TRADITIONAL MALAYSIAN BUILT FORMS: A STUDY OF THE ORIGINS, MAIN BUILDING TYPES, DEVELOPMENT OF BUILDING FORMS, DESIGN PRINCIPLES AND THE APPLICATION OF TRADITIONAL CONCEPTS IN MODERN BUILDINGS

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Chapter Four

MALAYSIAN COLONIAL ARCHITECTURE

4.1 HISTORY AND ORIGINS

Colonial architecture in Malaysia came into existence when three major imperial regimes - the Portuguese, Dutch and British - came to rule Malaya from 1511 to 1957. These European powers left behind a wide range of building forms and styles which demonstrate their influence in Malaya. Remnants of Portuguese and Dutch architecture can be seen in Malacca and British architecture is largely spread around the major cities on the west coast of the Malay peninsula.

The Portuguese occupied Malacca for one hundred and thirty years (1511-1641) and during their occupation they constructed various buildings including palaces, hospitals, a hall for the Portuguese Council of State, churches and large houses[1]. Surrounding Malacca town they built an eight-foot thick stone wall called the *A Farmosa* or `The Famous' (see Fig. 4.1). Most of the Portuguese buildings were obliterated in the Dutch siege of Malacca in 1641. The

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[1] Most of these recorded buildings were built within the `A Farmosa' fortification. S. Vlatseas notes that Manuel Godinho de Eredia, "Cosmographer Major" of Malacca and a punctilious recorder of his time, gives a complete list of buildings inside the Fort in one of his writings in 1618. These were: The Castle and the Palace of the Governor, the Bishop's Palace, the Hall of the Council and of the Brotherhood of Mercy, the Churches of Our Lady of the Assumption, Our Lady of the Visitation and Mercy, Our Lady of the Annunciation, the Church of St. Dominic, the Convent of the Dominicans, the Church of St. Anthony, the Convent of the Augustines and two hospitals. See VLATSEAS, S., *A History of Malaysian Architecture,* Singapore; Longman, 1990, page 30.

