonial Housing Settlement patterns in India, upon the urban forms and spatial organization in contemporary housing developments in New Delhi. Through the study of this process, the impact of the built environment in changing traditional activity patterns and life styles will be identified.

## CHAPTER 2

### METHODOLOGY

#### PURPOSE OF STUDY

The purpose of this research is to understand the processes of *acculturation*, *cultural transformation* and *accommodation* demonstrated in the organization and design of the built environment. The research hypothesizes that during the colonial era a style and pattern of urban residence (in this case that of a suburban elite) was introduced by the British people, which in the post-independence era has become a reference model and status symbol for the Indian upper middle class, whose life styles and residential patterns substantially continue to reflect colonial patterns.

The concept of *acculturation* has been defined by many researchers. Rapoport discusses the role of the environment in the process of learning, whereby meanings and learned behavior become habitual and routinized. He calls this process of learning *enculturation* if it occurs quite early in life. For immigrants and during periods of rapid culture change or culture contact this process may occur later in life and is then known as *acculturation*. To summarize: human behavior, including interaction and communication is influenced by roles, contexts and situations that, in turn are frequently communicated by cues in the settings making up the environment; the relationships among all these are learned as part of *enculturation* or *acculturation*.<sup>2</sup>

Redfield (1968) defines *acculturation* as, "those phenomena which result when groups of individuals having different cultures come into first hand contact with subsequent changes in the original cultural patterns of either or both groups."<sup>3</sup>

Malinowski (1945) uses the "third column approach" to understand the process of *acculturation* or culture contact as he calls it. His

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<sup>2</sup>Rapoport, The Meaning of the Built Environment, pp. 65-68, 1982.

<sup>3</sup>King A.D., "Cultural Pluralism and Urban Form", The Mutual Interaction of People and their Built Environment, footnote, p. 67, 1976.

definition aims at bringing out three phases of culture contact and change. In the first column he lists the impinging culture with its institutions, intentions and interests, in the second column, indigenous customs, beliefs and living traditions, and in the third column, the processes of contact and change where members of the two cultures cooperate, conflict or compromise.<sup>4</sup>

Foster (1960) shows in his discussion of the impact of Spanish culture in Latin America, that *acculturation* is a selective process wherein only some parts of European culture are bestowed and only some parts are received by the host society. The two cultural systems do not come into contact. Both the authority of the donor as well as that of the recipient act as screening processes.<sup>5</sup>

In his study on colonial urban development, King examines the development of the spatial structure of modern Delhi as a product of *acculturation* through colonialism. He says,

Since the mid 19th century, a steady process of *acculturation* had produced considerable numbers of Westernized Indians whom the Government increasingly employed in the army and subsidiary civilian roles. . . it was an unstated assumption that much of their own cultural tradition, in terms of language, values, behavior and life style were to be modified and that of the colonial culture adopted.<sup>6</sup>

While King's study focuses on the changes in the built form and life style of the European colonial culture, due to culture contact with the indigenous culture, this study is concerned with the post-colonial changes in the built form of the indigenous culture, due to *acculturation*.

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<sup>4</sup>King, Cultural Pluralism and Urban Form, The Mutual Interaction of People and their Built Environment, p. 68, 1976.

<sup>5</sup>Ibid.

<sup>6</sup>King, Colonial Urban Development, pp. 239-40, 1976.

*Transformation* can be defined as changes in the original building patterns of members belonging to either of the cultural sections in a plural society.<sup>7</sup> These changes occur over time in a culture contact situation; they are the physical manifestations of acculturation, as part of the process of colonialism.

Certain aspects of British colonial life style, activity patterns and material culture were shared or borrowed by members of the indigenous society over the period of colonialism. After Independence these aspects persist as part of a westernized indigenous culture sustained by the elite in the excolonial society.<sup>8</sup> The physical changes made to the built environment to facilitate the adoption of these British colonial patterns as part of the indigenous tradition, is termed as *accommodation*.

## **METHOD OF STUDY**

The method of study required the following phases:

### **1. Collect historical and background information on the British colonial era in India.**

- A. A brief study was made of the historical conditions in India in the seventeenth and the eighteenth century which led to the establishment of British colonial rule and the development of the early settlements.
- B. Ideologies and interests of the colonizing power and the Imperial power structure were identified.
- C. Predominant world views and philosophies of the British colonists and the Indian people, differences in religion, culture and life styles were compared.
- D. The socio-political structure of the British government which led to the development of economic class distinctions and the formation of a western educated elite amongst the Indian people was studied in brief.

Most of the above data was collected from books, journal articles and other relevant documents from the Indian archives.

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<sup>7</sup>Plural society here refers to M.G Smith's theory (1965) of the existence of culturally different sections living side by side, in one territorially defined society where one cultural section is in a position of political domination (King, A., "Cultural Pluralism and Urban Form", The Mutual Interaction of People and their Built Environment, p. 50, 1976)

<sup>8</sup>Ibid., pp. 74.

**2. Study the evolution of the 'British Cantonment Model' and develop a pattern language of colonial typologies.**

- A. Housing policies of the British government which had an impact on city layouts were identified..
- B. The Bangalore Cantonment was analyzed as a case study to identify patterns at the macro level.
- C. A set of patterns for the generic cantonment model was developed

The information for parts 'A' of this phase were obtained from books and journal articles. Layout plans of the cantonment in Bangalore city were obtained from the Karnataka archives.

**3. Study the evolution of the "British Bungalow Model" from native Indian prototypes, the model's transformation and modifications from the early Palladian garden houses.**

- A. The development of the early garden house in India based on Palladian prototypes was studied.
- B. Modifications to the Palladian garden house to suit the new environment in terms of both climate and function were identified.
- C. The development of the bungalow hybrid from the early garden house and vernacular Indian prototypes was analyzed.

**4. Develop a set of patterns for the generic bungalow model**

A sample of 9 colonial bungalows in Bangalore were used to develop a pattern language of the colonial bungalow model. Plans, historical information and other drawings required for the study were obtained from Janet Potts book, Old Bungalows in Bangalore (1977).

A Pattern Language and Houses Generated by Patterns (Alexander et al, 1979) were used as a model method to develop a "pattern language" of the British colonial model in India. While Alexander has identified several patterns in his various publications, only some of his patterns appeared to be relevant to colonial designs. Alexander's patterns were used as one possible source of significant relationships, that were explored, combined with other patterns observed from the data and personal experience. An attempt was

made to identify a sequence or hierarchy of colonial patterns, moving from the larger patterns in the cantonments and civil lines to the smaller patterns in the bungalow-compound complex. These patterns were formulated as rules that establish a relationship between a context, a system of forces which arise in that context and a configuration which allows these forces to resolve themselves in that context.<sup>9</sup>

Analytical techniques developed in the book Analysis of Precedent (Clark, Pause et al, 1982) were used as a reference model to identify and present the patterns graphically through schematic floor plans and sections.

**5. Study the existing patterns of spatial arrangement in DLF Qutab Enclave, Phase I - a contemporary upper middle class housing development in New Delhi, and develop a pattern language.**

- A. The existing patterns of spatial organization, land use, zoning, road layouts etc. were studied to develop a pattern language at the neighborhood level.
- B. A set of standards or rules was identified to develop a pattern language for the generic residential unit at DLF.

A sample of 10 houses in DLF Qutab Enclave Phase I was used to develop the patterns for the generic house model.

**6. Compare DLF with the "Colonial Model"**

- A. Recurring patterns of the Colonial Model in the DLF were identified.
- B. Obsolete patterns, modifications and transformations of the colonial patterns in the DLF to suit indigenous requirements of culture and life style were determined.
- C. Changes in activity patterns brought about by the adaptation of colonial patterns were identified.
- D. Non-colonial patterns were identified..

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<sup>9</sup>Alexander, The Timeless Way of Building, pp. 282, 1979.

Comparisons were made between patterns in the colonial model and similar or modified patterns in the DLF to prove the hypotheses. The presence of colonial patterns in this development identified the manner of adoption of aspects of colonial culture by the indigenous people through a process of *acculturation*, *cultural transformation* and *accommodation*.

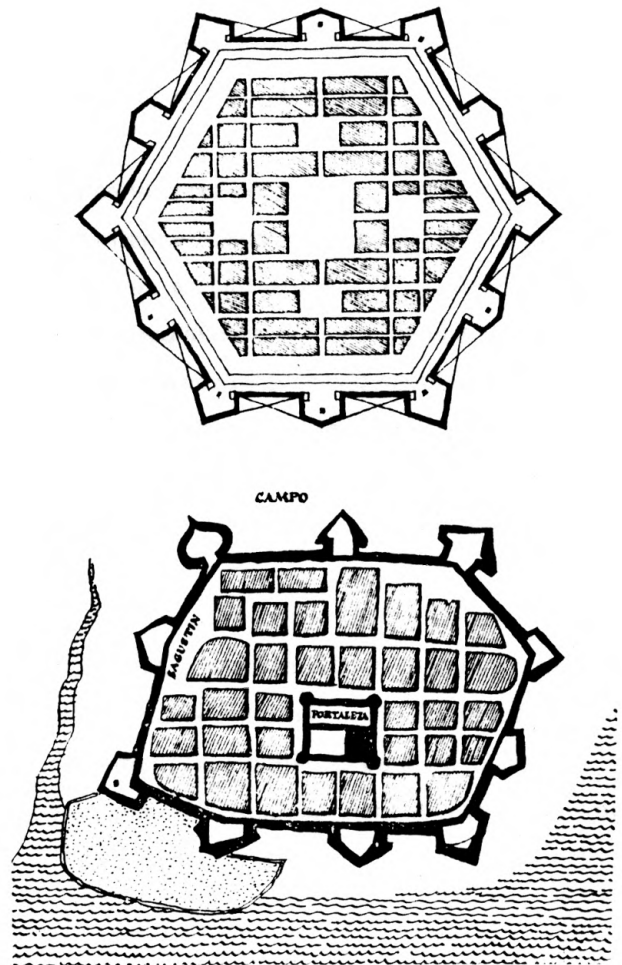
### CHAPTER 3

#### EARLY ENGLISH SETTLEMENTS

#### INTRODUCTION

The Portuguese were the first group of European merchants who established trading settlements in India in 1498. By mid 16th century, the Portuguese had erected towns on the western coast of India in the form of fortresses. These towns were fortified according to the Renaissance pattern. The forts were usually in the form of an irregular decagon with thick walls and triangular or heart shaped bastions. The various blocks within the fort formed an irregular pattern. This layout with a fortified polygonal wall plan formed the prototype of a large number of early European settlements in India. The fort in the center was a recurring feature in most settlements. The walls of the fort enclosed a miniature town with the church, factors lodges, warehouses etc. (Fig. 1).

A century later the Dutch, British, Danes and the French took over the Portuguese trading monopoly in India. The British East India Company was founded in 1599 as a trading company. In 1600, it received the Royal Charter from Queen Elizabeth I, to trade east of the Cape of Good Hope. The British East India Company originally set out with the intention of establishing trading monopolies in the East Indies. The Dutch maintained a stronghold in this region, so the Company moved



**Fig. 1. Portuguese trading settlements.**  
(Source: Nilsson, S., European Architecture in India 1750-1850, p. 41, 1968)



to India in 1613.

In India, the merchants of the Company encountered a highly developed civilization established by the Mughals. The Mughal empire was powerful, rich and well organized. The British merchants regarded the Emperor with respect. They were only interested in obtaining the Emperor's permission to trade and did not want any political involvement with either the Hindus or the Muslims. For the first 100 years (1613-1713) the British settled only along the coastal areas in small trading settlements/ forts. The Mughals ruled inland, and most East India Company officials continued to acknowledge Mughal domination and government.

In early seventeenth century, the official representatives of the East India Company came in close contact with the Mughal Emperor at Delhi. They were awed by the splendor and extravagance of the court and adopted oriental habits in food, clothing and lifestyle. One Company official, Sir Thomas Roe, who travelled with the Mughal Emperor, has given a vivid description of the Royal camp. According to Roe's description, "the Royal camp covered an area of 20 miles. It was organized like a town with regular streets where each noble or tradesman has his allotted place, so that wherever it was established the camp was identical and people could find their way around."<sup>10</sup> This custom of travelling and setting up camp sites, was later adopted by the officials of the Company at the turn of the century. British viceroys in India in the eighteenth century travelled in almost the same manner. It was characteristic of civil servants during later British rule, to conduct regular camping tours into the interior regions of the country. The Royal camp was an earlier prototype of the British cantonment model in the eighteenth century.

By the late seventeenth century, the British had established four major port cities at Surat (1613), Madras (1639), Bombay (1668) and Calcutta (1690). These early English settlements though small, were gradually beginning to develop as the nuclei of future Indian towns. Indian merchants attracted by trade began to settle around the Forts. The settlement thus began to be divided into the Fort or 'White Town' for the English, and the 'Black Town' where the Indians lived. Madras was the largest settlement with a population

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<sup>10</sup>Woodford, P. Rise of the Raj, p. 32, 1978

of 300,000 in 1700. Of this number, 114 were English. Calcutta founded later had a population of 12,000.

The small English population lived within the fort and was very paternal in character. Each settlement had a President or Governor as the supreme authority and representative of the Britannic Majesty. The Company officials were respectful to and apprehensive of the provincial Mughal Governors. Within the fort, strict residential separation was maintained between the military garrison and the civil establishment. Strict rules were laid down for the employees by the Directors of the East India Company in London. These merchants did not have their wives with them, and it was some years before British women were seen in large numbers in India. The small numbers made it possible to maintain a strong corporate life in the factory<sup>11</sup>. The gates of the Fort were shut every night, and the factors met for dinner and supper at the common table where they sat in order of seniority. As there were very few English women in India at this time, marriages with natives was accepted as a normal course. Though the factors of the Company kept apart from Indian life, they did not develop a contempt for Indian social customs and political power. Social interaction with the native population was extensive. The agents and Council had no qualms about inter-marriage and recommended that liaisons between English soldiers and local women should be encouraged to promote social and political harmony.<sup>12</sup> Descriptions of life in the settlements by early travellers, indicate the adoption of local habits and customs in terms of food, drink and clothing. They had no color prejudice or prejudice against adopting an Indian custom which made life more comfortable.<sup>13</sup> Mortality rates amongst the British during this period were very high owing to the hot tropical climate. Indian customs were sometimes adopted in the hope of making adjustments to the new climate, thereby reducing death rates. However, this Indianization was superficial and only in terms of food, sports and entertainment etc. The British society still remained very English in speech, clothes and ideas. Later settlers owing to their greater contact with Indians of all ranks became more aggressively English on the surface while unconsciously imbibing some characteristically Indian ideas.

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<sup>11</sup>The 'factory' was the mercantile office where all business was transacted by the agents (factors) of the company.

<sup>12</sup>Davies, P., Splendors of the Raj, p. 24, 1985.

<sup>13</sup>Spear, P., The Nabobs, p. 22, 1963.

At the beginning of the eighteenth century, English society was still confined to the four settlements at Surat, Madras (Fort St. George), Bombay and Calcutta (Fort William). In the eighteenth century, these settlements underwent transformations, owing to a series of historical events, and changes in attitudes of the British people. Between 1750 and 1785 a radical change occurred in English lifestyle and outlook from the secluded factory life to the cosmopolitanism exemplified by Calcutta. Two historical events were significant in bringing about this change: The capture of Madras by the French in 1746 and the capture of Calcutta by the Nawab of Calcutta in 1756. The French wars led to an influx of both Company and Royal troops from Britain. Victories in the French wars and the Battle of Plassey in Bengal, changed the role of the East India Company from a trading corporation to a powerful military establishment.

The influx of soldiers in 1746 led to the permanent establishment of the Company's army. These men were different from the merchants of the early settlements. Trade was not their main interest. They were patriotic and proved by demonstration, that European war methods were superior to the Indian methods. After 1746 the Company maintained both Indian and English troops. The regiments of both were officered by Englishmen. The lower class of Europeans became predominantly military. The influence of the British soldiers caused all the settlers to be more race conscious, and the settlement was transformed from a purely commercial to a more imperialistic one.

In 1765, the governor of Bengal obtained *zamindari* rights i.e. the right to collect land revenue and administer in the vicinity of Calcutta. By 1772, the Company had adopted an elaborate system of administration first established by Akbar and followed by proceeding Mughals. The Company undertook the collection of land revenues efficiently by employing officials known as *collectors*. The merchants of the early settlements were now officials, who performed the dual function of administration and commerce.

With the transformation of merchants into politicians many changes in attitude took place which had an impact on the character of the new settlements. Success in politics and the military strength of the Company made the officials more ambitious for power and wealth. As the Company directors in London refused to increase salaries, land revenue became a profitable source of income. The British merchant in Bengal was now an official, and the whole English community gained the status of a ruling race. This development also contributed to the feeling of cultural superiority and contempt for the Indians. Respect and submission to the authority of the

Company directors at London also began to decline.

The English civilians in India in the mid eighteenth century were another distinct class in English society. This class consisting of revenue collectors and merchants, was in closer contact with the native gentry and assimilated from them elements of extravagance and pomp. However, increase in the number of English settlers, increase in the number of women and closer contact with Europe brought about changes in lifestyle. The English society began to adopt English rather than Indian standards of living. The ideal of making every English settlement an exact replica of an English town, was beginning to develop. This was represented most clearly in the architectural developments of this period. No attempt was made to adopt the Indian house style opening inward upon a courtyard. Instead, the classical style was incorporated boldly using an Ionic colonnaded portico filled in by immense venetian blinds to keep the sun out. The Mughal style gardens with their formal layout and ornamental use of water were not popular either. Instead, the English tried to make their gardens almost like their English prototypes.<sup>14</sup>

In 1798 Marquis Wellesley was appointed as Governor-General of Calcutta.<sup>15</sup> Unlike his predecessors Hastings and Cornwallis, who had viewed themselves as servants of a trading company, Wellesley regarded himself as the figure head of a ruling power. He was against formal submission to the nominal sovereignty of the Mughal emperor. Between 1799 and 1803, Wellesley built the new Government House at Calcutta. He had found the existing building insignificant and unsuited to his position. The new building was built to a monumental scale as an expression of power and political domination. It was modelled on Kedleston Hall at Derbyshire, England, which was the country seat of the first Lord Scarsdale. In an attempt to recreate the lordly country seats of the homeland,

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<sup>14</sup>Ibid., pp. 34-35.

<sup>15</sup>In 1784 the East India Company had debts of 8 million pounds due to excessive spending by Company officials. The Pitts India Act in 1784 gave the British Parliament control over Company activities in India. A Governor-General was appointed to supervise all the three Presidencies of Calcutta, Madras and Bombay. Trade was emphasized as the main objective of the government and the British government tried to prevent officials from being ambitious and bent on conquest. (Woodford, P. Rise of the Raj, p.59, 1978).

Wellesley was emulating the lifestyle of the landed gentry in England.

The Company directors at London were appalled at Wellesley's extravagance and disapproved of the expense. Meanwhile, Lord Clive the Governor of Madras had also built a palatial country residence. These actions of the governors in India led to the following remark from the directors in 1803,

It by no mean appears to us essential to the well being of our Government in India that the pomp, magnificence and ostentation of the native governments should be adopted by the former; the expense to which such a system would naturally lead must prove highly injurious to our commercial interests.<sup>16</sup>

However, the attitudes of Company officials in India had changed. They no longer considered themselves as commercial merchants. Lord Valentia's comment in defense of Wellesley's extravagance suggests that commercial interests had now become secondary to political ambitions.

The sums expended upon the Government House have been considered extravagant by those who carry European ideas and European economy into Asia, but they ought to remember that India is a country of splendor, of extravagance and outward appearances; that the Head of a mighty Empire ought to confirm himself to the prejudices of the country he rules over . . . I wish India to be ruled from a palace, not from a counting-house; with the ideas of a Prince, not those of a retail-dealer in muslins and indigo.<sup>17</sup>

The British possession of Delhi in 1803 further reinforced their position as rulers. Wellesley called the victory "the happy instrument of your Majesty's restoration to a state of dignity and tranquility under the power of the British Crown". He declared Calcutta as the "Capital of the British Empire in India and the seat of supreme authority".<sup>18</sup>

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<sup>16</sup>Archer, M., "Company Architects and their influence in India", Journal of the Royal Institute of British Architects, v. 70, p. 318, 1963.

<sup>17</sup>Nilsson, S. European Architecture in India 1750-1850, p. 105, 1968.

<sup>18</sup>Ibid.

These political developments led to a change in attitude amongst the British citizens in India. Their lifestyle became more consciously Anglicized. Having advanced from the position of traders to rulers, the English wished to emphasize their identity, wealth and importance. This was achieved most conspicuously through architecture. The East India Company merchants did not belong to the upper classes in England.<sup>19</sup> However, following Wellesley's model they began to emulate the architecture and lifestyle of the landed gentry in England.<sup>20</sup> They began to construct large residences and could now aspire to live in a style which their social status had not permitted in England. The English society in India from this period onwards was rigidly upper class in structure, attitudes and convention.

By the end of the eighteenth century, the isolated commercial factory life of the early settlements was transformed to a rigorous corporate life in new settlements in the interior areas which were small replicas of English cities. These were the later day cantonments, or imperial cities largely comprising of British soldiers imbued with a military and imperial spirit. During this period, increased contact with England, and the influx of many temporary residents from Europe gave rise to problems of cultural contact, race relationships and political changes.

All of the above patterns and stages of development between the mid-seventeenth century and early nineteenth century can be identified in the British settlements at Madras and Calcutta. These initial stages are very important to the study of British colonial typologies, as they provide the rationale behind the evolution of urban patterns characteristic to colonial urban development in India.

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<sup>19</sup>Until mid 19th century the company did not appoint members of the upper class fearing that "minds unused to the ways of trade might indulge in extravagance unsuited to honest men". (Woodford, P., Rise of the Raj, p. 131, 1978)

<sup>20</sup>In eighteenth century England, the 'gentlemen' were the upper classes, the landed aristocracy, whose wealth lay in immense land holdings. They owned large country houses in enormous estates. In London however, merchants who dominated foreign trade were more powerful. The East India Company directors belonged to this group, who did not have the social status of the landed aristocracy. They tried to gain social prestige through buying large estates and adopting the lifestyle of the landed gentry. (Gupta, S., Architecture and the Raj (Western Deccan 170-1900), p. 13, 1985)



## EARLY BRITISH SETTLEMENTS AT MADRAS AND CALCUTTA

### Madras

In 1639 the British established a small trading station on the Coromandel coast. Five years later they erected Fort St. George and acquired ownership rights for the territory, from the local ruler. In 1687, the settlement was called 'The town of Fort St. George and the City of Madrasspatam'. This settlement became the first British municipality in India and was later called Madras. A map from 1688 represents the approximate pattern of the town (Fig. 2). The eastern boundary of the settlement is defined by the coastline, and to the west and south the town was enclosed by a river. The Square fort with triangular corner bastions was situated in the bend of the river and enclosed the 'factory'. The Fort was modelled on the earlier Portuguese Renaissance forts of the 16th century. The fort was surrounded by a number of regular rectangular quarters. The entire settlement was enclosed by a wall which was most strongly fortified towards the sea. The wall to the north had two gateways which led into the City of Madrasspatam, which was also enclosed by fortified walls and divided into rectangular quarters. This part of the town was later called the "Black Town" where the natives lived. To the west was a narrow canal beyond which was an extension area of the English settlement with rectangular quarters and an English garden. The schematic town plan of Madras indicates the segregation of European and Indian quarters and also the emergence of the enormous English garden which was to be a predominant feature of all English settlements in India.

By 1699 the Fort St. George formed the nucleus of Madras and was surrounded by a walled European settlement called the "White Town" (Fig. 3). Thomas Salmon, an ensign in the Madras garrison gave the following description of buildings in the White Town,

The fort stands pretty near the middle of the White Town where the Europeans inhabit. This is an oblong square about quarter of a mile in length, but not half so much in breadth. To the northward of the fort are three straight handsome streets, and as many to the south. The buildings are of brick, several of the houses two stories high, by which I mean they have one floor above the ground floor. Their roofs are flat and covered with a plaster made of sea shells, which no rain can penetrate; and being secured with battlements, they take the fresh air upon them morning and evening. The walls of these houses are very thick, and the rooms lofty; but what seems peculiar to this country is, the upper floors are laid with bricks instead of boards; but there are not many of these lofty houses . . . a hundred and twenty houses in the whole White Town . . . there are no gardens or very large courtyards before these houses; and indeed they stand pretty close to the street; but the Governor and

people of condition have gardens at a little distance from the town.<sup>21</sup>

It can be inferred from Salmon's description that the small British population lived within the Fort in some form of moderately sized, group housing. The native style of construction was adopted with thick brick walls and brick floors. This indicates that local labor was employed in the construction of these buildings. Like other European colonial settlements in India, Madras began to attract Indian settlers as it generated employment. The Indian settlement began to grow to the north of the Fort, outside the walls of White Town. The physical segregation of the British at this time, may have been a reflection of the prevailing native settlement patterns, where according to tradition different religious groups and castes inhabited separate areas.<sup>22</sup> However, in later years this pattern of segregation became a norm in all British settlements in India.

Salmon gave the following description of the native or "Black Town" as it was called during this period (Fig. 3),

To the northward, adjoining the White Town stands a much larger town, called the Black Town, where the Portuguese, Indians, Armenians and a great variety of other people inhabit. This is built in the form of a square . . . The streets of the Black Town are wide, and trees planted in some of them . . . except some few brick houses the rest are miserable cottages, built with clay and thatched, and not so much as a window to be seen on the outside, or any furniture inside except the mats and carpets they lie on. The houses of the better sort of Madras are of the same materials and built usually in one form, that is with a little square in the middle from whence they receive all their light . . . but I must say not withstanding all this appearance of poverty, I never was in a place where wealth abounded more.<sup>23</sup>

Salmon's description of the native town is very valuable because it gives an idea of the prevailing views amongst the early English settlers that the native form of housing and furniture appeared poor. This might have been one reason why the native house with its central courtyard never became popular with the British, and they made a conscious effort not only to recreate aspects of European

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<sup>21</sup>Love, H.V., Vestiges of Old Madras, vol. II, pp. 73-74, 1913.

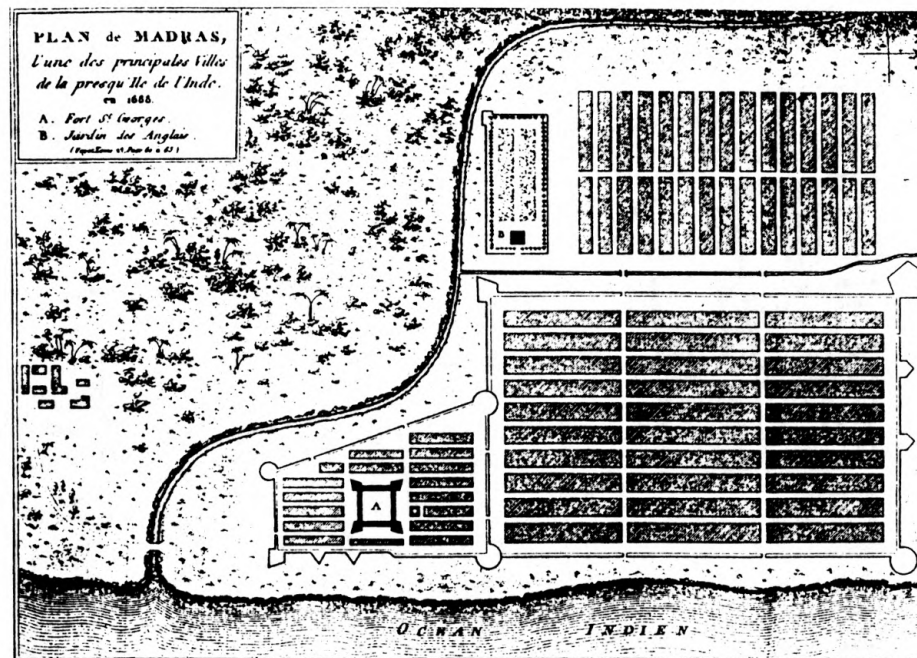
<sup>22</sup>Evenson, N., The Indian Metropolis, p. 2, 1989.

<sup>23</sup>Love, H.V., Vestiges of Old Madras, vol. II, p. 75, 1913.



life in India, but to emulate the upper classes or landed gentry in England.

Madras was the first settlement where the British gained territorial acquisition rights from the native ruler. Salmon mentions in his description, "besides the town of Madras, the East India Company have several villages under their government, which yield them a considerable annual revenue." This practice of claiming ground rent which began first at Madras was actively pursued in other British settlements in the country.<sup>24</sup>



**Fig. 2.** Madras in 1688. (Source: Love, H.V., Vestiges of Old Madras, vol. I, 1913)

<sup>24</sup>A map of Madras from 1733 indicating the boundaries of the surrounding villages owned by the East India Company is included in Appendix A.

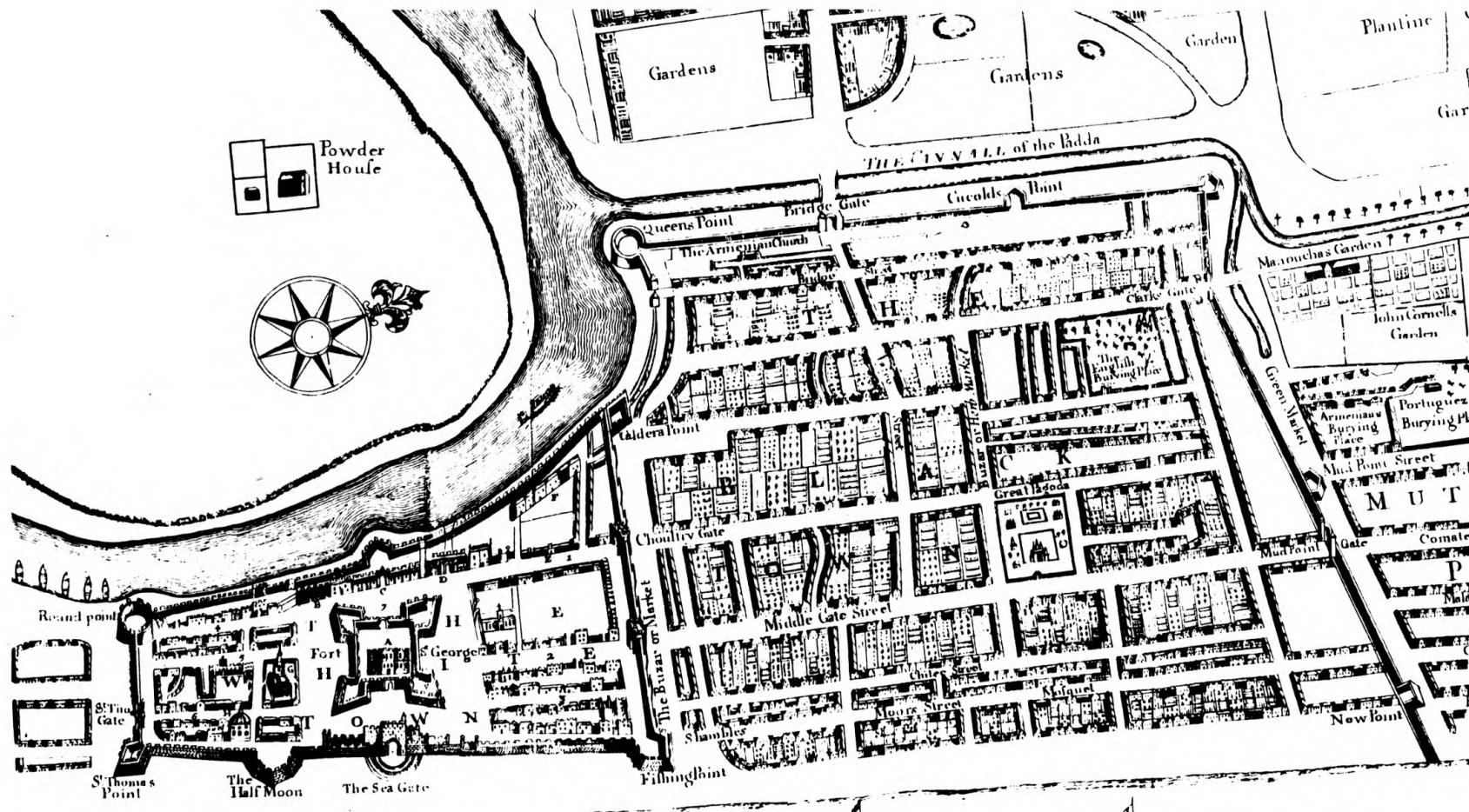


Fig. 3. Map of Madras by Thomas Pitt, c. 1710. (Source: Evenson, N., The Indian Metropolis, p. 4, 1989)

### **Beginnings of the Garden House**

Early settlers made liberal grants of land to private individuals in an effort to attract settlers (both European and native) to Madras. Land was leased out to individuals for a period of 99 years at a fixed amount of ground rent. This marked the beginning of speculation in property in British settlements.

Considerable amounts of land was reserved for direct use by the company. The company officials at Fort St. George began to develop 'gardens' on these reserved sites. These gardens were developed according to the English tradition of informal garden layouts and horticulture, in contrast to the native Mughal formal, symmetrical layout. The first garden, called the Inner Garden, was developed at some distance from the White Town and covered an area of about eight acres. The garden contained a small pavilion. Following this pattern, the new garden was laid out in the late 17th century. The Governor decided to erect a small structure for the reception of the native envoys. The first application to erect such a structure was made in 1676 and the company directors in London wrote back, "We note your desire for building a Choultry<sup>25</sup>, we do give you liberty to build a small Garden house, taking care that it be no great charge to us."<sup>26</sup>

In the next few years, this 'Garden House' began to be used as a suburban residence by the governor. Besides the Governor's garden house, the company officials also laid out many fruit and other gardens.<sup>27</sup> Salmon mentions these gardens in his description, "Beyond the Black town are gardens for half a mile planted with mangoes, coconuts . . . where anybody has the liberty of walking and may purchase the most delicious fruits for a trifle."<sup>28</sup>

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<sup>25</sup>Rest house located in a spacious garden.

<sup>26</sup>Love, H.V., Vestiges of Old Madras, vol. I, pp. 420-421, 1913.

<sup>27</sup>Refer to map of Madras from 1755 included in Appendix A.

<sup>28</sup>Love, H.V., Vestiges of Old Madras, vol. II, p. 76, 1913.

Although the British tried to recreate many aspects of European life in India, they did not make an attempt to recreate the British city in India. British cities at this time such as London, Edinburgh etc. were developed according to centralized urban plans inspired by Renaissance classicism.<sup>29</sup> The great urban estates in Britain were conceived as long term investments, with land remaining in single ownership and a single source of developmental control. Individuality was rejected and the aim was to create a unified environment. The early settlers in India were tradesmen in search of wealth. Urban planning and architecture were secondary concerns to them. The first few garden houses established by the company outside the White Town were used by the Governor and other higher officials for "rest and relaxation". According to the traveller Lockyer's description, "the Governor, during the hot winds, retires to the Company's new garden for refreshment,"<sup>30</sup>

H.V Love in his book Vestiges of Old Madras, also mentions that "Originally the country house was not a permanent residence for its owner. It was designed for weekends and holidays and its great feature was its garden."<sup>31</sup>

In course of time this practice was adopted by many prosperous settlers who began to build "garden houses" on large sites. More Europeans began to acquire land to the south-west of the fort to build country houses and gardens. By 1755 Triplicane, the village to the south-west of the fort, had developed into a scattered residential suburb. According to Love, "several substantial residences bordered the Mount Road near the Governor's Garden House."<sup>32</sup> The company directors in London considered that the building of country houses promoted extravagance. They were now beginning to exercise some restraint on the officials on Madras, regarding land grants to individuals and discouraged land grants unless used for utilitarian purposes,

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<sup>29</sup>Evenson, N., The Indian Metropolis, p. 5, 1989.

<sup>30</sup>Mitter, P., "The Early British Port Cities of India: Their Planning and Architecture, Circa 1640-1757", Journal of the Society of Architectural Historians, v. 65, no. 2, p. 113, June 1986.

<sup>31</sup>Love. H.V., Vestiges of Old Madras, vol. II, p. 614, 1913.

<sup>32</sup>*ibid.*, p. 504.

If our uncultivated grounds can be Leased out to Europeans or others with Views of Improvement, it is undoubtedly a Judicious Measure and should be encouraged; but if it is merely to gratify the Vanity and Folly of merchants in having the Parade of Country Houses and Gardens, We think these are Distinctions which belong only to our Governor and the principal Persons of Madras.<sup>33</sup>

Following Company orders the Board of officials in India made the following observations,

The Board think it first necessary to remark that, as Luxury, Expense and Dissipation ought at all times to be discouraged, and more especially in the Junior Servants of this Establishment, there would be the greatest impropriety in complying with the request of Mr. Paul Benfield, a Writer on the list.<sup>34</sup> His application is therefore rejected; and is now made a Standing Rule that no Such Grant as desired by Mr. Benfield shall be given to any writer in future.<sup>35</sup>

In 1769 the council ceased making land grants for the construction of garden houses pending instructions from the directors at London. In due course, the directors gave the officials at Madras full discretion to make grants of land and a flood of applications poured in between 1772-1774. *The Book of Grants of Ground* from 1774 gives a list of applications made with descriptions of the site with reference to some previously established road or garden. This indicates that even to the end of the 18th century, there was no master plan and the concept of standard lots did not exist.

The lease record comprised of the name of the lessee, the area allotted, the yearly rent and name of the village where the site was

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<sup>33</sup>Ibid., p. 505.

<sup>34</sup>In 1675 the East India Company established the Civil Service which constituted a rigid hierarchy of positions in the ascending order of apprentices, writers, factors, merchants, senior merchants, senior members of council and the governor.

<sup>35</sup>Love, H.V., Vestiges of Old Madras, vol. II, p. 615, 1913.

situated.<sup>36</sup> Land grants were made to civil servants, free merchants and military officers who were gradually becoming a larger part of the social structure after the French wars in 1740. The area allotted per site varied between 5-10 acres, with occasional grants of 17-27 acres made to wealthy merchants and important council members. Interestingly, most applicants seem to have specified sites adjacent or close to other existing garden houses or sites applied for by other individuals. This gives an idea that although the British chose to live in the country, away from the fort and the Black Town, they did not want to live in isolation, maybe due to security reasons.

By the end of the seventeenth century there was an enormous increase in the number of company lease holders in Madras. In the absence of a centralized urban plan with neighborhoods divided into varying lot sizes, the overall development of Madras from late 17th to late 18th century, reflected a semi-rural type of unplanned and scattered, piecemeal growth as indicated in the following description of Madras in 1774,

From the little I have hitherto seen, I feel myself highly prepossessed in favor of Madrass. The elegance of the buildings, the beautiful rows of trees which form an agreeable shade on each side of the streets, and the universal appearance of wealth and magnificence must strike forcibly on the eyes of a stranger . . . The houses of the English gentlemen are lofty and well proportioned, and from their construction are so extremely cool that I can scarcely believe myself in the torrid zone. Every person who can afford it has a country retreat at the distance of a few miles, which is called a garden house and is fitted up with peculiar elegance.<sup>37</sup>

### **Calcutta**

In 1690 the East India Company founded a trading center on the east coast which in course of time grew to be the center of the British empire in India. The Mughal Emperor granted the company three Indian villages - Suttanuttee, Kalikuta and Gobindpore, to establish trade in Bengal. Initially, the British erected small, separate temporary huts to accommodate the activities necessary for beginning trade

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<sup>36</sup>These villages constitute upper class residential neighborhoods in contemporary Madras.

<sup>37</sup>Stanhope P. as quoted in Love, H.V., Vestiges of Old Madras, vol. III, p. 80, 1913.



in Bengal. These buildings included a warehouse, houses for the Company President and other factors. They were constructed in the native style of the peasant hut with clay walls and straw thatched roofs. In 1696 Fort William was erected at Kalikata, one of the three villages near the bank of the river Hooghly . The fort looked approximately like Fort St. George at Madras and contained the residence of the Governor and houses for the factors and writers.<sup>38</sup>

Captain Hamilton, an eighteenth century Company official, described the Fort as follows,

Fort William was built as an irregular Tetragon of brick and mortar called *Puckah*, which is a composition of brick-dust, lime molasses and cut hemp and is as hard as and tough than firm stone or brick, and the town was built without order as the builders thought most convenient for their own affairs, everyone taking in what ground most pleased them for gardening so that in most houses you must pass through a garden into the house, the English building near the river's side and the Native's within the land.<sup>39</sup>

In 1702 the native ruler permitted the company to rent the land around the factory as in Madras. The officials could now claim ground rent and taxes and the fortifications around the three towns provided security for which the inhabitants had to pay. By 1703 some of the English inhabitants had already built houses around the fort, paying ground rent to the Company for their leases. This pattern of land speculation was already well developed at Madras. As in Madras, the town was inhabited by natives, Armenians and Portuguese. The English settlement grew around the fort and the Armenian and Portuguese areas were further north. The native area developed between the village of Suttanuttee in the north and the English settlement. The villages of Suttanuttee and Gobindpore were very sparsely populated around this time.

Between 1714 and 1717, the Company officials were successful in obtaining the right to rent 38 villages around the English settlement, as at Madras in 1690. By mid 18th century the British settlement began to extend beyond the fortified enclosure. Private individuals,

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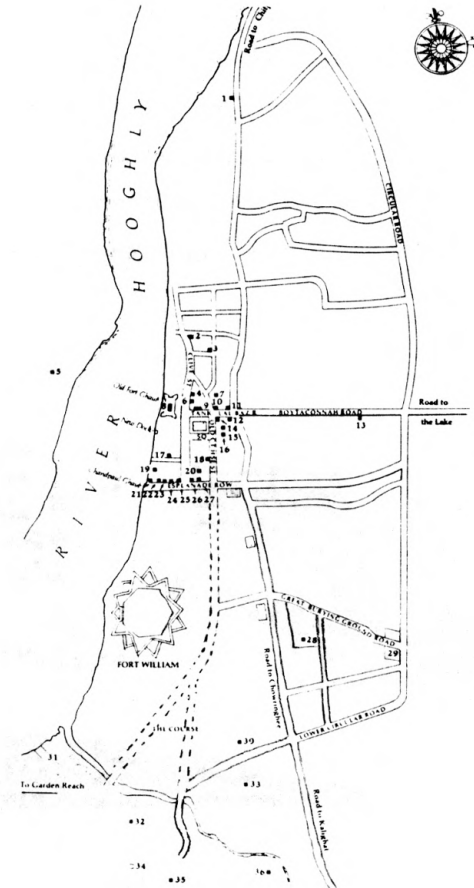
<sup>38</sup>A map of Calcutta (1690-1757) indicating the location of Fort William is included in Appendix A.

<sup>39</sup>Woodford, P., Rise of the Raj, p. 49, 1978.

merchants and officers began to acquire residences which were wedged into the Indian quarters. An irregular ring of European houses began to form beside the fort. The new houses were the "garden houses" similar to those described by Alexander Hamilton. These houses outside the protective walls of the fort were the first to be captured by the Mughal Nawab in the Battle of Plassey in 1756.

After the British victory in the Battle of Plassey in 1757, Calcutta became the most important British settlement in India and Bengal became the first large area on the mainland under British control. Calcutta which was the center of Bengal administration, developed as the most important British city in India until the twentieth century.