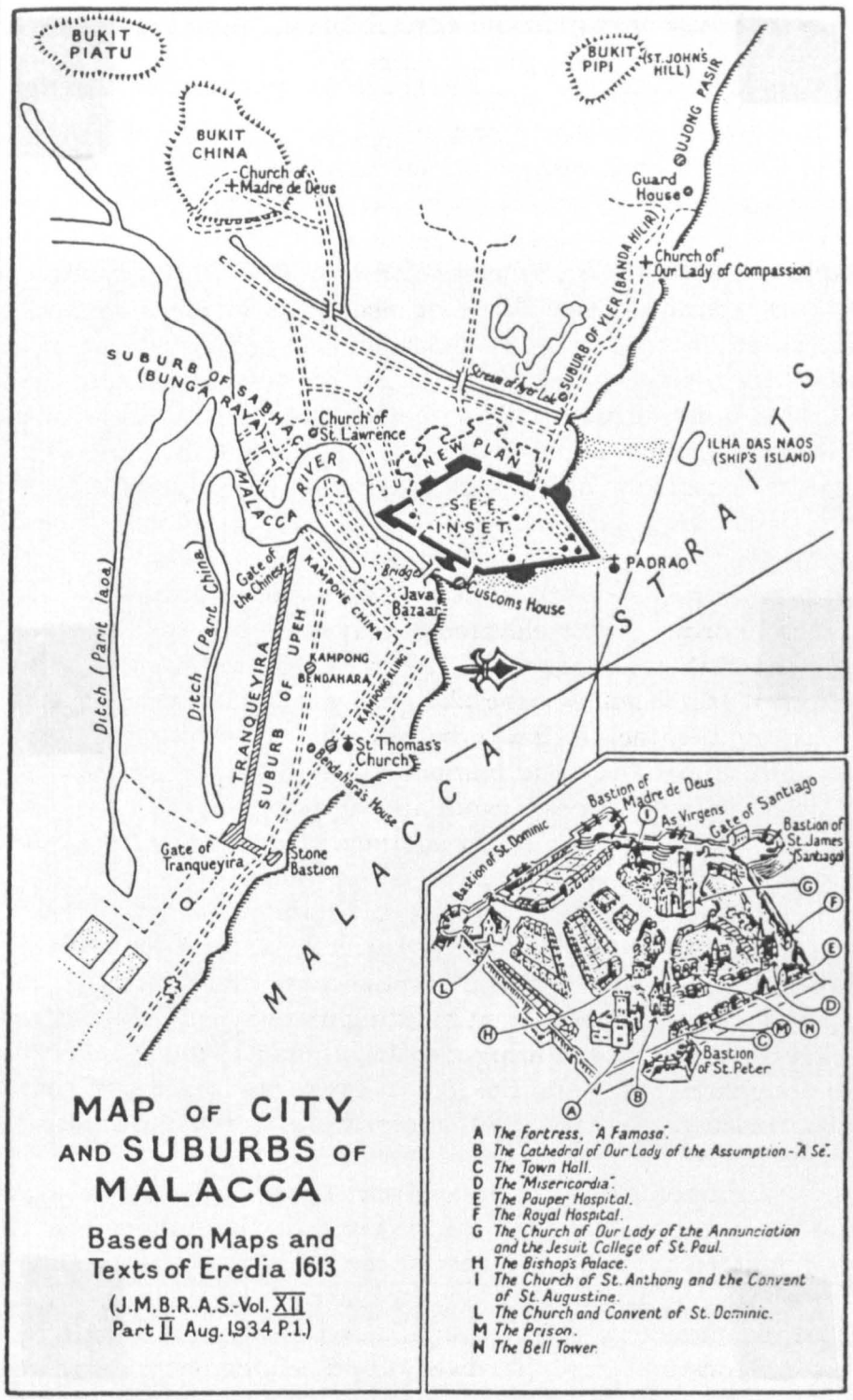

Figure 4.1: *Malacca and suburbs as it existed under the Portuguese in 1613.*[2]

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[2] Map reproduced from MOORHEAD, F. J., *A History of Malaya and Its Neighbours,* London; Longman, Green and Coy, 1957, page 181.

'Porta di-Santiago' is the only remaining vestige of the A-Farmosa fortification (Fig. 4.2).

Figure 4.2: *`Porta di-Santiago' of Malacca.*

The oldest recorded religious structure built by the Portuguese is Ermida wood chapel, built in 1521 by Duarte Coelho[3]. This chapel was replaced by a stone church in 1566 which was known as "the Church of Our Lady of the Annunciation". It was in use until 1590 and was later renamed by the Dutch as St. Paul's Church.

The ruins of St. Paul's Church together with the ruins of A-Farmosa bear witness to the Portuguese introduction of the arch in Malaya[4]. From remnants of Portuguese buildings, it has been suggested that the Portuguese were the first to build permanent buildings on level ground and to introduce the arch and associated forms from their southern European homeland. They were also the first to open quarries in the search for building stone and lime; the quarry was later to become the royal Malay burial ground.[5]

The Dutch occupation in Malacca began in 1641 and terminated in 1824 when the Dutch exchanged Malacca with the British for Bencoolen in Sumatra, Indonesia under the Anglo-Dutch Treaty. Christ Church and the `Stadthuys' (Town Hall) are two significant structures of the Dutch period which still exist today.

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[3] See TOO, ANTHONY, "Churches", *Majallah Akitek,* Vol. 2, No. 6, Nov/Dec. 1990, page 90 and KOHL, DAVID G., *Chinese Architecture in the Straits Settlements and Western Malaya,* Kuala Lumpur; Heinemann Asia, 1984, page 54.

[4] KOHL, DAVID G., *op. cit.*, page 52.

[5] KOHL, DAVID G., page 54.

The Stadthuys is a three-storey structure which was built to house the Dutch Governor. Records suggest that it was built between 1641 and 1660, which would make it the oldest Dutch structure in the Malay archipelago. The gable walls of the Stadthuys are of a shape that can be seen in Amsterdam[6] (Fig. 4.3).

Christ Church was built in 1753 opposite to the Stadthuys. The building, 82 feet long, 40 feet wide and 43 feet high has ceiling beams cut from a single tree without any joints. Some of the handmade benches date back more than two hundred years and a beautiful mural of the "Last Supper" graces the wall over the alter[7] (Fig. 4.4).

The Stadthuys and Christ Church use heavy and solid masonry construction which contrasts with traditional, lightweight Malay timber buildings. The thick masonry walls of the Stadthuys and Christ Church are made of laterite[8] up to the plinth and rendered brickwork above. Doors and windows are framed in heavy hardwood and the adjustable panels are attached to the frames with wrought-iron hinges. Imported Dutch red tiles are used for the roof. Ceilings are supported by massive beams cut from single trees as much as forty-eight feet long and twelve inches thick, and in

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6 VLATSEAS, S., *op. cit.*, page 31.

7 VLATSEAS, S., page 34.

8 Laterite is a red-rich residual tropical soil which can be cut into blocks which harden upon prolonged exposure to air to produce a durable building stone, often referred to as `iron-stone'.

Christ Church are forty feet above the floor. The dining room ceiling of the Stadthuys is decorated with carved hardwood in floral designs, carved by Dutch artists.[9]

Other Dutch contributions, which can be seen from the physical form of the two structures, are the louvred windows, the open balconies, the balustrades, the round pedimented space over the Christ Church entrance and the Renaissance motif of symmetrically spaced windows in both the Church and Stadthuys.

Classical influence was introduced into Malaya by both the Portuguese and the Dutch and was developed further during the British colonial period. The sections that follow mainly concentrate on the British contribution in advancing Western architectural ideas and styles in Malaya, owing to the fact that their influence was the most widely spread among the three Western powers.

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[9] SCOTT-ROSS, MARCUS, *A Short History of Malacca,* Singapore; Chopmen, 1971, page 106 quoted by KOHL, DAVID G., *op. cit.*, page 55.

Figure 4.3: *The Stadthuys in Malacca, built between 1641 and 1660, is reputed as the oldest Dutch building in the Malay archipelago.*[10]

Figure 4.4: *Christ Church of Malacca (1753).*[11]

10 Illustration reproduced from VLATSEAS, S., *op. cit.*, page 33.

11 Illustration reproduced from VLATSEAS, S., page 31.

The British were the last colonial regime to set foot in Malaya, nevertheless they made the greatest impact on the architectural scene of Malaya.

The British colonial period began in Penang in 1786. In the space of one hundred and seventy one years of their occupation (1786-1957), Malaya experienced the full impact of classical influences, predominantly the humanist ideals of the Renaissance founded on the concepts of harmonic proportions, symmetrical planning and order. The period also saw the emergence of Georgian and Regency architecture.[12]

The first British colonial building in Malaya was built in Penang but as British colonial power expanded to other Malay states so too did British colonial architecture. Their penetration into the Malay peninsula was executed through the appointment of British Residents in various states and their involvement in economic and political affairs.

The formation of the Straits Settlements (1826) was the initial undertaking of the British in expanding their authority in the Malay peninsula. The development of the tin industry and rubber plantations in the states of Perak and Selangor in late nineteenth century saw the further involvement of the British in the administration of the

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[12] TOO, ANTHONY, *op. cit.*, page 90.

Malay states and in the production of the resources. The advent of the British Resident in Kuala Lumpur in 1880 marked the beginning of the administration of the town on modern lines with the introduction of building regulations, public services and infrastructure. In late 1879, a British magistrate was sent to Kuala Lumpur on a permanent basis and combined his magisterial duties with the supervision of the Public Works Department and Survey Department.

The formation of the Federated Malay States in 1895 and the choice of Kuala Lumpur as the Federal Capital further facilitated the development of Kuala Lumpur as the centre of British colonial administration in Malaya. On account of its central position, Kuala Lumpur was chosen to be the Headquarters of the Resident-General and other departmental heads.[13]

In the last quarter of the nineteenth century, British influence had started to make its impact in Malaya with the construction of various colonial buildings. As with most British colonial countries, the Public Work Department was responsible for the design and production of the largest volume of buildings in the country, especially buildings in the public sector which included administration offices, court buildings, schools and railway stations[14].

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[13] See MALAYSIAN INSTITUTE OF ARCHITECTS, *Guide to Kuala Lumpur Notable Buildings,* Kuala Lumpur; Pertubuhan Akitek Malaysia, 1976. pp. 9-11.

[14] MALAYSIAN INSTITUTE OF ARCHITECTS, *Post-Merdeka Architecture 1957-1987,* Kuala Lumpur; Pertubuhan Akitek Malaysia, 1987, page 16.

4.2 THE MAIN BUILDING TYPES

Colonial buildings in Malaya may be classified under three broad categories. The first category is institutional and public buildings which consists of administrative offices, railway stations, schools, banks, courts, hotels, museums, monuments and forts. The second category is religious buildings which include chapels, churches, cathedrals and mosques. The third category is recreational and residential buildings which include clubhouses, palaces, mansions, bungalows and terraced houses. From this wide range of building types, the following most dominant types are broadly discussed:-

i. Government offices
ii. Railway stations
iii. Churches
iv. Schools
v. Clubhouses
vi. Mansions and Bungalows

4.2.1 GOVERNMENT OFFICES

The most notable government office built during the British colonial period in Malaya was the Sultan Abdul Samad building. The original purpose of the building was to house the government departments of the British colonial administration. It then became the Selangor State Secretariat building and served this function until 1978, when the Federal Territory of Kuala Lumpur was established and the Selangor Government moved to Shah Alam. Since 1978

the building has been called the Sultan Abdul Samad building. This building, grand in scale and dramatic in style dominates the Padang (field) with its 143 feet high central clock tower. It stretches some 400 feet along the east of Jalan Raja and has in many ways, come to symbolise the City of Kuala Lumpur[15] (Fig. 4.5 and 4.6). The building was the first of a group of buildings of a similar design, all built around the turn of the century by the newly formed Public Works Department (PWD) in the Federated Malay States. The architect for this building, A. C. Norman, had originally conceived of a design in the classical style. But C. E. Spooner, Norman's superior as State Engineer, had worked for a time as an engineer in the Ceylon PWD and had come to know and admire the *Indo-Saracenic*[16] architecture of India. He was of the opinion that the style was 'more in keeping with a tropical environment', and on his urging, this style of architecture was approved by the Colonial Secretary. Construction began in 1894 and was completed in 1897[17].