The new town was built using restitution money from the local ruler. A new fort was built at Gobindpore, the southern most of the three villages constituting Calcutta (Fig. 4). It was bigger and more European in character, reflecting the superior and powerful position of the British as new rulers. In old Calcutta the Fort had been the core around which the English inhabitants lived. Beyond this grew the native city. Under the changed political situation it was not considered necessary to build the new fort in the middle of the English town to provide protection to the inhabitants. After the recapture of Calcutta in 1757 from the Nawab of Bengal, the English merchants began to live outside the city in "garden houses". The old Fort was used as a customs house.<sup>40</sup>



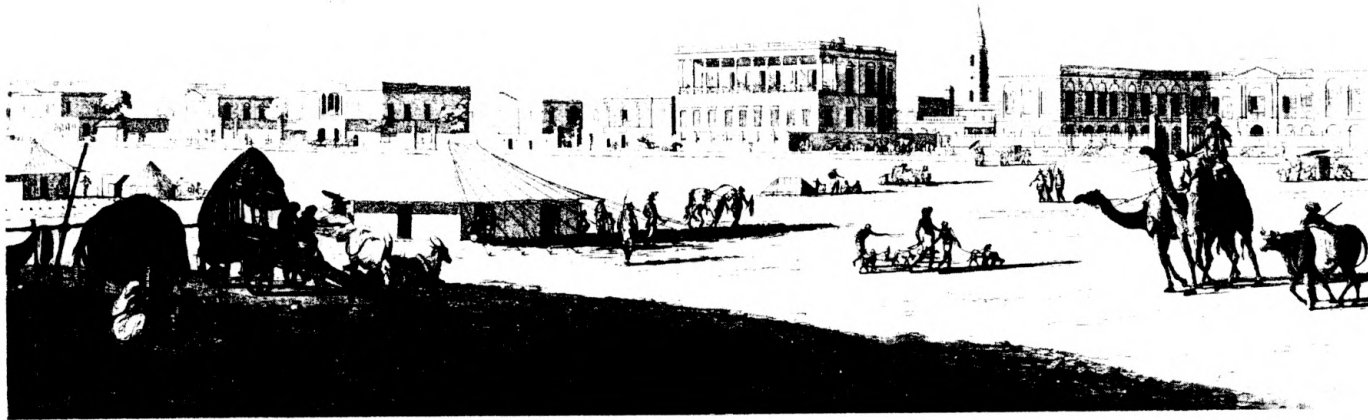
<sup>40</sup>Spear, P., The Nabobs, p. 49, 1963.

Fig. 4. Calcutta 1757-1798. (Source: Losty, J.P., Calcutta, City of Palaces, p. 34, 1990)



The new Fort William necessitated substantial alterations to the town plan of Calcutta. The Indian dwellings along the river bank were cleared to obtain space for the large fort. The jungle area surrounding the fort was cleared and levelled to form a great Esplanade.

Large areas towards the inland were also cleared to accommodate an enormous area called the Maidan, as firing space for the European army. In addition to its military origin the Maidan also served an aesthetic function. It formed an enormous vista to which the classical buildings formed a backdrop. Besides its military and aesthetic purpose, climatic reasons also led to the development of the Maidan. Buildings were placed wide apart and the Maidan was formed to allow the cool evening breeze to pass through the wide open spaces. Beyond the Maidan, towards the inland, more garden houses were constructed according to the old pattern. Each house was erected in its own compound, surrounded by a garden (Fig. 5). With reference to these buildings William Hodges wrote in 1783, "It adds greatly to the superb appearance that the houses are detached from each other, and insulated in great space. The buildings are all on a large scale, from the necessity of having a fine circulation of air."<sup>41</sup>



**Fig. 5.** Thomas Daniel, *Views of Calcutta, 10 Esplanade Row West, 1788*. (Source: Losty, J.P., *Calcutta, City of Palaces*, p. 61, 1990)

<sup>41</sup>Losty, J.P., *Calcutta, City of Palaces*, p. 63, 1990.

These houses were few and scattered and did not form part of an urban quarter or district. The emphasis was on individual structures as each official of the Company began to value privacy and a space for himself. This social requirement led to speculation in sites and houses. According to Mrs. Kindersley's description the city seemed to reflect enormous unplanned growth.

It is large, with a great many good houses in it, and has the advantage of standing upon the banks of a river, it is as awkward a place as can be conceived; and so irregular that it looks as if all the houses had been thrown up in the air, and fallen down again by accident as they now stand: people keep constantly building and everyone who can procure a piece of ground to build a house upon, consults his own taste and convenience, without any regard to the beauty or regularity of the town.<sup>42</sup>

After the French and Bengal wars, the East India Company developed a new military strategy which required rapid troop movement and open deployment of artillery. The pattern of the enclosed fortified town was abandoned because the forts could no longer guard the large areas that came under British control, in late eighteenth century. Deviations were made from the regular rectangular layout of blocks and the British settlement was no longer thought of as a clearly defined unit. Houses were allowed to extend into the river basin, roads were laid out and houses were constructed along them.<sup>43</sup> In course of time these groups of roads and houses were combined to form suburbs called 'cantonments'.

From 1770, Barrackpore developed as the first British cantonment or garrison town near Calcutta. It was not built according to a plan, but developed to accommodate new military requirements. The country residence of the Governor-General, who was also commander-in-chief was erected here along with temporary accommodation for officers and soldiers. Officers were accommodated in one-storied vernacular structures built with sun-dried bricks, and in the style of native Bengali huts with a thatched roof. These temporary structures were called *bungalows*<sup>44</sup> and first became popular in the provinces with the growth of the cantonments. The soldiers lived

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<sup>42</sup>Ibid., p. 37.

<sup>43</sup>Refer to map of Calcutta (1798-1858) included in Appendix A.

<sup>44</sup>The evolution of the bungalow into the 'bungalow-compound complex' which formed the basic unit of the British cantonments in the nineteenth century will be studied in Chapter 6.

in tents.

These changes which took place in Calcutta from the middle of the eighteenth century introduced many new concepts of town planning which were followed up in British settlements in nineteenth century.

### **SOCIAL HIERARCHY OF THE SETTLEMENTS**

The settlements though small at the end of the eighteenth century, were divided into a number of social classes. Distinction between trade and government service did not exist at this time. Every Company official was an administrator and a merchant. The commercial was the more popular service as it was more lucrative. These divisions due to occupation became more defined with time. In the later days of the British Raj, this distinction changed to one of division by hierarchy and position and were almost as rigid as the Hindu caste system. The first broad distinction was between the official and military classes. Within the military there was a further distinction between Company's and Royal officers. Besides the civilians and soldiers existed a group of professionals. These were the lawyers, doctors and engineers who formed the middle class of the settlement. However, this middle class was too small as yet to develop ideals and lifestyle of its own. So their tastes and lifestyles, were to a large extent, patterned on the lifestyles of the officials. English society in India, unlike in England, was aristocratic by position and not by birth or lineage.

By late eighteenth century the commercial and administrative units of the East India Company were divided. Officials ceased to be traders and a class distinction developed between administrators and merchants. Besides the above classes, the lowest class comprised of "Low Europeans" or Eurasians of mixed descent, usually referred to as half-castes. This rigid class hierarchy had an impact on the development of British towns in the nineteenth century. The segregation of the civil lines for administrative officers of the Indian Civil Service, and the military cantonments for the soldiers and civilians (merchants, professionals etc.), reflect these class conscious attitudes.

## CREATION OF THE INDIAN "MIDDLE-CLASS"

These social changes in British society caused a change in attitude towards India. The English were now filled with a sense of racial superiority and condemned Indian customs. The rise of Utilitarian philosophy in England around this time emphasized the spreading of European moral and cultural values to Indians through education.<sup>45</sup> Thomas Macaulay who went to India in 1834 as a Law member of the Supreme Council passed the Macaulay's minute on education. In 1835 Lord Bentinck, the Governor-General of India, declared English as the official language. All higher education was to be taught in English. A resolution was passed in 1835 declaring that 'the great object of the British Government ought to be the promotion of European literature and science amongst the natives of India'. These policies had a profound impact on Indian tradition by creating a group of westernized indigenous elite, the Indian "middle classes", who were consciously English in taste and opinions.

In England, the middle classes developed largely as a result of economic and technological change after the industrial revolution, and were engaged mainly in trade and industry.<sup>46</sup> In India the real growth of the middle classes was a twentieth century phenomenon and they were employed mainly in government services or in the commissioned ranks of the army. The centralization and growth of government services in late nineteenth century resulted in an increasing number of Indians being accepted into government occupations. In 1913 the Indian Civil Service which had been a preserve of the British began to accept Indians. After 1918 Indians also began to be admitted to the commissioned ranks of the Indian army. Their acceptance however, was conditional upon a certain degree of "westernization" which included not only changes in language, dress, behavior, values and life-style but also a willingness to adopt western environments. All these developments led to an increased exposure of the native population to British environments, lifestyles and values.

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<sup>45</sup>William Wilberforce, an evangelical member of Parliament made, a speech in 1813 which illustrates his total confidence in the superiority of England, "Let us endeavor to strike our roots into the soil by the gradual introduction and establishment of our own principles and opinions; of our laws, institutions and manners . . . are we so little aware of the vast superiority even of European laws and institutions, and far more of British institutions, over those of Asia." (Woodford, P. Rise of the Raj, pp. 112- 113, 1978)

<sup>46</sup>King, A.D., "The Westernization of Domestic Indian Architecture", Art and archaeology research papers, vol. 11, p. 36, June 1977.

## CONCLUSION

By the early nineteenth century British settlements in India had evolved from small trading posts to small English cities. Although this development was unplanned and scattered, some of the patterns established in these early stages constituted important characteristics of the larger cantonment towns in the nineteenth and early twentieth centuries. The *maidan* evolved into the parade ground and the 'garden house' which constituted the basic residential unit of these early settlements, was transformed into the bungalow-compound complex in the cantonment. Large open spaces, gardens, broad roads lined with trees and other social institutions such as bazaars continued to be important features of the cantonment plan. Further evolution of the cantonment model will be studied in the next chapter.

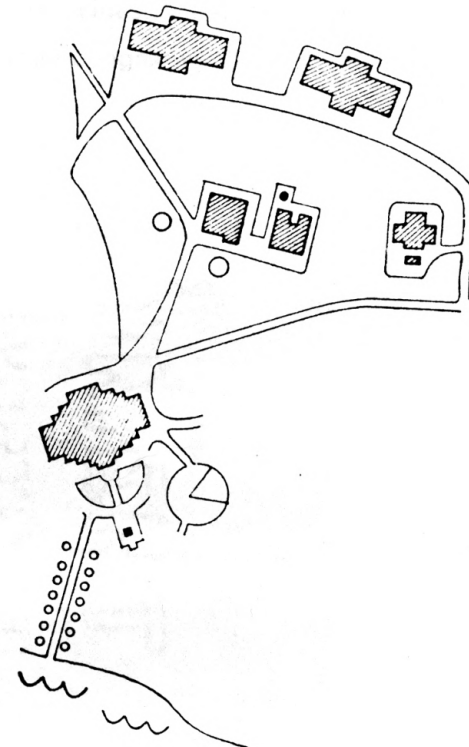
## CHAPTER 4

### EVOLUTION OF THE CANTONMENT MODEL

#### BEGINNINGS OF THE CANTONMENT

As discussed in the last chapter, from 1770, Barrackpore was developed as the first British cantonment town. In 1800 Wellesley reconstructed the Governor-General's country house at Barrackpore as a summer residence (Fig. 6). The officer's bungalows around the Governor's house were restructured to accommodate secretaries, aides-de-camp and visitors. Separate structures were built for the kitchen and servants quarters. All the buildings were encompassed in a spacious park. Some of these structures were in the style of the native Bengali hut with thatched roofs, while others were more in the style of the Governor's house.

In 1800, another military base was established at Ballyganj, near Calcutta. Ballyganj did not have the permanent character of later day cantonments, but it contained some elements which were to characterize later cantonments: separate houses for officers and soldiers and a large parade ground.<sup>47</sup>



**Fig. 6.** Country residence of the Governor General at Barrackpore. (Source: Nilsson, S., European Architecture in India 1750-1850, p. 124, 1968)

<sup>47</sup>Nilsson, European Architecture in India. 1750-1850, p. 77, 1968.

The cantonments owing to their function and structure were very different from existing Indian urban patterns. Their military and administrative function determined their structure. After the establishment of British rule in 1803, it had become common practice for the *collectors* of the civil service to tour their area for revenue collection and administration. In early 19th century officers and military personnel would set up tents similar to the Mughal Royal camps described by Sir Thomas Roe in the 16th century.<sup>48</sup> A large retinue of servants accompanied the officers and soldiers. These camps were like 'moving cities', suited to the hot climate<sup>49</sup> (Fig. 7). With the establishment of permanent garrisons, tents began to be replaced by thatched bungalows. These were later replaced in the nineteenth century with permanent structures.



Fig. 7. Nineteenth century British camps. (Source: Woodford, P., Rise of the Raj, 1978)

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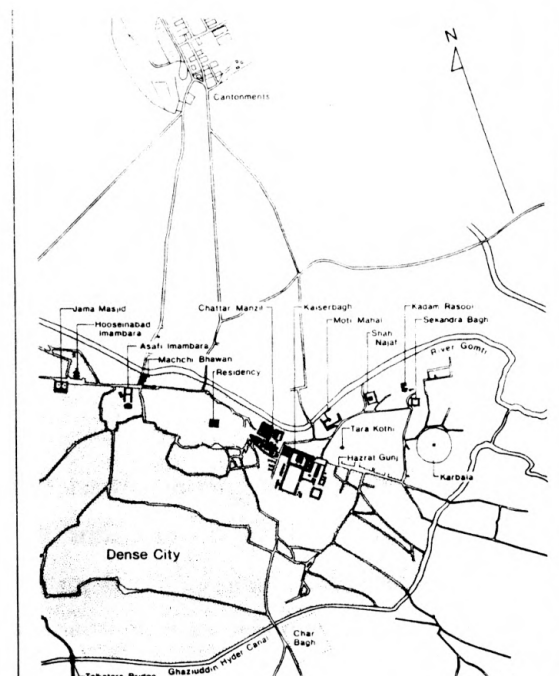
<sup>48</sup>These camps covered an area of twenty square miles and were organized like a town with streets where each noblemen or tradesman had his allotted place, topographically and socially. (Davies, P., Splendors of the Raj, p. 77, 1985)

<sup>49</sup>Ibid.



Cantonments in the nineteenth century were of two types. One was the military cantonment attached to the British Presidency towns Calcutta, Madras and Bombay like Barrackpore and Ballyganj. The second category constituted cantonments attached to old indigenous towns like the cantonments in Delhi, Poona, Lucknow, Bangalore and Banaras. These Cantonments were almost always placed five or six miles from the native city and the intervening space was occupied by Indian regiments. This pattern was typical of all British cantonments in India till the twentieth century (Fig. 8). Cantonments as means of defence could be placed wherever military control was considered necessary.

**Fig. 8. Lucknow Cantonment 1856.** (Source: Oldenburg, V.T., The Making of Colonial Lucknow, p. 22, 1984)



The following description of a cantonment by Stocqueler in 1853 indicates that the layout was influenced by norms of social organization in England and the prevailing norms governing military organization in the field.

An encampment embraces the entire space of ground covered with canvas, of which tents are constructed. The leading object in this arrangement is, that every battalion or squadron may be enabled to form with ease and expedition at any given moment . . . The tents, both of cavalry and infantry, are arranged in rows perpendicular to the front of the encampment with intervals between them called streets . . . The tents of the captains and subalterns are pitched at the rear of their respective troops . . . The field officers' troops are to the rear of these, opening to the front and placed opposite to the outer streets of the battalion while that of the Commanding officer is opposite to the center of the street.<sup>50</sup>

<sup>50</sup>Stocqueler as quoted in King, A.D., Colonial Urban Development, p. 100, 1976.



With the growth of British imperial power rapid mobilization and fast movement of troops became a necessity. This was achieved by placing the cantonment in a spacious area outside the town, rather than in the congested town center (Fig. 8). This arrangement facilitated greater mobility and efficiency and did not require changes in the existing patterns of indigenous towns. Also, both the English and Indian troops could be effectively isolated from the local population. The reasons for this segregation will be discussed later in this chapter.

The number of officials employed in the civil service increased after the establishment of British rule in 1803. The rigid class hierarchy which had developed during the 18th century had an impact on the development of British towns in the nineteenth century. Administrative officers were segregated from military personnel and civilians. They were accommodated in the *Civil Lines* or *Civil Station*, which represented the political and administrative function of the colonial settlement. It was occupied by members of the colonial bureaucracy (judge, collector, magistrate, superintendent of police) and service classes (engineers, civil surgeons, teacher, missionaries, businessmen etc.). The civil station was situated between the cantonment and the native city. It formed part of a major provincial town or alternatively, it was a 'mofussil' or 'country station' representing the capital of a small rural district. The civil station together with the military cantonment were usually referred to as the Cantonment.

The term *cantonment* originates from the French word *canton* which means to quarter or divide land into portions.<sup>51</sup> This meaning of the cantonment as an enclosed area, separated from other socio-spatial units and itself divided up into smaller spatial areas is apparent in cantonment plans. Residential accommodation was segregated according to three criteria, racial or ethnic group, military rank and type of built structure. Racial segregation was expressed by the existence of European infantry lines and native infantry lines, European and native hospitals, European and native infantry parade grounds. Segregation by rank was expressed by the existence of separate

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<sup>51</sup>Murray, 1988 as quoted in King, A.D. Colonial Urban Development, p. 80, 1976.

categories of accommodation for officers and troops. Segregation by building type was expressed in the existence of barracks for European soldiers (also referred to as lines), native huts for Indian troops and individual bungalows for officers. Thus, the rigid social hierarchy reflected in the physical layout of the cantonment. The senior ranking officials were fewer in number and were accommodated in large bungalows centrally placed in a large plot or *compound*, five to ten acres in size. Junior officers and civilians occupied smaller sized bungalows, in compounds of half an acre or more. The lower ranks were accommodated in *quarters* grouped together, and soldiers lived in barracks. Native troops were accommodated in self-constructed, temporary huts.

While the political, administrative and defense services were provided by the colonial community, economic services were usually provided by the native population. This was done through the *bazaar* which was an indigenous institution in terms of function, spatial form and nomenclature. The bazaar was usually in the form of a permanent market or street of shops. According to the cantonment code the bazaar was 'any land in a cantonment which has been set apart for the purpose of trade or the residence of natives . . . and the boundaries of which have been demarcated by pillars or posts . . . under the authority of the general officer of the command.'<sup>52</sup>

The bazaar supplied every day commodities such as groceries, and was very rarely visited by members of the colonial community. Native servants employed by the British constituted the only link between the bazaar and the inhabitants of the cantonment. Retail services exclusive to the colonial community were provided by European shops whose wares, retailing norms, economic organization and physical appearance were derived from England.

The main center of social interaction in the cantonment, was the *Club*. The club originated amongst the 'upper class' in eighteenth century England, as an exclusive social institution, providing temporary residence and a place for social intercourse and entertainment only to members. It was matter of social prestige in England to be a member of the elitist clubs. In India, access to the club was confined only to members of the colonial community. The functions of the club, as a place for social interaction and reaffirmation of cultural identity are illustrated in the following quote from a member of the colonial community in India in 1923, "The club to which the whole European population belongs, provides a meeting place, and is a center for all kinds of sports and games, as well as for

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<sup>52</sup>Government of India Cantonment Code as quoted in King. A. D. Colonial Urban Development, p. 81, 1976.

dancing, . . . is one of the chief diversions of the British in India . . . The club is the center of social life . . . It is the recognized meeting place of the station."<sup>53</sup>

The club had demarcated areas for various forms of leisure activities and sports such as card-room, billiards-room, squash, badminton and tennis courts, swimming pool, bar, reading room, library etc. These were culturally preferred leisure pursuits common among the upper classes in England. The existence of this institution in India once again exemplifies, the emulation of an upper class life style by all the members of the colonial community.

By the late nineteenth century, cantonments had evolved into elaborate towns with a pattern of development and institutions specific to British society and its lifestyle in India. Typically the cantonment covered an average area of seven to eight square miles accommodating approximately 5000 inhabitants. Most cantonments were laid out on a spacious pattern of broad avenues, lined with trees and classical bungalows on large plots. Large open spaces constituted the parade ground for drill and training. Bazaars, clubs, theaters, bachelor and married officers houses, playgrounds, parade grounds, polo grounds, churches, cemeteries, schools etc. were characteristic features of most cantonments.

Settlements originally established for military purposes had evolved into a suburban pattern representing a system of built forms and spatial arrangements organized by a particular culture, for a particular purpose. The colonial community had modified the environment according to its culture specific ideas and perceptions of aesthetics, health and hygiene. These criteria influenced the location, layout and spatial distribution of cantonments in India till the end of British rule.

The physical layout of the cantonment was influenced by English ideas of landscape. Large open areas and the large compound spaces around the bungalows were modified to resemble English gardens laid out with flower beds, lawns and pathways. Medical theories in nineteenth century England stated that diseases occurred and spread due to impurity of air, humidity and lack of elevation above

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<sup>53</sup>Platt, 1923 as quoted in King, A.D., Colonial Urban Development, p. 87, 1976.

the 'noxious' vapors of the ground. These theories were important in the location of the cantonment at a distance from the Indian city. It was felt that noise and air from the old city would affect the health of the cantonment inhabitants. The distance also occurred as a deterrent for soldiers who picked up diseases from prostitutes. All living accommodations were built on a high plinth to avoid the humidity and vapors from the ground.

After the mutiny in 1857 and the transfer of power from the East India Company to the British Crown in 1874, the number of British troops in India increased. The British population in India was close to 120,000 at the end of the nineteenth century. New cantonments were built and the existing cantonments were expanded to accommodate these troops. Also, the use of improved technology and changes in the perception of man-environment relationships, following the Industrial revolution, had caused changes in the lifestyle of people in the urban areas of Britain. Lower death rates, disease control, improved sanitation, water supply and lighting had improved living conditions. These changes in England had an impact on the cantonments in India. High death rates and high incidence of disease amongst the British troops led the authorities to set up a Royal Commission in 1863, to study the conditions of the British Indian Army and suggest improvements.<sup>54</sup> The Commission made recommendations based on the new theories of health and hygiene which had gained popularity in England after the Industrial revolution.

Three main causes of morbidity and mortality were mentioned in the report. The first cause of sickness was perceived as being environmental. Diseases were thought to occur as a result of a combination of factors such as air temperatures, humidity, the presence or absence of particular types of vegetation, composition of the soil and the quality of water. The other two causes were classified as behavioral. The first behavioral cause was related to the excessive consumption of alcohol, and the second was related to diseases from social relations with native prostitutes. These three causes led to culture-specific modifications of the cantonment in late

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<sup>54</sup>According to the report of the Commission, among the 227,000 members of the colonial military establishment, 85,000 were British, the rest were recruited from the native population. The British troops were accommodated in 114 cantonments located throughout the country. The number of troops in these cantonments ranged from 50 to 4000. (Ibid, p. 98)

nineteenth century. Table 1 illustrates the levels of environmental control identified in the cantonment.<sup>55</sup> Nineteenth century medical theories emphasized the 'locational' and 'developmental' causes of disease more than the 'behavioral' ones. The cantonment environment was modified in terms of built form and the utilization of space, in an attempt to reduce excessive mortality and morbidity. Elevation became an important factor in the location of the cantonment. It was a commonly held belief that 'a certain amount of destruction of European health results from residence on the plains'.<sup>56</sup> Since early nineteenth century, European 'hill stations' had been developed in India as they provided cooler and more comfortable climates. After 1860, medical theories recommended that one-third of the European troops in India should preferably be stationed in the hills.

At the 'macro' level which included the area enclosed by the boundaries of the cantonment, certain 'aerial' factors were perceived as affecting the health of the colonial community. Noxious smells from the native city were perceived as a health hazard. This belief had significant spatial and locational implications for the cantonment as is apparent from the following quote from a member of the colonial community,

The immediate neighborhoods of large cities, especially in the leeward direction are not satisfactory localities for our troops. The sanitary conditions of all Indian towns cannot be described as less than vile. Localities not susceptible to easy drainage will be shunned and old graveyards and sites of ancient cities escaped. The whole cantonment would front the prevailing winds, native houses, bazaars, burial grounds . . . would be placed rearward to European residences . . . the station should be surrounded by a zone of one or two miles radius, free from cultivation and irrigation. Such extent of country should be grassland with clumps of trees or occasional gardens.<sup>57</sup>

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<sup>55</sup>This descriptive model developed by A.D.King is based on what McCoughlin (1970) has called 'dissatisfaction with place-related activities'. According to McCoughlin such dissatisfaction may be overcome by three types of responses - locational, developmental and behavioral. (King, A.D., Colonial Urban Development, pp. 103-106, 1976)

<sup>56</sup>King, A.D., Colonial Urban Development, p. 108, 1976.

<sup>57</sup>Moore, 1862 as quoted in King, A.D., Colonial Urban Development, p. 111, 1976.

**Table 1.-Levels of Environmental Control in the Cantonment**

<b>Types of available responses</b>	<b>Levels of environment</b>	<b>Illustrations of types of responses</b>	<b>19th century recommended responses</b>
1. Locational	1. Geographic region: elevation above sea-level.	More activity	1. 1/3rd of activity moved to 'the hills'.  2. Activity moved to healthier sites.
2. Developmental (modify environment to accommodate activity)	2. Macro-environment (locality/area of services)	Plant trees, build walls, construct sewers, drain lakes, prevent infiltration by non-culture members.	Increase extent of planting, modify systems of water supply, sewers etc., keep away from indigenous settlement.
	3. Intermediate environment I (building)	Construct new or modify old buildings.	Modify barracks, hospitals etc.
	4. Intermediate environment II (room)	Modify rooms and internal divisions of space (raise ceilings, install windows).	Modify windows, floors, ventilation system, spatial distribution of activities inside building.
3. Behavioral	5. Physiological	Modify behavior, sanitation practices, modify diet, modify physiological system by using drugs.	'Gymnasium' made compulsory, alternative forms of recreation encouraged, sale of alcohol controlled.



The 'green belt' around the cantonment was the physical manifestation of this 'zone of one or two miles radius' which segregated the native city from the cantonment.

At the behavioral level alcohol and social relations with native women were perceived to cause lower states of health. Three solutions were recommended by the Royal Commission, which had important spatial implications for the cantonment environment. Indigenously produced liquor was considered as the source of alcoholism and troops were recommended to keep away from the bazaars. Troops were also advised to keep away from native areas to avoid contact with local women. The principle of *strict* segregation from the indigenous population was maintained to the end of colonial rule. For the lower ranking members of the military establishment the first order at a new station stated that all Indian villages, Indian shops, Indian bazaars and the civil lines were out of bounds to all the troops.

The second solution was to encourage different forms of recreational activities. Many cantonments already provided space for outdoor activities which had originated in a pre-industrial context in Britain and required very little specialized equipment. The maidan or parade grounds were usually used for recreational purposes. Increasing industrial urbanization in Britain had institutionalized such leisure activities, which now required the provision of specialized spaces as part of the urban environment. In the cantonment these spaces constituted cricket and football stadiums, polo grounds, hockey grounds, race courses etc.

The third solution was to increase the proportion of married men on the cantonment. In terms of spatial requirements this meant an extension of married persons accommodation in the form 'detached cottages' each in its own plot of land.<sup>58</sup>

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<sup>58</sup>Ibid., p. 118.

## **BANGALORE CANTONMENT AS A CASE STUDY**

When the British defeated Tipu Sultan at Seringapatnam in 1799, they felt the need to establish a military base in the interior part of South India. Bangalore's agreeable climate and strategic location on the Deccan plateau, made it an attractive military base. A walled native city and a fort already existed in the area, but as was the British tradition in India, a separate 'cantonment' was established away from the native population. The Bangalore cantonment was established in 1809 on land assigned to the British by the Maharajah of Mysore. It was systematically molded according to the British lifestyle and acquired typical buildings such as bungalows, churches, clubs, cemeteries, parade ground, parks, military barracks, bazaars, hospitals and schools. By the second half of the nineteenth century, the city had evolved from an essentially cantonment city into a center of integrated civil and military administration with a population of about one lakh in 1880. Besides the Presidency towns (Madras, Calcutta and Bombay), Bangalore Cantonment was probably the largest British settlement in the country, towards the end of the nineteenth century. All the patterns described above in the **Evolution of the Cantonment Model** can be identified in the cantonment plan for Bangalore.

After the setting up of the British Commission, the city expanded and was altered according to the new medical theories. Bangalore's location at over 3000 feet above sea level made it an ideal cantonment where the new theories of health and hygiene, and the perceptions of the man-environment relationship, could be expressed in the physical layout of the city and its built forms. The sprawling layout of the city with parks besides numerous tanks and water bodies, and the spacious layout of the bungalows in large compounds with gardens, gave Bangalore its character of the 'Garden City'<sup>59</sup> (Figs. 9 and 10). Big extensions were planned as self-contained small localities called *towns*, each one presumably named after some officer in the past. Some of these extensions like Richmond Town, Cox Town, Fraser Town, Austin Town still exist in Bangalore by the same name. Each town was a residential locality for a certain income group with its own public utilities like markets, bazaar, post-offices, schools, health centers, police stations and a congregational place of worship. These sprawling extensions were laid out with broad roads and narrow lanes known as conservancy lanes running

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<sup>59</sup>Issar T.P., The City Beautiful, p. 12, 1988.

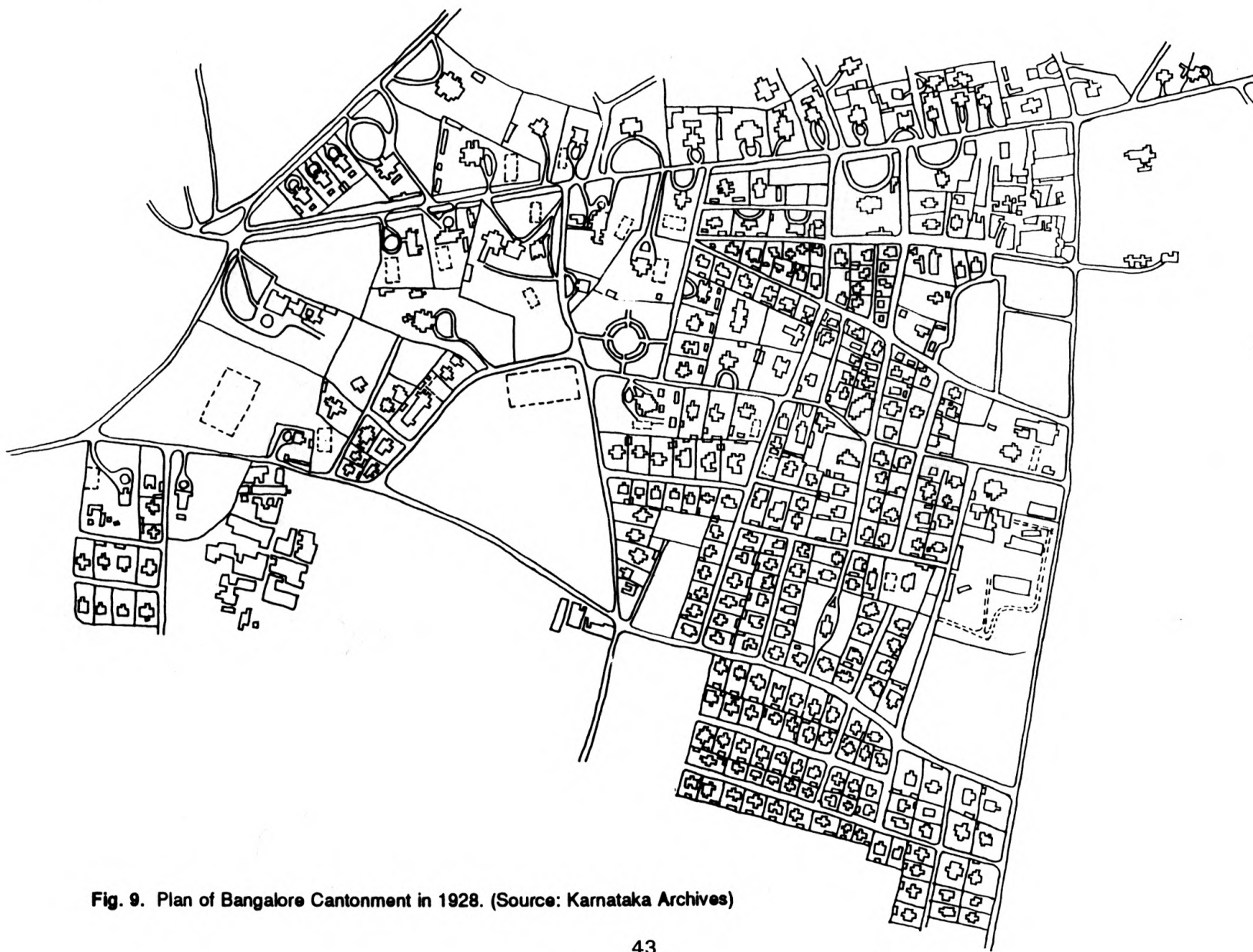


behind the houses.<sup>60</sup> Roads were broad and lined with trees, even though there was no fast vehicular traffic. Lots of varying sizes were laid out in different parts of the same extension catering to the needs of different income groups, but even the smallest lot was large enough to accommodate a small garden. A large number of bungalows were built to accommodate both the civil and military population in the cantonment. The land allocated for residential use was divided up by the British authorities and sold or granted in large lots of five to ten acres to military and civilian people, and administrators. Some of the houses were also sold to wealthy Indians in the administrative services and merchants who were "sufficiently westernized".

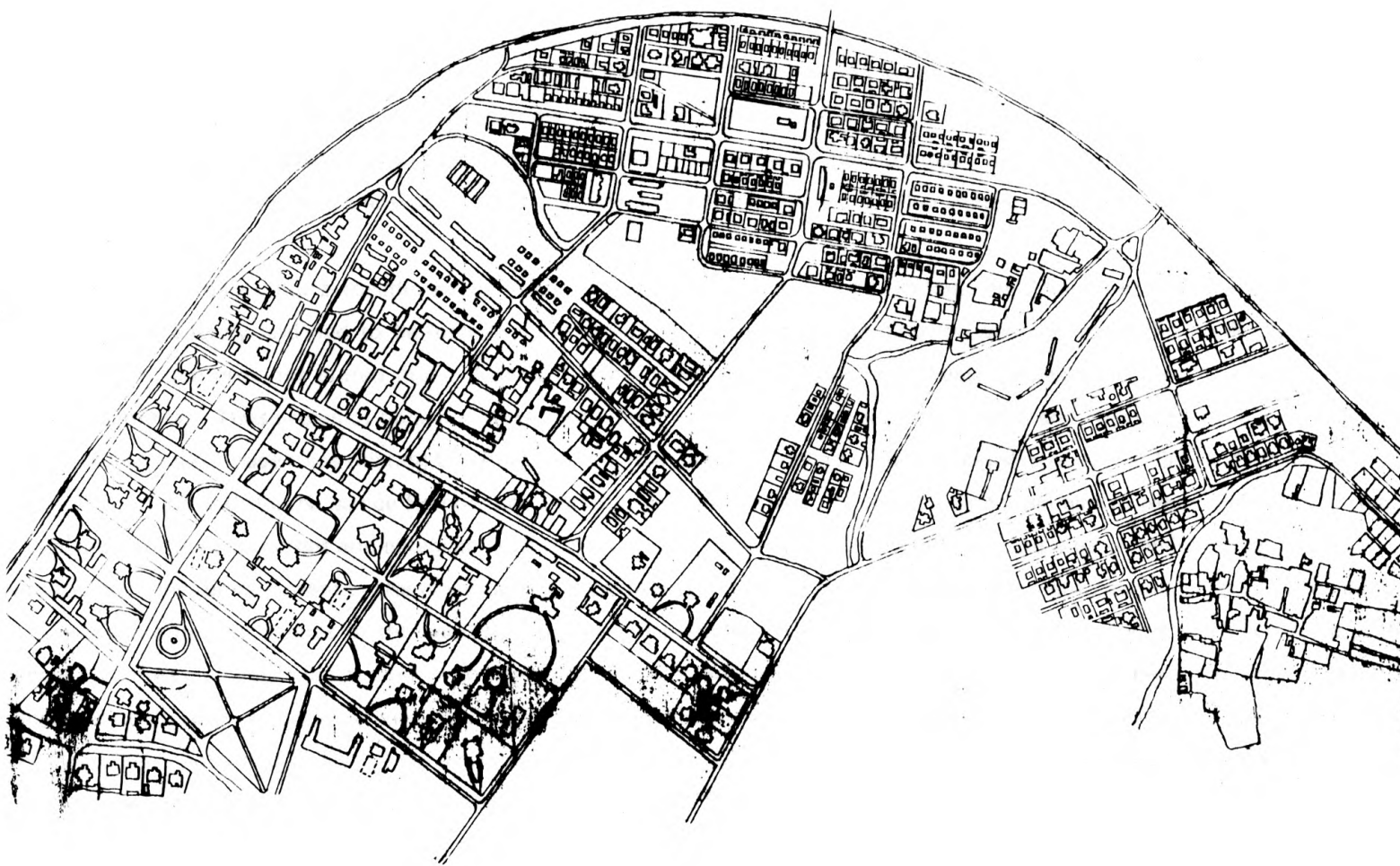
Entertaining and socializing was very popular both among the British and the Indians, and the bungalow was designed to suit the social roles and activities of the owners. Newer extensions which were developed in the early twentieth century also followed the basic pattern of the older towns, and were laid out as self-contained units with parks and open spaces scattered amidst large bungalows lined along broad avenues.

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<sup>60</sup>Underground sewage systems were not in existence as yet and dry sewage was disposed manually.



**Fig. 9.** Plan of Bangalore Cantonment in 1928. (Source: Karnataka Archives)



**Fig. 10. Plan of Bangalore Cantonment in 1928. (Source: Karnataka Archives)**

## CONCLUSION

In the eighteenth and early nineteenth centuries, cantonments had been located and laid out according to fortuitous or strategic criteria. In the late nineteenth and early twentieth centuries, race conscious attitudes and health perceptions increasingly determined the layout and location of British settlements. According to the *Cantonments Manual*, 1909, 'it should be carefully borne in mind that the cardinal principle underlying the administration of cantonments in India is that cantonments exist primarily for the health of the British troops and to considerations affecting the well being and efficiency of the garrison, all other matters must give place'.<sup>61</sup>

The cantonment was a culture-specific environment with its own norms or codes of behavior. Such norms were alien to members of the indigenous society and had to be learned. For example, the 'Rules regarding the occupation of the Public Works Inspection Bungalows' in one province stated that, 'Asiatic officials were eligible to occupy these bungalows if they have adopted European (British) customs.' These rules of behavior were formulated in the Cantonments Acts, Codes and Regulations issued between 1864 and 1924. Many of these rules relating to sanitation practices were modelled on British legislative acts in England including the Public Health Act, 1848 and the Nuisance Removal and Disease Prevention Act, 1855 etc. The main aim of these rules was to define the spatial area of the cantonment and establish control over its adjacent region. Within this culture area behavior perceived as interfering with the new man-environment systems set up in the cantonment, was forbidden. Behavior acceptable to members of the indigenous culture outside the boundaries of the cantonment was not permitted within the limits. Some indigenous practices were prohibited because of their perceived connection with diseases. Other practices were prohibited on account of being intrusive in what was a completely culturally controlled environment. For example, "Every occupier of any ground within the limits of the cantonment shall trim or prune hedges and trees . . . no persons shall cut down trees without sanction of the Cantonment Committee . . . boundary walls, hedges or fences . . . shall not exceed a specific height."<sup>62</sup>

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<sup>61</sup>Mackenzie, 1929 as quoted in King, A.D., *Colonial Urban Development*, p. 118, 1976.

<sup>62</sup>*Ibid.*, p. 120.

In this way, a total culture area was established where the environment was modified according to culture specific theories of medicine and olfactory, visual and oral preferences of the colonial society. Movement into this culture specific area by members of the indigenous community required, that much of their own cultural traditions in terms of values, behavior and lifestyle were to be modified according to that of the colonial culture. Thus, the dominance-dependence relationship of colonialism was effective in causing a shift in cultural identity among the educated classes in India.

This study of the **Evolution of the Cantonment Model** suggests that in any system of man-environment interaction, expectations relating to states of health, economic returns, aesthetic satisfaction etc. are of a relative nature, dependent on the inherent value system and world-view of a culture at a given time. In the next chapter a pattern language will be developed for the generic cantonment model. This generic model will be compared to a similar model developed for a contemporary neighborhood in New Delhi, the DLF Qutab Enclave Phase I. Through these comparisons, an analysis will be made of the impact of the culture-specific cantonment model on contemporary perceptions of the built environment in India.

## CHAPTER 5

### **ANALYSIS OF PATTERNS IN THE BRITISH CANTONMENT MODEL AND THE DLF QUTAB ENCLAVE. PHASE I**

#### **ANALYSIS OF PATTERNS IN THE BRITISH CANTONMENT MODEL**

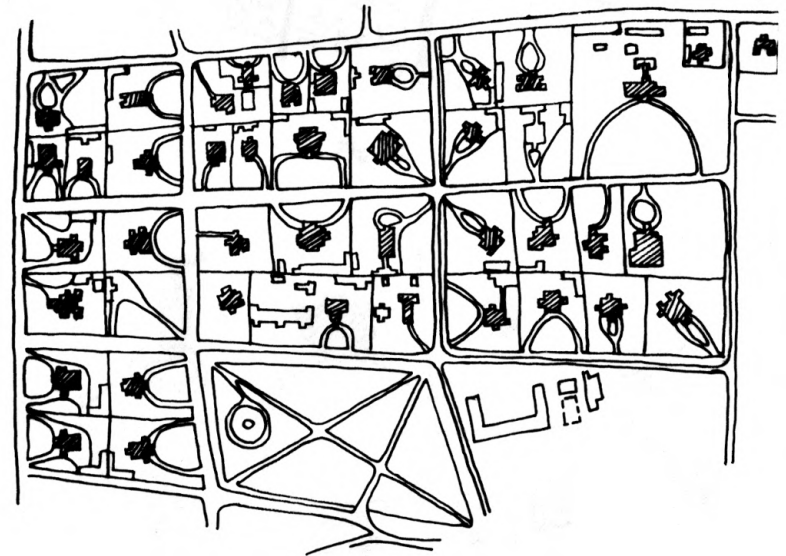
The previous section on the evolution of the cantonment model suggests that a pattern language can be developed for a generic model of the British Cantonment. Among the numerous patterns in the cantonment, some recurring patterns have been identified as being relevant to this study. A general description has been developed for each pattern which explains the pattern and helps in identifying it in cantonment plans from Bangalore. The patterns analyzed are listed below.

##### **Cells**

Each 'residential extension' or 'town' could be called a *cell*<sup>63</sup>. Each cell has its own unique characteristics because it accommodates a certain economic class of people as indicated by the lot sizes. Each cell has the same set of institutions and is interspersed with parks and open spaces. Each cell is therefore a subculture cell (Fig. 11).

##### **Degree of Publicness**

More expensive towns or neighborhoods are located closer to the city center or on the main thoroughfares. Within each cell, the larger lots are located along the main roads (Fig. 11).