The Sultan Abdul Samad building had to fit into a triangular site with the Gombak River running along the diagonal border. At one end, the building has a deep plan

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[15] DICKIE, MARTIN, "Bangunan Sultan Abdul Samad, Jalan Raja", *Majallah Akitek*, No. 3 and 4, 1986, page 33.

[16] *Indo-Saracenic* is a combination of Islamic and European architectural styles which was developed in India. This architectural style is discussed in section 4.3.1: The Main Architectural Styles.

[17] ABEL, CHRIS, "Built Sources of Malaysian Identity", *Majallah Akitek*, Vol. 3, 1985, page 36.

with open balconies breaking up the mass and at the other end the linear plan has been opened up to form a courtyard[18] (see Fig. 4.7).

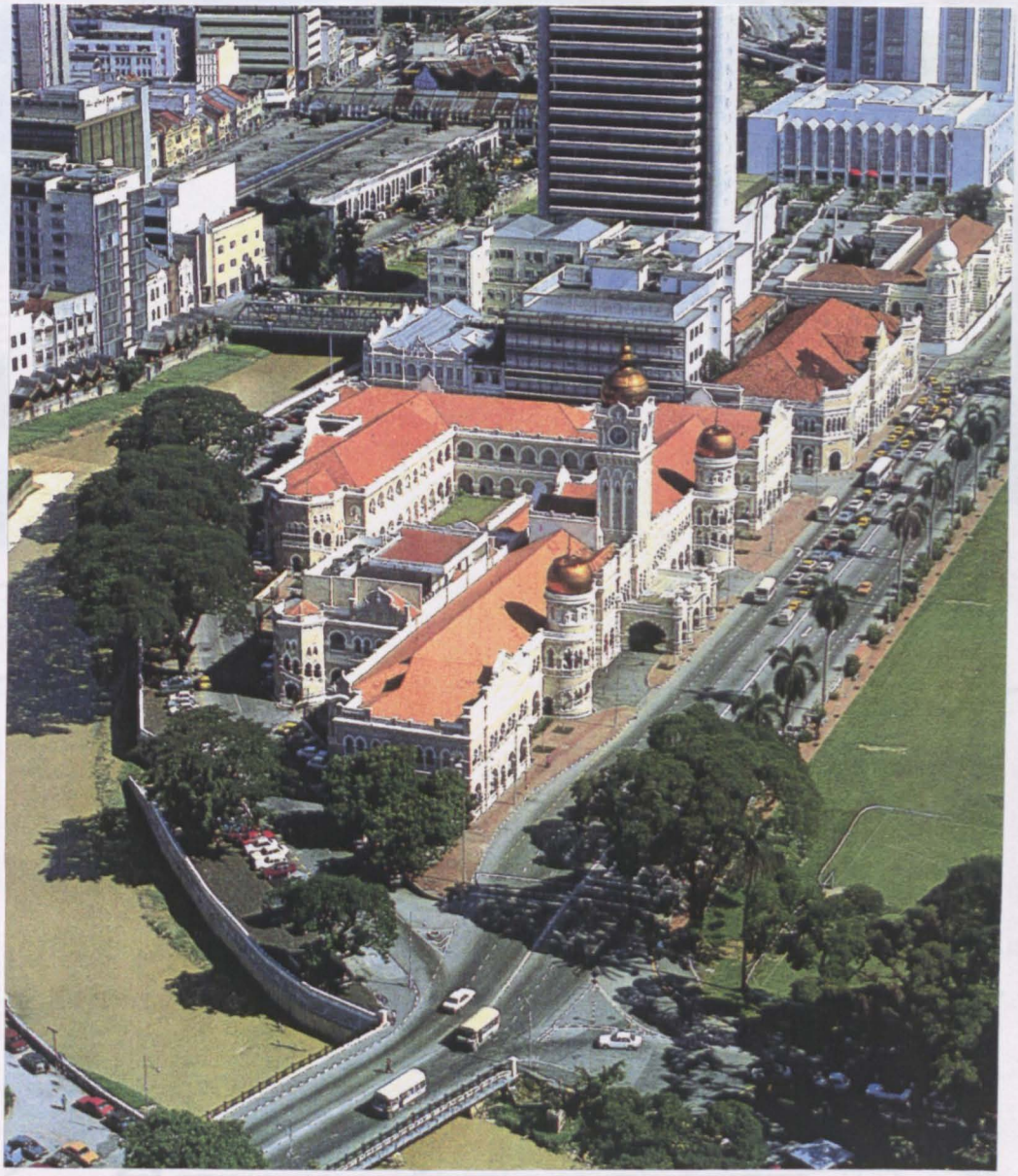

Figure 4.5: *Aerial view of Sultan Abdul Samad building (1897).*[19]

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18 ENDUT, ESMAWEE HAJI, *Search For Identity: A Survey of Malaysian Architectural Forms and Styles,* Brighton Polytechnic; School of Architecture and Interior Design (unpublished), 1989, page 58.

19 Illustration reproduced from GUELDEN, MARLANE, *Kuala Lumpur,* Singapore; Times Editions, 1986, page 14.

Figure 4.6: *View of Sultan Abdul Samad building from the street.*

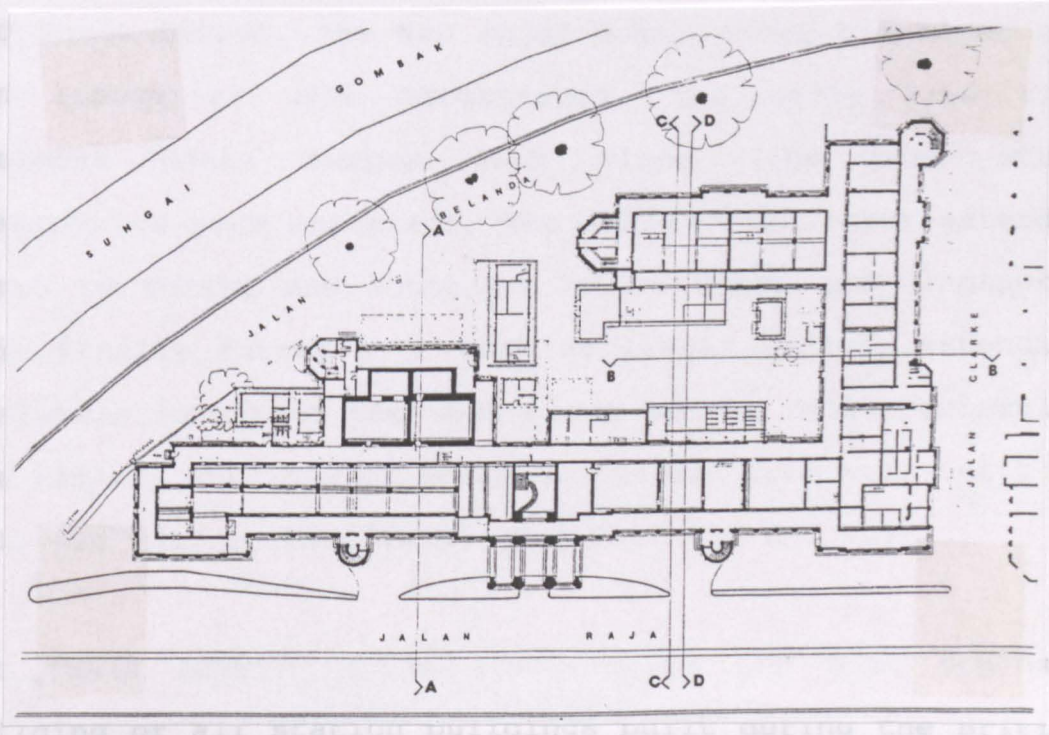

Figure 4.7: *Plan of Sultan Abdul Samad building.*

The building has been modified several times over the years in response to the demands for more space, reorganisation and the impact of services like air-conditioning. In particular, the open balconies which surrounded the office spaces had been blocked up and taken over as offices in many places. Unfortunately, two double storey structures at either end of the building were taken down during the Second World War - because it was thought that any bombing would dislodge them and causes injury to pedestrians - and have not been restored.[20]

4.2.2 RAILWAY STATIONS

Railways were constructed to provide transportation and to improve communications between major towns in Malaya. The main connection was between the towns of Ipoh and Kuala Lumpur, the two major towns where tin mines and tin industries were established. The early line also connects Kuala Lumpur with Klang (the port where commodities were exported). The railway was later extended north to Penang and south to Johore Bahru and Singapore; this finally formed a stretch of linear railway extending the whole length of the west coast of the Malay peninsula. The railway stations of Kuala Lumpur and Ipoh were built in 1911 and 1917 respectively. (See Fig. 4.8 and 4.9)

The Kuala Lumpur Railway Station is the most dominant building of all station buildings built during the British

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[20] DICKIE, MARTIN, *op. cit.*, page 33.

colonial period. It was built by the Public Works Department and the British architect responsible for the design was Arthur Benison Hubback.