**Fig. 11**

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<sup>63</sup>Cell is one of Alexander's patterns defined as any area containing more than a few hundred dwellings. (Alexander, C., Houses Generated by Patterns, p. 56, 1969)

### Road Systems

Within each cell roads are laid out on a grid iron pattern. Road widths vary in each cell and are wider in cells with larger lots. All roads are lined with trees on both sides and allow two-way traffic, although traffic was not a prime concern in the planning scheme as automobiles were not frequent at the time. Every subculture cell has a wide main road which constitutes the spine of the road system. Secondary roads and lanes branch off from this main spine providing access to individual residential units (Fig. 12).

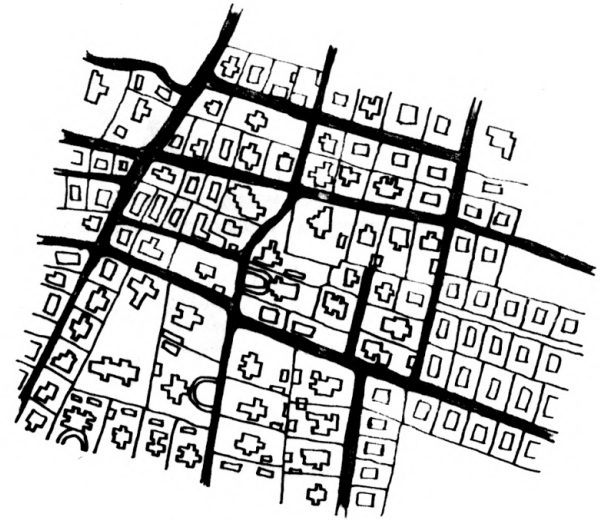


Fig. 12

### Parking Areas

Neighborhoods do not have common parking lots. Each bungalow-compound unit has its own garage, parking space or coach house previously used for carriages but later used for cars in the twentieth century (Fig. 13).

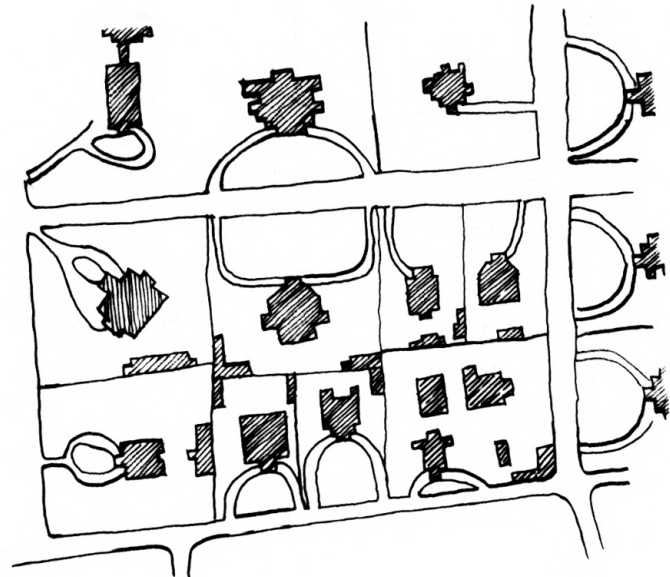


Fig. 13



### Car-pedestrian Symbiosis

Roads are laid out mainly for pedestrian and carriage traffic as automobile traffic was not anticipated at the time. Besides the sidewalks along the roads there are no exclusively demarcated pedestrian roads or pathways (Fig. 14)..

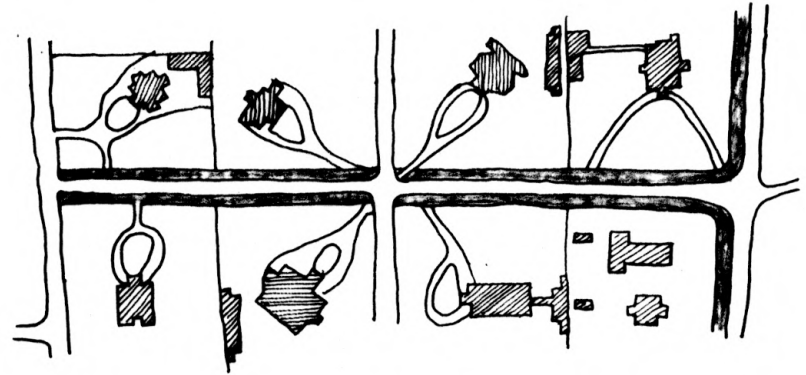


Fig. 14

### Activity Nuclei

Community institutions such as shopping areas, clubs, theaters, schools, health centers, religious institutions and common areas such as parks, playgrounds and childrens' play areas constitute activity nuclei. Each cell has its own set of activity nuclei, providing residents access to these community facilities. The native bazaar constitutes the main shopping area for everyday supplies and groceries. It is very rarely visited by members of the colonial community and the native servants constitute the only link between the bazaar and the inhabitants of the cantonment. Retail services exclusive to the colonial community are provided by European shops located in each cell. The club constitutes the main focus of social interaction. Entrance to the club is restricted to members of the colonial community (Fig. 15).

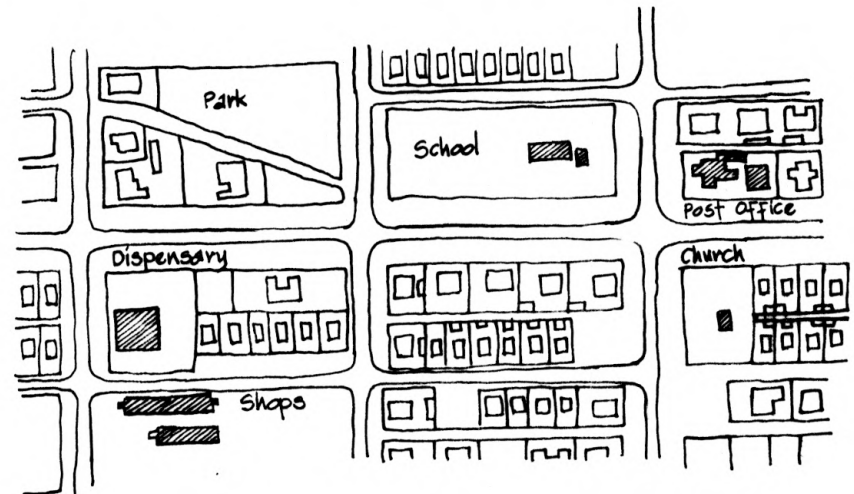


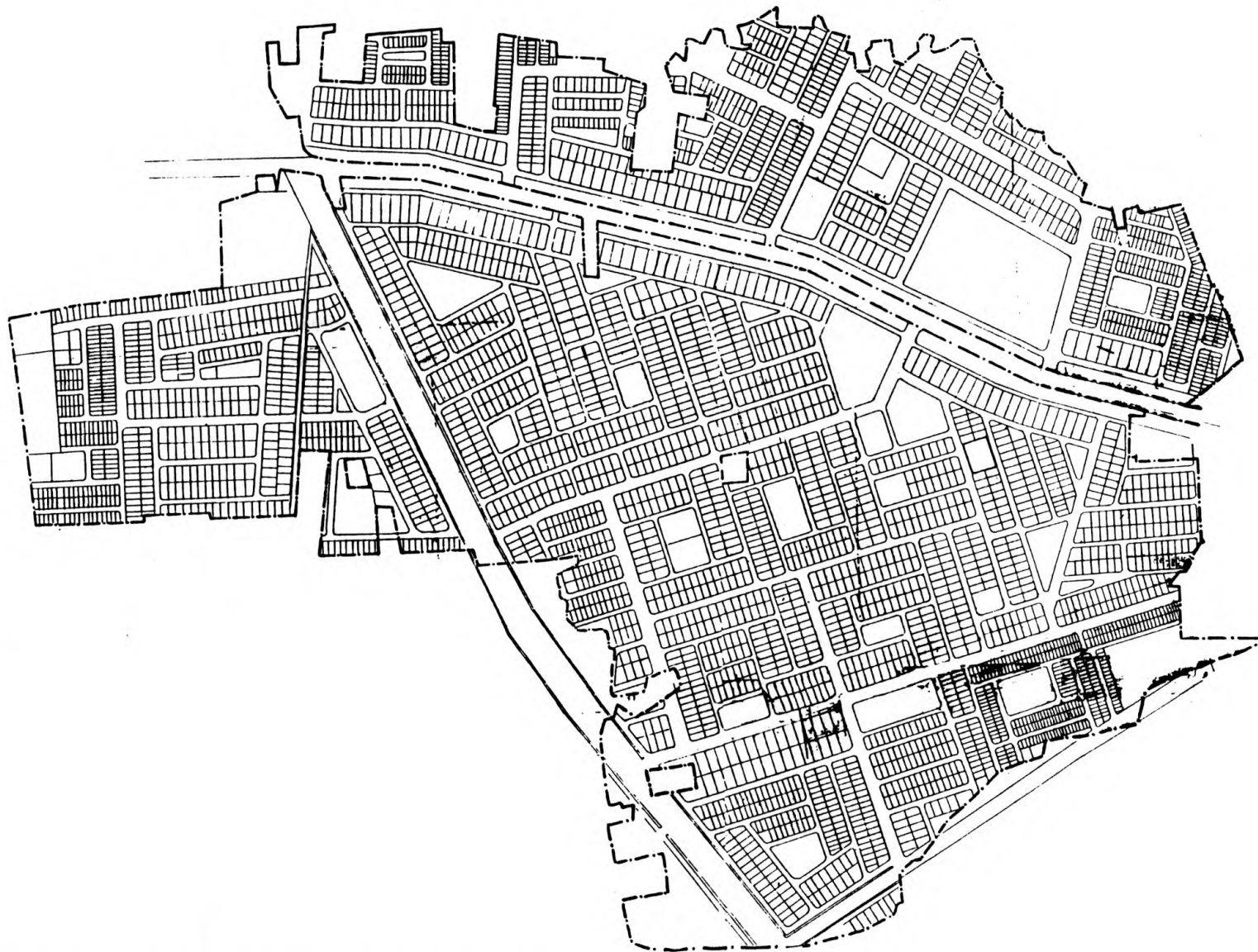
Fig. 15



## **ANALYSIS OF PATTERNS IN THE DLF QUTAB ENCLAVE**

The Delhi Leasing and Finance Limited (DLF) is a public limited real estate company which was established in 1948. Since then, this company has developed many residential suburbs in Delhi. The DLF Qutab Enclave is the largest residential suburb developed in the past decade. It is designed to accommodate 50,000 residents and promoted as "the elite neighborhood of Delhi". The housing development is located approximately 30 kilometers from central Delhi, in the neighboring state of Harayana. The total area under development (approximately 2000 acres) was originally agricultural and waste land acquired by the company from the government. The entire area has been phased as DLF Phase I, II, III and IV. Each phase has facilities such as clubs, schools, movie theaters, parks, post offices, health centers, dispensaries, shopping complexes, telephone exchange, police station etc. Infrastructural facilities such as street lights, roads, bus stops, water supply, sewerage, etc. are provided and maintained by the company (Fig. 16). A large part of the development consists of residential plots of varying sizes sold to individual owners. Some areas are allocated for group housing where the DLF has built multi-storied apartments, modular housing and town-houses which are sold to individual owners. This study is mainly concerned with individual, detached housing developments in the DLF Qutab Enclave Phase I.

In the following section a pattern language has been developed for a generic model of the DLF Qutab Enclave. Amongst the numerous patterns in this neighborhood, some recurring patterns, similar to the patterns in the cantonment model have been identified as being relevant to this study. A general description has been developed for each pattern which explains the pattern and helps in identifying it in the DLF site plan.



**Fig. 16.** Plan of DLF Qutab Enclave, Phase I. (Source: Delhi Leasing and Finance, New Delhi)

## CELLS

Each group of similar sized lots constitutes a *cell*. Residents choose which cell they want to live in according to their standard of affordability. Cells are separated from one another by open land, green belts and main thoroughfare roads. Each cell constitutes a subculture cell because it houses a specific economic group of people and, it has its own unique characteristics in terms of lot sizes, road widths and bye-laws governing the layout of the house on site (Fig. 17).

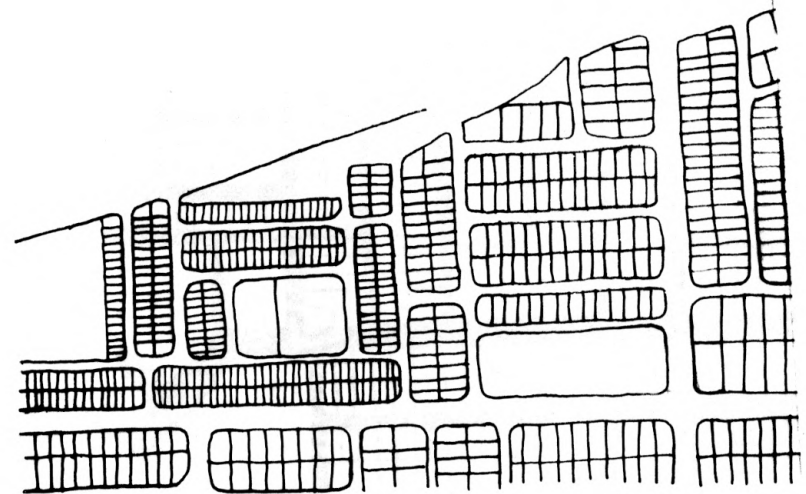


Fig. 17

## DEGREE OF PUBLICNESS

Larger lots are located along the main thoroughfare and smaller lots are located towards the interior, secluded from the main thoroughfares (Fig. 18).

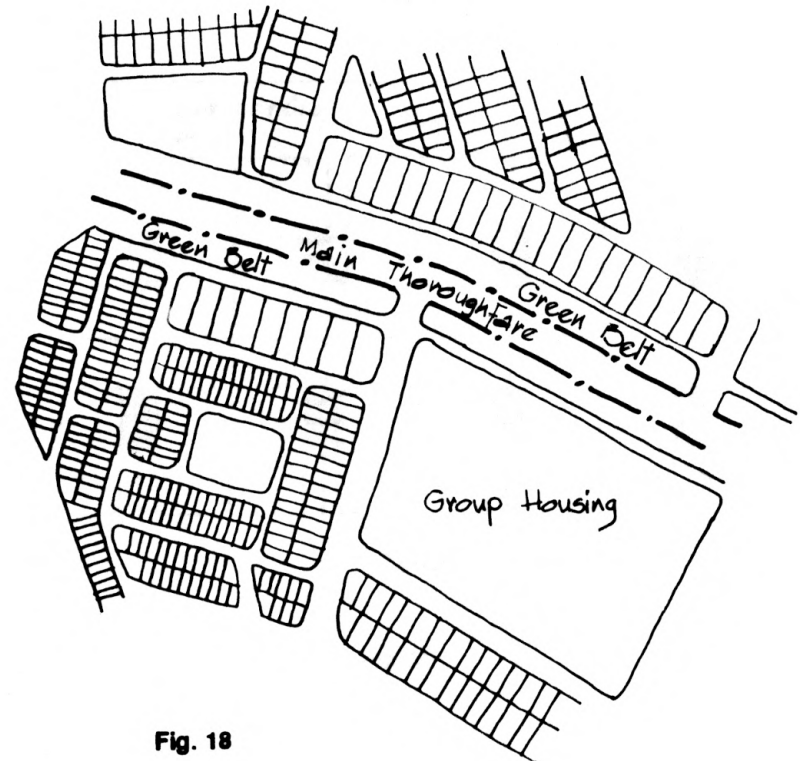


Fig. 18

## ROAD SYSTEMS

Roads have a clear hierarchial order and road widths vary in different cells. Cells with larger lots have wider roads as compared to cells with smaller lots. The road layout pattern is one of many small squares with blocks wrapped around them. Only some arterial streets run uninterrupted across the enclave. Every subculture cell has a wide main road which constitutes the spine. Secondary roads and lanes branch off from this main spine providing access to individual residential units. Roads are lined with trees on both sides. All roads are designed for two-way traffic and meet in T-junctions or four-way junctions (Fig. 19).

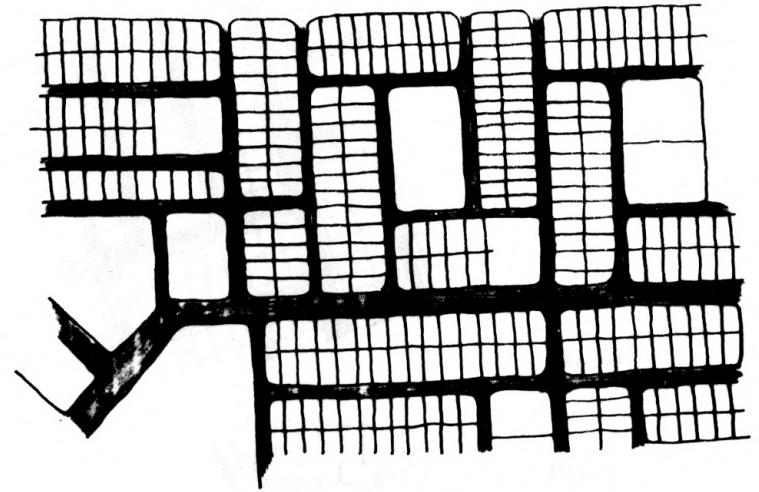


Fig. 19

## PARKING AREAS

Cells do not have common parking lots. Larger lots (1000-400 sq. yds.) have a provision for parking within the lot i.e. parking area or garage space on each individual lot. Smaller lots which cannot accommodate a car within the compound do not have a common parking lot provision. Cars are parked outside the compound wall along the street on the sidewalks. Sidewalks are not elevated and are on level with the road (Fig. 20).

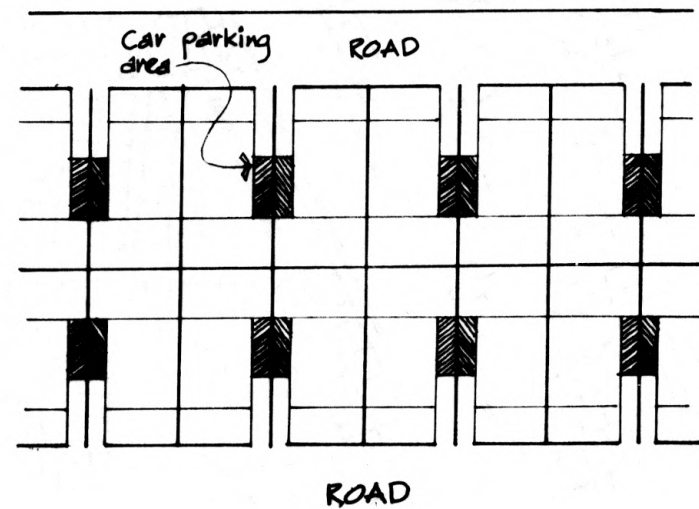


Fig. 20

### CAR-PEDESTRIAN SYMBIOSIS

Roads are laid out mainly for automobile traffic. All roads permit vehicles and sidewalks constitute the only demarcated pedestrian zones. There are no exclusive pedestrian pathways anywhere in the neighborhood (Fig 21).

### ACTIVITY NUCLEI

Community institutions - shopping areas, clubs, theaters, schools, health centers and common areas such as parks, playgrounds and childrens' play areas constitute activity nuclei. Each cell has its own set of activity nuclei (except the club) providing residents easy access to these community facilities. Three shopping complexes are located at convenient places in the neighborhood along the main thoroughfares, to maximize business and visibility. Each shopping complex has many small stores, restaurants and 'tea stalls' and is designed as an Indian bazaar or permanent market, with streets of shops.<sup>64</sup> Typically, servants buy everyday supplies and groceries from the food stores in the shopping complex. Residents of the DLF usually visit other shopping areas in New Delhi for their shopping needs. The club constitutes the main focus of social interaction. Entrance to the club is confined to residents of the DLF Qutab Enclave(Fig. 22).

<sup>64</sup>Refer photograph included in Appendix D.

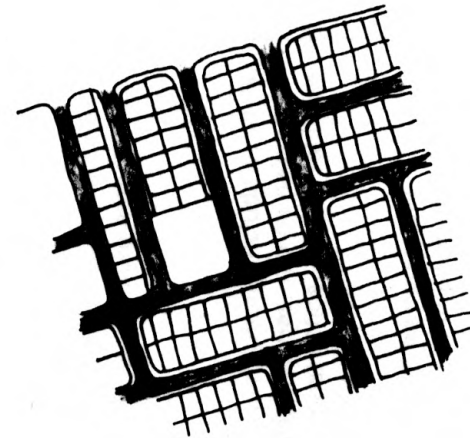


Fig. 21

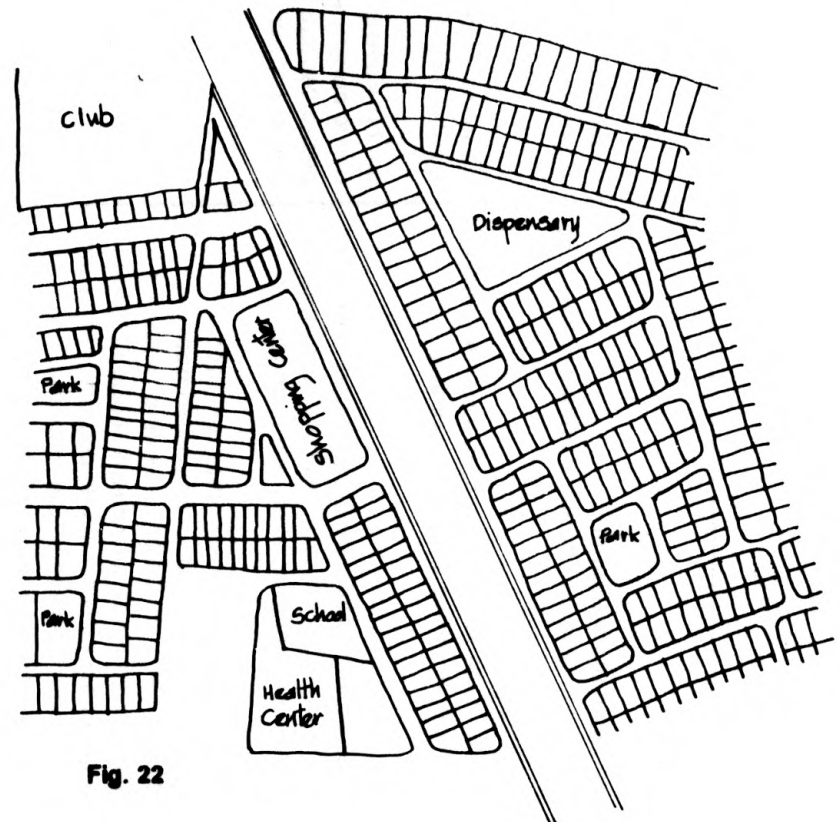


Fig. 22

**Table 2.-Comparisons between patterns in the British Cantonment and the DLF Qutab Enclave.**

CANTONMENT	DLF QUTAB ENCLAVE
<ul style="list-style-type: none"> <li>-Segregated from the congested native town.</li> <li>-Green belt around the cantonment formed the physical manifestation of this segregation.</li> <li>-Laid out on a grid iron pattern.</li> <li>-Rigid social hierarchy reflected in the physical layout expressed by the existence of separate categories of accommodation for officers and soldiers. Also in the existence of neighborhoods with varying lot sizes.</li> <li>-Economic services provided by the native <i>bazaar</i> which was a permanent native market for everyday commodities.</li> <li>-The club constituted the main focus of social interaction. Access to the club was confined to members of the colonial community. It had demarcated areas for various forms of leisure activities and sports such as card room, billiards, reading room, swimming pool, badminton and tennis courts, bar etc.</li> <li>-Other community institutions included schools, health centers, religious institutions, theaters and police stations located in each residential town or cell.</li> <li>-Large open areas such as parks and playgrounds were provided in each residential town or cell.</li> <li>-The bungalow-compound complex constituted the basic residential unit.</li> </ul>	<ul style="list-style-type: none"> <li>-Segregated from Delhi and developed as a less congested neighborhood.</li> <li>-Green belt around the neighborhood as a physical boundary.</li> <li>-Laid out as clusters of grided cells.</li> <li>-Social hierarchy reflected in the physical layout expressed by the existence of lot sizes for various income groups.</li> <li>-Enclosed shopping complex accommodates grocery stores which provide everyday commodities. These stores are owned by local people living in areas around DLF.</li> <li>-DLF Gymkhana club is the main focus of social interaction. Access to the club is confined to residents of the DLF Qutab Enclave. The DLF club also has demarcated areas for various forms of leisure activities and sports.</li> <li>-Other community institutions include schools, health centers, dispensaries, movie halls, police station and post office. These facilities are provided in each cell.</li> <li>-Large open areas such as parks and playgrounds are provided in each cell.</li> <li>-The house within the compound forms the basic residential unit.</li> </ul>



## CHAPTER 6

### EVOLUTION OF THE BRITISH BUNGALOW IN INDIA

#### INTRODUCTION

By early seventeenth century, Company officials had begun to identify the expanding British empire in India with that of Ancient Rome and Greece.<sup>65</sup> Travelers often described the architecture of Madras and Calcutta as an evocation of ancient Greece. The consistent desire to display wealth through buildings, had led the East India Company to consciously adopt the neo-classical style, which became an instrument of politics and was used as a visual embodiment of British power. The Governors' mansions in the colonial port cities were built to create clear and visible symbols of authority.<sup>66</sup>

Since the classical style had originated under the bright Mediterranean sun, the British in India believed that its crisp sculptural forms were more suited to the Indian environment.<sup>67</sup> Also, as classical architecture was based on rules, it could be learned and applied by Company engineers who were not architects. These engineers lacked formal training in architecture and usually adapted building forms from pattern books and treatises published in Britain.<sup>68</sup> Wide circulation of these pattern books enabled Company engineers to reproduce the neo-classical architecture of England, in India.

In the early seventeenth century, the English architect Inigo Jones introduced the Palladian style in Britain which became popular among the country gentry. These landowners identified themselves with Palladio's clients, who were the country gentry in sixteenth century

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<sup>65</sup>Evans, C., "Power on Silt: towards an archaeology of the East India Company", Antiquity, vol, 64, p. 653, September, 1990.

<sup>66</sup>Mitter, P., "The early British port cities of India: their planning and architecture, circa 1640-1757", Society of Architectural Historians, vol. 45, no. 2, p. 102, June 1986.

<sup>67</sup>Evenson, N., The Indian Metropolis, p. 47, 1989.

<sup>68</sup>Ibid, p. 48.



Italy.<sup>69</sup> Since the English settlers in India from the seventeenth century, had begun to emulate the lifestyles of the landed gentry in England, it was apparent that their 'garden houses' like the country seats in England, would also be built in the Palladian style. Palladio's villas represented the best of two worlds, the farmer's and gentlemen's, by using the classical heritage to lend an air of cultivated grandeur to the country estate.<sup>70</sup> They were designed to symbolize nobility and dignity. For the company merchant in India, who wanted his house to proclaim his lordly status through its spatial grounds and palatial facade, Palladio's villa was the ideal archetype. Thus, the Palladian country house provided the model for early British dwellings in Madras and Calcutta.

The garden house villa typology, which was adopted in Madras and Calcutta contrasted with contemporary precedents in England. In London, urban houses of the period were fairly small in size and grouped into terraces while in India, English garden houses in the city resembled scaled down versions of Palladian mansions in England.<sup>71</sup> At Madras, the "garden house" was described by travellers as a large roomy mansion, in the midst of a garden. It was built on a ground floor of warehouses fronted by an imposing classical portico and surrounded by "piazzas" of classical pillars supporting the roof. There were no arches, and windows were protected with venetian blinds. The roofs were flat and the whole exterior was finished with *chunam* - a plaster consisting of sea shells and lime which gave a bright white polished appearance. Madras chunam was very popular in English buildings because of its marble like finish, and was also used in Calcutta.

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<sup>69</sup>According to James Ackerman, the country landowner in Anglo-Saxon culture, like his predecessor in sixteenth century Veneto, was economically dependent on the land, but a classical education and the ambitions of a humanist gave him city tastes. He preferred the Palladian villa designed for an economic and social situation nearly identical to his own.(Ackerman, J., Palladio, p. 78, 1981)

<sup>70</sup>Ibid, p. 53.

<sup>71</sup>Davies, P., Splendors of the Raj, p. 52, 1985.

The Calcutta garden houses were in the same classical style as the ones at Madras. Mrs. Kindersley described these houses located in the suburbs to the south and north of the city in 1768,

In the country round the town, at different distances, are a number of very pretty houses, which are called garden houses, belonging to English gentlemen: for Calcutta besides its being a large town, is not esteemed a healthy spot; so that in the hot season, all those who can are much at these garden houses, both because it is cooler and more healthy.<sup>72</sup>

In the Esplanade and Chowringhee in Calcutta, an increase in the number of houses led to the creation of a continuous street frontage of boundary walls and gates (Fig. 23).



**Fig. 23.** Thomas Daniel, Council House and Esplanade Row, 1792. (Source: Losty, J.P., Calcutta, City of Palaces, p. 65, 1990)

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<sup>72</sup>Mrs. Kindersley as quoted in Losty, J.P., Calcutta, City of Palaces, p. 38, 1990.

By the end of the eighteenth century the "garden house" came to be the most popular style of house for English officials of the Company, both at Madras and Calcutta. These garden houses mark the first stage in the adaptation of European forms of architecture to an Indian context. Most houses followed a similar pattern of a well-proportioned block of two or three stories, set in its own garden compound, with the inner rooms protected by a deep veranda or portico. The siting of individual buildings in their own compounds or garden areas also facilitated good air circulation.

In the seventeenth century, the native Bengali hut was adopted by the European merchants as a form of temporary shelter while trading in the interior regions of Bengal. These shelters were constructed by the local peasants and used as warehouses and residences. As Englishmen were not permitted to live outside the fort during this period, they adapted themselves to these temporary native structures known as '*banglas*', for short periods. At this time, the word '*bangla*' was applied by the British to any single-story temporary structure with a pitched roof surrounded by a veranda.

With the establishment of the British administrative and military network in mid eighteenth century, the number of British in the interior regions or *mofussil* settlements increased rapidly. Permanent military camps and cantonments first established in 1772, housed the English troops and officers in tents and native huts. The British population in these camps gradually began to adapt the native *bangla* to their cultural and functional requirements. Increase in the number of officials and soldiers created a demand for a form of housing that was better adapted to the climatic conditions in Bengal and, one that could be built fast using local materials. Vernacular buildings had been used as out-buildings and privies in the classical residences in Madras and Calcutta,<sup>73</sup> but in the *mofussil* these simple structures became the principal form of European housing. They were cheap, more comfortable than tents and easily adaptable to the British lifestyle.

Further evolution of the native *bangla* through the eighteenth century led to the development of the English *bungalow model* which represented the beginning of the synthesis of Western and Indian domestic architectural themes.

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<sup>73</sup>The Governor's residence built at Barrackpore in 1770 had vernacular structures for accommodating officers, secretaries and aides-de-camp.

Thus, while the garden house was established as the most popular form of urban residence in the port cities, the bungalow model was being developed by the British as a form of residence in the mofussil areas. Meanwhile, the garden houses in the port cities were also being adapted to the contingencies of the Indian climate. Established conventions of British Palladianism in England were found to have their limitations in the extremes of the Indian climate and under the influence of Indian building practices, modifications were made to classical proportions and articulation. Late eighteenth century garden houses presented an interesting mixture of English and Indian features. Spear describes them as examples of "an obstinate adherence to customs and attempts at adaptation to the climate."<sup>74</sup> The portico and colonnade evolved into the veranda and by 1810 the word 'bungalow', which still appeared in italics in a book of travel, was gradually beginning to replace the name "garden house", although the verandas outside the houses were still called piazzas and consisted of classical colonnades.

By late nineteenth century the bungalow in the cantonment had evolved into an ingenious hybrid - the *bungalow-compound complex* which was a mixture of Anglo-Indian Palladian classicism used for the garden house, and the native bengali hut. This *colonial bungalow model* which formed the basic residential unit of the colonial cantonment town, was diffused in the late nineteenth century to British colonies in Africa and others parts of the Far East.

Anglo-Indian Palladian classicism, first introduced by the East India Company engineers for the bungalow, represents the most valuable contribution of Anglo-Indian building typology.<sup>75</sup> A study of the bungalow model therefore, requires a thorough understanding of the principles of Palladian classicism applied in the garden house, its adaptations to the Indian climate and the native Bengali hut.

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<sup>74</sup>Spear, P., The Nabobs, p. 49, 1963.

<sup>75</sup>Meade, M., "Europe in India", The Architectural Review, p. 31, August 1987.

## PALLADIO'S RULES

The following typological patterns which constituted Palladio's rules of design, can be identified in most Palladian villas .

1. Symmetry - The systemization of the ground-plan became a characteristic feature of all Palladian villas.<sup>76</sup> He placed a hall in the central axis, and arranged the smaller rooms symmetrically on both sides of the hall. The pattern was derived based on the functional needs of the Italian villa: loggias and a large hall in the central axis, two or three bedrooms or living rooms of various sizes at the sides, and between these and the hall, space for small rooms and staircases.<sup>77</sup> The central section was the focus of the composition. In plan it was represented by the entrance, i.e the stairway and the portico, in elevation the pediment supported on the columns of the portico raised the center above the wings.

2. Proportions - According to Rudolf Wittkower's analysis, all these plans were derived from a single geometric formula. The basic pattern consisting of squares and rectangles in various proportions were re-grouped each time to create a new villa plan (Fig. 24). The systematic linking of one room to the other by harmonic proportions in domestic buildings, was the fundamental novelty of Palladio's architecture.<sup>78</sup>

3. Facades - Palladio adopted the pedimented classical temple front for his villas as a symbol of dignity and nobility. The following reasons for adopting this element were given by him,

I have made the front piece (i.e the pediment of the portico) in the main front of all the villas and also in some town houses . . . because such frontpieces show the entrance of the house, and add very much to the grandeur and magnificence of the work, the front being thus made more eminent than the rest; besides they are very commodious for placing the ensigns of arms

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<sup>76</sup>Wittkower, R., Architectural Principles in the Age of Humanism, p. 67, 1988.

<sup>77</sup>Ibid, p. 68.

<sup>78</sup>Ibid, p. 122.

of the owners, which are commonly put in the middle of the front.<sup>79</sup>

The pedimented temple front was either used as a porch that projects from or recedes into the block, or simply laid upon it as a relief. Huge masonry substructures were used to create a sequence of platforms which elevated the building. In swampy areas, the main house was built over a high basement which was used as a kitchen or storage space. External stairs became an important facade element expressing grandeur. In his early villas which included other outbuildings, Palladio used the walled compound as a symbol of protection. The walled compound resembled the central suburban practice in fifteenth century Italy.<sup>80</sup>

4. Materials - Palladio's villas were usually built of rough brickwork with a coating of stucco. Columns were also built of brick and stonecarving was reserved for the most refined details such as the bases and capitals of columns and window frames.<sup>81</sup>

5. Location - Most Palladian villas were located in the country away from the city, to accommodate agricultural functions. However, some of the houses planned as villas were located in the suburbs of Vicenza. These villas were referred to as *belvederes* by Palladio, because they were not built for the gentleman farmer but for the wealthy, urban mercantile class. The main function of the *belvedere* was to enable a commanding view of the surrounding countryside on all sides.<sup>82</sup>

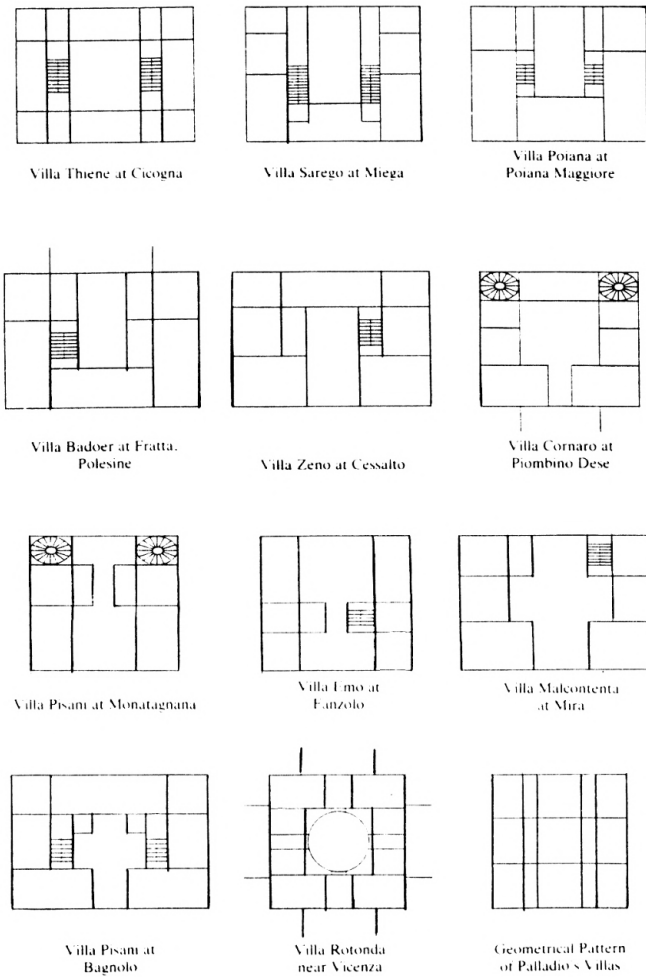
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<sup>79</sup>Ackerman, J., Palladio, p. 65, 1981.

<sup>80</sup>Ibid, p. 47.

<sup>81</sup>Ibid, p. 68.

<sup>82</sup>Ibid, p. 70.



**Fig. 24. Schematized plans of Palladio's villas. (Source: Wittkower, R., Architectural Principles in the Age of Humanism, p. 69, 1988)**



## PALLADIAN MODIFICATIONS IN THE EARLY GARDEN HOUSES OF THE BRITISH IN INDIA

Military engineers and amateur architects began to adapt classical architecture to the tropical climate, adjusting proportion, intercolumniation and forms to local needs.<sup>83</sup> 'More air and less light' which was adopted as a maxim of "tropical architecture", led to a series of interesting changes and experiments at the turn of the eighteenth century. Palladio's architectural grammar was modified to suit the tropical climate. Column spacings were altered from the classical discipline and the classical portico was adapted to climatic and functional requirements. Verandas were embellished with devices which provided shade, but allowed a cool passage of air. Earlier, to reduce the glare caused by the height of the pillars, venetian blinds were introduced between the pillars and also over windows. During this period, curtains made of split bamboos threaded together, known as 'tatties', were hung between columns. *Kus-kus*, a thick straw matting material was applied to the doors. Central evaporative cooling was achieved by wetting the matting and allowing the breeze to pass through only one open door, and through the kus-kus curtain. These screens were important indigenous features probably borrowed from the Mughals. The swinging *punkah* or swinging fan was another cooling device borrowed from the Mughals. It consisted of a large cloth hung over a wooden frame, suspended from the ceiling and worked by a cord on a pulley. A servant was required to operate the punkah constantly in the same fashion as a ringing bell (Fig. 25). This was also a cooling device borrowed from the Mughals. The flat-roof was an important element adopted from native buildings. The flat balustraded rooftops were used for entertaining and outdoor sleeping at night.

The facing materials for the houses were always the same - a brick core covered with Madras *chunam*.<sup>84</sup> William Hodges commented on the buildings in Madras in 1781:

The style of the buildings is in general handsome. They consist of long colonnades, with open porticoes, and flat roofs and offer the eye an appearance similar to what we may conceive of a Grecian city in the age of Alexander. The clear, blue and cloudless sky, the polished white buildings, the bright sandy beach and the dark green sea present a combination totally new to the eye

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<sup>83</sup>Davies, P., Splendors of the Raj, p. 14 , 1985.

<sup>84</sup>Davies, P., Splendors of the Raj, p. 52, 1985.

of an Englishmen.<sup>85</sup>

In Calcutta, multistory dwellings were common as the lower floor was considered unhealthy for sleeping, due to the swampy terrain. A single story house was elevated, above a five to seven foot high basement that was used as storage space.<sup>86</sup> This was similar to Palladio's villa design for swampy areas. The interior rooms were spacious and lofty and the use of the punkah necessitated high ceilings. Frequent bathing became a necessity under the Indian climatic conditions and bathrooms were always provided in large houses, sometimes attached to each bedroom.

However, despite all these adaptations the English continued to cling to English habits, more so as the size of the settlements increased. Their only contact with the Indians was the extensive staff of servants employed in each house.

Although relatively few examples of Madras 'flat-top' houses or garden houses survive today, a clear impression of their appearance can be obtained from contemporary drawings and pictures. The Government House at Madras is a typical example of a garden house designed in 1800 by the Company engineer John Goldingham (Fig. 26). The design consists of a two story central range set forward from the wings and embellished with pedimented centerpiece. Both stories have deep set colonnades to provide protection from the sun. Extensive colonnaded verandas enclose three sides of the building. The pediments were adorned with trophies commemorating



**Fig. 25. The swinging punkah.**  
(Source: Spear, P., The Nabobs, 1963)

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<sup>85</sup>Ibid, p. 30.

<sup>86</sup>Evenson, N., The Indian Metropolis, p. 54, 1989.

the triumph of British arms. This can be compared to Palladio's statement about the pediment being "commodious for placing ensigns of arms of the owners." Goldingham's plans for the government buildings were part of a wider scheme for the park in which they were situated.<sup>87</sup> Fountains, basins, a mound, sunken gardens and a separate farmyard were all part of the overall conception, designed to recreate the arcadian setting of an English country house in its own estate.<sup>88</sup>



**Fig. 26.** Government House, Triplicane, Madras. (Source: Nilsson, S., European Architecture in India 1750-1850, plate 30b, 1968)

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<sup>87</sup>These plans were derived from William Chamber's *Treatise on Civil Architecture*. (Davies, P., Splendors of the Raj, p. 34, 1985)

<sup>88</sup>*Ibid*, p. 36.

The Madras Club is another good example of a typical 18th century garden house. The house was located in a large compound with no outbuildings. The interior was divided into numerous small ground-floor rooms with two upper rooms on the first floor<sup>89</sup> (Fig. 27).

Lady Gwillim, wife of the Chief Justice of Madras, described her house in 1802,

The houses of all Europeans are nearly equal as to goodness and size. . . They are all pictures of Italian palaces with flat roofs or balustrades . . . The walls, columns and balustrades are all polished. The walls of rooms are sometimes painted as stucco rooms in England of pale green blue . . . Some people color the chunam for the outside of the house of a light grey in imitation of the grey granite of the country (England) leaving the columns, pilasters, white . . . We have folding doors in all the rooms which are half way green painted Venetians, the doors are all Venetians and no glass, but we can exclude the light yet have air from room to room.<sup>90</sup>

Warren Hastings house was built in 1777 at Alipur, on the southern outskirts of Calcutta, as a simple, two-storied garden house with living quarters on the ground floor. In the particulars of sale in 1785 it was described as "an upper roomed house . . . consisting of a hall and rooms on each floor, a handsome stone staircase and a back staircase all highly finished with Madras chunam and the very best materials" (Fig. 28).