Arthur Benison Hubback first took up government service in Kuala Lumpur in 1901.[21] His initial experience in Malaya was working on the alterations and site details to the administrative offices of Selangor State Secretariat (Sultan Abdul Samad building). He had previously been employed in the government service in Madras, India, and had some experince in the design of both the Law Courts and Board of Revenue Offices in Madras[22].

Hubback arrived in Kuala Lumpur just after the debate concerning an appropriate style for public buildings in Kuala Lumpur. The debate determined in favour of `the Moorish' as a suitable style for the new railway building and the decision was approved by the Chief Architect at that time, A. C. Norman (the architect who designed the State Secretariat building). The ground level of the station was planned as a simple linear set of halls with a deep continuous covered loggia in front, providing shade and shelter, with the platforms laid out in parallel rows behind (Fig. 4.10).

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[21] During Hubback's stay in Malaya, he returned to England for the RIBA professional examination in 1904. His official position, when the decision to build the present station was made in late 1906, was Architectural Assistant to the Director of Public Works Department. See STOCKER, PETER, "Kuala Lumpur Railway Station: An Appraisal", *Majallah Akitek,* No. 3 and 4, 1986, page 23.

[22] STOCKER, PETER, page 25.

Figure 4.8: *General view of Kuala Lumpur Railway Station (1911).*[23]

Figure 4.9: *Ipoh Railway Station (1917).*[24]

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[23] Illustration reproduced from GUELDEN, MARLANE, *op. cit.*, page 30.

[24] Illustration reproduced from VLATSEAS, S., *op. cit.*, page 61.

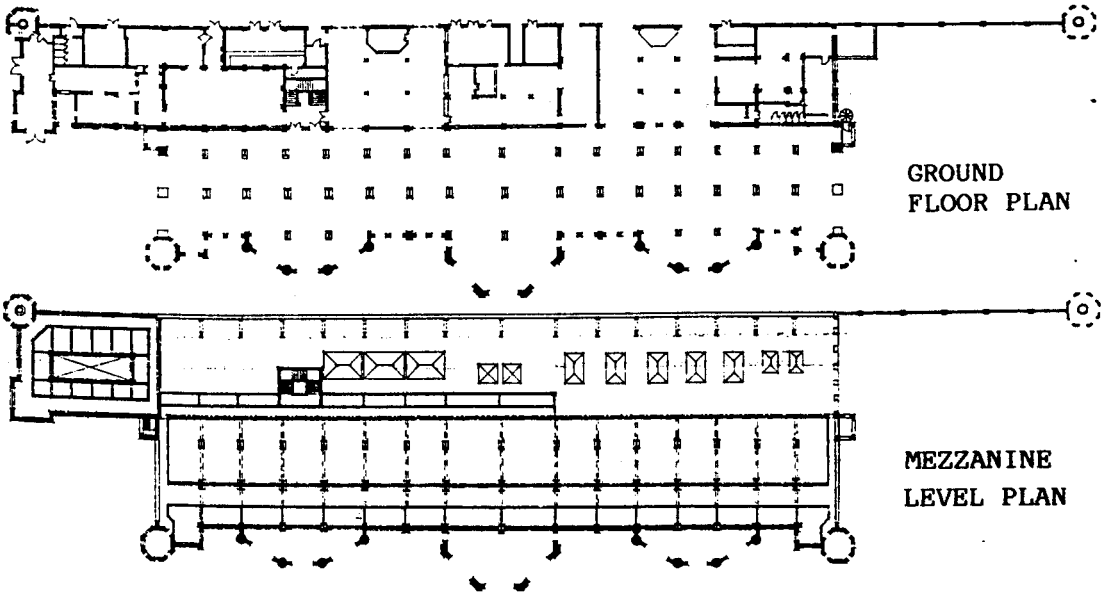

Figure 4.10: *Plans of Kuala Lumpur Railway Station.*[25]