Wellesley's new Government House built in 1803 was a Palladian style mansion adapted to the Indian climate. The prototype for this building was Kedleston Hall, a Palladian country house designed by Robert Adam and built in Derbyshire between 1759-1770.<sup>91</sup> The plan is symmetric and consists of a central hall with rooms on both sides. The north end has a large flight of external stairs which form the ceremonial entrance to the building at the center of the facade. The south end has an apsidal colonnaded portico covered with a dome. Stone used at Kedleston, was replaced by brick and plaster in Calcutta (Fig. 29)

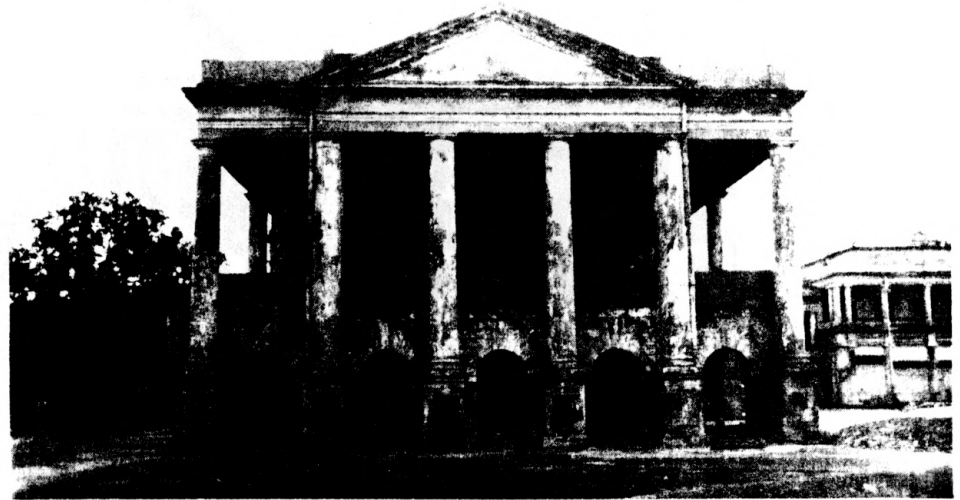
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<sup>89</sup>Ibid.

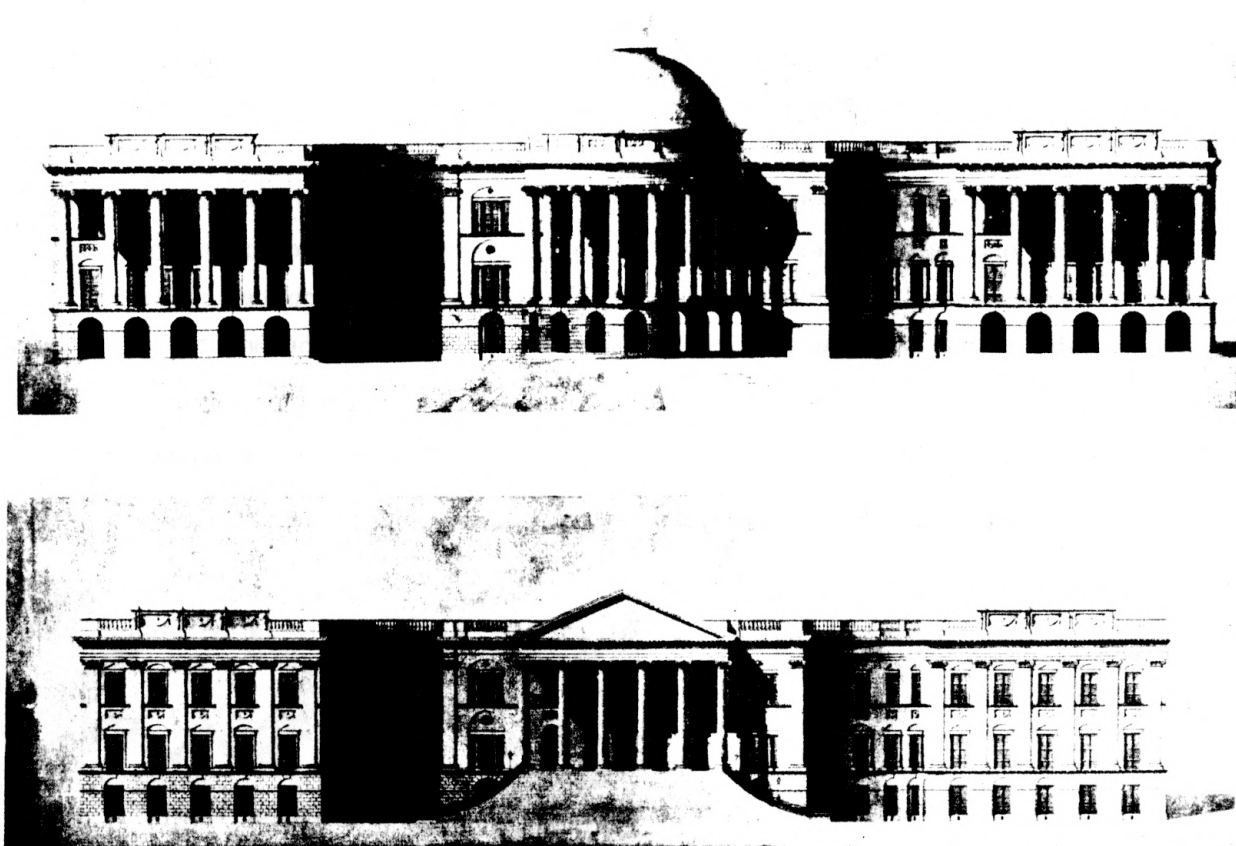
<sup>90</sup>Ibid, p. 40.

<sup>91</sup>Evenson, N., The Indian Metropolis, p. 58, 1989.

**Fig. 27.** The Madras Club. (Source: Davies,P.,  
Splendors of the Raj, p. 37, 1985)



**Fig. 28.** Warren Hastings house, Alipur, 1777.  
(Source: Nilsson, S., European Architecture  
in India 1750-1850, plate 51, 1968)



**Fig. 29.** Government House, Calcutta 1803. (Source: Nilsson, S., European Architecture in India 1750-1850, plates 26 a & b, 1968)

Palladian architecture at Madras and Calcutta, gradually began to influence the design of buildings in the *mofussil* or hinterland areas of British settlement. This will be studied in the next sections.

## THE BUNGALOW PROTOTYPE

Opinions differ regarding the type of native structure which formed the prototype for the later bungalow, developed by the British in India. According to Anthony King's study of the bungalow, four conflicting explanations exist.

In 17th century Hindustani, the word *bangla* referred to the common hut of the Bengali peasant with a sloping roof and two gable ends.<sup>92</sup> The structure consisted of mud or matted walls, and the floors were raised one or two feet above the ground. The frames were usually made of bamboo tied together. Huts belonging to the more wealthy had wooden posts and beams in place of bamboo frames. The structure did not have any windows and the door was the only opening.<sup>93</sup> Nilsson refers to this basic structure as the curvilinear hut (Fig.30).

a rectangular building with a special roof structure: wooden ribs are bent and joined together to form a grid which is covered with straw. The roof protrudes over the walls and forms curves resembling a crescent moon on its sides. At the front, the protruding part of the roof may be supported by wooden poles, thus forming a gallery.<sup>94</sup>



Fig. 30. Curvilinear Bengali hut. (Source: King, A.D., The Bungalow, plate 3, 1984)

<sup>92</sup>King, A., "The Bungalow In India, its Regional and Pre-Industrial Origin", Architectural Association Quarterly, vol. 5, no. 3, p. 8, September 1973.

<sup>93</sup>Ibid.

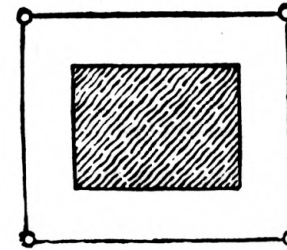
<sup>94</sup>Nilsson, S., European Architecture in India, 1750-1850, p. 186, 1968.



Another kind of hut called a *chauyari* was built of the same materials as the curvilinear hut, but consisted of a pyramidal roof (Fig. 31). This type of hut was further classified into two categories-the *ath-chala* (eight sides) and the *chau-chala* (four sides).<sup>95</sup> The *ath-chala* type consisted of the main pyramidal roof over the central square space, with four more projections covering a gallery or veranda all around the house. This type is referred to by Nilsson as the 'double-roofed house' and identified as the true prototype of the European bungalow.<sup>96</sup>

A third alternative prototype was identified by Grant in 1849. He described the ground plan of a native banga,

center square consists of either one or two apartments, according to the circumstances or wants of the individual, while the thatched roof extending considerably on all sides, is supported on the extreme edges upon bamboo or wooden pillars, thus forming a veranda all around the building.<sup>97</sup>



Basic form of the native hut.



**Fig. 31.** Chauyari hut. (Source: King, A.D., The Bungalow, p. 26, 1984)

The fourth prototype was identified by Lockwood Kipling, who traced the origin of the British bungalow to the Indian service tents used by the military and administrative personnel in late eighteenth century for the collection of revenue in mofussil areas. Kipling described

<sup>95</sup>King, A., The Bungalow, p. 26, 1984.

<sup>96</sup>Nilsson, S., European Architecture in India, 1750-1850, p. 187, 1968.

<sup>97</sup>King, A., The Bungalow, pp. 26-27, 1984.

the tent as "a large and lofty room surrounded by double walls of canvas . . . occasionally covered with thatch."<sup>98</sup>

All the above types of native structures which are considered to be the prototype of the later bungalow, express some similarities with the Palladian classical mansions in terms of formal spatial qualities. Both the bangla and the Palladian mansion were symmetrical in their layout. The bangla consisted of a large central square space with a veranda all around. The central door which was the only opening formed the focus of the composition. The centrality of the plan was also expressed in the elevation, in the form of the apex of the pyramidal roof which was located exactly over the center of the plan. These spatial qualities of the bangla which were similar to the Palladian mansions might have made it a more easily adaptable form to the British, although the two structures differed significantly in terms of the structural system. The bangla was a post and beam structural system while the Palladian mansion consisted of bearing walls.

#### EUROPEAN ADAPTATIONS OF THE *BANGLA*

The earliest description of an Anglo-Indian bungalow from 1783 described bungalows as (Fig. 32),

Buildings in India, generally raised on a base of brick, one, two or three feet from the ground, and consist of only one story: the plan of them usually is a large room in the center for an eating and sitting room, and rooms at each corner for sleeping; the whole is covered with one general thatch, which comes low to each side; the spaces between the angle rooms are *viranders* or open porticos to sit in during the evenings; the center hall is lighted from the sides with windows and a large door in the center. Sometimes the center *viranders* at each end are converted into rooms.<sup>99</sup>

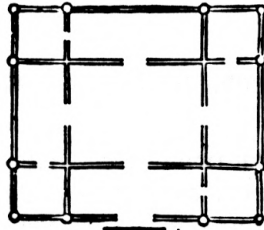
Francis Buchanan in 1810 also mentioned in his description, that the British had made some changes to the *choultry* hut. They

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<sup>98</sup>Ibid, p. 28.

<sup>99</sup>King, A., "The Bungalow In India, its Regional and Pre-Industrial Origin", *Architectural Association Quarterly*, vol. 5, no. 3, p. 12, September 1973.

introduced windows and divided the interior space into rooms. Cloth ceilings were suspended below the thatch roof to keep away insects.<sup>100</sup>



First British adaptation  
of the floor plan.



**Fig. 32.** First British adaptations of the native *bangla*. (Source: King, A.D., The Bungalow, p. 27, 1984)

Grant in 1849 described the changes introduced by the British in the ground plan of the native bangla. The veranda was enclosed by erecting mat or brick walls. Partitions were introduced across the corners converting the veranda into little rooms in the corners. These rooms are said to have been used for bathing and sleeping. The roof was projected over the veranda as in the indigenous structures (Fig.32).<sup>101</sup>

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<sup>100</sup>Ibid, p. 10.

<sup>101</sup>King, A., The Bungalow, p. 27, 1984.

The main characteristics of the Anglo-Indian bungalow, as it had evolved in the late eighteenth century, were its single-storied structure, raised plinth, thatched roof and veranda. All these were also characteristic features of the indigenous Bengal hut.<sup>102</sup> At this stage, the European transformation of this prototype consisted only of enclosing the veranda to create corner rooms and creating internally divided space.

By 1824 the name bungalow and the housetype was in common usage among the British in India. Bishop Herber wrote,

Bungalow, a corruption of Bengalee, is a general name in this country for any structure in the cottage style of only one floor. Some of these are spacious and comfortable dwellings, generally with high thatched roofs, surrounded by a veranda and containing three or four good apartments, with bathrooms and dressing room, enclosed from the eastern, western or northern verandas. The south is always left open.<sup>103</sup>

By Herber's time the bungalow was beginning to develop into a more British culture-specific dwelling type than its vernacular antecedents, with rooms for specialized functions (Fig. 33). Its development as a culturally distinctive form of dwelling depended on the secure possession of territory in which cultural choices could be expressed. So, as in the garden houses, the bungalow in the mofussil began to be situated in a spacious compound of 2-20 acres which was leased or bought from the Company.<sup>104</sup>

With the development of planned suburban cantonments in the nineteenth century, the British rapidly took up the bungalow as the ideal house type and it acquired more European characteristics.<sup>105</sup> The development of a rigid class hierarchy among the English also further

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<sup>102</sup>Ibid, p. 28.

<sup>103</sup>King, A., "The Bungalow In India, its Regional and Pre-Industrial Origin", *Architectural Association Quarterly*, vol. 5, no. 3, p. 15, September 1973.

<sup>104</sup>King, A., *The Bungalow*, p. 34, 1984.

<sup>105</sup>Davies, P., *Splendors of the Raj*, p. 105, 1985.

modified the bungalow, as it began to acquire elements which portrayed social status. The British at this time felt that the bungalow was "not to be considered as a criterion of the general aspect of English residencies, which are usually lofty and stately looking mansions, with facades adorned with spacious porticos supported on pillars of sufficient width to admit two carriages abreast."<sup>106</sup> Wooden posts began to be replaced by Doric and Tuscan columns, tiles replaced thatch, roof pitches were screened behind ornamental balustrades and mud was replaced by brick and plaster or chunam. The bungalow by this time was being supplanted by the externally more impressive classical mansion. The superimposition of classical detailing over these indigenous structures reflected a desire to emulate, in miniature, the grand town residences of Calcutta and still more deep-seated, a desire to maintain European identity and values.<sup>107</sup>

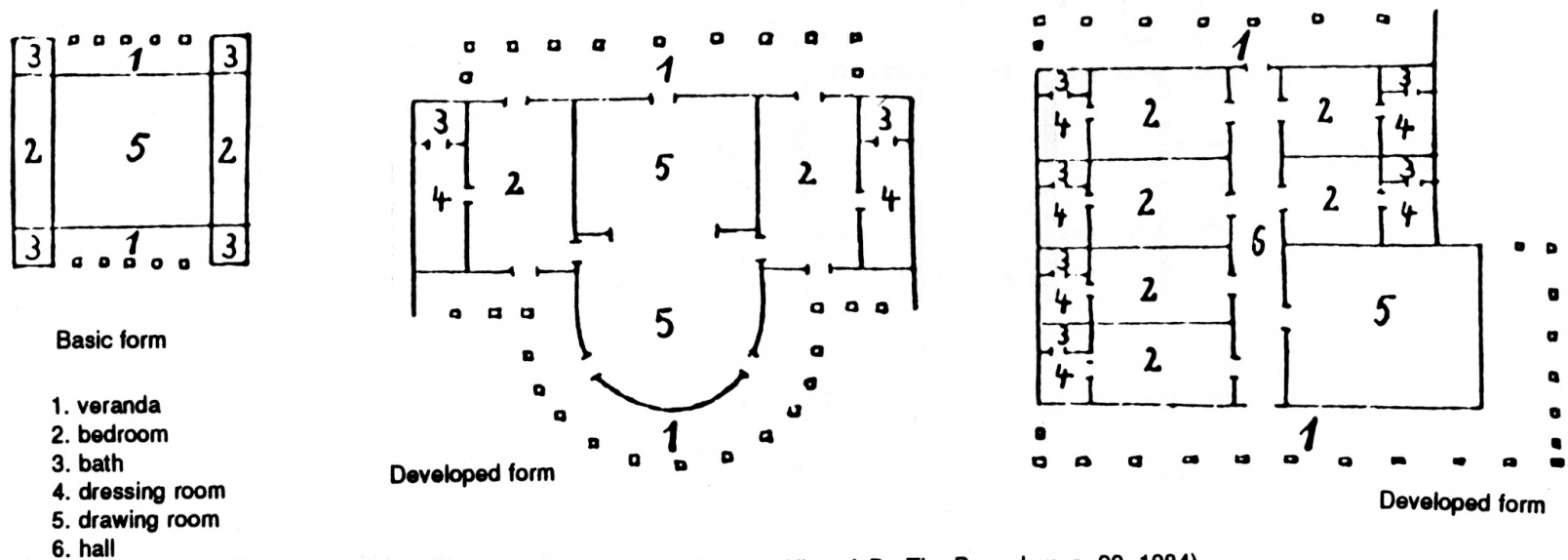
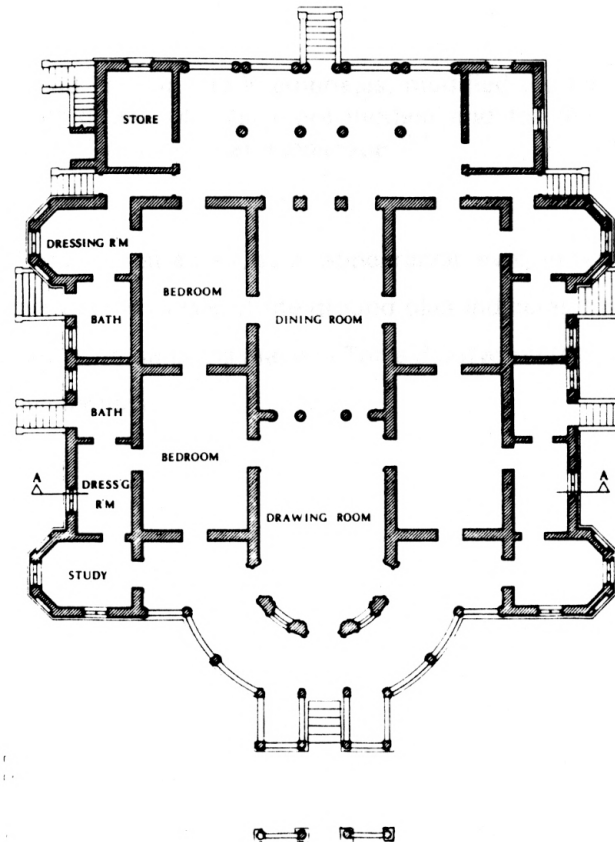


Fig. 33. Evolution of bungalow floor plans. (Source: King, A.D., The Bungalow, p. 29, 1984)

<sup>106</sup>Evenson, N., The Indian Metropolis, p. 55, 1989.

<sup>107</sup>Davies, P., Splendors of the Raj, p. 105, 1985.

The interiors of such houses were described as much the same as in England. The plan form of many classical bungalows was similar (Fig. 34). The house was entered through a colonnaded portico which functioned as a porte-cochere and led into a wide colonnaded veranda. The drawing room which led off the veranda was a lofty spacious room, sometimes with an exposed roof structure. The dining room was placed behind the drawing room, and beyond it was the rear veranda which functioned as a service entrance. Kitchens and servants quarters were usually constructed as outbuildings in the compound, separate from the main house.<sup>108</sup>



**Fig. 34.** Late nineteenth century bungalow, Bangalore.  
(Source: Potts, J., Old Bungalows in Bangalore, p. 17, 1977)

<sup>108</sup>Ibid, pp. 106-107.

As in the garden houses at Madras and Calcutta, indigenous heat control mechanisms were introduced. *Chicks*, a type of roller blind made of split bamboo canes were fixed to windows and doors to reduce glare. *Tatties* were fixed between pillars in the veranda and the cloth punkah was suspended from the ceiling.

Many authors have mentioned that the Bengali hut was the basic form from which the British bungalow evolved. However, some theories cast doubt on the Indian origins of the bungalow and trace it back to the Palladian style garden houses of Madras and Calcutta. According to Charles Allen,

it is hard to see how such stately mansions, two-story and vertical and in emphasis, modified though many were to take on verandas with Tuscan colonnades, could have been cut down into the more modest and for the most part single-story bungalows that were to become such a dominant feature of Anglo-Indian landscape.<sup>109</sup>

This statement clearly indicates that comparisons have been made only at an image or appearance level, in terms of scale and facade features. The British certainly adapted the native *bangla*, but a closer analysis of the ground plan indicates that the first adaptations were similar in spatial arrangement to the Palladian garden houses. Comparisons made in Table 3 between the Palladian garden houses and the bungalow in early nineteenth century, identify these similarities.

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<sup>109</sup>Allen, C. in Architecture of the British Empire, p. 59, 1989.



**Table 3.-Comparisons between the Palladian Garden House and the Early Bungalow Model**

<b>Palladian Garden House</b>	<b>Early Bungalow Model</b>
<p><i>Symmetry</i> - Hall in the central axis and smaller rooms on both sides of the hall.</p> <p>Central section forms the locus of the composition.</p>	<p>Large room in the center with rooms at each corner.</p> <p>Large door in the center.</p>
<p><i>Proportions</i> - Plans derived from single geometric formula consisting of squares and rectangles in various proportions.</p>	<p>Plans derived from a basic form.</p>
<p><i>Compound</i> - Defined a private world where the British could create familiar surroundings.</p>	<p>Culturally distinct form of dwelling situated in an enclosed territory in which cultural choices could be expressed. The native <i>bangla</i> was not located within a compound.</p>
<p><i>Location</i> - Located away from the Black town in the suburbs of Madras and Calcutta.</p>	<p>Located in the cantonment away from the existing Indian town in the mofussil regions.</p>

From the above comparisons it is incorrect to suggest that the early bungalow model evolved *only* from the native hut. The bangla was undoubtedly the prototype for the up-country dwelling, but it was adapted by the British based on Palladian models of spatial arrangement, which were used by the early British settlers for their garden houses at Madras and Calcutta.

In the first half of the nineteenth century, therefore, two main developments took place. In the cantonments in provincial towns and mofussil up-country stations, the Anglo-Indian bungalow derived from native prototypes continued to be built for lower ranking officials. At the same time, the 'flat-roofed' classical bungalow, modeled on the early garden houses at Madras and Calcutta, was being used in the larger cantonments as an ideal archetype to house the senior officials. After three centuries, elements of Palladian classicism developed in Italy to symbolize dignity and nobility, were still being used by the British in India for the same purpose.

After 1858 when the British government established imperial rule, the bungalow evolved to become a symbol of new imperial power. The British population increased after the mutiny in 1857 as the size of the military and police forces increased. A description of the bungalow by a German traveller in 1890 indicates further evolution of the ground plan in the late nineteenth and early twentieth century. The bedrooms are now placed at the sides and bathrooms at the corners.<sup>110</sup> This was the usual arrangement for bungalows from this period as seen in Bangalore (Figs. 35-43). It also provided an effective means of climate control by shielding the inner rooms and walls from the direct rays of the sun, while admitting air and light.

By this time the bungalow-compound unit, besides being climatically effective, also represented a culturally constituted behavioral environment. People from different cultures perceive their environments in different ways depending on their lifestyles, values, world-views and traditions. The bungalow-compound unit constituted a culture territory molded according to the culture specific norms of the British people in India. The ways in which spatial areas of this unit were used depended upon the value systems of its occupants.

As in the cantonment model, culture-specific concepts of sanitation and disease influenced the choice of the site and the layout of the bungalow. Elevated sites were preferred and it was required that "Indian dwellings and servants' houses should be at a safe distance" for hygiene reasons.<sup>111</sup> Culture-specific concepts of aesthetics required preferred kinds of visual experiences from the bungalow and also that the bungalow and its compound formed part of such a view when seen from a distance. The site was chosen to command the best views from all the rooms. Enough space had to be allowed between the gate and the building to permit the house being seen immediately on entering the compound.<sup>112</sup> The driveway from the gate to the house was a spatial symbol proclaiming the status of the owner. Sufficient space had to be provided around the house as a visual assurance for the occupants that they were located in

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<sup>110</sup>King, A., "The Bungalow In India, its Regional and Pre-Industrial Origin", Architectural Association Quarterly, vol. 5, no. 3, p. 12, September 1973.

<sup>111</sup>Platt, 1923 as quoted in King, A.D., Colonial Urban Development, 1976.

<sup>112</sup>Ibid, p. 132.

their own cultural territory.

The open space within the compound was used for a number of culture specific functions such as gardening and formal and informal entertaining. The garden was the principle part of the culture area and was developed according to the norms prevailing in Britain. These norms included landscaping, planting trees and laying out flower beds and pathways. Garden parties, lunches, dinners, receptions and breakfasts on the veranda were important aspects of the lifestyle of the occupants. For all such activities specialized areas were required both inside the house and within the compound. Since space had important social functions its size was in accordance with the occupants position in the social hierarchy of the colonial community. Besides being used for parties and entertaining, these spacious gardens also provide coolness and scenic beauty, which were culture-specific aesthetic perceptions of the British. Land was available in plenty and labor was cheap, so they could emulate the life style of their predecessors in the garden houses of Madras and Calcutta.

Even as late as the early twentieth century, a staff of 10-20 servants was common. Within the compound, the servants' quarters were segregated and kept to the rear. Even on a small site, the kitchen, servants' quarters and stores were built away from the bungalow as according to British perceptions 'this removed noise and the smell of cooking, and servants' chatter from the house, and allowed both buildings to get more light and air'.<sup>113</sup>

So the bungalow within its compound provided a secure cultural territory within which behavioral, social and sensory preferences could be made and expressed. This is more clearly understood from the following quote from a member of the British community in India, "Dr. Anderson's house in Madras was built in a garden, beautifully laid out in the English taste; but from its abounding with trees and shrubs and flowers, . . . a very aristocratic appearance."<sup>114</sup>

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<sup>113</sup>Firminger, 1918, as quoted in King, A.D., Colonial Urban Development, 1976.

<sup>114</sup>Brown, 1948, as quoted in King, A.D., Colonial urban Development, 1976.

In terms of world-view this interest in the garden and the house was associated with a secular belief in the reality of the material world. Such an attitude was in contrast with the world-view of the indigenous culture, which traditionally placed little value on the material world.

### **BRITISH INFLUENCES ON THE NATIVE NOBILITY**

For the "native nobility" or wealthy merchant class in India in the eighteenth and nineteenth century, the initial Westernizing influences were the acquisition of European goods and facade treatments to their houses, rather than the adoption of European house plans and forms. Holt Mackenzie commenting on upper middle class behavior in Calcutta in 1832 referred to the "marked tendency among the natives to indulge in European luxuries", such as furniture, horse carriages etc. Bishop Herber also made the following observations about wealthy Indians in Calcutta in 1824, "their progress in the imitation of our habits is very apparent, though still the difference is great. None of them adopt our dress. But their houses are adorned with verandas and corinthian pillars."<sup>115</sup>

A visitor to Shajahanabad in Delhi in 1833 also wrote,

In no other part of our eastern possessions do the natives show so earnest a desire to imitate European fashions . . . the houses are of various styles of architecture, partaking occasionally of the prevailing fashions of the West. Grecian piazzas, porticos and pediments are not infrequently found fronting the dwellings of Moslems and Hindus.

However, this accretion of stylistic changes was limited to the facade only. Urban Indian houses from this period usually retained the traditional plan of the courtyard dwelling, although a classical portico might face the street, and the internal courtyard may be

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<sup>115</sup>Evanson, N., The Indian Metropolis, p. 73, 1988.

surrounded by colonnaded loggias.<sup>116</sup>

So although urban Indian architecture in the nineteenth century was influenced by contemporary British architecture, it did not have the same social implications as the change in house plan, form and location, characteristic of the late nineteenth century bungalows. At this stage, changes in native residential architecture were only superficial and did not contribute to bringing about a change in the culture and lifestyle of the Indian people. However, it is important to note that the emulation of British architectural styles exclusively by the Indian upper classes, emphasizes the notions of prestige and status associated with the individual dwelling. This was clearly a British cultural influence in terms of world view. Prior to British presence in India, almost all housing, for the commoners as well as the nobility was constructed of non-permanent materials such as wood and bamboo. Masonry was reserved for public architecture and accessories in the houses of the rich, like balustrades. Housing of permanent material did not constitute an essential status attribute in India, as it did for the aristocracy of Europe at this time.<sup>117</sup>

The creation of the educated Indian middle classes in early twentieth century and their inclusion into the civil service and the army, entitled them to housing provided by the British government in the form of bungalows in cantonments. Since their acceptance was conditional to a certain degree of "westernization", it was presumed that they would adapt their lifestyles and activity patterns to the bungalow style house. The traditional courtyard house was abandoned and the bungalow-compound model with differentiated special purpose rooms, specialized furniture and the garden used for leisure and entertainment activities within the compound, became the accepted style of living for the Indian middle class.

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<sup>116</sup>The Marble Palace, a classical mansion built in Calcutta in 1835 by a member of the Indian nobility, incorporated a traditional courtyard plan but was located within a spacious garden, following the British garden house pattern. (Evenson, N., The Indian Metropolis, p. 74, 1988)

<sup>117</sup>Milone, P.D., "Allocated or Entitled Housing: Institutional paternalism and the growth of the colonial port city" in Basu, D.K., The Rise and Growth of Colonial Port Cities, p. 213, 1985.

This change in house plan, form and location contributed immensely to the accelerated change in the traditional lifestyles and cultural perceptions of the Indian people from this period on. Their cultural preferences were now similar to those of their colonial rulers. The following quote from Begum Shaista Ikramullah, a muslim lady, describes this process of *acculturation*. Begum Shaista's father was appointed as the District Medical Officer for the East India Railway in 1919 and their family moved from their traditional muslim house in Calcutta to a government bungalow in the *civil lines* at Lilloah, a small suburb of Calcutta.

We had a very nice house and a really lovely garden . . . This was the stage when Indians went in for extreme Westernization in every way, particularly those who joined the Service, which so far had been reserved for the English. They felt it was their incumbent duty to prove to the Englishmen that they could emulate him to perfection . . . Our house, therefore, was furnished to look exactly like an English house.<sup>118</sup>

## CONCLUSION

The garden house in the suburb originated as a form of colonial residence in India, in an attempt to recreate a culture-specific environment and adapt to the contingencies of the tropical climate. Historical events and social processes transformed the garden house to the bungalow-compound complex which symbolized the imperial status of the British in India, by defining their cultural territory as superior and segregated from the native population. In this process of transformation, the garden house lost its original significance as a place of 'rest and relaxation'. Instead, the bungalow-compound complex in the cantonment symbolized the *dominance-dependence* relationship inherent in colonialism.

The garden house typology influenced the architectural tastes of the Indian nobility in the port cities in the eighteenth and the nineteenth centuries. British styles began to replace traditional Indian facades as they symbolized the prestige and status associated with the ruling race. Most of the British took for granted that their way of life was superior and it was only appropriate that the better class of natives should try to emulate them. The traditional Indian dwelling was considered unfit for British occupation and it was impossible for an

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<sup>118</sup>Ikramullah, Begum Shaista, as quoted in King, A.D., "The Westernization of Domestic Architecture in India", Art and Archaeology Research Papers, vol. 11, p. 38, June 1977.



Englishmen to live in the traditional Indian city because of the "peculiarities and habits of the natives". However, it was not considered impossible for Indians to adapt to the British style bungalows in the cantonments in the twentieth century.<sup>119</sup>

The steady increase in the number of Indians employed in the government services in early twentieth century, and their accommodation in bungalows led to an increase in exposure to European lifestyles and environments. These developments effected the residential preferences and architectural styles of Indian middle class housing in India. The growth of 'Western-style' suburbs as a form of middle class housing in the post-independence period indicates this change in cultural preferences.

The study of the evolution of the British cantonment and the bungalow-compound unit, indicate that British colonial architecture in India developed as a continuum over time and considerably influenced the cultural perceptions of the Indian people. Some aspects of this cultural continuity dating back to the seventeenth century can still be identified in the domestic architecture of the Indian people in the post-colonial era. Owing to a series of specific historic conditions, colonial traditions have become an intrinsic part of today's Indian architectural tradition through a selective process that accepted certain colonial patterns and rejected others to suit life styles and activity patterns.

In the next chapter a set of bungalow plans from Bangalore will be analyzed, to develop a pattern language of colonial form typologies. These patterns will be compared with similar patterns identified in the DLF residential extension in New Delhi to determine the influence of the 'British Model of Colonial Housing Settlement' on urban forms and spatial organization in contemporary housing developments in India. Through this process, the impact of the built environment in changing traditional activity patterns and lifestyles will be identified.

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<sup>119</sup>Evenson, N., The Indian Metropolis, p. 72, 1988.



## CHAPTER 7

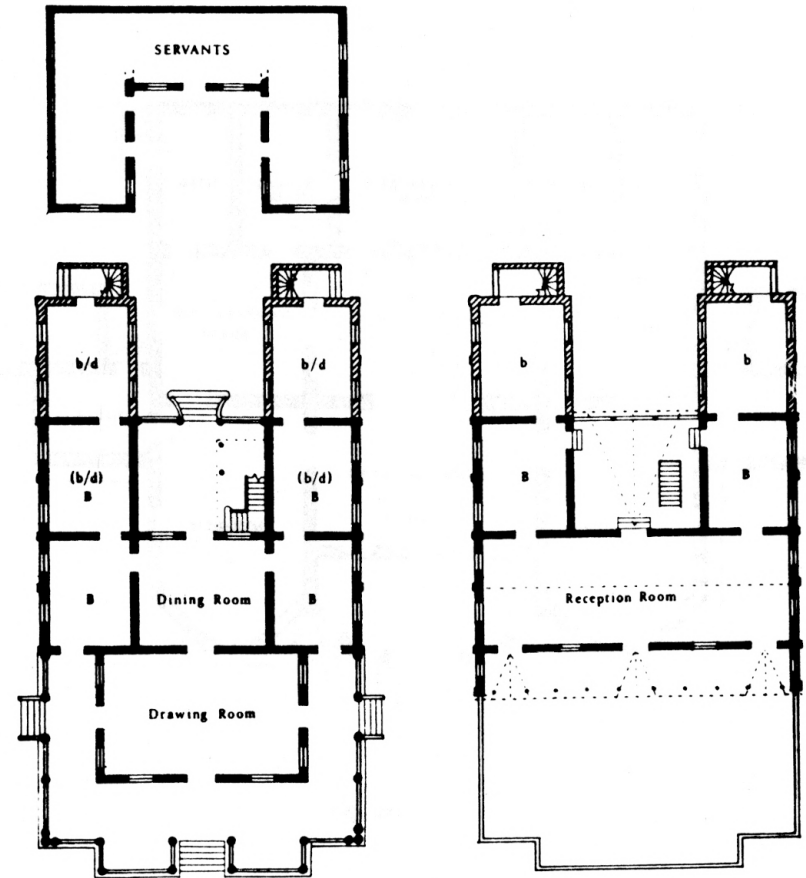
### **ANALYSIS OF PATTERNS IN THE BRITISH BUNGALOW MODEL AND THE DLF HOUSE**

A sample of nine colonial bungalows built in Bangalore cantonment between 1850 and 1920 has been analyzed to develop a pattern language of the colonial bungalow model as it had evolved in the twentieth century. Since most of these bungalows have been torn down in recent years, information about them could be gathered mainly from books. Janet Potts book Old Bungalows in Bangalore (1977) was used as the primary source of reference for floor plans and other material on the bungalows used as case studies in this analysis. These bungalows were located in the residential towns or extensions which were laid out in Bangalore Cantonment from the mid-nineteenth century to early twentieth century. They vary in terms of lot sizes and number of stories, depending upon the location and the time of construction. In the early twentieth century, two-storied bungalows were being built in the bigger cantonment towns because of smaller lot sizes, owing to an increase in land prices.

Historical data was available for only some of these bungalows. The others were most probably built in the late nineteenth century as can be deduced from their single-storied structure. 2 Palace Road, 86 Richmond Road, 7 Cambridge Road, 46 Mahatma Gandhi Road, 6 Richmond Road and 13 Alexandra Street, are the bungalows for which details regarding the date of construction, occupants and lot size were not available (Figs. 38, 39, 40, 41, 42, 43). Because of the unavailability of this information it has been difficult to place these bungalows in a chronological order. The other three bungalows - 87 Richmond Road, 48 Lalbagh Road and 7 Ali Askar Road are described here. Two of these bungalows built in the early twentieth century are both two storied structures.

### 7, Ali Askar Road

This bungalow built in 1918-1919 on a seven acre site by an Indian muslim, was different from the earlier single-story bungalows. The house consisted of two stories with the drawing room, dining room and the family bedrooms located downstairs, and a large reception room and terrace on the top floor. The reception room and terrace were approached by a stairway, accessed by passing through the drawing and dining rooms on the ground floor. These areas were used mainly for entertaining and other social occasions such as weddings and religious ceremonies. Except the central reception room area which had a sloping roof the rest of the house had flat roofs. (Fig. 35).



**Fig. 35**

### 87, Richmond Road (Binfield)

This house was probably built by a British engineer in the late nineteenth century on a six acre site, in one of the more expensive neighborhoods of Bangalore. It was later bought by an Indian muslim. The house had a formal garden with lawns and tennis courts. Vegetables were grown behind the house in the rear lawn. Horse stables, coach-houses and harness-rooms were situated along the south wall of the compound. Servants were accommodated in the rear side, behind the bungalow. The breakfast room was used by the moslem family as a family dining room when there were no guests. The drawing room and the dining were the more formal entertaining areas. The dining room had a punkah hung across the ceiling which was pulled by a servant who sat in one of the back bedrooms. On one side of the breakfast room was the prayer room used for religious rituals. Bedrooms were attached to dressing rooms and bathrooms. The bathrooms had external doors for cleaning (Fig. 36).

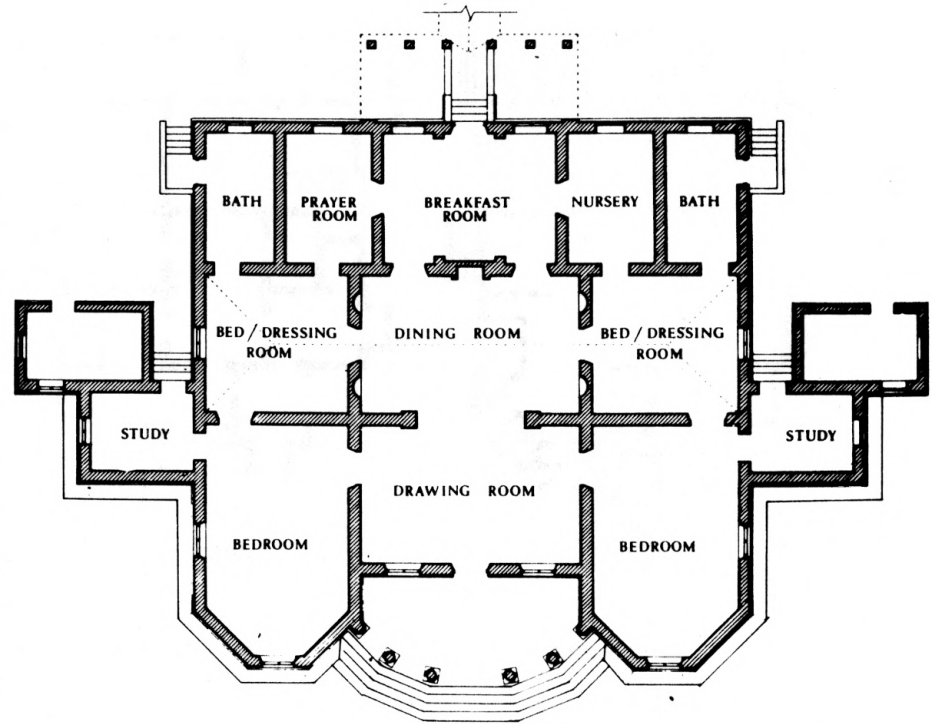
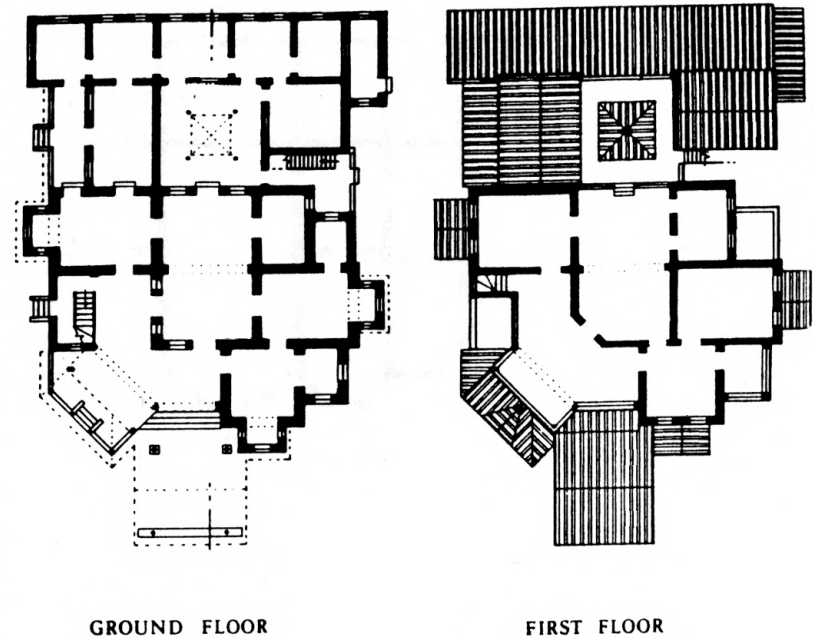


Fig. 36

#### 48, Lalbagh Road

This house was built in 1910 by a South Indian geologist educated in England. On returning from England he decided "to have a modern house built for his family, and for the traditional hindu home to be changed into an anglicized home".<sup>120</sup> The two-storied house was built on a one acre site in one of the newer residential extensions in the Bangalore Cantonment. The house was named Mashie Lodge after the owner's favorite golf club, the Mashie Niblick. The space in front of the house was systematically laid out with flowering trees and plants. The owners hosted many dinners and dance parties to both English and the more anglicized Indian guests. The drawing and dining room and the six-pillared hall in the rear adjoining the dining room were all used as entertainment areas. The rear hall was used as a dance hall during these social occasions. Mashie lodge was acclaimed as the best maintained and tastefully decorated premises for the visit of His Royal Highness the Prince of Wales in 1921 (Fig. 37).



**Fig. 37**

<sup>120</sup>Pott, J., Old Bungalows in Bangalore, 1977.

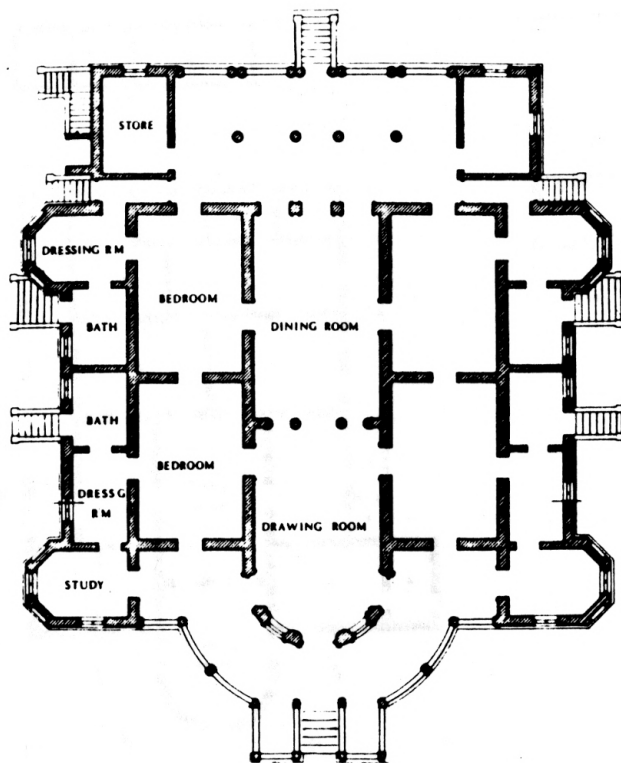


Fig. 38. 2 Palace Road.

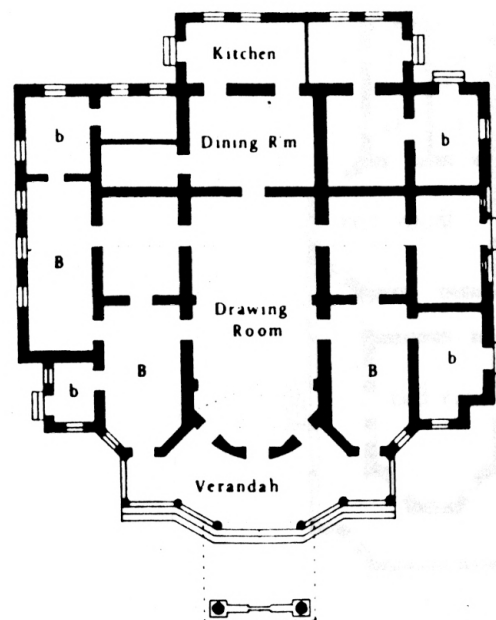


Fig. 39. 86 Richmond Road.

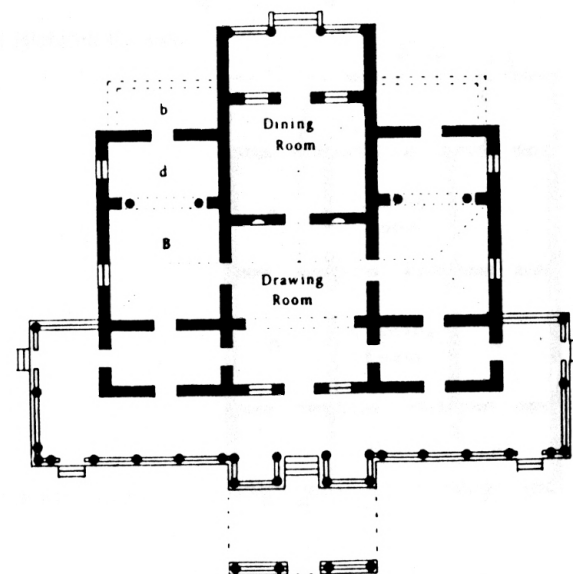


Fig. 40. 7 Cambridge Road.

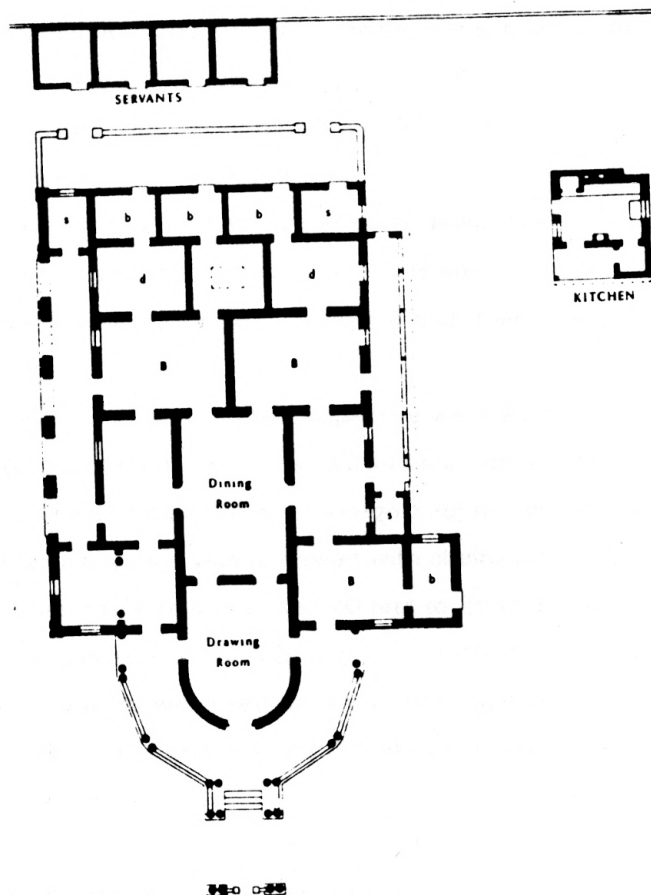


Fig. 41. 46 Mahatma Gandhi Road.

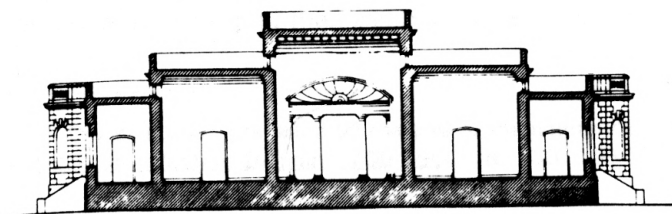


Fig. 44

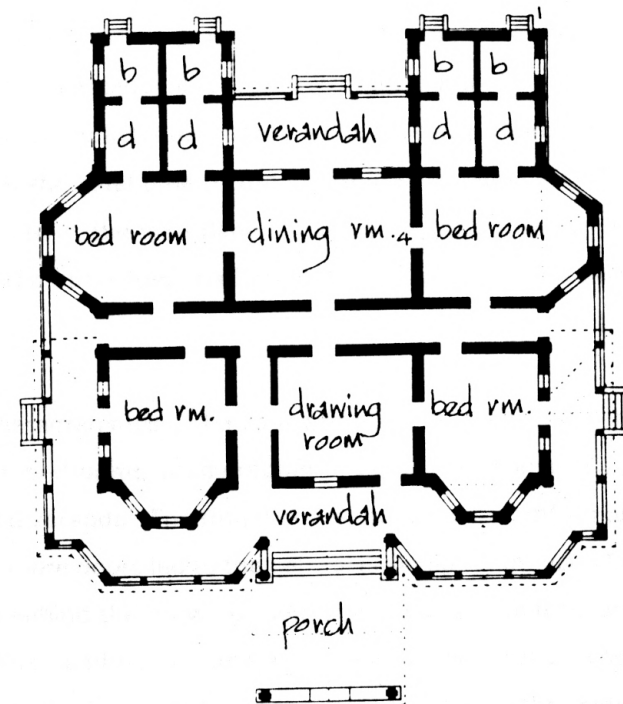


Fig. 42. 6 Richmond Road.

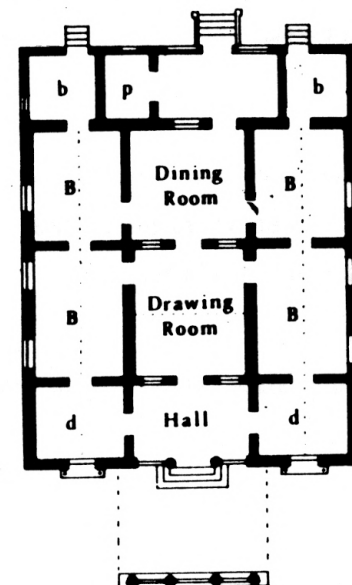


Fig. 43. 13 Alexandra Street.

Although each bungalow is unique, the site plans, floor plans and sections of all these bungalows exhibit so many similarities that it is possible to introduce the concept of one generic model. This generic house has a typical layout pattern of a centrally located bungalow surrounded by a low compound wall with a single entrance or two gateways, which open onto a long driveway connecting to the porch. The area in front of the house comprises of as much as two thirds of the total area of the lot, and is developed into a garden with tall trees, flower beds, lawns and tennis courts depending upon the size of the lot. Behind the house are the servants quarters and the kitchen which was always detached from the main building. Some bungalows had stables and coach houses and quarters for coachmen, gardeners and their families.

The floor plans of these bungalows were always symmetrical and had common characteristics. The space inside was divided into a number of rooms with specialized functions such as the drawing room, dining room, bedrooms, study rooms and dressing rooms. The house was entered through a large colonnaded portico attached to a wide colonnaded veranda. The front veranda was used for informal entertaining and was furnished with chairs and tea-tables. From the veranda one or more doors led to the central drawing room, usually 15 feet to 20 feet high and 20 feet to 25 feet deep. The dining room was located behind the drawing room and divided from it by an arch, pilasters or curtains. It was attached to a rear veranda which led to the kitchen and pantry area at the rear of the house. The rear veranda was used for a variety of domestic activities connected with the kitchen. Large bedrooms were located on either side of the central drawing and dining rooms, with attached dressing rooms and bathrooms. Bathrooms had external doors for cleaning purposes.<sup>121</sup>

The height and roof levels of the various parts of the building were largely governed by the need for ventilation below the ceiling level through small skylights. The roof of the central rooms was higher than the adjoining bedrooms (Fig. 44). Bathrooms at the periphery had lower roof heights than the bedrooms. The lower roofs were usually flat and the higher central roof was either flat or pitched.

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<sup>121</sup>Dry sanitation prevailed till the end of the nineteenth century and night soil was removed manually by sweepers. (Samita Gupta, Architecture and the Raj (Western Deccan 1700-1900), p. 133, 1984)

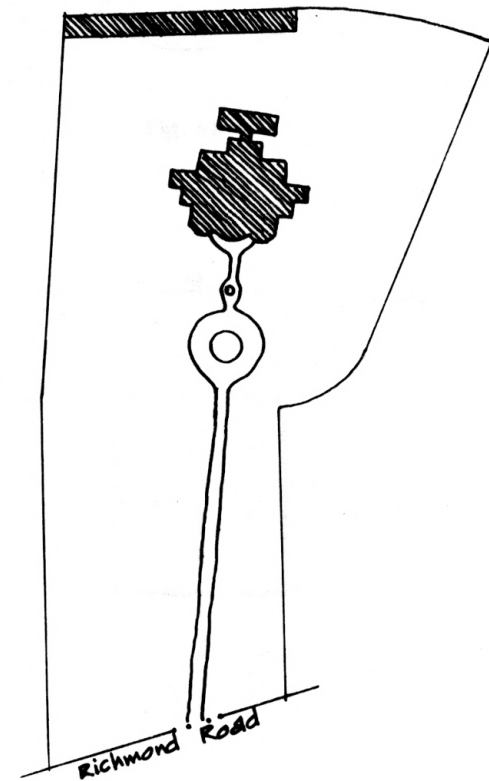


Windows were reduced to a minimum and many doors were provided connecting rooms, to facilitate cross ventilation between the rooms and the veranda.

While there are numerous patterns in the bungalow model, a sequence of nine most important and recurring patterns have been identified as being most relevant to this study. A general description has been developed for each pattern which explains the pattern and helps in identifying it in each bungalow. The nine patterns analyzed in the 87, Richmond Road bungalow have been illustrated here with schematic sketches. Illustrations of patterns analyzed in the other bungalows in the sample set are included in Appendix B.

### CENTRALIZED SITE LAYOUT

The bungalow is centrally located on the site surrounded by a low compound wall, with one or more gateways. The house is approached by a long drive which connects to the porch in front of the house. The kitchen is a detached structure located behind the house, sometimes connected to the rear veranda by a covered passage. Other detached structures located along the rear edge of the compound wall contain servants quarters, stables, coach houses and store rooms. Gardens are laid out in front and around the house (Fig. 45).

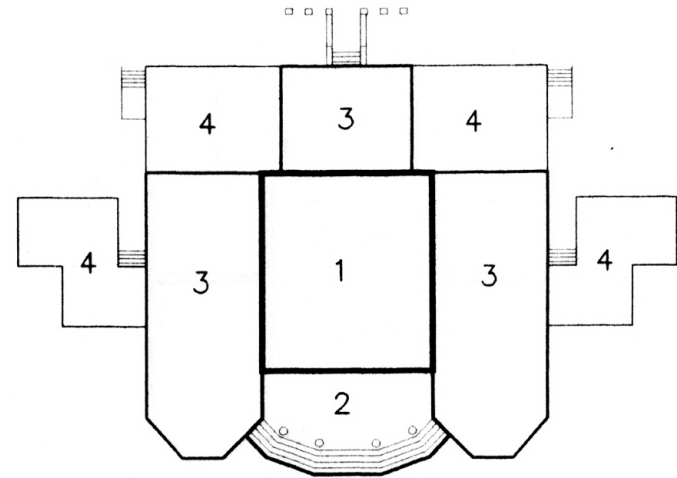


## HIERARCHY OF SPACES

Distinct spatial hierarchies can be identified in each plan. In a typical plan the following hierarchies can be established from most important to least:

- 1) drawing room, dining room
- 2) veranda, porch
- 3) bed rooms
- 4) rest of the house (Fig. 46).

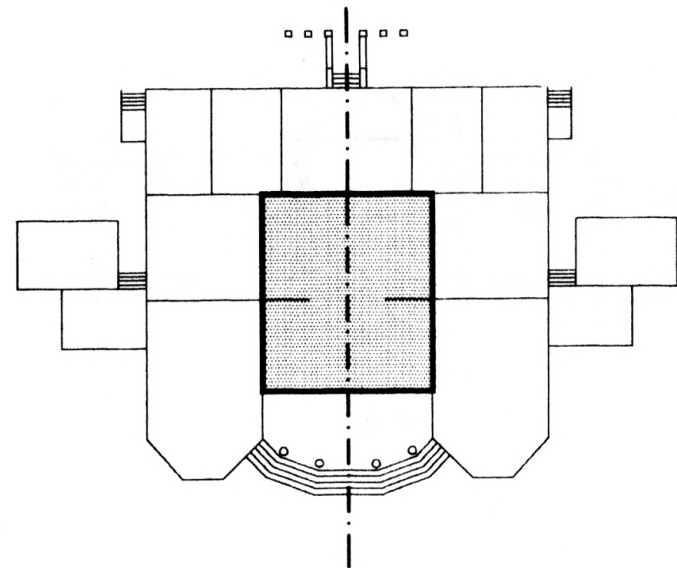
This spatial hierarchy is also expressed in the elevations where the most important space has the highest roof as seen in the pattern "Roof Heights" (Fig. 49).



**Fig. 46**

## ORDERING IDEAS

The plan is symmetrical and has a strong and clear axial order. The drawing room and dining room constitute the primary space in the house. This primary space forms the dominant center and lies on axis (Fig. 47).



**Fig. 47**

### CANONICAL SPATIAL ARRANGEMENT

Centralized plan consisting of major use spaces located around a primary center. Primary spaces forming the center are linearly arranged (Fig. 48).

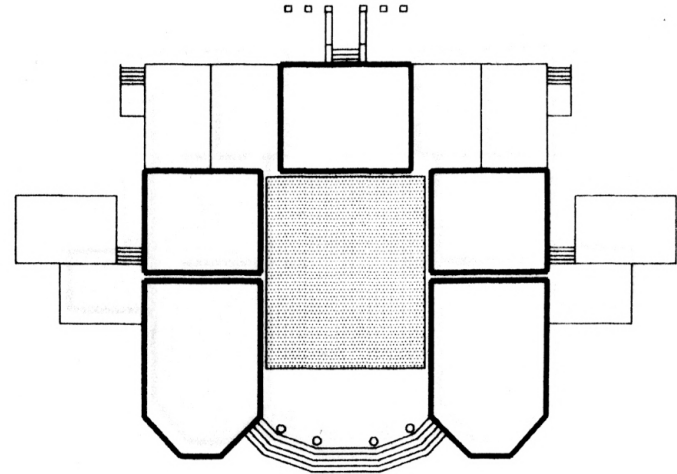
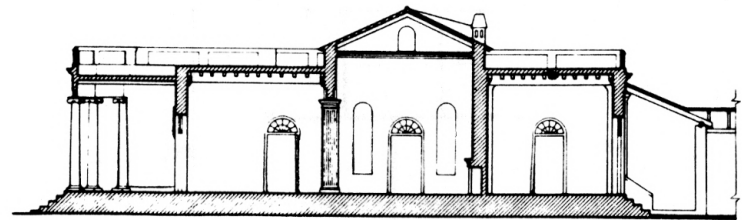


Fig. 48

### CEILING HEIGHT VARIETY

The central primary space has a higher roof than the surrounding bedroom spaces. Bathrooms and verandas located on the periphery of the floor plan have the lowest roof heights (Fig. 49).

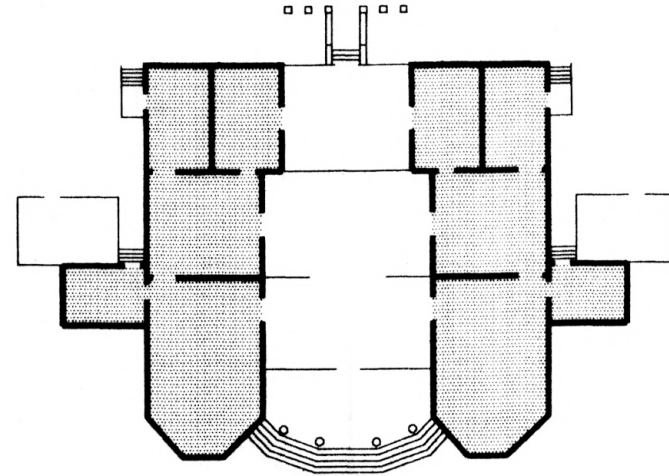


SECTION

Fig. 49

## SUITES OF ROOMS

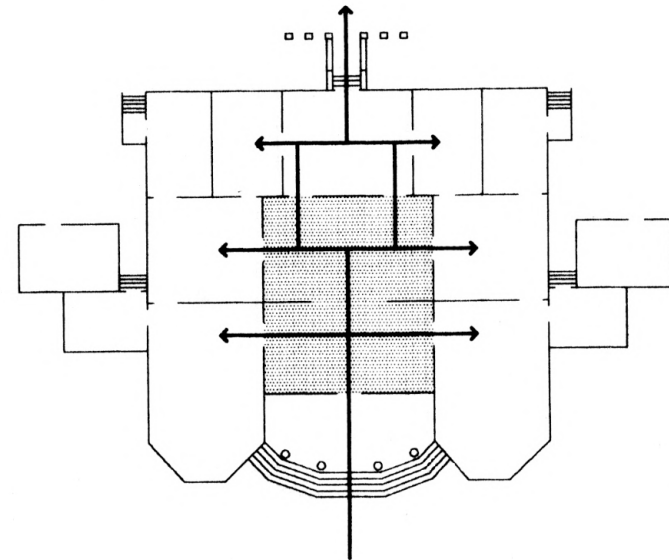
Rooms are grouped together as functional units forming a suite. A typical suite consists of a bed room, dressing room and attached bathroom. Each bungalow has more than one suite. Suites are arranged symmetrically on both sides of the primary axis (Fig. 50).



**Fig. 50**

## CIRCULATION FROM THE CENTER

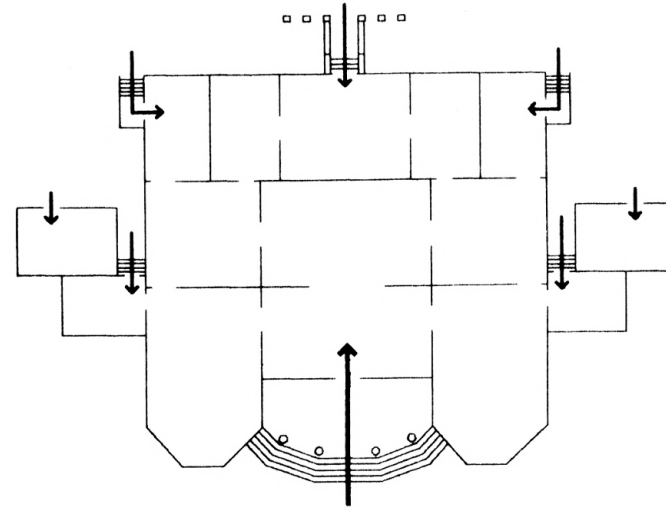
The primary space constitutes the main circulation node. Internal circulation is always through the primary space. External circulation includes direct access into bathrooms from the outside, direct access into bedroom suites from the verandas and service access for servants at the rear end of the house (Fig. 51).



**Fig. 51**

## ENTRANCE EXPERIENCE

The main entrance is articulated by entrance elements consisting of the gate, drive, porte cochere, entrance steps, veranda, front lawn and main door. Other accesses into the house include direct access from verandas into bedrooms, service access for servants at the rear end of the house and service accesses into bathrooms for cleaning. These accesses are less articulated (Fig. 52).

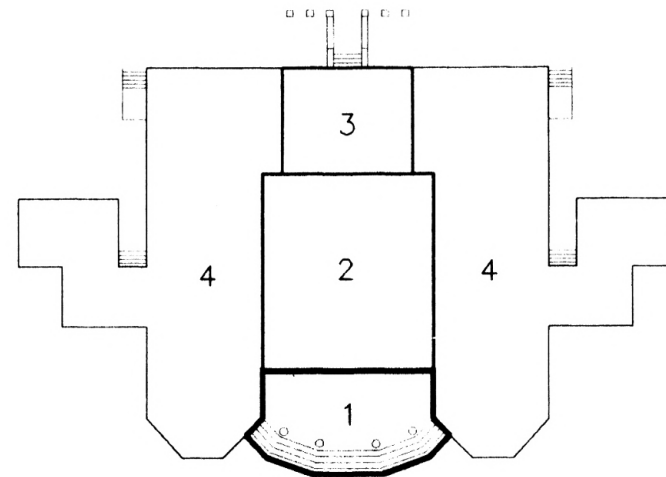


**Fig. 52**

## INTIMACY GRADIENT

Four distinct levels can be identified in each plan from most public and formal to most private and informal:

- 1) Entrance (veranda, porte cochere)
- 2) Public (drawing room)
- 3) Semi-public (dining room)
- 4) Private (bed rooms and rest of the house) (Fig. 53).



**Fig. 53**

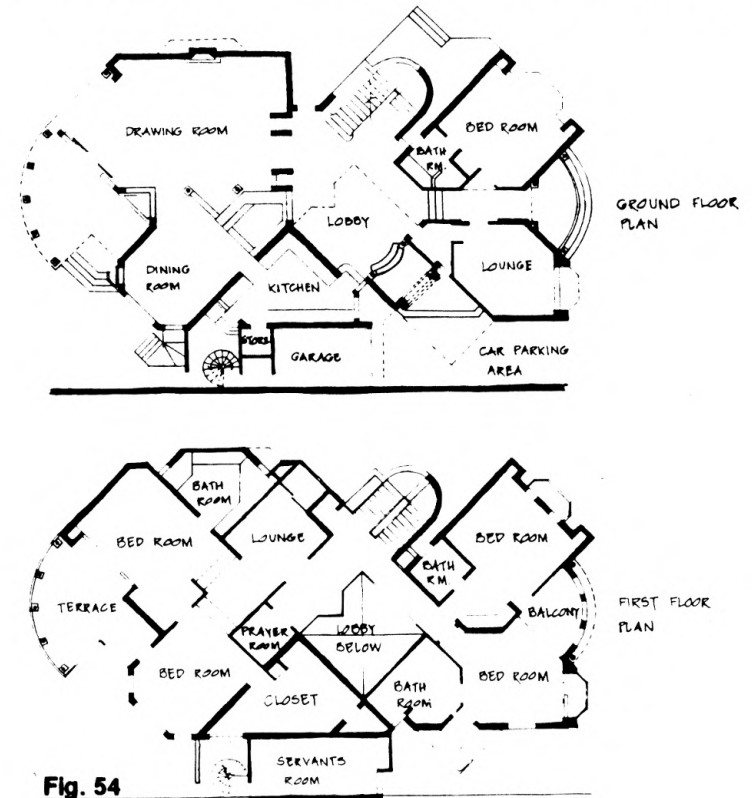
## ANALYSIS OF PATTERNS IN THE DLF HOUSES

A sample of ten houses in the DLF Qutab Enclave Phase I has been analyzed to develop a pattern language or a generic model of the contemporary upper middle class residential unit. The floor plans of these houses were obtained from the Haryana Urban Development Authority office. Most of these case study houses were occupied and some were under construction when the field study was undertaken. The houses vary in terms of lot sizes, location within the neighborhood, number of stories and type of occupancy (single or multi-family). Information about the occupants was available only in cases where the house was occupied, and it was possible to speak to the residents. For some houses, it was possible to gather more information about the house and the client requirements from the architect.<sup>122</sup>

The following section contains a brief introduction to each house and the background of the residents. Houses have been listed according to lot sizes.

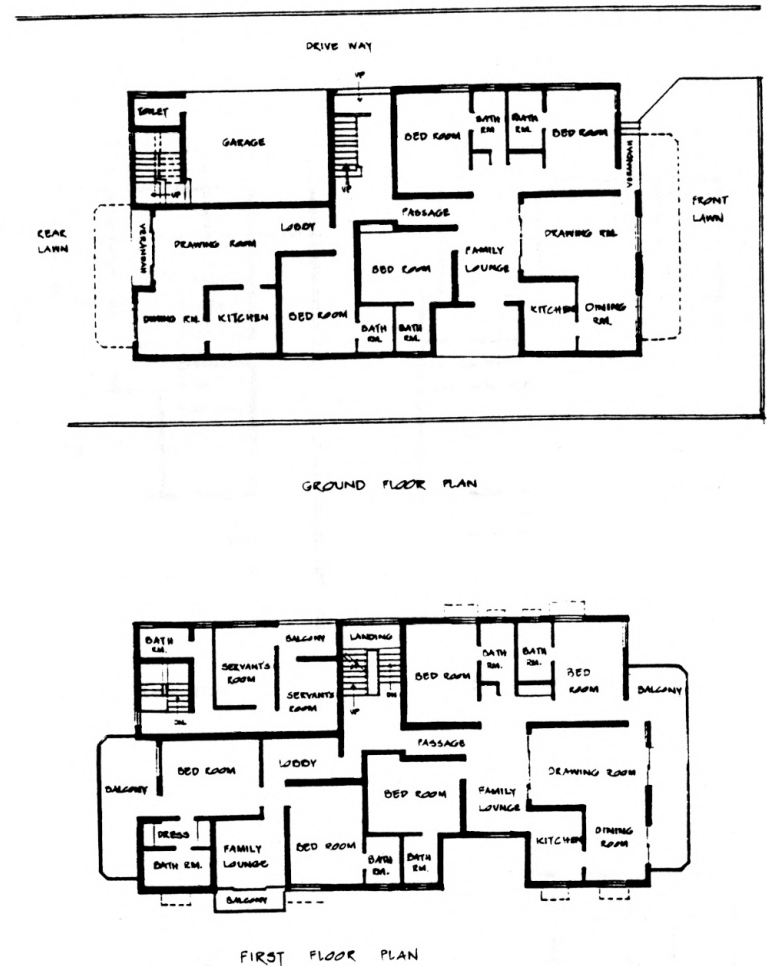
### Anand House (13, Shatoot Marg)

The house was not built when the field study was undertaken. Floor plans and data about the house and the clients were obtained from the architect, Anil Kukreja. The house has been designed on a 1000 square yard lot, for a non-resident Indian family who plan to move to India and live in the DLF. It is designed as a two story single family dwelling unit (Fig. 54).



<sup>122</sup>Refer to photographs included in Appendix D.

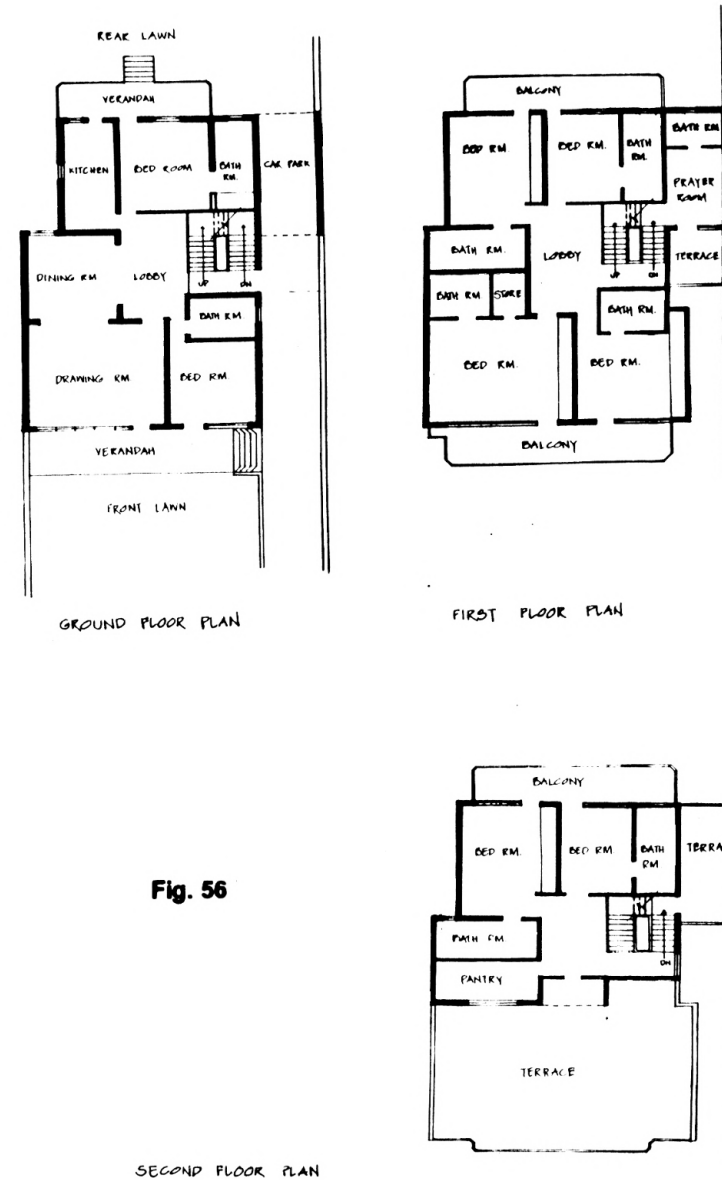
The house was designed by a Delhi architect, C.K. Ganapathi, for a non-resident Indian client, who also plans to move to India. At the time the field study was undertaken the house was occupied by the owner's relatives. The house is built on a 1000 square yard lot and consists of three residential units. The owner plans to occupy one of these units and rent the other two (multi-family occupancy). It is a three storied structure, the third floor consisting of a vast terrace space. The house can be approached from access roads both in front and behind the site. The front part of the house has two independent units, one on the ground floor and one on the first floor. The third unit is divided between the ground and first floor and can be accessed independently from the rear road. The rear part of the house also accommodates a garage on the ground floor and common servant spaces shared by all three units on top (Fig. 55).





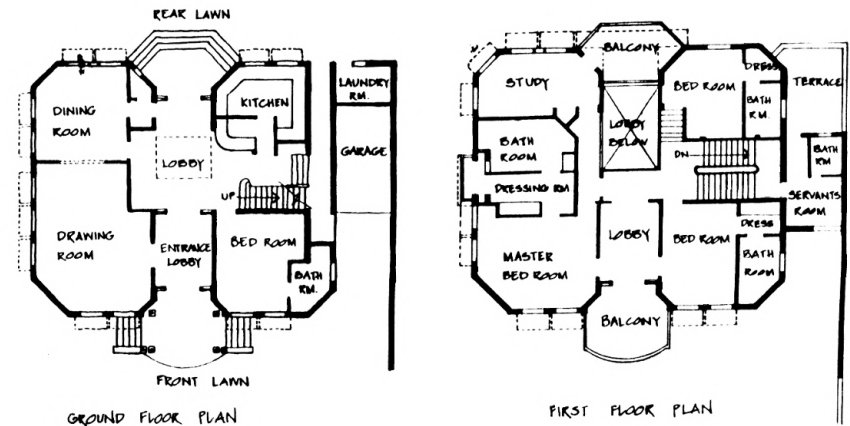
### Katyal House (57 Ashoka Crescent)

The house has been designed on a 500 square yard site for a single extended family. It is a three storied structure with the drawing room, dining room, kitchen and two bedroom suites located on the ground floor. The first floor has four bedroom suites and a prayer room, and the second floor accommodates one bedroom suite, a pantry and a large terrace. The terrace and pantry are used for entertainment and parties. Servants are accommodated in a temporary structure along the edge of the rear compound wall. The occupants of this house previously lived in a traditional courtyard house without a lawn and compound wall, located in an old residential neighborhood in New Delhi. The requirements of a large extended family determined the design of the house (Fig. 56).



### Chaudhri House (C1/25)

The house was under construction when the field study was undertaken. Information about the house and the client was obtained from the architect, Anil Kukreja. The house is built on a 500 square yard lot for a non-resident Indian. It is a two storied structure designed for a single family. The owner's father was a government employee in New Delhi and their family was accommodated in a large officer's bungalow. The architect feels that this background has influenced the client in his choice of a house. The floor plan consists of characteristic spaces such as drawing room, dining room, kitchen and bedrooms, but unlike most of the other case study houses this house does not have a large terrace space. The absence of a third floor made it possible for the architect to increase the ceiling heights. The house has classical facades and sloping roofs (Fig. 57).



**Fig. 57**

### Bahl House (B10/12)

The house is built on a 500 square yard lot and consists of two independent dwelling units on the ground and first floor. The owners have rented the ground floor unit and the first floor was unoccupied. The ground floor is occupied by a single nuclear family who moved to Delhi a few years ago. The lady of the house said that her father was employed in the Indian Army, and she grew up in the old colonial army officer's bungalows where they were accommodated. She expressed her preference for the bungalow type house with large lawns, drawing and dining rooms as compared to the traditional Indian courtyard dwelling (Fig. 58).

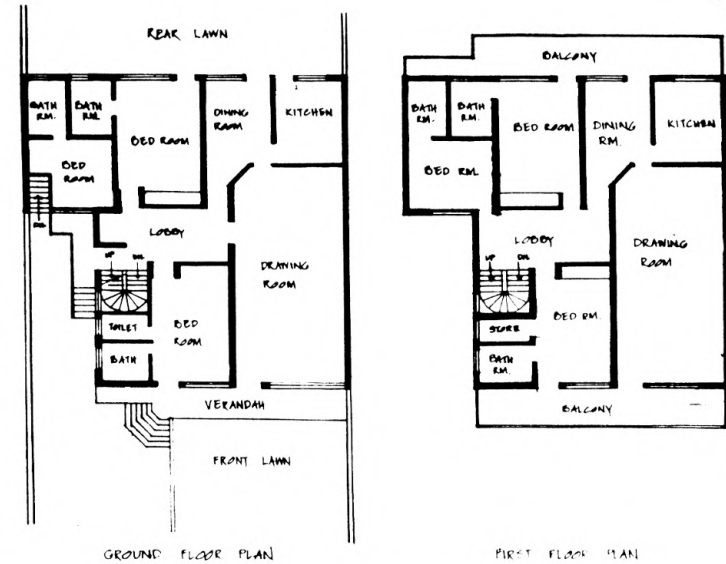


Fig. 58

### Khosla House (A13/1)

The house is built on a 500 square yard lot for a single nuclear family. It is a two storied structure with a large terrace space on the top floor, used for parties. The family was previously living in a rented house in New Delhi before they moved to the DLF. The lady of the house said that she grew up in a traditional courtyard house but she prefers her house at the DLF because it has front and rear lawns with verandas, separate drawing and dining rooms, spacious bedrooms with attached toilets and servants' quarters. This house is also designed by architect C.K. Ganapathi (Fig. 59).

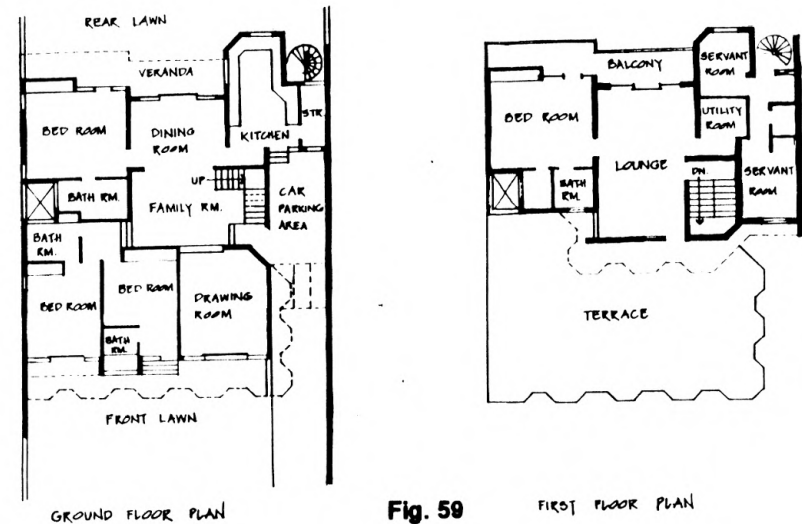
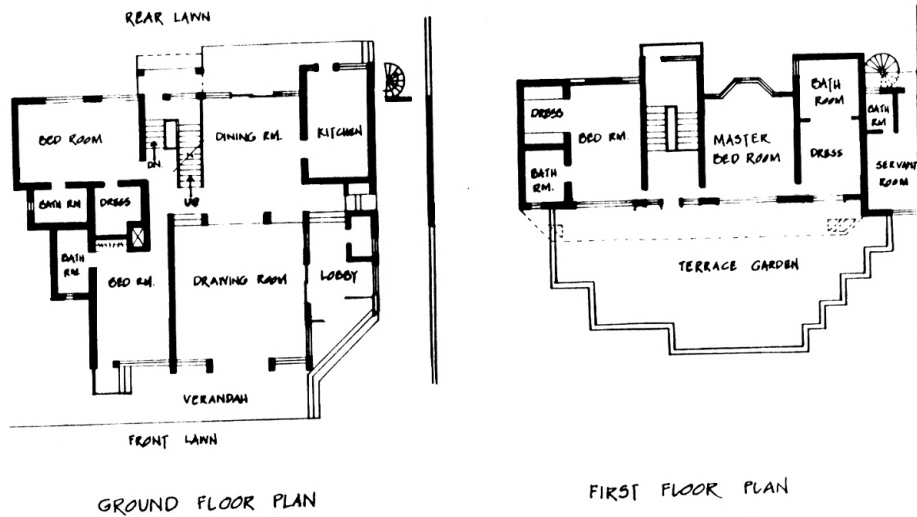


Fig. 59

### Bhattacharya House (D4/A1)

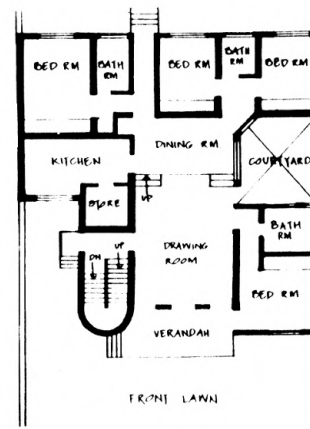
The house is built on a 614 square yard lot for a single nuclear family. It is a two storied structure with a large terrace garden on the first floor. The house was under construction when the field study was undertaken. Information about the clients was obtained from the architect, A.K. Gurtoo. The clients required large spaces for entertaining a large number of guests. This necessitated large drawing and dining rooms. The owners also wanted large bedrooms with attached toilets (Fig. 60).



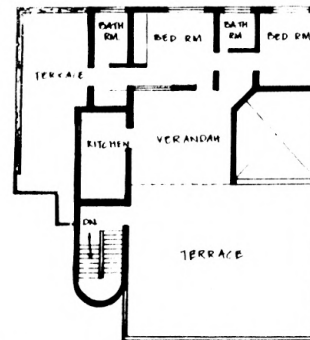
**Fig. 60**

### Verma House (2 A-15)

The house is built on a 500 square yard lot and consists of three independent dwelling units on the ground, first and second floor. It was under construction when the field study was undertaken. Information about the owners or the architect could not be obtained. This is the only house in the sample set which has a courtyard. According to the building bye-laws for the DLF, houses are permitted to have courtyards but these are more like internal light wells. Unlike traditional Indian houses where all the other spaces were planned around the central courtyard, the courtyard in the Verma house is placed on the periphery of the plan and does not constitute a major activity area. Its function is to provide adequate light and ventilation to the dining room, bedroom and bathroom which are placed around it. The unit on the second floor does not have formal drawing and dining rooms. It is similar to traditional Indian dwellings with a large terrace space, although there is one bedroom suite. The units on the ground and first floors have identical plans with characteristic spaces - drawing room, dining room, kitchen, bedroom suites and verandas. Servants' quarters have not been indicated on the plan. They may be added later in the form of a temporary structure along the edge of the rear compound wall as in the Katyal house (Fig. 61).



GROUND FLOOR PLAN



SECOND FLOOR PLAN

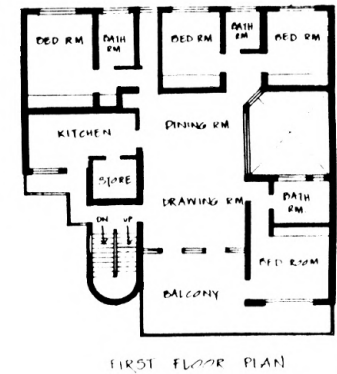


Fig. 61

### Jaiman House (A26/12D)

The house is built on a 400 square yard lot for an extended family. It is a two storied structure with a central double height family lounge space. The upper floor contains two bedroom suites and a small terrace. The owner's father was employed in the tea plantations in Assam where they were accommodated in a typical British plantation bungalow built on a ten acre site. The occupants expressed a desire for larger lawn areas and a keen interest in gardening. Frequent parties and entertaining a large number of guests were not their priorities. The house was designed to satisfy the requirements of an extended family (Fig. 62).

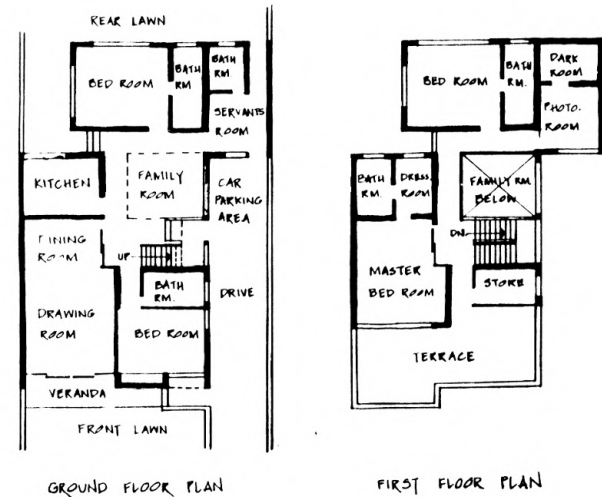


Fig. 62

### Ganapathi House (A-46/19)

The house is built on a 300 square yard lot and belongs to architect C.K. Ganapathi, who has also designed the Khosla house and Kainth house. It is a two storied structure designed for a single nuclear family. The architect has created large terrace spaces at two different levels despite the small size of the lot. The drawing room is placed at the first landing level and the space below in the basement accommodates the architects office. The dining room and the family lounge constitute the primary spaces in the house. The small lot size does not permit provision for car parking space and the servant's quarter, within the compound (Fig. 63).