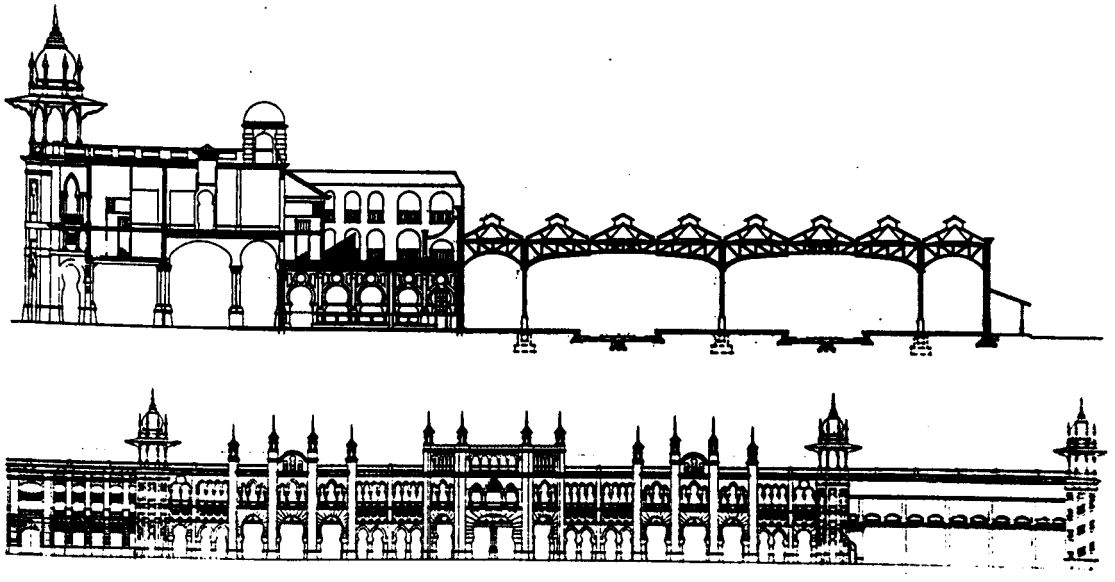

Figure 4.11: *Cross section and front elevation.*[26]

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[25] Illustration reproduced from STOKER, PETER, *op. cit.*, page 25.

[26] Illustration reproduced from STOKER, PETER, *ibid.*, page 25.

Grilled and slatted openings to both faces provided cross ventilation. The northern section housed the principal public rooms of the Station Hotel, which extended the full length of the building at mezzanine and first floor level and also over the loggia, giving the building a `floating' quality to the front elevation (Fig. 4.11). In section, the apparent volume of the building is reduced, stepping down towards the platforms and allowing the principal halls to be top-lit from large ventilating sky-lights.

This railway station is in fact the third station on the site and is by far the longest surviving station of the three. The first station was constructed in 1886 with the opening of the Klang to Kuala Lumpur line and was situated slightly to the north of the present building. It was referred to as a "Residency Station" since it terminated at the grounds of the British Resident. This station lasted only six years before the volume of traffic of the expanding railway system and the growth of the town itself, necessitated a grander edifice[27].

The second station was built in 1892 and was located on the present site. It consisted of a group of single and double storey buildings arranged in a linear arrangement along the rail track. The centrepiece of the building was a gable ended hall surmounted by a vaguely Italianate clock tower and fronted by a porch with a classical balcony. This hall

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[27] STOKER, PETER, pp. 22-23.

was joined to two smaller scaled but similar pavilions by simple link blocks with verandahs providing shade to the street facade (see Fig. 4.12).

The pavilions had a jack roof construction, but the principal decorative feature of all three roofs was the elaborately decorated gable trusses, carried on twinned corbel brackets which supported the overhanging roof.

Figure 4.12: *The 1892 Railway Station.*[28]

[28] Illustration reproduced from STOKER, PETER, *ibid.*, page 23.

4.2.3 CHURCHES

Christianity was first introduced into Malaya by the Roman Catholic church when the Portuguese captured Malacca in 1511. However, the Portuguese were not very successful in spreading Christianity because the Malay population had already converted to Islam. The religion did not spread to other parts of Malaya until the nineteenth century when new immigrants brought Catholic, Anglican and Methodist missionaries[29].

The Church of Our lady of the Annunciation (1566-1590) of Malacca, which was built by the Portuguese, is reputed to be one of the earliest Christian church in Malaya. Anthony Too remarks that "it was perhaps one of the first permanent buildings on ground level with round-headed arches and Renaissance motifs in Malaya"[30]. The church stands prominently at the summit Residency Hill of Malacca and was built of local laterite or ironstone with fine stonework detailing.

The first Catholic church in Malaya was the St. Francis Xavier Church of Malacca which was built in 1849 (Fig. 4.13). Francis Xavier was believed to be responsible for spreading Catholicism in the Malay region in the sixteenth century. He was known as "Apostle of the East".[31] The

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[29] See RYAN, NEIL JOSEPH, *The Cultural Heritage of Malaya*, Kuala Lumpur; Longman Malaysia, 1971, page 161.

[30] TOO, ANTHONY, *op. cit.*, page 90.

[31] See VLATSEAS, S., *op. cit.*, page 71.