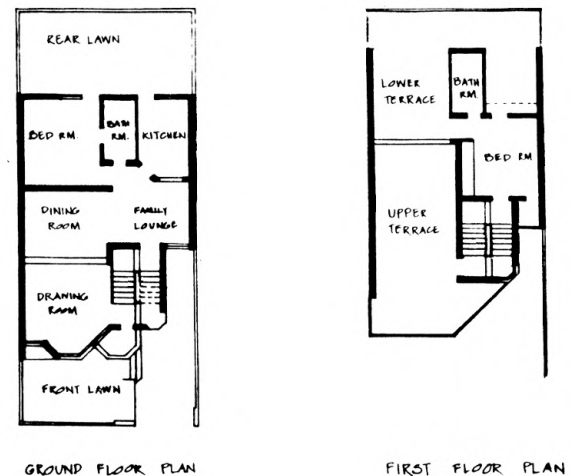


Fig. 63

Since the site plans, floor plans and sections of all these houses exhibited many similarities, it was possible to develop a generic unit model. The generic unit consists of a centrally located house within a compound, with front and rear lawns. Except houses built on 1000 square yard lots, all the other houses in the sample set have compound walls only at the front and at the rear, abutting the front lawn and the rear lawn. The walls at the sides are shared with the adjacent units on both the sides (except houses built on corner sites). Each unit has only one gate, except the 1000 square yard lots which have access roads and gates both at the front and at the back.<sup>123</sup> The gate leads into a short driveway which terminates in a car parking space. Servants quarters are usually located above the car parking area and accessed by a stairway at the back. Occasionally, servants are accommodated in temporary structures abutting the rear compound wall, although bye-laws do not permit this. The forbiddance of outbuildings attached to the rear compound wall, is a shift from the colonial model. Lawns in the front and behind the house are laid out with flower beds, shrubs and small flowering trees.<sup>124</sup>

The house itself is divided into a number of characteristic spaces such as drawing room, dining room, family lounge, kitchen and bedrooms with attached bathrooms and dressing rooms. From the front veranda one or more doors lead into the drawing room. The dining room is located behind the drawing room and occasionally divided from it by an arch, a wall or a change in level. The kitchen is located at the rear end of the house and is usually attached to the rear veranda. Bedrooms with attached bathrooms are located around the central space which is either the drawing, dining room or the family lounge. Bathrooms do not have any external doors but they are located at the periphery of the plan. Large terrace spaces on the top floors are used for entertaining and other social gatherings. The multi-storied structure of the house does not allow for much variation in ceiling heights at each level. However, in some houses the central primary space (family lounge, drawing, dining room) does have a double height ceiling.

While there are numerous patterns in the DLF house model, a sequence of nine most important and recurring patterns previously studied

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<sup>123</sup>Refer to the "Site Layout" pattern for the DLF houses included in Appendix C.

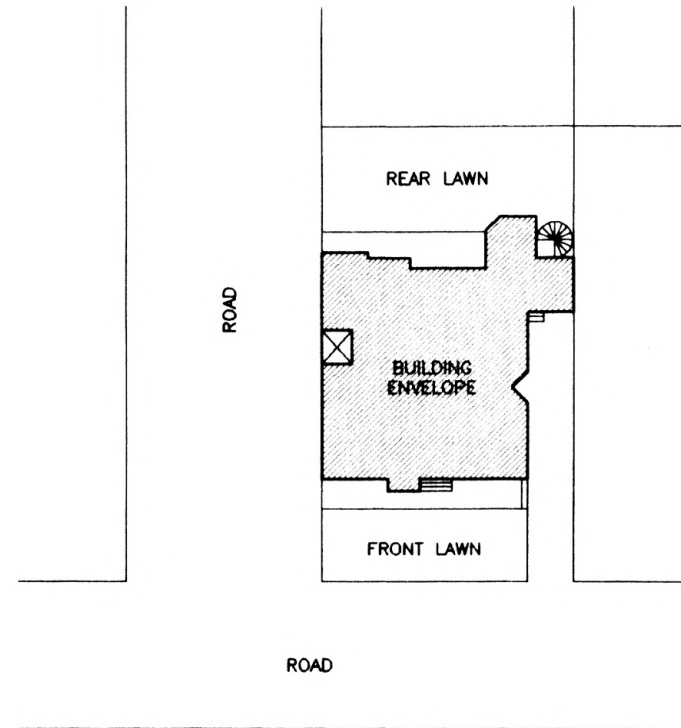
<sup>124</sup> Refer photographs included in Appendix D.



in the bungalow model have been identified as being most relevant for comparison. A general description has been developed for each pattern which explains the pattern and helps in identifying it in each house. The nine patterns analyzed in the Khosla house have been illustrated here with schematic sketches. Illustrations for the other houses in the sample set are included in Appendix C.

### CENTRALIZED SITE LAYOUT

The house is centrally located on the site with front and rear lawns abutting the compound walls at the front and back. Lawns are laid out only in the front and rear, and not all around the house. The site has three distinct zones: 1. front lawn 2. building envelope 3. rear lawn. Usually, one gate located at the corner of the front compound wall constitutes the main entrance into the house. The gate leads into a short driveway which terminates in a car parking space. In the larger sized lots the driveway connects both the gates at the front and at the back of the house. Occasionally the servants' quarter is a temporary detached structure along the rear edge of the compound wall, but in most houses the servant spaces are located above the car parking area. Except for houses located on 1000 square yard sites all the other houses are not completely detached from the adjacent units. The walls on both sides of the site are shared with adjacent units on both sides (Fig. 64).

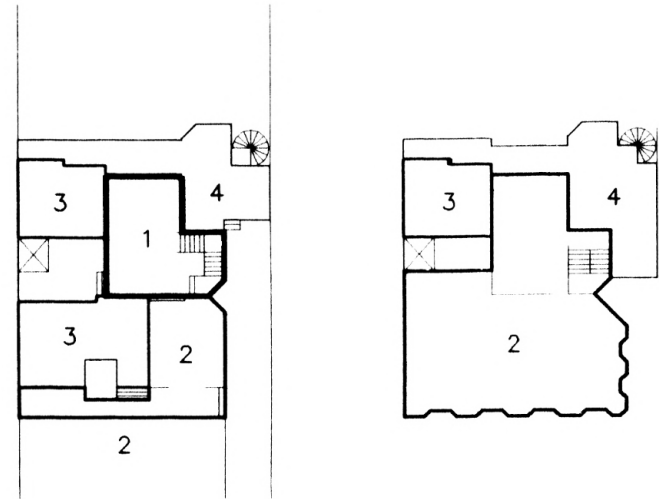


**Fig. 64**

## HIERARCHY OF SPACES

Distinct spatial hierarchies can be identified in each plan. In a typical plan the following hierarchies can be established from most important to least:

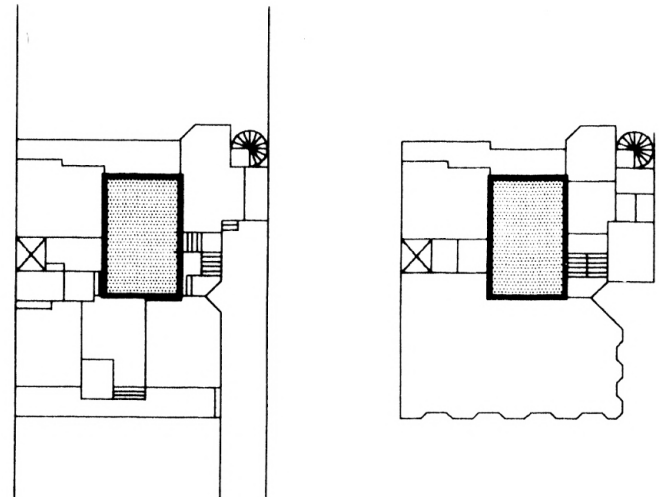
- 1) drawing room/dining room, family room or lobby.
- 2) veranda, front lawn and terraces.
- 3) bed rooms.
- 4) rest of the house (Fig. 65).



**Fig. 65**

## ORDERING IDEAS

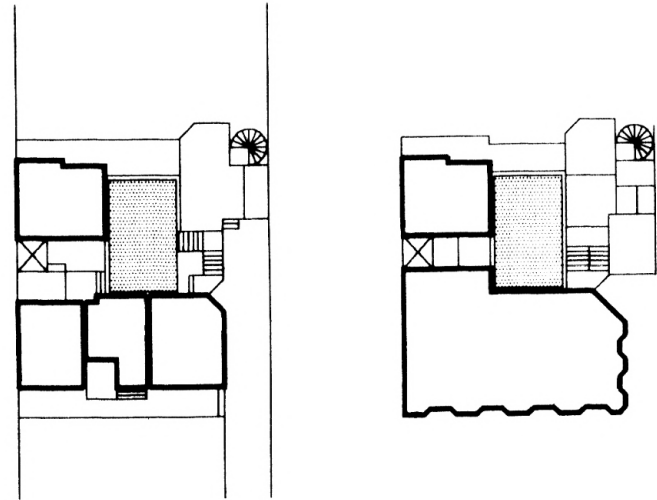
The plan is unsymmetrical and does not have a clear axis. The drawing room/dining room, family lounge or lobby constitutes the primary space in the house. This primary space forms the inner core and is located at the center of the building mass (Fig. 66).



**Fig. 66**

### CANONICAL SPATIAL ARRANGEMENT

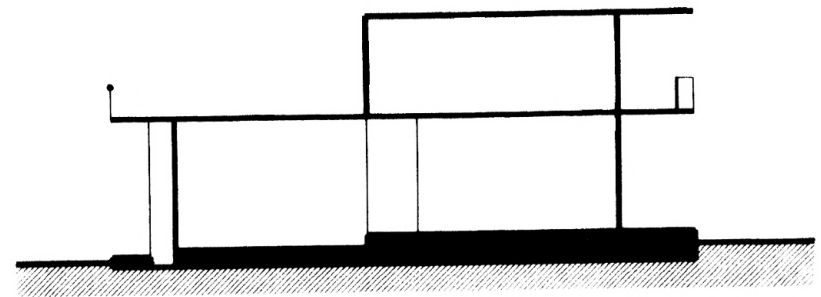
Centralized plan with major use spaces located around a primary center. In some houses the primary spaces forming the center are linearly arranged (Fig. 67).



**Fig. 67**

### CEILING HEIGHT VARIETY

Except in some houses where the central primary space has a double height ceiling, all the other house have uniform ceiling heights for all the spaces, at every floor level (Fig. 68).

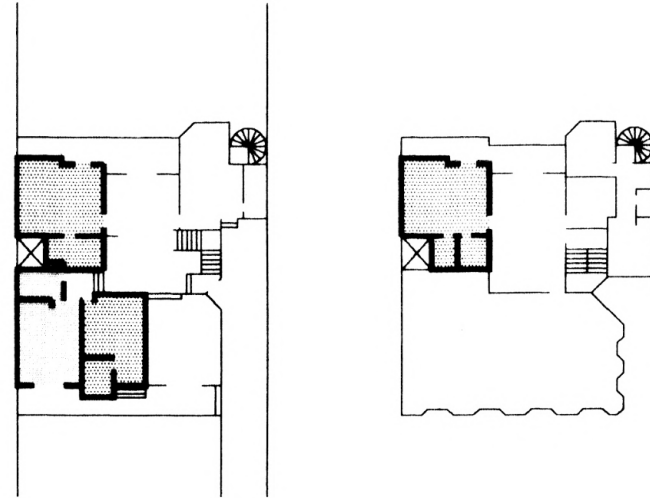


**SECTION**

**Fig. 68**

## SUITES OF ROOMS

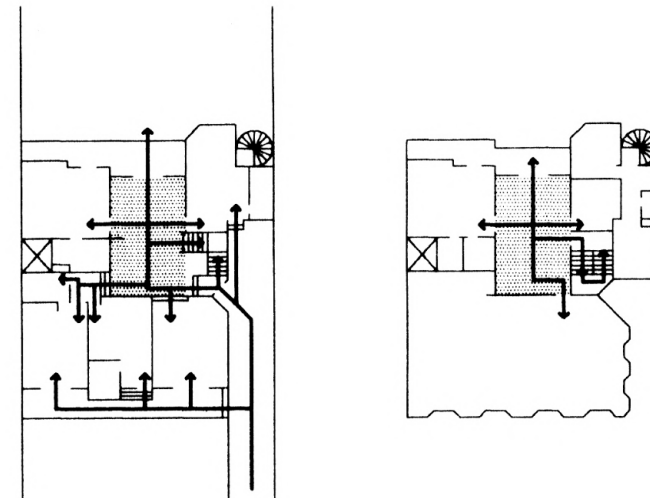
Rooms are grouped together as functional units forming a suite. A typical suite consists of a bed room with an attached bathroom. Each house has more than one suite. In some houses, the master bedroom suite has an attached dressing room, bathroom and a balcony or terrace. Most houses have a guest bedroom suite (Fig. 69).



**Fig. 69**

## CIRCULATION FROM THE CENTER

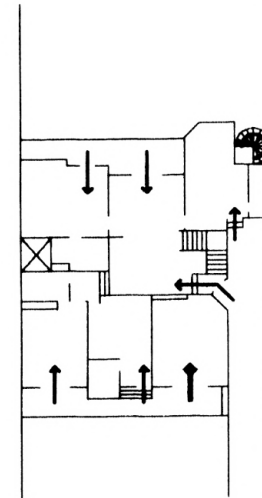
The primary space (drawing/dining room, family room or lobby) forming the inner core constitutes the main circulation node. Internal circulation is always through the primary space. External circulation includes direct access into the guest bedroom suite from the veranda, service access for servants at the rear end of the house and an informal entrance for the residents from the garage or car parking area at the side. The informal entrance always leads into the primary central space (Fig. 70).



**Fig. 70**

## ENTRANCE EXPERIENCE

The main entrance is articulated by entrance elements consisting of the gate, short drive, entrance steps, veranda, front lawn and main door. Other accesses into the house include direct access from front and rear verandas into bedrooms and dining room, service access for servants at the rear end of the house and an informal entrance at the side. These accesses are less articulated (Fig. 71).

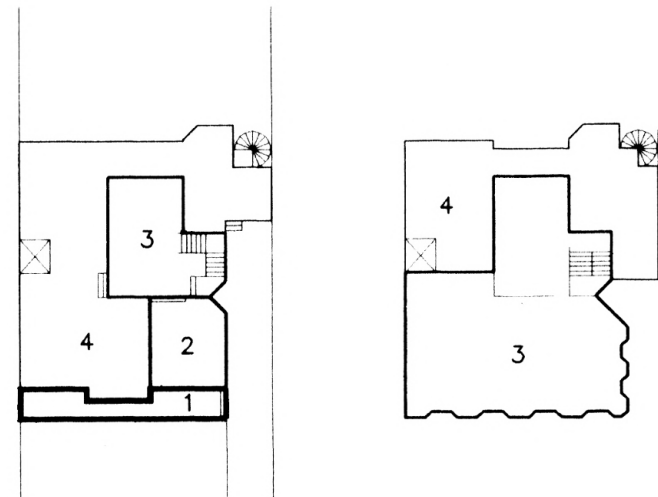


**Fig. 71**

## INTIMACY GRADIENT

Four distinct levels can be identified from the most public and formal to the most private and informal:

- 1) Entrance (veranda and front lawn)
- 2) Public (drawing room)
- 3) Semi-public (dining room, family room or lobby)
- 4) Private (bed rooms and rest of the house) (Fig. 72).



**Fig. 72**

## COMPARISON OF PATTERNS IN THE BUNGALOW MODEL AND THE DLF HOUSE

### CENTRALIZED SITE LAYOUT

Both the bungalow and the DLF house are centrally located on site, enclosed by a low compound wall. The site in both house types has three distinct zones: 1. front lawn 2. building envelope and 3. rear lawn. In the bungalow model, larger site area provides more flexibility in the location of the gate and the main entrance. The spatial requirements of the automobile and the smaller lot size places restrictions on the location of the gate and the main entrance in the DLF house. While the kitchen and servants quarters are located in detached outbuildings in the bungalow, these spaces constitute part of the main building envelope in the DLF house. However, visual and spatial segregation is still maintained from the servants area by locating it above the car parking space, and providing a separate access stairway at the back. By placing the building mass back from the street, the DLF house still retains the character of the bungalow set back from the street and fronted by green space. Also, the compound wall constitutes the defined territory within which individual choices are expressed. Again, the smaller lot size places restrictions on the location of the building as a completely detached unit on all sides (Fig. 73).

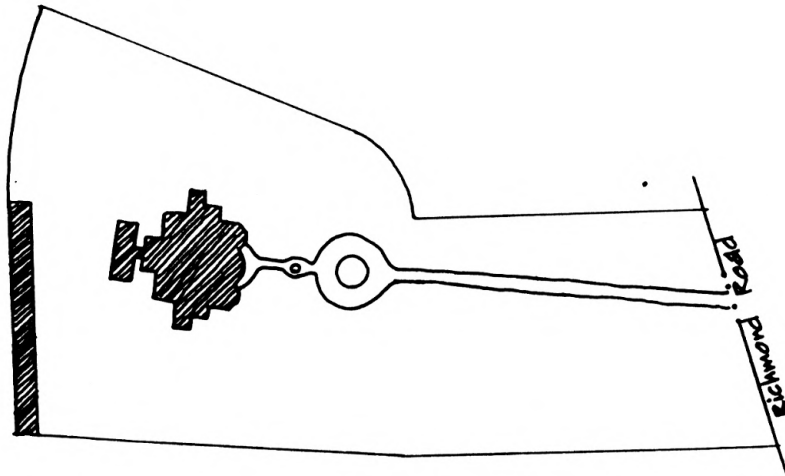
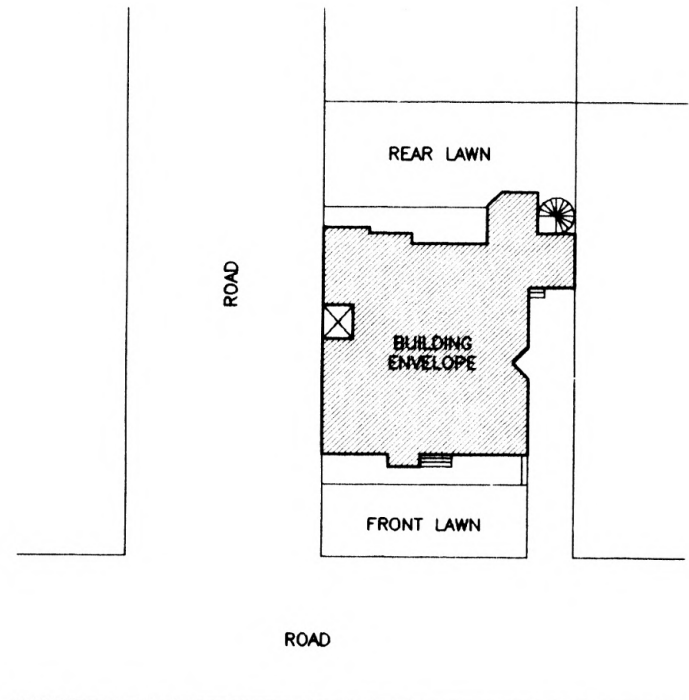


Fig. 73



## HIERARCHY OF SPACES

Distinct spatial hierarchies can be identified in both the house types. Although the central space constitutes the most important space in both the bungalow and the DLF house, it differs in function. In the bungalow the central space constitutes the drawing room (sometimes the drawing/dining room) while in the DLF house the drawing/dining room, family room or the lobby forms the central core of the building mass. Besides the veranda and the front lawn, the terrace constitutes an important space in the DLF house. Because of the smaller size of the front lawn, entertainment activities which were accommodated on the front lawn in the bungalow are extended to the terrace in the DLF house.

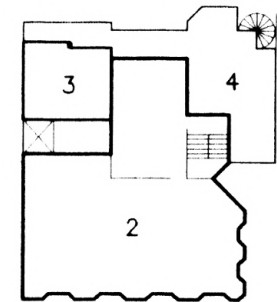
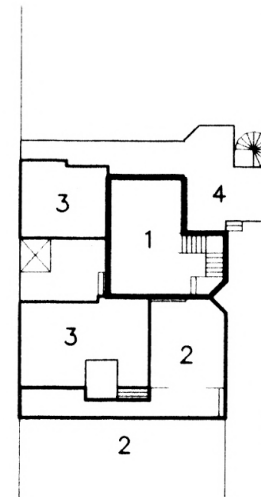
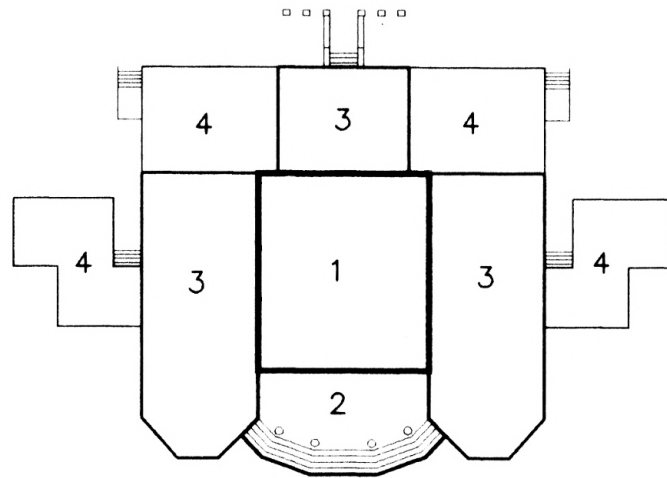
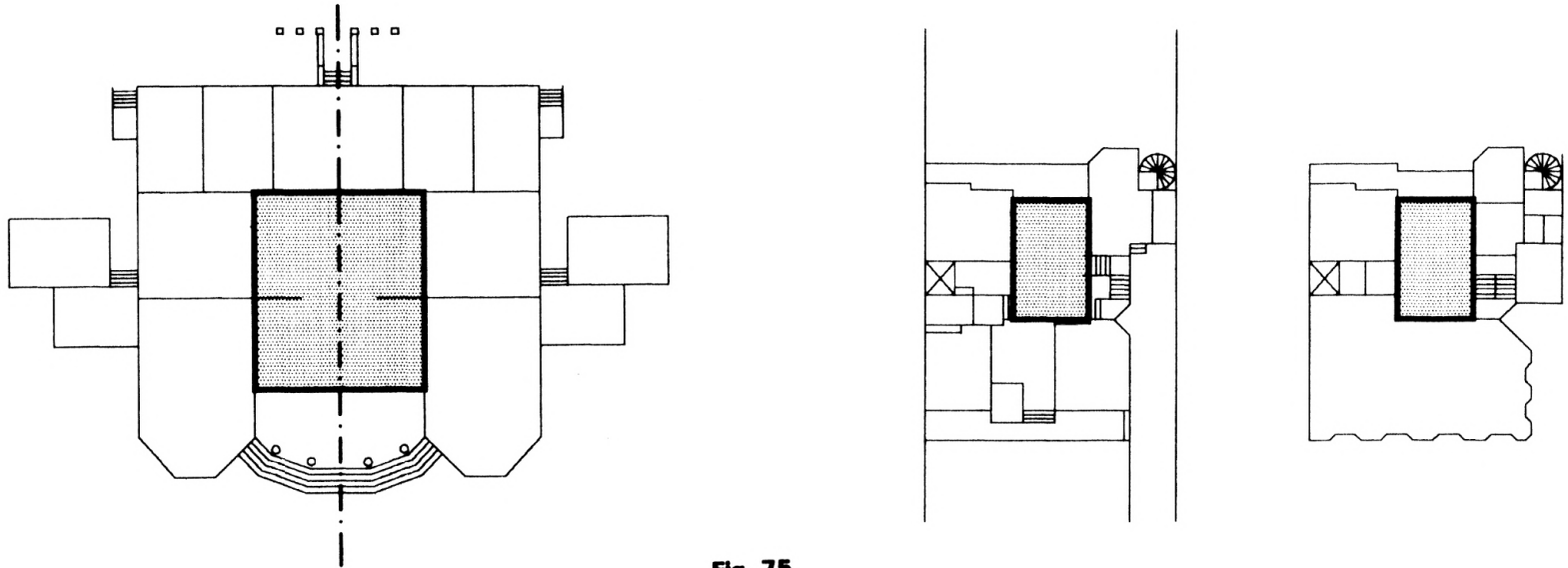


Fig. 74



## ORDERING IDEAS

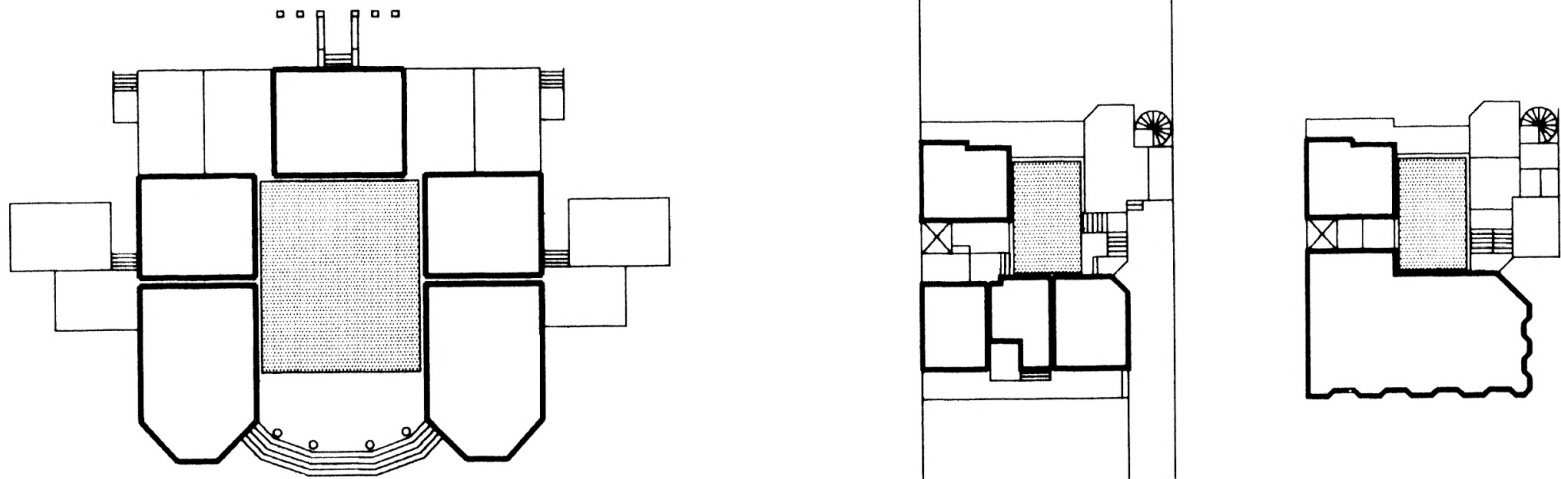
The bungalow model represents a strong symmetrical axial order while spatial order in the DLF house is more fragmented. The plan is unsymmetrical and does not have a clear axis. However, the location of the primary space at the center of the building mass expresses some similarities to the spatial order in the bungalow where the primary space constituted the dominant center.



**Fig. 75**

### CANONICAL SPATIAL ARRANGEMENT

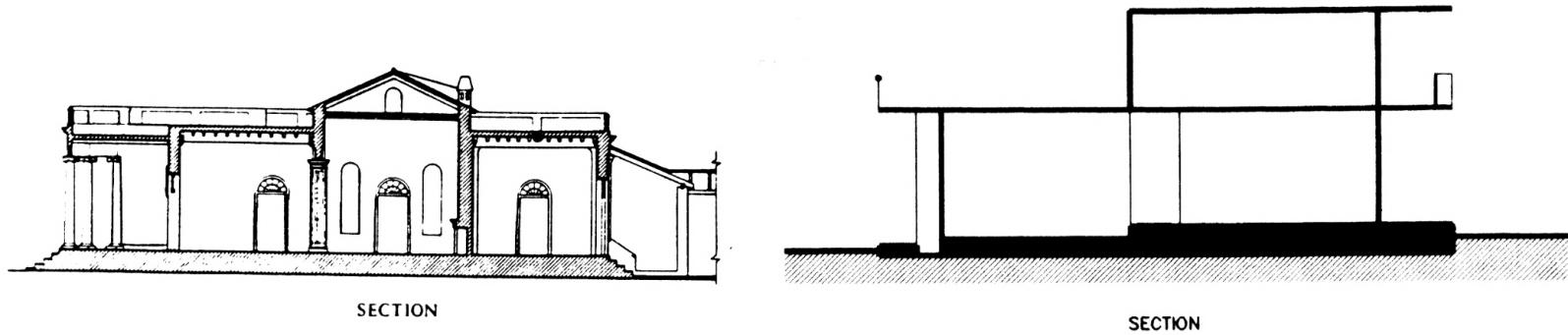
Both house types have a centralized plan with the major use spaces located around the primary center. In the bungalow, the primary spaces forming the center (drawing room and dining room) are linearly arranged expressing the spatial continuity of the axis. Since the DLF plans are unsymmetrical and fragmented they seldom express the spatial continuity of a linear arrangement. However in some of the DLF houses where the drawing room and dining room constitute the primary center, they are linearly arranged and express spatial continuity similar to the bungalow model (e.g. Bhattacharya house and Verma house).



**Fig. 76**

### CEILING HEIGHT VARIETY

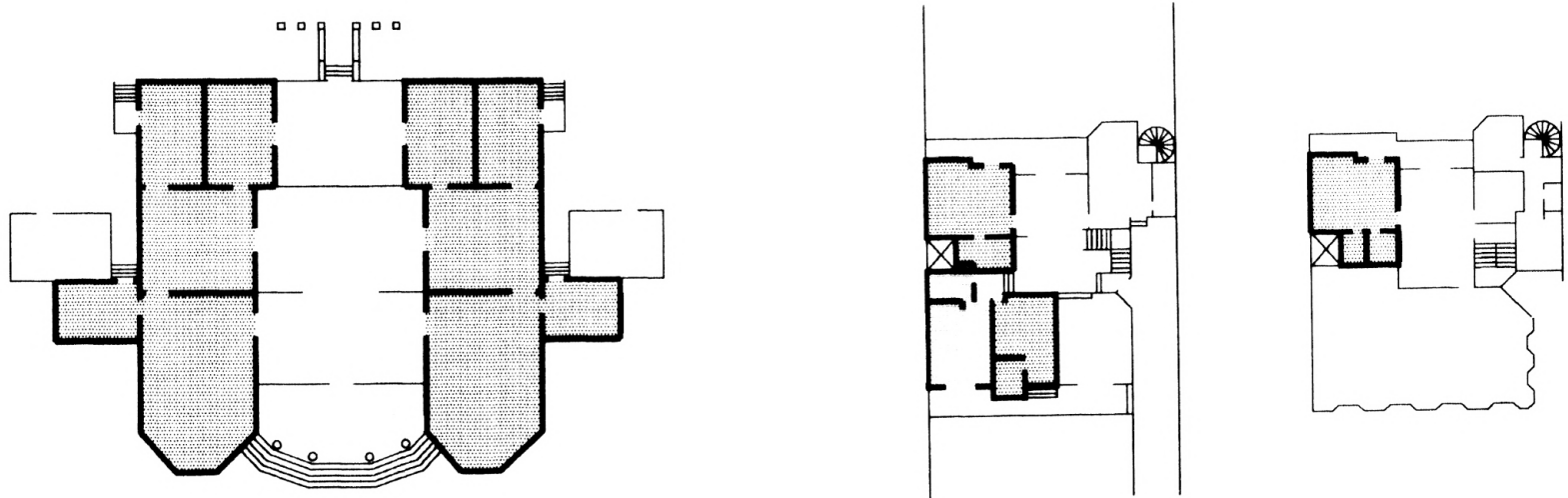
The single storied structure of the bungalow allows for greater variation in roof heights. The multi-storied structure of the DLF house places restrictions on roof height variations. However, in some single family houses, the central primary space has a double height ceiling. This pattern can be compared to the higher roof of the central primary space in the bungalow model.



**Fig. 77**

## SUITES OF ROOMS

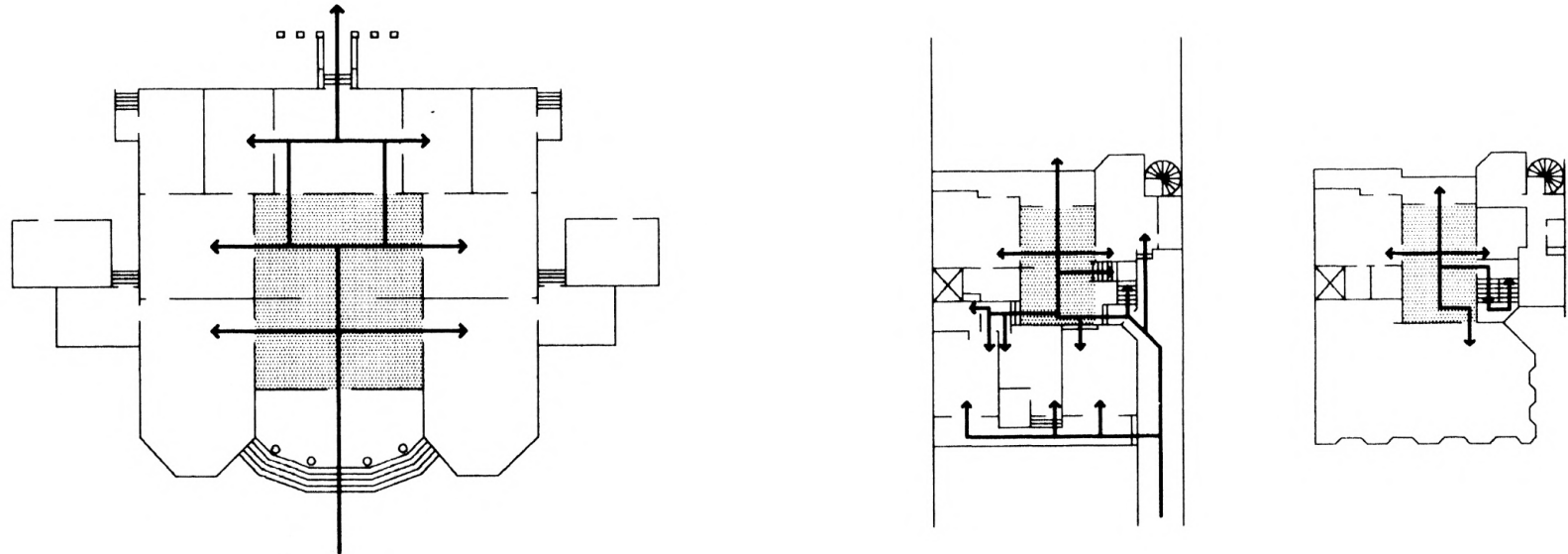
Both house types have rooms with attached bathrooms forming a bedroom suite. Each house has more than one suite. In the DLF house, the master bedroom suite has an attached dressing room and bathroom. Some houses in the DLF have one common bathroom with two accesses. One access connects to the bedroom and the other access connected to the lobby or hallway area is for visitors (e.g. Khosla house, Ganapathi house).



**Fig. 78**

### CIRCULATION FROM THE CENTER

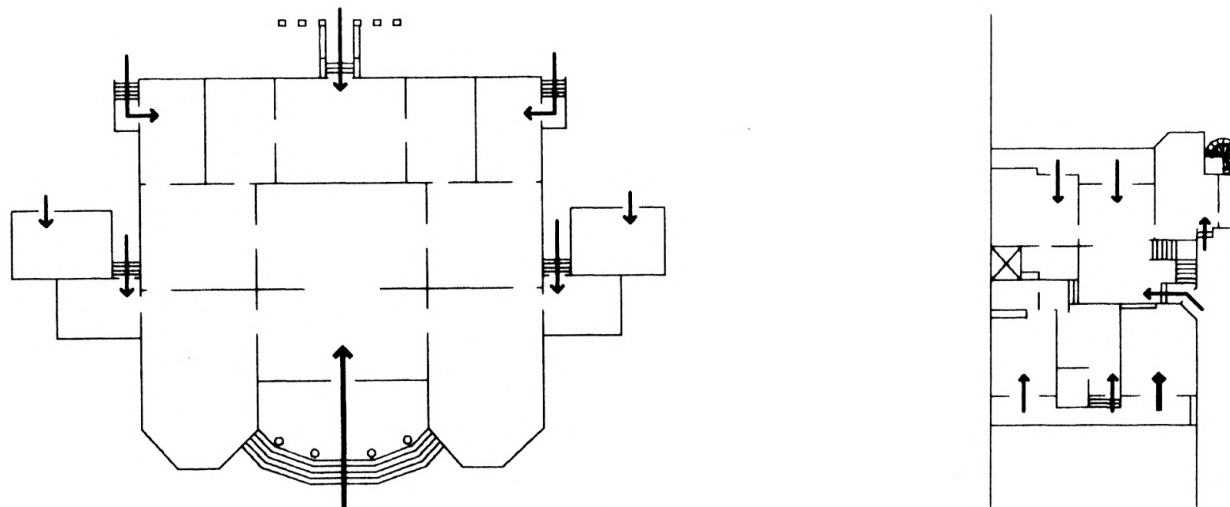
In the bungalow model, the primary circulation path is congruent with the primary axis of spatial ordering and reflects the spatial symmetry of the plan. In the DLF house, the primary circulation path is along the edge of the site because of the contingencies placed on the location of the building, by the requirements of the automobile and the restrained flexibility of the smaller lot size. The house is approached from the informal access at the side rather than the center as with the bungalow. However, the front still constitutes the main, formal entrance to the building and is used by visitors to the house. Internal circulation in both the house types is always through the primary central space which constitutes the main circulation node. External circulation in both the house types includes direct access into the guest bedroom suite from the veranda and service access for the servants at the rear end of the house. In some of the DLF houses, the kitchen located at the rear end of the house has a service access from the rear lawn for servants.



**Fig. 79**

## ENTRANCE EXPERIENCE

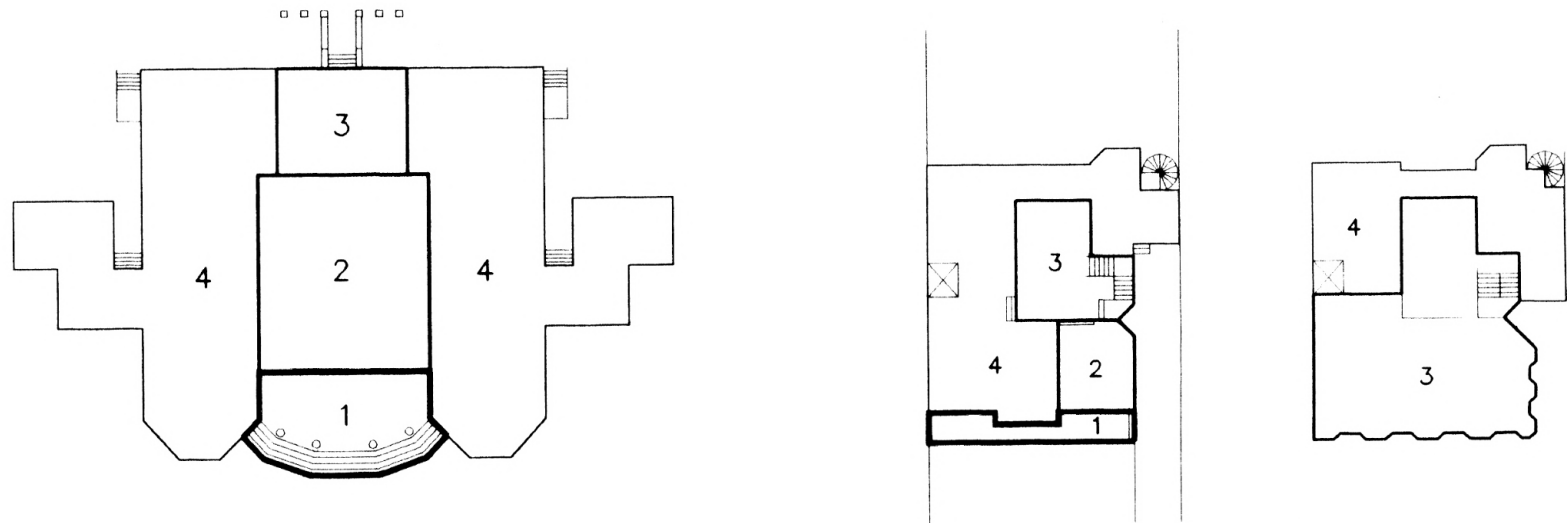
The main entrance located in front in both the house types, is articulated by entrance elements consisting of the gate, drive, entrance steps, veranda, front lawn and main door. Bungalows from late nineteenth century had a porte cochere for carriages but this entrance element was not used in the bungalows from early twentieth century. In the DLF houses, because of the smaller lot size restriction these entrance elements are scaled down to a large extent and do not have the same monumental effect as in the bungalow model. Both house types have other accesses into the house which include direct access from the verandas into bedroom suites and access for the servants from the rear end of the house. The bungalow model had external service accesses into bathrooms for cleaning. This pattern is obsolete in the DLF house although the bathrooms are still located at the periphery of the plan. Instead, the DLF houses have an additional informal entrance at the side which is used by the residents and servants. The informal entrance has the most direct connection to the central space, unlike the bungalow model where the main entrance has the most direct connection to the central space. This arrangement has important implications on the intimacy gradient in the house.



**Fig. 80**

## INTIMACY GRADIENT

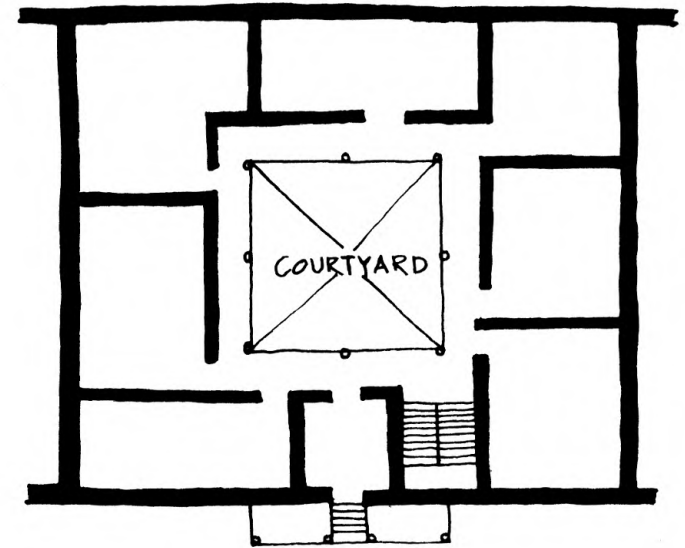
Four distinct intimacy levels can be identified in both the house types. The primary central space in the bungalow constitutes the "public" space whereas in the DLF house, the primary central space is the "semi-public" or more private area of the house. This difference in intimacy levels between the bungalow and the DLF house could relate to the intimacy gradients in traditional courtyard houses in India where the public space was always peripheral and the central courtyard constituted the private area. The family room in the DLF house reflects spatial functions similar to the central courtyard space in traditional Indian houses. The bedrooms and the rest of the house constitute the private space in both house types.



**Fig. 81**



Comparisons of patterns between the bungalow model and the DLF house indicate, that some colonial patterns have been modified in the DLF house, while others have been adopted without any change. The three part division of the site, and the location of the unit within the compound are clearly colonial patterns, in contrast with the traditional Indian courtyard house. Typically, the traditional Indian courtyard house is a one or more storied building, with rooms arranged around a central courtyard. The unit opens directly onto the street and is attached to adjacent units on both sides. Unlike the bungalow, the Indian traditional house does not have gardens and lawns. The courtyard constitutes the only open area from which the building derives light and ventilation (Fig. 82).



**Fig. 82**

In the DLF house, the building mass set back from the street, as in the bungalow, is in contrast with traditional housing patterns, where the main entrance to the house opened directly on to the street. Provision of a segregated servant space in each unit also reflects adoption of colonial patterns and life style. As in the bungalow, the "center" still constitutes the primary space, but this pattern could also be attributed to the traditional courtyard houses, where the central courtyard constituted the primary space. The specialization of rooms as drawing room, dining room, bedroom, family lounge, etc., and their nomenclature is clearly a colonial pattern because traditional house did not have specialized areas with demarcated functions. Also, the provision of an attached bathroom with each bedroom constitutes a typical British spatial arrangement where each bedroom was a suite. In traditional Indian houses, bathrooms were always detached from the main building envelope for hygiene and other religious reasons. Although bathrooms in the DLF houses do not have external accesses, they are still located on the periphery of the floor plan as in the bungalow, for ventilation purposes. Separate accesses for servants from the rear side of the house and direct accesses into bedroom suites from the verandas also reflect colonial norms of spatial arrangement. All of these patterns in the DLF house represent the process of *transformation* whereby changes in the original building patterns occur over time in a culture contact situation. They are the physical manifestations of *acculturation*

or changes in the cultural patterns of the indigenous people.

The terrace, which did not constitute a dominant element in the bungalow model, is an important traditional feature which has been modified in terms of spatial function in the DLF. In traditional Indian houses the terrace was used as an outdoor sleeping area at night. Terraces in the DLF houses are mainly used for entertainment purposes, as an extension of the lawn space. This is a clear example of the process of *accommodation* where traditional Indian elements have been adopted to meet the changed cultural requirements of the people.

Although the central space constitutes the primary space in the DLF house as in the bungalow, its functions are different. The drawing room/dining room constituted the primary central space in the bungalow. In most DLF houses the center is occupied by the family lounge and the drawing/dining room is now placed on the periphery of the plan. So while the center was a "public" space in the bungalow, it is more private in the DLF houses. This pattern can be attributed to the traditional housing pattern where the central courtyard functioned as a family space and was more private than the peripheral spaces facing the street.

### **COMPARISON OF BYE-LAWS FOR THE BRITISH CANTONMENT AND THE DLF QUTAB ENCLAVE**

In this section, comparisons will be made between building codes for the bungalow unit, and the individual residential unit in the DLF. Bye-laws for the Civil Lines in Delhi have been referred to because of the unavailability of bye-laws for the Bangalore Cantonment. Since all the cantonment towns in India were laid out according to standard rules and regulations, bye-laws for most towns were similar. The bye-laws used to regulate the layout of buildings in the Civil Lines at Delhi, were those made under sections of the Punjab Municipal Act, 1911.<sup>125</sup> Architects designing houses at DLF need to conform to the Punjab Scheduled Roads and Controlled Area Restriction of Unregulated Development Rules, 1965. Comparisons made in Table 4 identify the similarities between the building codes for the bungalow-compound unit in the cantonment and the basic residential unit in the DLF.

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<sup>125</sup>Excerpts from Notified Area Committee, Civil Station, Delhi, 1938.

**Table 4.-Comparison of Bye-laws for the British Cantonment and the DLF Qutab Enclave**

CANTONMENT	DLF QUTAB ENCLAVE								
<p><b>Area of Site which may be built upon:</b> Not greater than 1/3rd the area of the lot.</p>	<p><b>Maximum permissible ground coverage:</b></p> <table> <tr> <th><u>Plot Size</u></th><th><u>Coverage</u></th></tr> <tr> <td>225 sq.m</td><td>60%</td></tr> <tr> <td>225-450 sq.m</td><td>40%</td></tr> <tr> <td>450-855 sq.m</td><td>35%</td></tr> </table>	<u>Plot Size</u>	<u>Coverage</u>	225 sq.m	60%	225-450 sq.m	40%	450-855 sq.m	35%
<u>Plot Size</u>	<u>Coverage</u>								
225 sq.m	60%								
225-450 sq.m	40%								
450-855 sq.m	35%								
<p><b><u>Description of habitable rooms</u></b>  <b>Minimum size of rooms:</b> Floor area of not less than 100ft<sup>2</sup>.  <b>Minimum height of rooms:</b> Not less than 10ft. from floor to ceiling.  <b>Ventilation of rooms:</b> Doors and windows and other apertures will have a total area of not less than 25% of the floor area of the room.</p>	<p><b>Minimum size of rooms:</b> Floor area of not less than 9.29m<sup>2</sup> (100ft<sup>2</sup>)  <b>Minimum height of rooms:</b> Not less than 2.74m. (9.1ft.) from floor to ceiling.  <b>Ventilation of rooms:</b> Doors and windows and other apertures will have a total area of not less than 25% of the floor area.</p>								
<p><b><u>Description of kitchen</u></b>  Minimum area of not less than 30ft<sup>2</sup>, minimum width of 4ft. and minimum floor to ceiling height of 10ft.  Should have a window with an area not less than 4ft<sup>2</sup>.</p>	<p>Minimum area not less than 5.95m<sup>2</sup> (65ft<sup>2</sup>), minimum width of 1.83m (6ft.) and minimum floor to ceiling height of 9.1ft.  Doors, windows and other apertures should have an area of not less than 25% of the total floor area.</p>								
<p><b><u>Description of W.C's and Bathrooms</u></b>  <b>Bathrooms:</b> Should have a minimum floor area of 30ft<sup>2</sup> and a minimum width of 4ft. Should have a window with a minimum area of 4ft<sup>2</sup> and if the room is of minimum size, some means of permanent ventilation.  <b>W.C.:</b> Should have a minimum floor area of 20ft<sup>2</sup> and a minimum width of 3ft. Should have a window with an area of not less than 2ft<sup>2</sup> opening on an external wall and some means of permanent ventilation.</p>	<p><b>Bathroom:</b> Should have a minimum area of 1.8m<sup>2</sup> (20ft<sup>2</sup>) and if provided with a W.C., minimum area of 3m<sup>2</sup> (32ft<sup>2</sup>) and a minimum width of 4ft.  <b>W.C.:</b> Minimum area of 1.1m<sup>2</sup> and minimum width of 0.85m (3ft.).  Both the bathroom and W.C. should have a window opening on an external wall with a minimum area of 25% of the total floor area plus 0.2m<sup>2</sup> of permanent ventilation.</p>								
<p><b><u>Staircases</u></b>  <b>Minimum width:</b> 3ft. (changed in 1940 to 2.5ft.)  <b>Maximum riser height:</b> 9 inches  <b>Maximum tread width:</b> 9 inches</p>	<p><b>Minimum width:</b> 0.69m (2.5ft.)  <b>Maximum riser height:</b> 0.23m (9 inches)  <b>Maximum tread width:</b> 0.23m (9 inches)</p>								

<p><b><u>Internal ventilation courtyard</u></b></p> <p>Minimum area of a courtyard upon which inhabited rooms abut should be 25% of the aggregate floor area of the rooms and verandas abutting the courtyard and the minimum width should be 10ft in any direction.</p>	<p>Minimum area of a courtyard upon which habitable rooms abut should be 25% of the aggregate floor area of the rooms and verandas abutting the courtyard and the minimum width should be 3m (10ft) in any direction.</p>
<p><b><u>Front and Rear open spaces</u></b></p> <p>Adequate means of access for external light and air should be provided on the front and rear of the building in accordance with the following rules:</p> <ul style="list-style-type: none"> <li>i) Every building should have an open space in front within the compound of not less than 15ft. in width or half the height of the building, whichever is more.</li> <li>ii) Every building should have an open space in the back of not less than 10ft. width or half the height of the building, whichever is more.</li> <li>iii) Habitable rooms not receiving light and air from either the front or the rear should have the whole of one side of the room abutting an interior open space such as a courtyard.</li> </ul>	<p>All houses have an open space in front (front lawn) and at the back (rear lawn) abutting the compound wall. The width of these lawn spaces varies in proportion with the lot sizes.</p>

**Table 4.-Continued**

## CHAPTER 8

### CONCLUSIONS

Traditionally Indians ate their meals sitting on the floor. The food was served either on leaves or on metal . . . plates. Now in the larger towns and cities, the educated and Westernized groups increasingly prefer to eat at tables. The most obvious feature of the change is the new technology - chairs, tables, stainless steel utensils, spoons.<sup>126</sup>

From the above quote it can be inferred that the gradual change in the traditional life styles and activity patterns of the Indian people in the post-independence era, is attributed to rapid modernization and westernization. King in his article on "The Westernization of Domestic Architecture in India" says, "that there is no single study which examines the historical development of the process which the author of the above quote has described, namely, the Westernization of Indian material culture and particularly, its domestic dimension." He adds that, "Srinivas uses the term 'Westernization' in a general sense to discuss the changes brought about in Indian society and culture as a result of 150 years of British rule, the term subsumes changes occurring at different levels - technology , institutions and ideology."<sup>127</sup> In his paper, King also states that the notion of 'Westernization of domestic architecture' implies three inter-related changes which have both affected urban house forms in India, and the larger urban setting in which these house forms are located. He describes these changes as,

1. A change in house plan, form and structure. This means a change from a one or more storied courtyard-type dwelling, with rooms facing inward onto an internal courtyard, and structurally joined to similar houses on one or more sides, to a free-standing, courtyard-less, outward facing, one or two-storied European styled bungalow. It also implies a change in the number, size and arrangement of rooms.
2. The change in house form also involved a change in location or a move away from the traditional indigenous city to a suburb.
3. The adoption of western domestic equipment especially cutlery, tableware, cooking and serving utensils, furniture, sanitary

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<sup>126</sup>Srinivas, M.N., "Westernisation", Social Change in Modern India (1966), as quoted in King, A.D., "The Westernisation of Domestic Architecture in India", Art and Archeology Research Papers, vol. 11, p. 32, June 1977.

<sup>127</sup>Ibid.

equipment etc.<sup>128</sup>

It is important here to distinguish between the terms 'Modernization' and 'Westernization' as they relate to this study. In the west, modernization is understood as changes brought about in a society due to industrialization. While this was largely an autonomous or internal process in western society, in India however, modernization was introduced from the outside without industrialization, through the process of colonialism.<sup>129</sup> The colonial society in India established a process of urbanization which was dependent on industrialization in Britain. Although well developed urban centers had existed in India prior to colonial rule, the economy was agriculture based. The British colonists introduced transport technology in the form of railroads, steam carriages, road networks, etc., and established industries. This led to the growth of cities with an urban based economy. The rural-urban distribution of population changed and a new class structure based on economic as opposed to the traditional caste system emerged. These changes led to specialized land use and building types in the urban centers, which had an immense impact on the built environment in the cities.<sup>130</sup> Thus in India, the urbanization brought about by colonialism was a form of *dependent urbanization* where urbanization took place in the colonial society because of industrialization in Britain.

The impact of colonialism on India was that of a modern (i.e. industrial), western (i.e. British) and colonial (i.e. politically and socially dominant) power. In this sense, modern is manifest in the form of technology i.e. industrial, western as a type of culture and colonial as a form of power relationship. So while in the western city, distinguishing pre-modern from modern requires distinguishing between the pre-industrial and industrial, in India it also requires the distinction between the modern understood as industrial and western

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<sup>128</sup>A major difference between Indian and British residential practices was that the British furnished their houses with a variety of objects such as chairs, tables, beds, sofas, etc. Traditional Indian houses had very little domestic equipment, usually in the form of mats, rug, pillows and roll-away mattresses which could be stored away when not in use. The lack of heavy interior furnishings gave considerable flexibility to the use of interior spaces in the traditional Indian house. (Evenson, N., The Indian Metropolis, pp. 71-72, 1989)

<sup>129</sup>Colonialism has been defined as 'the establishment and maintenance, for an extended time, of rule over an alien people that is separate and subordinate to the ruling power. ("International Encyclopaedia of Social Sciences", New York, 1968)

<sup>130</sup>King, A.D., Colonial Urban Development, p. 128, 1976.



understood as cultural or colonial.<sup>131</sup> This is because of the fact that the most important difference between the historical development of the Indian city and its western counterpart over the last four centuries is the phenomenon of colonialism. In the Indian situation therefore, it is difficult to distinguish between 'internal' modernization i.e the transformation of Indian society from within and 'westernization' understood as the transfer of values, attitudes, forms of knowledge, technology, institutions and cultural models as a product of colonialism.

British residential areas in India were regulated by culture-specific norms to effectively prevent infiltration except by members of the indigenous community who were willing to adopt the lifestyle of the colonial inhabitants. Movement into such areas as a symbol of social status and progress made the simultaneous process of westernization inevitable. This process of gradual westernization is evident in the following quote from a member of India's post-independence business elite. He describes how both the architectural and socio-administrative environment of British rule in Lahore, influenced the lifestyle of his father, an official in government service. On retirement the official built a house for himself in 'Model Town', a suburb south of the civil lines six miles out of Lahore.

Somebody had conceived the idea in 1925 of acquiring a big tract of wasteland . . . and dividing it into plots. The plan of the town was completely geometrical . . . The roads had no names but the blocks were alphabetically numbered . . . they (the houses) were all patterned on the government bungalows which had been their homes . . . Each house was divided into two parts by a huge vestibule in the middle. On one side were dining and drawing rooms and an office room; on the other, the bedrooms with, dressing rooms and bathrooms.<sup>132</sup>

In this study, the phenomenon of 'westernization' understood as a form of cultural diffusion or acculturation, has been isolated and identified in contemporary urban residential practices in India which owe their origin more to 'westernization' through colonialism than to the economic process of 'modernization through industrialization'. In an attempt to study the above process of westernization, the research began with the hypothesis 'that during the colonial era a style and pattern of urban residence (in this case that of a suburban

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<sup>131</sup>King, A.D., "Colonialism and the City" in Ballahatchet, K. and Harrison, J., The City in South Asia: Pre-modern and Modern, p. 6, 1980.

<sup>132</sup>King, A.D., "The Westernisation of Domestic Architecture in India", Art and Archaeology Research Papers, vol. 11, p. 37, June 1977.

elite) was introduced by the British people, which in the post-independence era has become a reference model and status symbol for the Indian upper middle class, whose life styles and residential patterns substantially continue to reflect colonial patterns'. Through a study of the evolution of the "British Colonial Style" of domestic architecture in India and its influences on the DLF Qutab Enclave housing development in New Delhi, an attempt was made to identify the processes of *acculturation*, *cultural transformation* and *accommodation* demonstrated in the organization and design of the built environment. The acceptance of the 'house within its own compound' as the basic urban residential unit by members of the post-colonial Indian society, represents one of the most significant aspects of westernization as a consequence of colonialism.

The research has tried to emphasize that the built environment in India has developed as a continuum owing to a series of specific historic conditions which have led to changes in life styles, values and activity patterns. Also, these changes have occurred through a selective process, whereby the Indian people have accepted certain patterns and rejected or modified certain others to suit their needs. The study also proves that architecture or built form is a product of economic, political and social power and that buildings are an integral part of the institutions and social processes that produce them. It illustrates the extent to which a colonial power successfully implanted a set of culturally-based aesthetic and social values onto the native population, and how these values have become part of the contemporary indigenous tradition.

Amos Rapoport has defined tradition as something that is transmitted over time. He states,

some parts of this tradition (e.g artifacts) may be accepted and others (e.g life styles or social arrangements) may be rejected. Thus different parts of tradition may change differentially and in different ways so that certain essential elements continue and are combined with new ones, as is often the case in developing countries.<sup>133</sup>

Within Rapoport's definition, the British colonial style in India cannot be excluded from traditional architecture. The colonial style and

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<sup>133</sup>Rapoport, A., "Attributes of Tradition", Dwellings, Settlements and Traditions, p. 84, 1989.



its influences cannot be equated to contemporary high-style or popular design.

King in his paper on "Colonial architecture and urban development" says,

the form of a building results from the application of a set of subconscious rules showing 'how things should be done'. These rules about buildings and spaces are part of a person's culture, telling him or her how to build . . . How people think governs how people build. And how people build - the structures, symbols and spatial divisions they create - also affects how people think.<sup>134</sup>

Therefore, to understand how a certain built form is generated it is important to relate it to the culture of the society that has produced it. King has identified three levels of rules in modern architecture. The first level of rules are those determined by the social and cultural assumptions of the society. These rules relate to the way people perceive, classify and interpret the world around them and are learned as part of the cultural and social experience or *acculturation*. The second level of rules are those evolved by the architectural profession. These are rules relating to the application of building codes and standards regarding health, safety, materials, spatial provisions and aesthetics. The third level of rules are those relating to each individual architect, which distinguish the work of one architect from that of another. All these rules form part of the design process which focuses on the function of the building, requirements of the occupants and how it is built and financed.

King's rules can be compared to Alexander's "pattern language". Alexander defines "a pattern language" as a finite system of rules which helps to generate buildings with a balance of uniformity and variety. It is also a way of understanding the generative processes which gave rise to these patterns and how the "structure" of a space supports the pattern of events. He further adds that,

it is the structure of the underlying language which is doing most of the work. If you want to influence the structure of your town, you must help to change the underlying languages. It is useless to be innovative in an individual building, or an individual

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<sup>134</sup>King, A.D., "Colonial architecture and urban development: the reconversion of colonial typologies in independent India", Lotus International, vol. 34, p. 46, 1982.

plan, if this innovation does not become part of a living pattern language which everyone contributes to, and everyone can use<sup>135</sup>."

Alexander suggests that the languages which people have today are so fragmented, that most people no longer have any language, and what they do have is not based on human or natural considerations or their own intuitions. People have lost confidence in their own judgement and hand over the right to design to the architect. They have lost their own pattern languages so utterly they will do anything which architects tell them. Yet, architects themselves have also lost their intuition. Since they no longer have a widely shared language which roots them in the ordinary feelings people have, they are also prisoners of the absurd special languages which they have made in private<sup>136</sup>.

In the past decade some Indian architects have continued to make a sincere effort to create architecture with an Indian identity. Often, it resulted in a sort of pastiche similar to the Indo-Saracenic style employed in the colonial period. Other architects have tried to make a reference to the Indian tradition without being literal, but this has often resulted in obscure references. For example, in the museum designed by Indian architect Charles Correa, on the site of Mahatma Gandhi's *ashram* in Ahmedabad, the architect identifies a revival of traditional ideas on the ground that simplicity of form reflects Gandhian traditions and values. Although the simplicity is reflected in the building, Gandhian values are not synonymous with Indian architectural heritage.<sup>137</sup> However, in some instances, architects have been successful in creating buildings with a strong cultural identity. Unfortunately, the above issues seem to be of concern to a few leading architects who are involved mainly in the design of institutional buildings. The typical bungalow house in a vast majority of fashionable urban residential enclaves like the DLF Qutab Enclave, continues to express a loss of identity. In a search for an individual style, elements from a variety of sources, such as French Villas, Spanish country tiles, classical porticoes, etc., are grafted on to a

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<sup>135</sup>Alexander, C., The Timeless Way of Building, p. 241, 1979.

<sup>136</sup>*Ibid.*, p. 233.

<sup>137</sup>Tillotson, G.H.R., The Tradition of Indian Architecture, p. 137, 1989.

modern frame. Indian traditional sources are often not used because of the fear that native sources might appear backward. This has created a hybrid pattern of incongruous urban residential environments and the loss of a common "pattern language", as seen in the DLF houses.

What is required in the contemporary Indian situation is accommodation between colonial influences and cultural traditions such that the built environment acquires a distinct cultural identity specific to the locale, and is representative of India's cultural history of assimilation. However, in an attempt to create traditional environments, architects in India have tended to equate indigenous, vernacular architecture with that which is traditional. They have superficially applied historical elements to contemporary architecture which neither helps in preserving culture (defined here as life style, activity patterns, values and beliefs) nor does it satisfy the users' needs in a modern environment in a pragmatic way.

This study hopes to be of relevance to the contemporary Indian context because architects need to be more knowledgeably involved in the design of urban housing in India. Architecture, besides being a creative profession is also one with important social implications. The aim of this research has been to gain a better understanding of the socio-cultural aspects of design in the Indian context. The study is intended to benefit contemporary Indian architects in the following ways:

**1. By demonstrating how the built environment in New Delhi has developed as a continuum over time** - The study of the evolution of the British cantonment model and the bungalow-compound unit indicate that British colonial architecture in India developed as a continuum over time. The presence of some aspects of this cultural continuity in the DLF Qutab Enclave represent how colonial traditions have become an intrinsic part of contemporary Indian architectural tradition. The changing life-style of the Indian people therefore, cannot be attributed to modernization and global influences only.

**2. By identifying a pattern language of the Colonial Model, colonial patterns which deserve design considerations but are not used in contemporary housing developments, can be identified** - For example, comparisons of patterns between the bungalow and the

DLF house have suggested that while the bungalow had a strong order in its spatial arrangement, the DLF houses have a fragmented spatial order. Since the spatial requirements for both the house types are similar, it is possible for architects to reconsider the organization of rooms in plan to reflect the open spatial quality of the bungalow. Also, ventilation and climate control constituted a very important part of bungalow design. Windows were minimized and the number of doors was increased to facilitate maximum cross-ventilation. Most DLF houses have very large windows which do not help in keeping the interiors cool. Contemporary architects need to give this colonial pattern further design considerations.

**3. By identifying the presence of some aspects of colonial patterns in contemporary housing developments, it can be suggested that a framework or pattern language exists, within which, the constant and changeable aspects of culture have found expression in the built form** - As seen in the DLF example, although many colonial patterns have been modified or transformed, numerous patterns in the DLF continue to be derived from spatial norms in the colonial model. These patterns which have been adopted through a selective process to suit the life style of the residents suggest, that the DLF house like the bungalow, is also a culture-specific environment with its own design norms. An understanding of these culture-specific norms related to the life style of the residents will help the architect solve the problem of excessive choice experienced both by him and his clients.

**4. By demonstrating the relationships between cultural change and changes in the built environment** - The gradual westernization of the Indian middle-class under the influence of colonialism led to changes in their traditional values, world-view and life styles. This culture change created a preference for a certain type of built environment and the consequent move away from the traditional Indian city to the suburb. This study demonstrates that culture change results in changes in the built environment to suit new cultural patterns and conversely, changes in the built environment can cause changes in the cultural values of a society. It is important for architects to understand this relationship between culture and the built environment in order to create environments which are congruous with and reflect the culture of a society. In an age when cities all over the world are becoming homogenous, it is challenge for the architect to realize these cultural differences and strive towards the creation of built environments as artifacts that differ from one culture to another.

**5. By evaluating the assets and/or liabilities of these colonial legacies within contemporary housing designs** - In India, the shift from traditional settlements and traditional housing patterns led to a breakdown of the extended family set up, and the emergence of nuclear families. This process has caused a proliferation in the number of households and dwellings, and a scramble for land. In the colonial era, the British cantonment occupied four times the area of the native city which contained a much higher density of population. In the post-colonial era, upper middle-class neighborhoods and old traditional settlements continue to reflect this disparity in terms of area occupied and population density. The preference for the colonial model of housing settlement by the upper middle class in India, has important economic implications related to land-ownership and tenure. Architects and planners who have a knowledge of the underlying patterns in these developments could play an important role in minimizing the existing disparities, by suggesting alternative layouts for contemporary neighborhoods, which combine the desirable spatial qualities of both the British and traditional Indian settlement patterns.

**6. By enabling architects and urban planners to revise building codes and standards and make urban structures more responsive to the activities of those for whom the city exists today<sup>138</sup>** - In the post-colonial era, most ex-colonial countries have continued to adopt building codes from the colonial era because the government has not made an attempt to revise these building codes. Unfortunately, most architects in private practice design within the contingencies of these outdated building codes, because they are not in a position to influence the government to revise these codes. Architects and planners working for the government need to have an understanding of the historic development of the built environment in the Indian city. This will enable them to evaluate building codes for their relevance in the contemporary context and make appropriate changes suitable to the cultural requirements of the people.

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<sup>138</sup> According to a 1971 UN report, in many colonial cities minimum standards emanating from a by-gone era are still prevalent and promoted (King, A.D., Colonial Urban Development, p. 288, 1976)

## SCOPE FOR FURTHER RESEARCH

British colonialism in India introduced a form of dependent-urbanization which disrupted traditional market structures and economic systems, and established new spatial relationships. These changes were significant in incorporating India into today's capitalist global market economy. Changes in the methods of production, and the development of a world wide mode of production have led to further transformations in the life styles of the people. The global process of capitalism which has reduced the city to a system of production and consumption, has brought about a homogenization of the urban built environment in India, as in other parts of the world. Also, the accelerated pace of urbanization, resulting from global economic forces, has caused unprecedented urban squalor, economic inequality, congestion, housing shortage and a scramble for land.

On the basis of current United Nations population projections, U.S demographers have calculated that by the year 2006 the world will become predominantly urban. 3.5 billion people will be packed into cities which cover only 1 % of the earth's 13,391 million hectares of land surface. Roughly nine-tenths of urban growth is expected to occur in the LDC's (less developed countries). Of the 23 cities listed by the UN with a population of over 10 million people, three are in India - Calcutta, Bombay and Delhi.<sup>139</sup> These statistics have important implications for the future of the built environment and the quality of life in these cities.

One of the major problems faced by the indigenous inheritors of the colonial legacy in post-colonial societies, has been the gross differences in densities and the varying levels of services provided for the inhabitants of different sectors of the city. This has created enormous disparities in living standards, life styles, incomes, opportunities and cultural traditions.<sup>140</sup> Current building standards and norms which govern the design of individual buildings and town planning need to be modified to suit contemporary requirements. The aim should be to bring about a gradual change in the life-style and consumption patterns of the people through a change in the architecture of the built environment. This relates to questions of taste, style and standards of living in contemporary post-colonial

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<sup>139</sup>Source: Indian Express, April 23, 1990.

<sup>140</sup>King, A.D., Colonial Urban Development, p. 274, 1976.



societies, which derive not only from their colonial past, but also from an expanding global system of capitalism which depends on accumulation and domestic consumption. With the growth of multi-national corporations and global markets in the past decade, cities all over the world are becoming more interconnected. Capitalism is seen as the most dominant external force influencing the shape of the built environment. To modify standards therefore will require not only a change in architecture but a thorough understanding of the economy and changes in the economic systems of post-colonial societies. A knowledge of architecture and the built environment as they relate to the economy could provide possible solutions to the growing problems of urbanization in these countries.

As cities and localities continue to receive external influences from many sources due to increased global interaction, it may be futile to isolate a single force and study its impact on the built environment, especially in the post-colonial situation, where many different eras and influences exist simultaneously and contribute to the development of the built environment. However, referring to Rapoport's definition of tradition as "something that changes differentially and in different ways so that essential elements continue and are combined with new ones", it seems worthwhile to develop a new definition for cultural identity in post-colonial cities - one that recognizes the city as a simultaneous manifestation of a multitude of values, world views and lifestyles. For although it is true that global technology and economic networks are gradually reducing all cities to similar patterns, cultural values which have become an intrinsic part of the tradition do continue to distinguish one city from another, as demonstrated in this study of a post-colonial city. Cities everywhere are rapidly becoming more like one another but the built environment still continues to demonstrate some cultural characteristics specific to the locale. As King has suggested, "if half of the 'modern' city in South Asia or elsewhere results from the application of culturally-neutral technology and the other half from the cultural values of the society in which it exists, we would go a long way in understanding both the city, as well as its problems, if we knew 'which half was which'.

Janet Abu-Lughod has also emphasized the importance of cultural studies in her works on urbanization in developing economies. She says,

The major metropolis in almost every newly-industrializing country is not a single unified city, but, in fact, two quite different cities, physically juxtaposed but architecturally and socially distinct.....These dual cities have usually been a legacy from the

colonial past. It is remarkable that so common a phenomenon has remained almost unstudied. We have no real case studies of the introduction of western urban forms into non-western countries.....a knowledge of the process whereby the former was introduced is of interest not merely historically.....but also as an example of culture change. Anthropologists have long studied the process of cultural diffusion of simple artifacts. How much more important to study the transplanting of man's most complex artifact - the modern city<sup>141</sup>.

This research has suggested that the identification and isolation of imported cultural models in post-colonial societies, provides an insight to the transformation of the built environment due to changes in the cultural values of a society. Conversely, it adds to an understanding of how the built environment plays an important role in perpetuating the cultural values of a society. In the modification and renewal of post-colonial cities, this knowledge of the relationship between the culture of a society and its built environment can go a long way in arriving at culturally relevant solutions to the problems of housing and design.

In the past decade, a growing interest has developed among architects and planners to study these aspects of urbanization which shape the city. A study of the impact of colonization and the process of indigenous transformation, is a prerequisite for understanding the paradox of the post-colonial modern city. Although this research has focused on *one* post-colonial city, it hopes to stimulate and identify the need for similar studies in other post-colonial cities in Latin America, Africa and Asia. Cross-cultural studies and comparisons between regions could identify possible solutions to improve the sub-human living conditions in these countries, classified as the less developed world.

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<sup>141</sup>Abu-Lughod (1965) as quoted in King, A.D., Colonial Urban Development, p. 22, 1976.

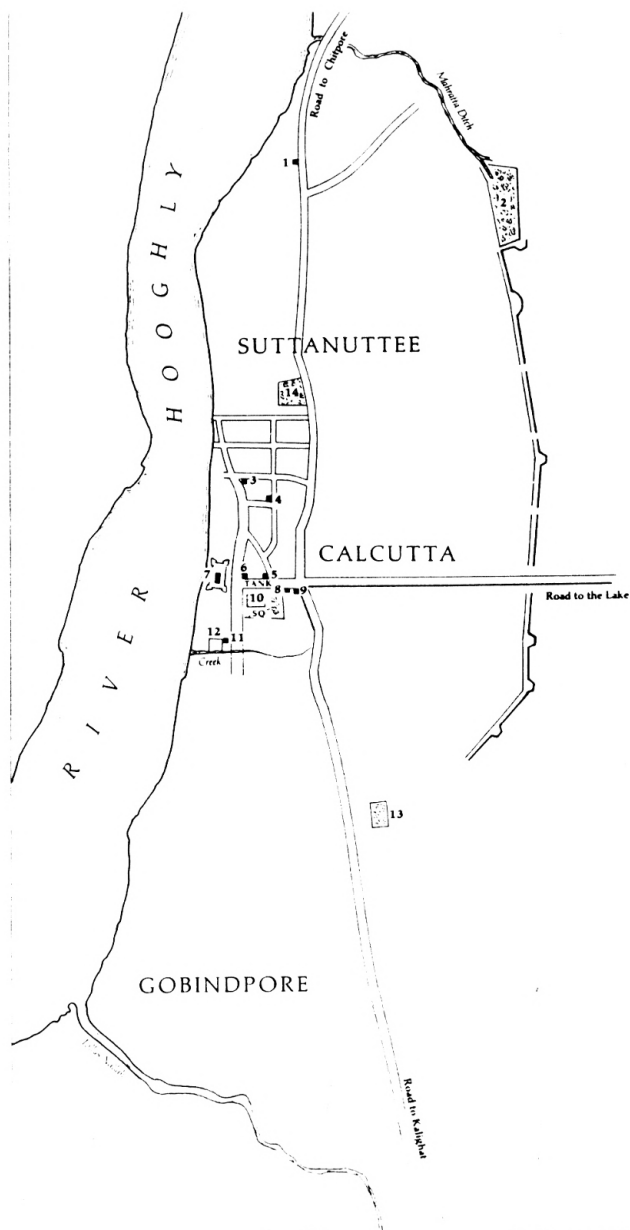


# APPENDIX A -- MAPS OF MADRAS AND CALCUTTA

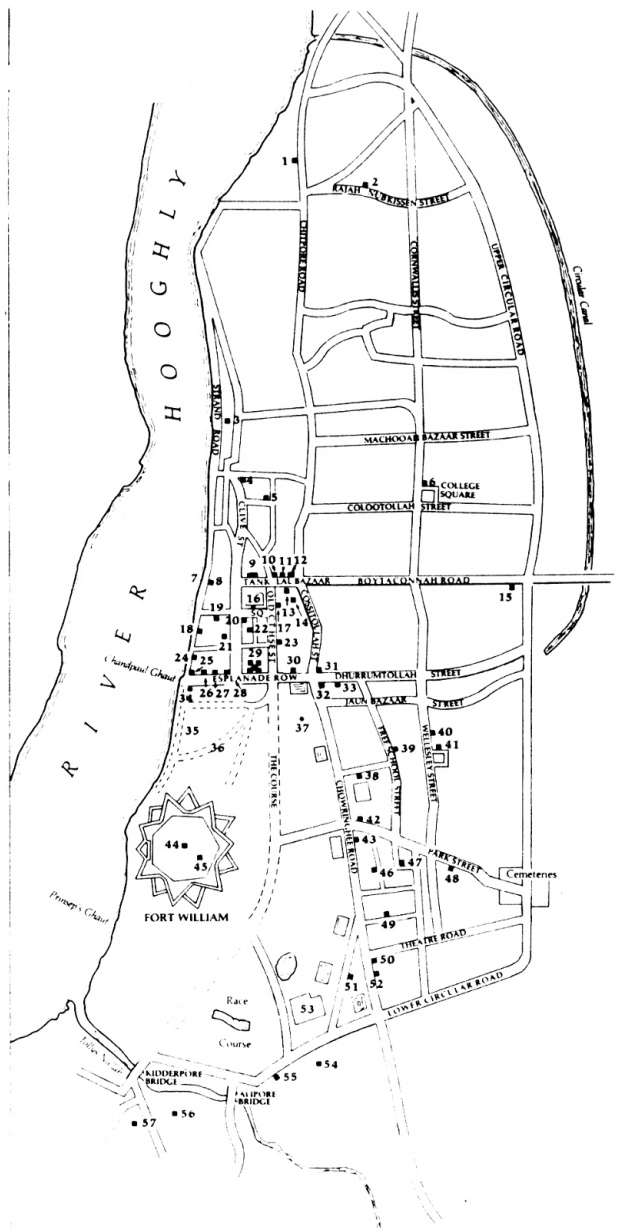


Madras in 1733. (Source: Love, H.V., Vestiges of Old Madras, vol. II, 1913)



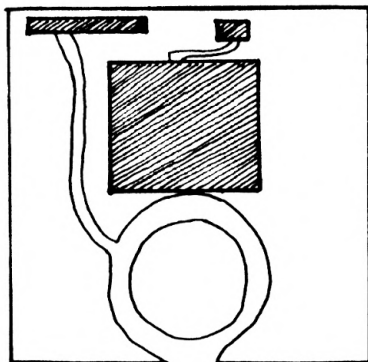
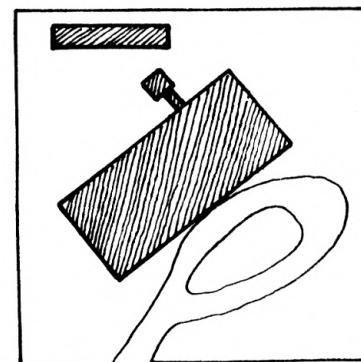
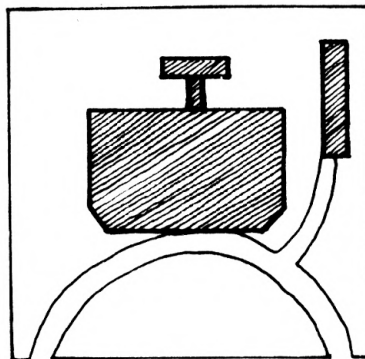
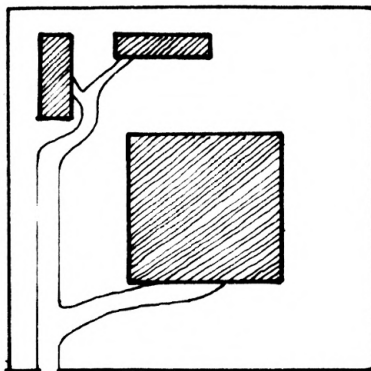


Calcutta 1690 - 1757. (Source: Losty, J.P., Calcutta, City of Palaces, p. 10, 1990)



Calcutta 1798 - 1858. (Source: Losty, J.P., Calcutta, City of Palaces, p. 72, 1990)

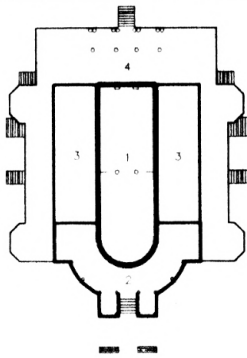
## APPENDIX B -- ILLUSTRATIONS OF PATTERNS IN BRITISH BUNGALOWS



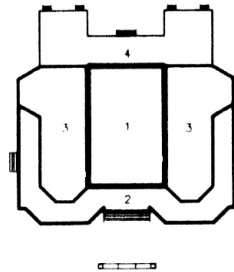
### CENTRALIZED SITE LAYOUT

The bungalow is centrally located on the site surrounded by a low compound wall, with one or more gateways. The house is approached by a long drive which connects to the porch in front of the house. The kitchen is a detached structure located behind the house, sometimes connected to the rear veranda by a covered passage. Other detached structures located along the rear edge of the compound wall contain servants quarters, stables, coach houses and store rooms. Gardens are laid out in front and around the house.

(NOTE: Due to the unavailability of site plan drawings for the sample set bungalows, typical bungalow layout plans have been represented.)



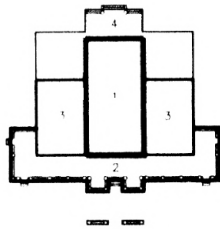
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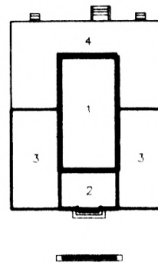
6 Richmond Road



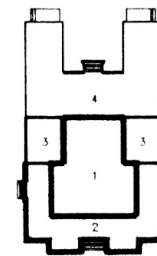
48 Lalbagh Road



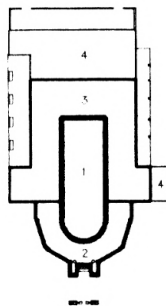
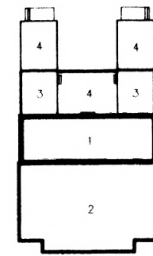
7 Cambridge Road



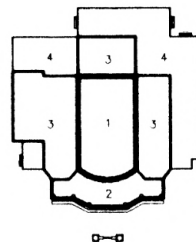
13 Alexandra Street



7 Ali Askar Road



48 Mahatma Gandhi Road

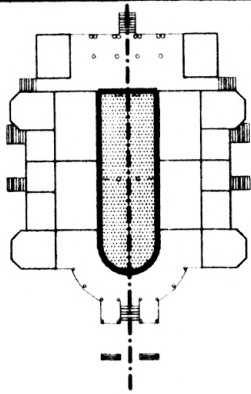


86 Richmond Road

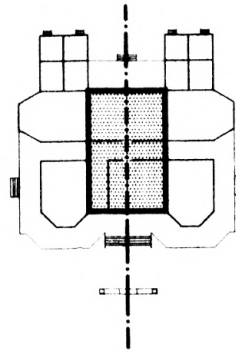
### HIERARCHY OF SPACES

Distinct spatial hierarchies can be identified in each plan. In a typical plan the following hierarchies can be established from most important to least:

1. drawing room, dining room.
2. veranda, porch.
3. bedrooms.
4. rest of the house.



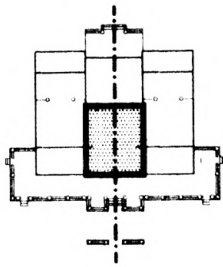
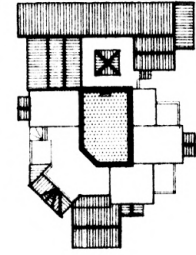
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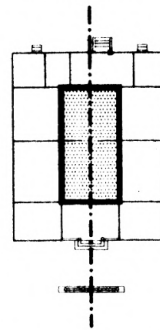
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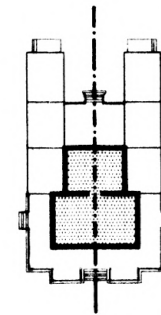
48 Lalbagh Road



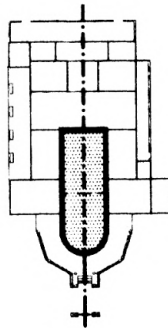
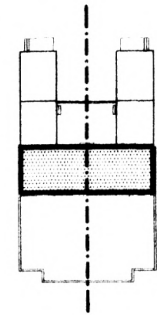
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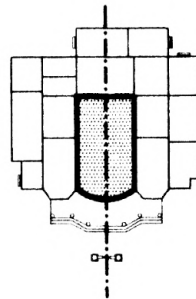
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7 Ali Askar Road



48 Mahatma Gandhi Road

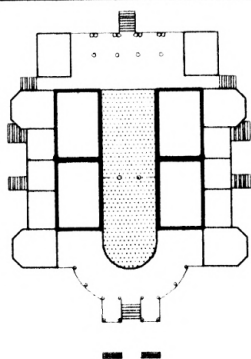


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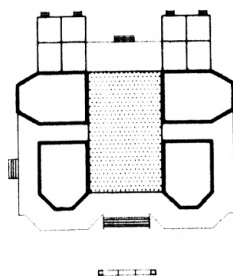
### ORDERING IDEAS

The plan is symmetrical and has a strong and clear axial order. The drawing room and dining room constitute the primary space in the house. This primary space forms the dominant center and lies on axis.

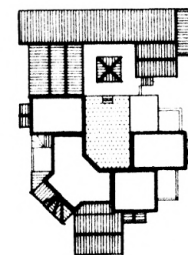




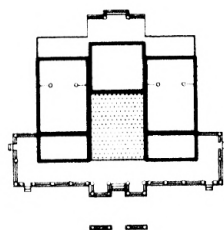
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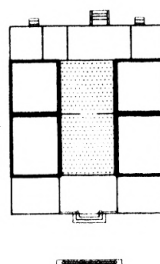
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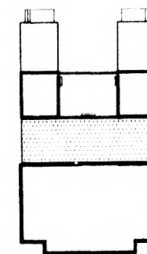
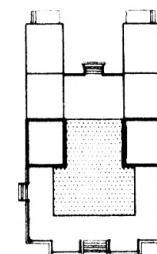
48 Lalbagh Road



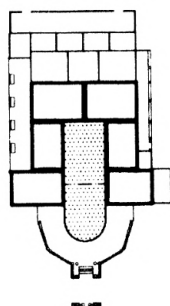
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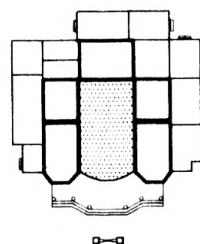
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7 Ali Askar Road



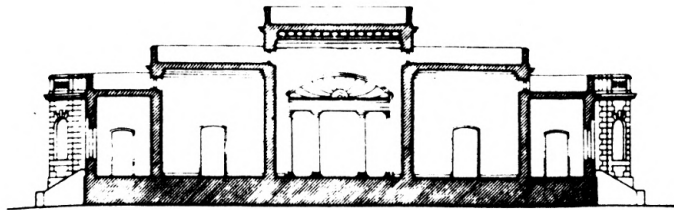
48 Mahatma Gandhi Road



86 Richmond Road

### CANONICAL SPATIAL ARRANGEMENT

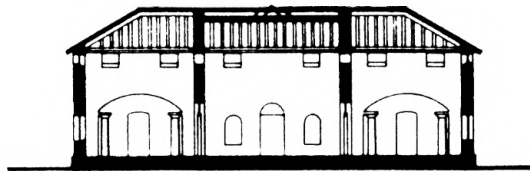
Centralized plan with major use spaces located around a primary center. Primary spaces constituting the center are linearly arranged along the primary axis.



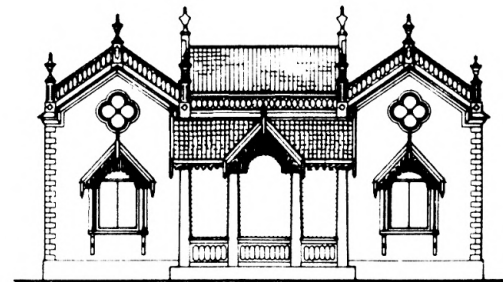
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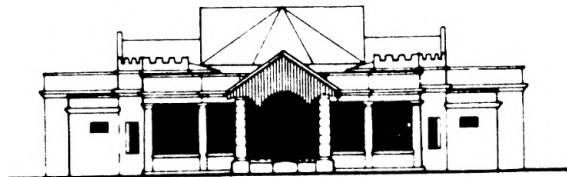
48 Lalbagh Road



7 Cambridge Road



13 Alexandra Street

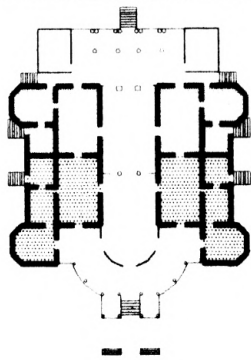


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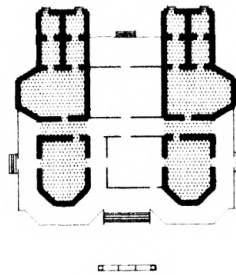
### CEILING HEIGHT VARIETY

The central primary space has a higher roof than the surrounding bedroom spaces. Bathrooms and verandas located on the periphery of the floor plan have the lowest roof heights.

(Note: Due to the unavailability of section drawings for all the bungalows in the sample set, only selected bungalow sections have been represented.)



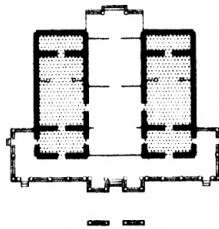
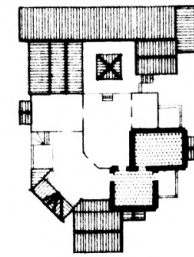
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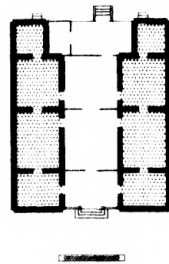
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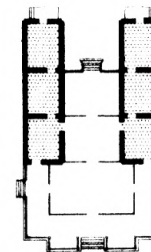
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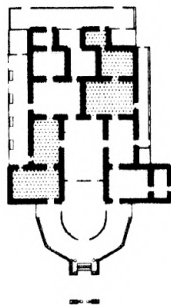
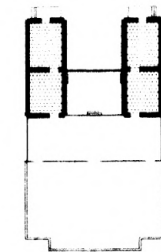
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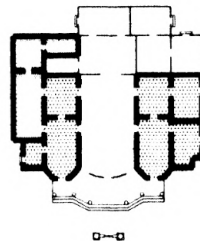
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7 Ali Askar Road



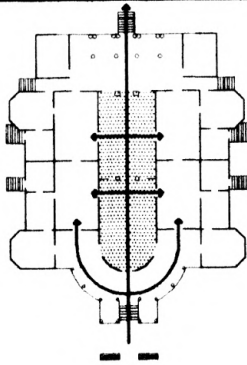
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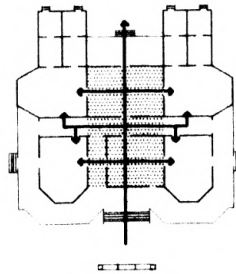
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### SUITES OF ROOMS

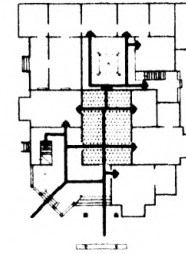
Rooms are grouped together as functional units forming a suite. A typical suite consists of a bedroom, dressing room and attached bathroom. Each bungalow has more than one suite. Suites are arranged symmetrically on both sides of the primary axis.



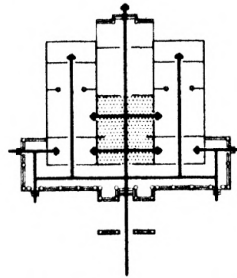
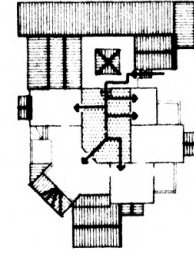
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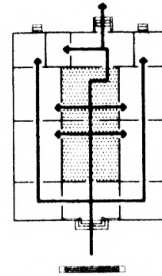
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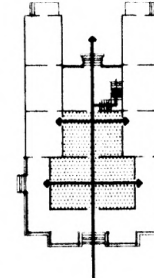
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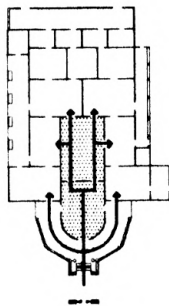
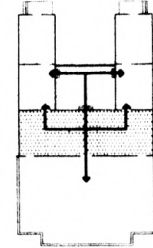
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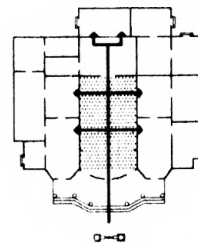
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7 Ali Askar Road



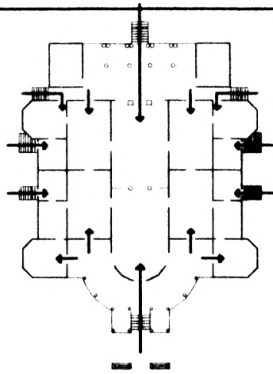
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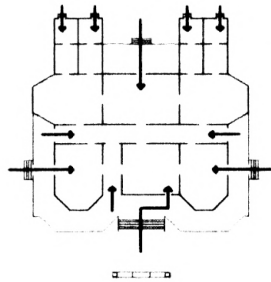
86 Richmond Road

### CIRCULATION FROM THE CENTER

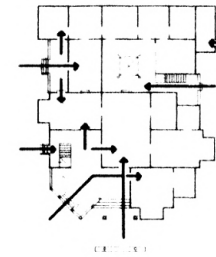
The primary space (drawing/dining room) constitutes the main circulation node. Internal circulation is always through the primary space. External circulation includes direct access to bathrooms from the outside, direct access to bedroom suites from the verandas and service access for servants at the rear end of the house.



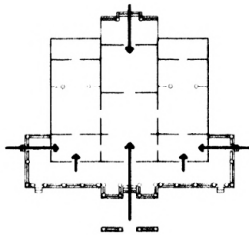
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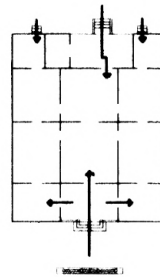
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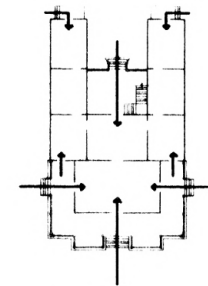
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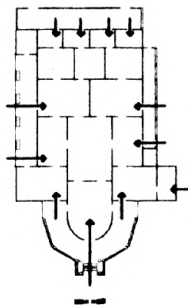
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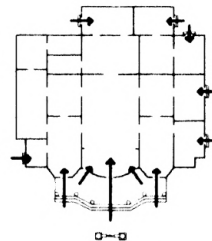
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7 Ali Askar Road



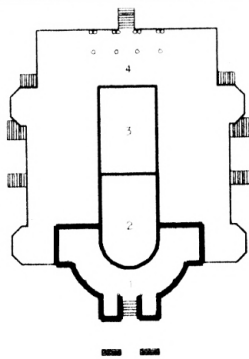
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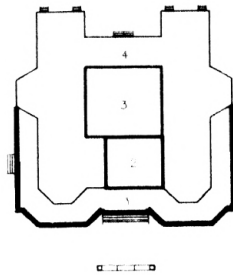
86 Richmond Road

## ENTRANCE EXPERIENCE

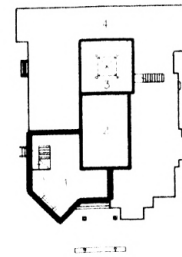
The main entrance is articulated by entrance elements consisting of the gate, drive, porte cochere, entrance steps, veranda, front lawn and main door. Other accesses into the house include direct access to bedrooms from verandas, service access for servants from the rear end of the house and service accesses to bathrooms for cleaning. These accesses are less articulated.



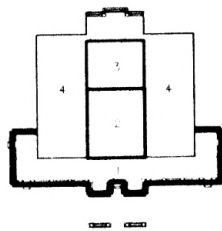
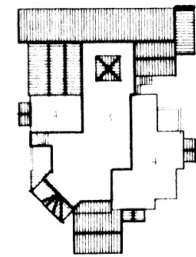
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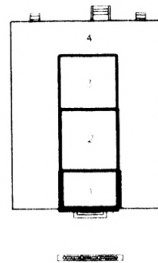
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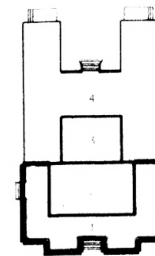
48 Lalbagh Road



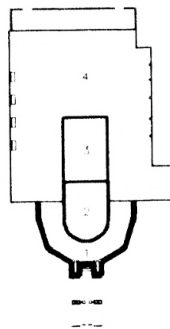
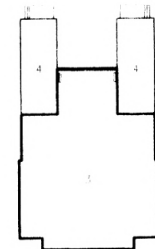
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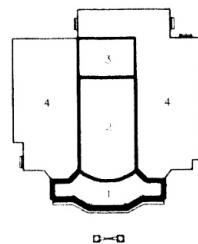
13 Alexandra Street



7 Ali Askar Road



48 Mahatma Gandhi Road



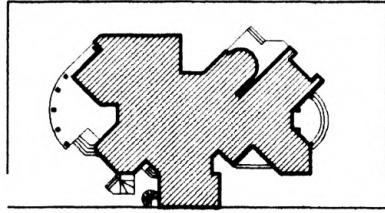
86 Richmond Road

### INTIMACY GRADIENT

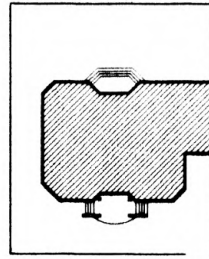
Four distinct levels can be identified in each house from most public and formal to most private and informal:

1. Entrance (veranda, porte cochere)
2. Public (drawing room)
3. Semi-public (dining room)
4. Private (bedrooms and rest of the house)

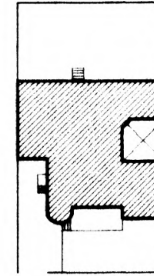
## APPENDIX C -- ILLUSTRATIONS OF PATTERNS IN THE DLF QUTAB ENCLAVE HOUSES



Anand House



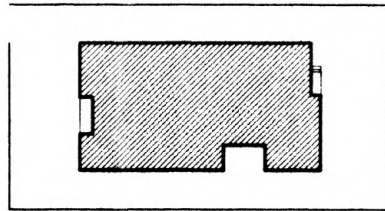
Chaudhri House



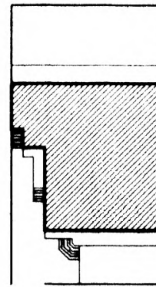
Verma House



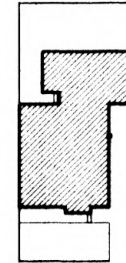
Ganapathi House



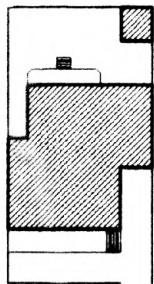
Kainth House



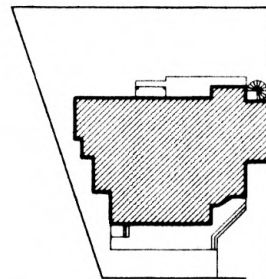
Bahl House



Jaiman House



Katyal House

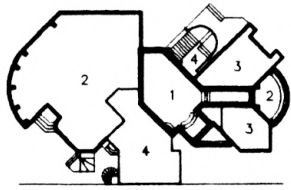


Bhattacharya House

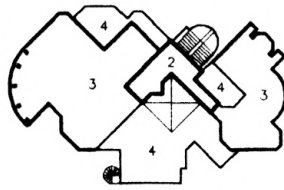
### CENTRALIZED SITE LAYOUT

The house is centrally located on the site with front and rear lawns abutting the compound walls at the front and back. Lawns are laid out only in the front and rear, and not all around the house. The site has three distinct zones: 1. front lawn 2. building envelope 3. rear lawn. Usually, one gate located at the corner of the front compound wall constitutes the main entrance into the house. The gate leads into a short driveway which terminates in a car parking space. In the larger sized lots the driveway connects both the gates at the front and at the back of the house. Occasionally the servants' quarter is a temporary detached structure along the rear edge of the compound wall, but in most houses the servant spaces are located above the car parking area. Except for houses located on 1000 square yard sites all the other houses are not completely detached from the adjacent units. The walls on both sides of the site are shared with adjacent units on both sides.

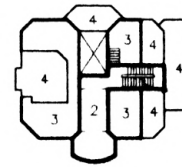
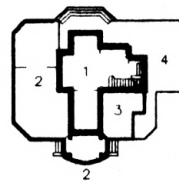




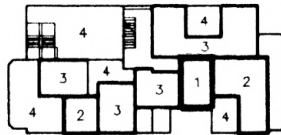
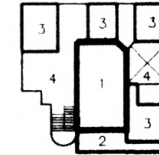
Anand House



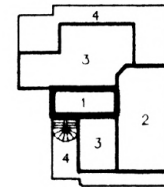
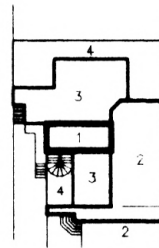
Chaudhri House



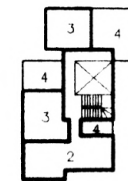
Verma House



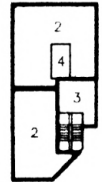
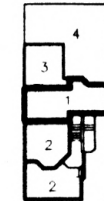
Kainth House



Bahl House



Jaiman House

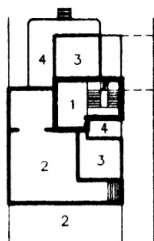


Ganapathi House

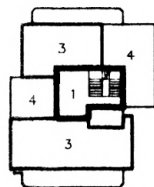
## HIERARCHY OF SPACES

Distinct spatial hierarchies can be identified in the plan. In a typical plan the following hierarchies can be established from most important to least:

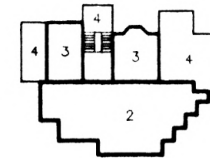
1. drawing room/dining room, family room or lobby.
2. veranda, front lawn and terraces.
3. bedrooms.
4. rest of the house.

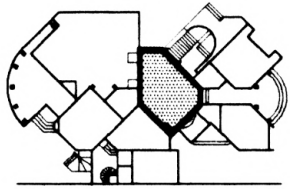


Katyal House

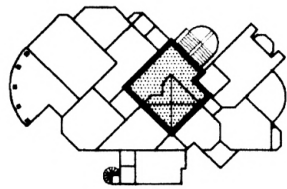


Bhattacharya House

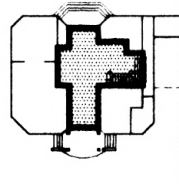




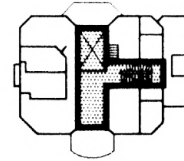
Anand House



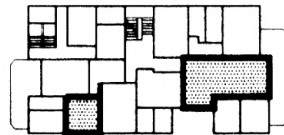
Chaudhri House



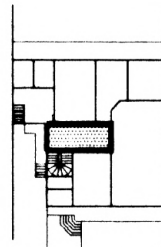
Verma House



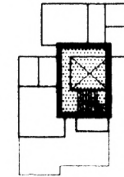
Kainth House



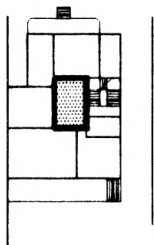
Bahl House



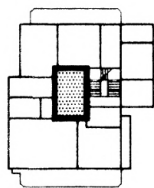
Jaiman House



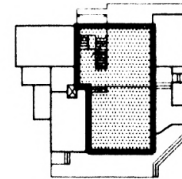
Ganapathi House



Katyal House

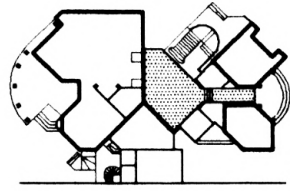


Bhattacharya House

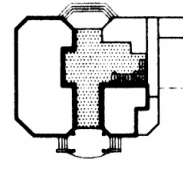
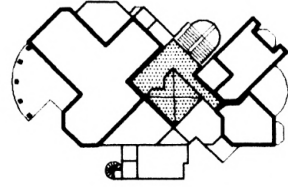


### ORDERING IDEAS

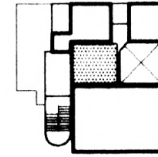
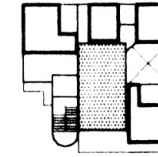
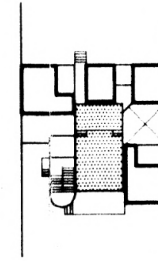
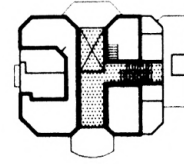
The plan is unsymmetrical and does not have a clear axis. The drawing/dining room, family room or lobby constitutes the primary space in the house. This primary space forms the inner core and is located at the center of the building mass.



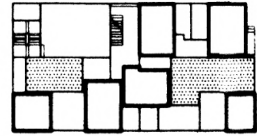
Anand House



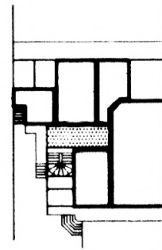
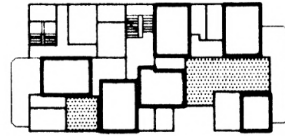
Chaudhri House



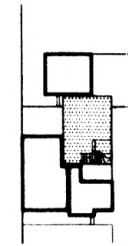
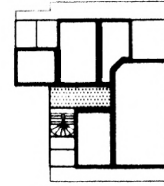
Verma House



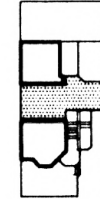
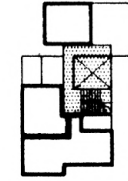
Kainth House



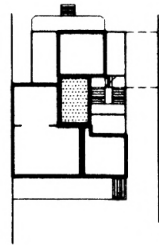
Bahl House



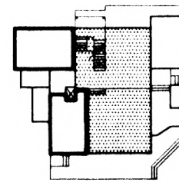
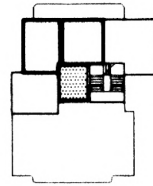
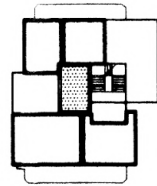
Jaiman House



Ganapathi House



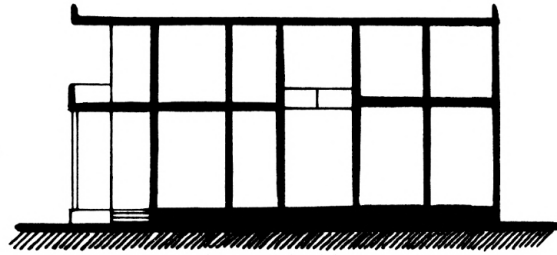
Katyal House



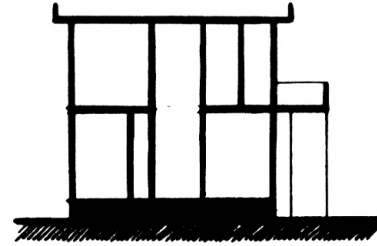
Bhattacharya House

### CANONICAL SPATIAL ARRANGEMENT

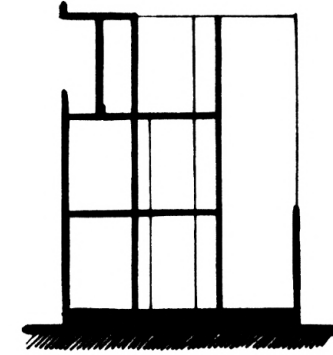
Centralized plan with major use spaces located around a primary center. In some houses the primary spaces forming the center are linearly arranged.



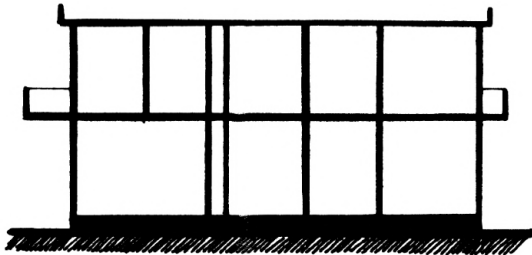
Anand House



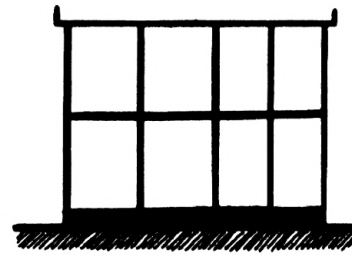
Chaudhri House



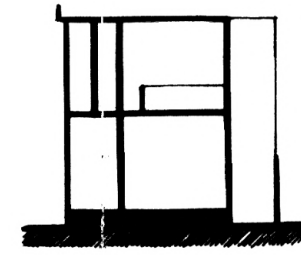
Verma House



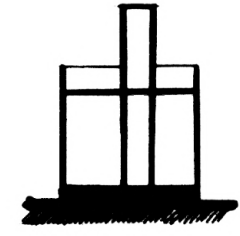
Kainth House



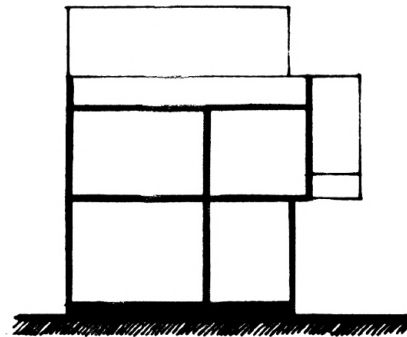
Bahl House



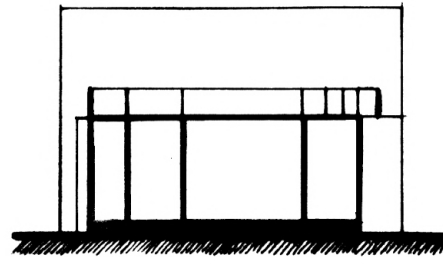
Jaiman House



Ganapathi House



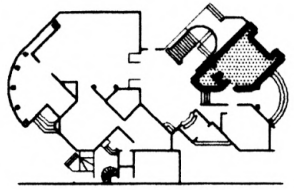
Katyal House



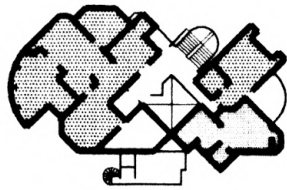
Bhattacharya House

### CEILING HEIGHT VARIETY

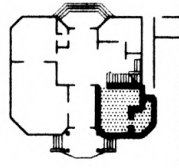
Except in some houses where the central primary space has a double height ceiling, all the other houses have uniform ceiling heights for all the spaces, at every floor level.



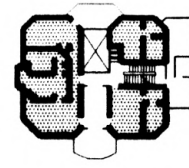
Anand House



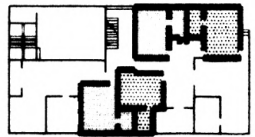
Chaudhri House



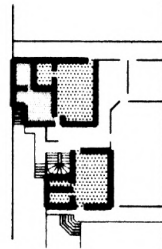
Verma House



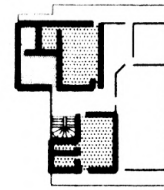
Kainth House



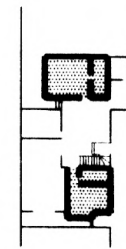
Bahl House



Jaiman House



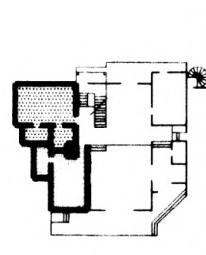
Ganapathi House



Katyal House

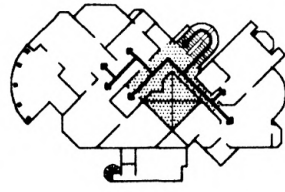
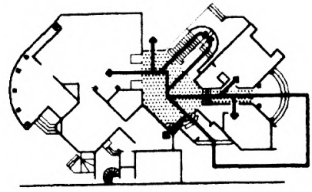


Bhattacharya House

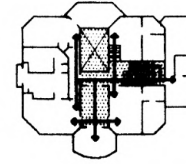
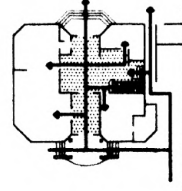


## SUITES OF ROOMS

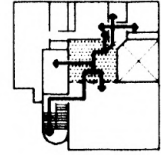
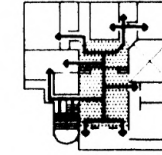
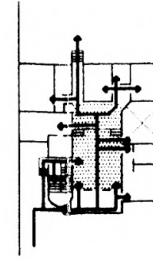
Rooms are grouped together as functional units forming a suite. A typical suite consists of a bedroom with an attached bathroom. Each house has more than one suite. In some houses, the master bedroom suite has an attached dressing room, bathroom and a balcony or terrace. Most houses have a guest bedroom suite.



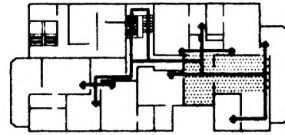
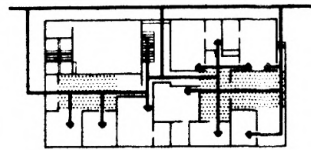
Anand House



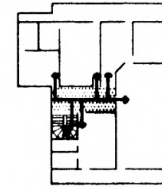
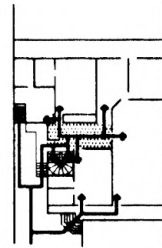
Chaudhri House



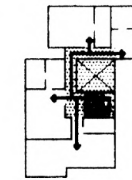
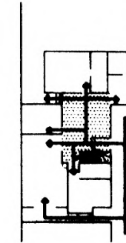
Verma House



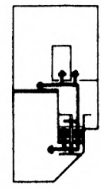
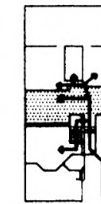
Kainth House



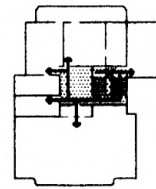
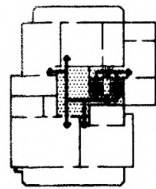
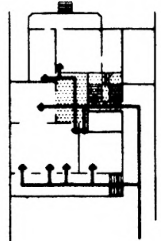
Bahl House



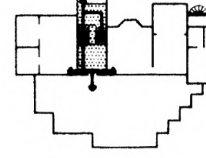
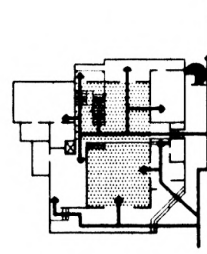
Jaiman House



Ganapathi House



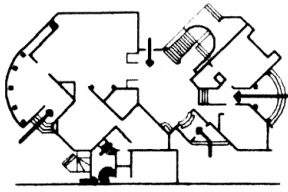
Katyal House



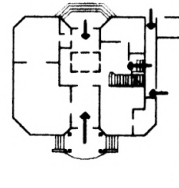
Bhattacharya House

### CIRCULATION FROM THE CENTER

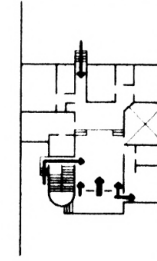
The primary space (drawing/dining room, family room or lobby) forming the inner core constitutes the main circulation node. Internal circulation is always through the primary space. External circulation includes direct access into the guest bedroom suite from the front veranda, service access for servants at the rear end of the house and an informal entrance for the residents from the car parking area at the side. The informal entrance always leads into the primary central space.



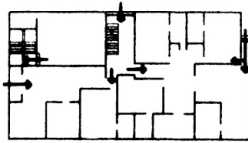
Anand House



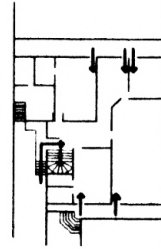
Chaudhri House



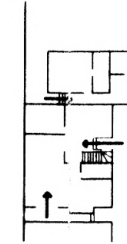
Verma House



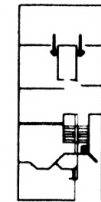
Kainth House



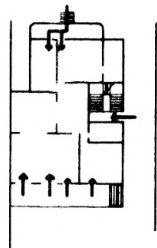
Bahl House



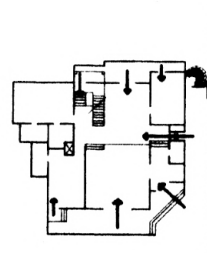
Jaiman House



Ganapathi House



Katyal House

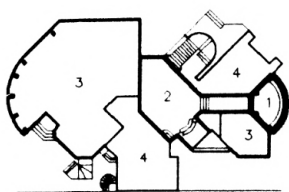


Bhattacharya House

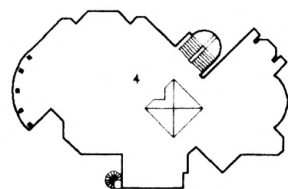
## ENTRANCE EXPERIENCE

The main entrance is articulated by entrance elements consisting of the gate, short drive, entrance steps, veranda, front lawn and main door. Other accesses into the house include direct access from front and rear verandas into bedrooms and dining room, service access for servants at the rear end of the house and the informal entrance at the side, from the car parking area. These accesses are less articulated.

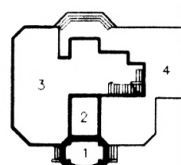




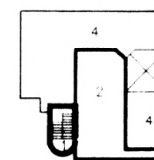
Anand House



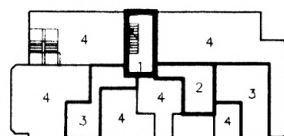
Chaudhri House



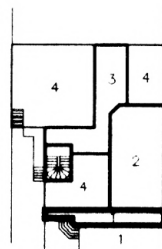
Verma House



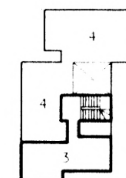
Kainth House



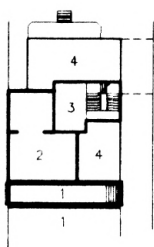
Bahl House



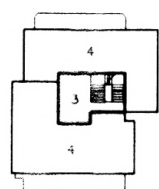
Jaiman House



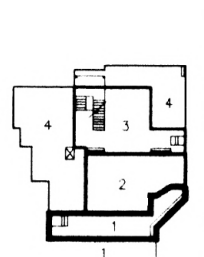
Ganapathi House



Katyal House



Bhattacharya House



## INTIMACY GRADIENT

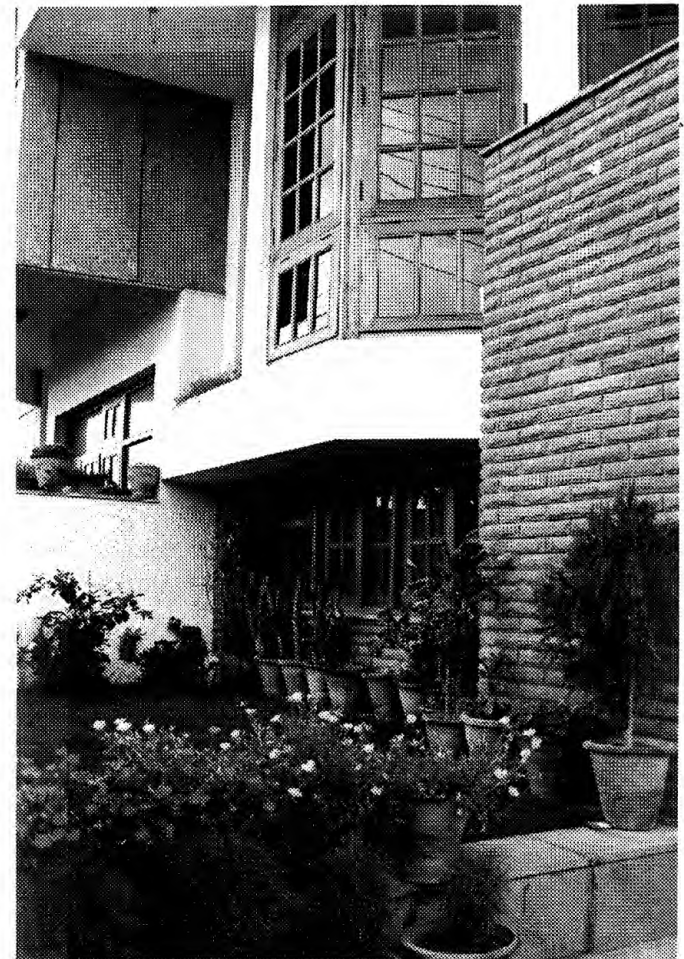
Four distinct levels can be identified in each house, from most public and formal to most private and informal:

1. Entrance (veranda and front lawn)
2. Public (drawing room)
3. Semi-public (dining room, family room or lobby and terraces)
4. Private (rest of the house)

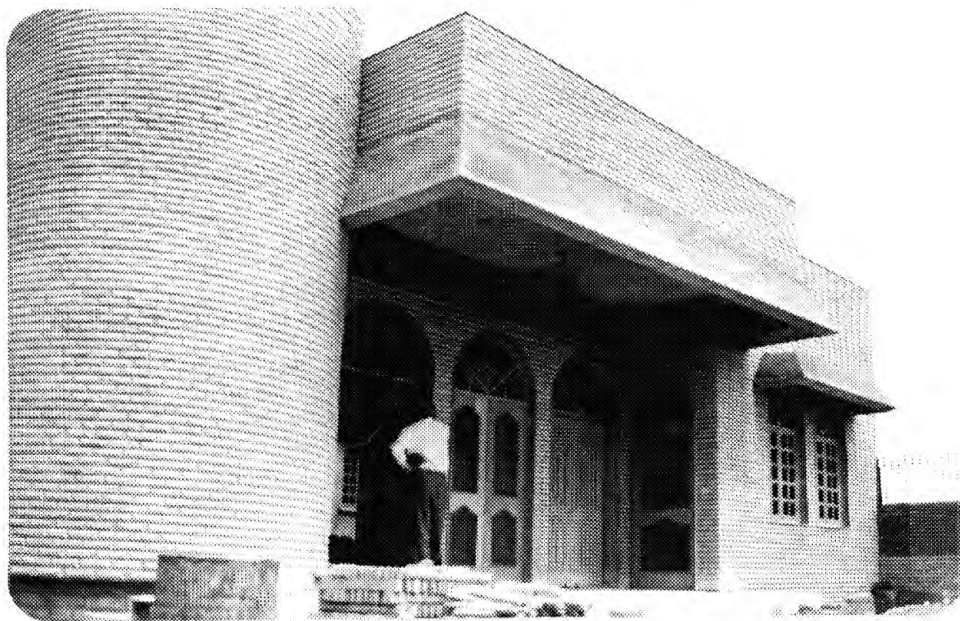
APPENDIX D -- PHOTOGRAPHS OF THE DLF QUTAB ENCLAVE



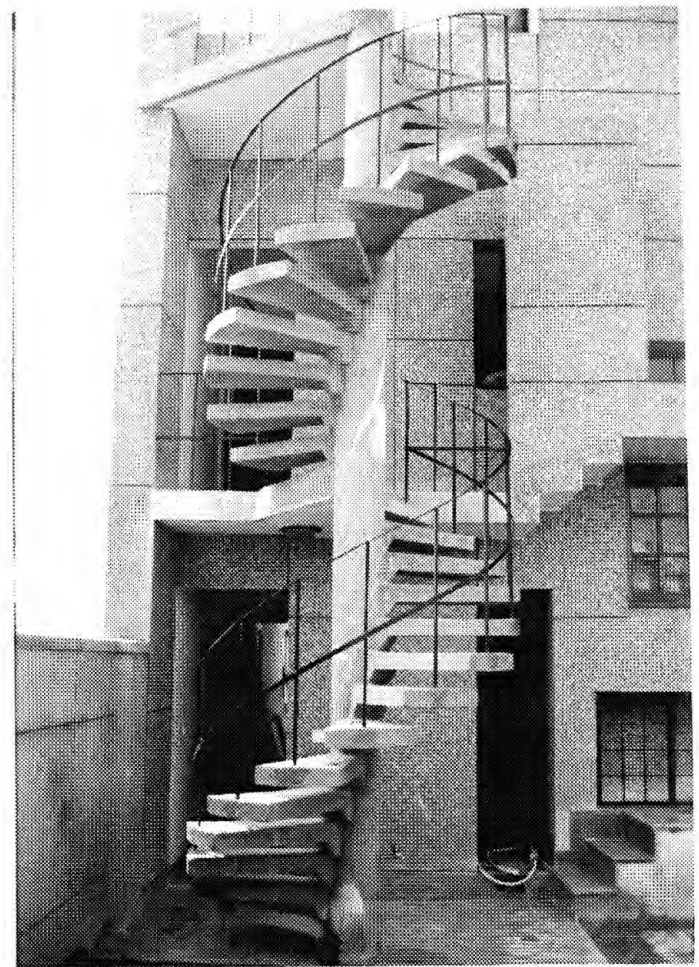
Chaudhri house.



Front lawn, Ganapathi house.



Verma house.



Stairway to servants' quarters, Bhattacharya house.

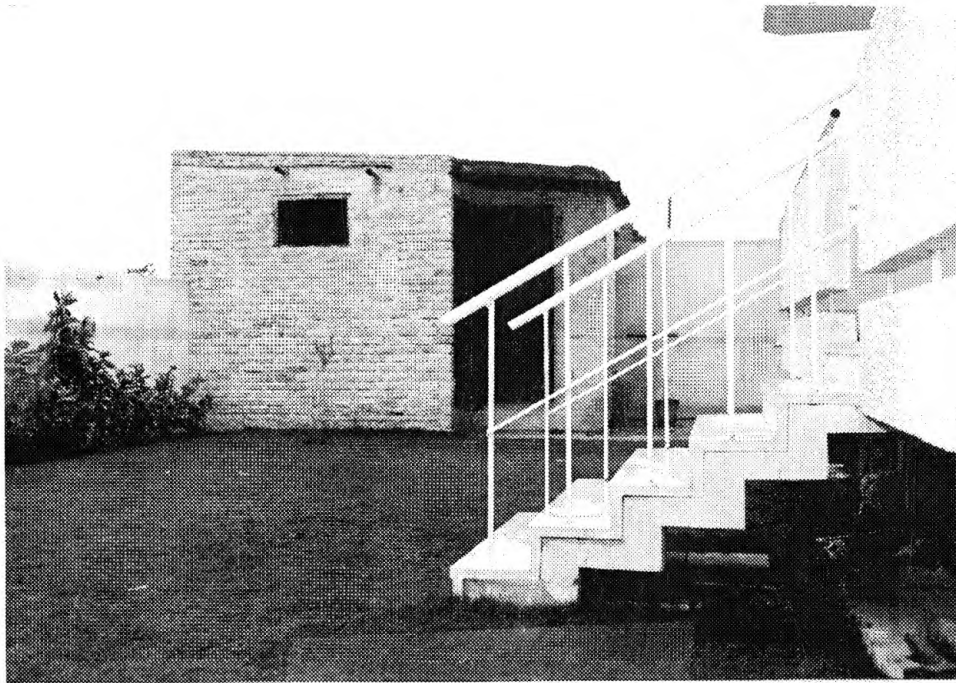


Entrance steps and veranda, Jaiman house.



Entrance steps, veranda and front lawn, Bahl house.

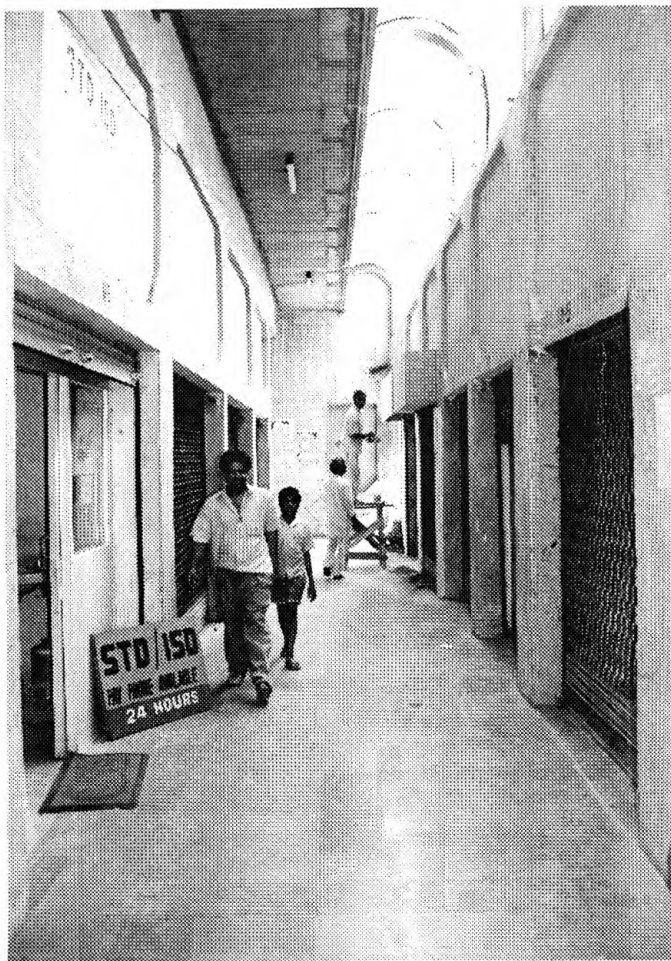




Servants' quarters, rear lawn and service access, Katyal house.



Entrance steps, Katyal house.



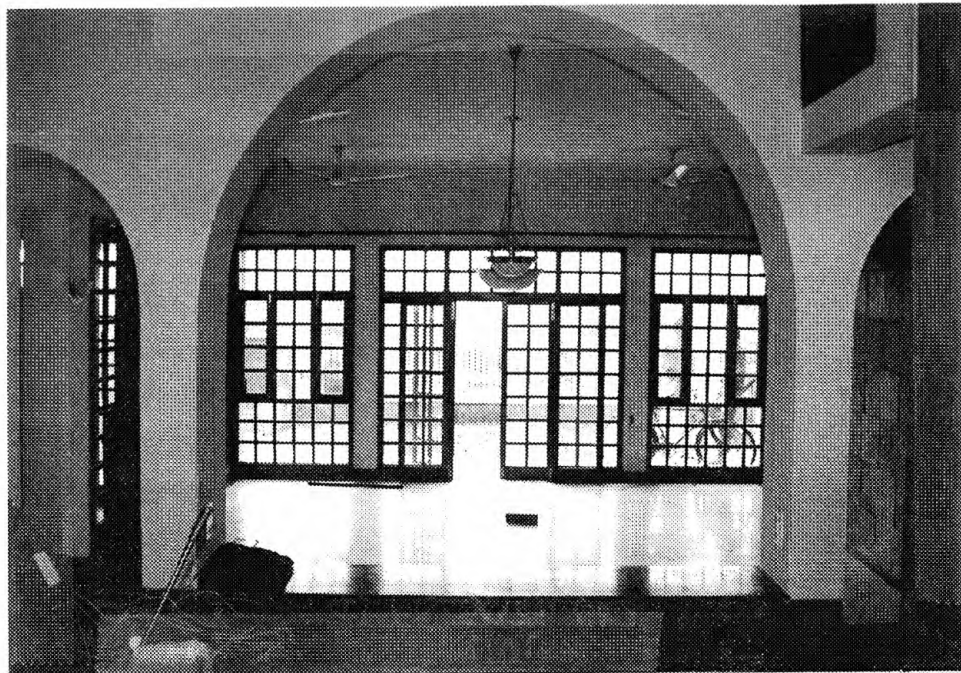
Shopping Complex interior.



Grocery stores in the DLF Shopping Complex.



Chaudhri house interior.



Arch separating drawing and dining rooms,  
Bhattacharya house.

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