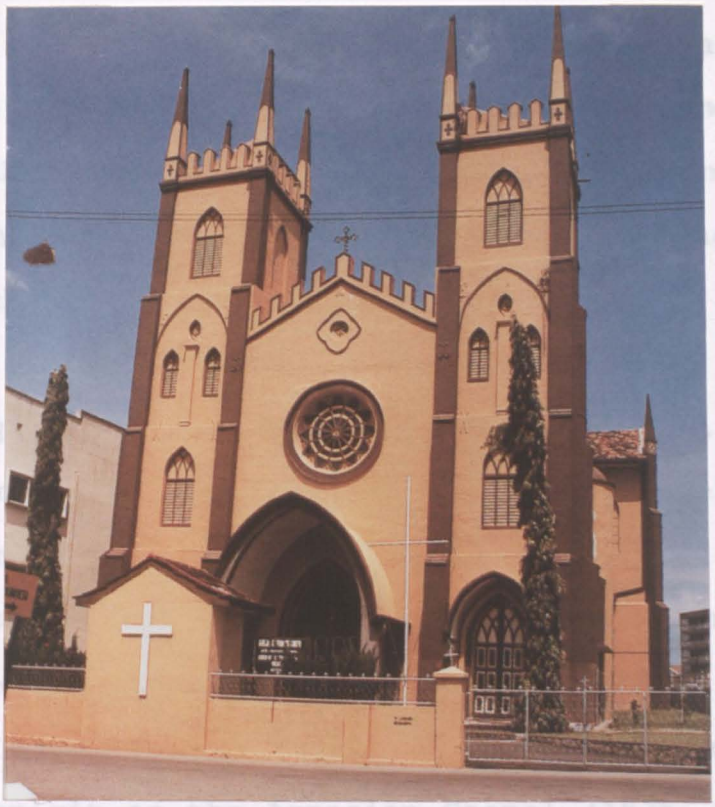

Figure 4.13: *Church of St. Francis Xavier (1849).*[32]

Figure 4.14: *Cathedral of the Assumption, Georgetown, Penang (1860).*

32 Illustration reproduced from VLATSEAS, S., page 71.

church is in the Gothic style with its front facade having a twin-tower and a clerestory window. Twin towers also appeared in the Cathedral of the Assumption in Penang (Fig. 4.14), though this church is in a British Regency style, and the Church of St. Michael in Ipoh, Perak.

The first Anglican church built in Malaya was St. George's Church of Penang which was built in 1819 and designed by Captain R. Smith of the Bengal Engineers. It is also the oldest Anglican church in South-east Asia. The church has a lofty spire which rises behind the front portico with its four pairs of columns subdividing it into three bays. It is in the same spirit as the Armesian Chapel (1835, Church of St. Gregory the Illuminator) in Singapore, by George Drumgold Coleman[33], a notable Irish-born architect who established a legacy of fine buildings in the popular Regency *Anglo-Indian*[34] style.

As Kuala Lumpur developed into a colonial administrative centre during the late nineteenth century, many churches were built around the city to accommodate the religious needs of the immigant communities. The Church of Holy

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[33] George Drumgold Coleman arrived in Singapore from service in Culcutta and Batavia in 1822. He was inspired by the temples of ancient Greece and Rome and the Regency architecture of John Nash. His work include public and private buildings, mostly built in Singapore.

[34] *Anglo Indian* is a term used to identify the Palladian style of Georgian architecture as it evolved in colonial India in the eighteenth century. Many British colonists who came to Malaya (including engineers and architects) had previously worked in India and continued to design buildings in Malaya in a similar style (see section 4.3.1: Main Architectural Styles).

Rosary (Fig. 4.15) was built in 1903 to cater mainly for the Christian Chinese working in the tin mines and St. Anthony's Church was built in 1911 to serve the Indian immigrants of the Christian faith who came to work in the rubber plantation.

The Church of Holy Rosary was designed by J. F. Lambert, a French missionary, in a Gothic style. It was enlarged in 1955 with additional trancepts by the architect R. B. Pereira. This addition followed the existing Gothic style although the original timber ceiling was replaced by plaster vaulting.[35]

St. Andrew's Church in Kuala Lumpur was founded in 1917 to cater for the spiritual needs of expatriates in the city. The design is similar to some Saxon churches in northern Britain with a simple plan consisting of tall, aisleless naves and small rectangular chancels based on the Celtic pattern, a style employed in small, country churches.[36]

The Church of St. Mary the Virgin in Kuala Lumpur (1894) by A. C. Norman was influenced by a combination of early English medieval architecture with touches of the Neo-Gothic style. It is thought to be the first Anglican Church to be built in brick in Malaya. An extension was made to the building in 1967.

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[35] See MALAYSIAN INSTITUTE OF ARCHITECTS, *op. cit.*, page 31.

[36] TOO, ANTHONY, *op. cit.*, page 93.

Figure 4.15: *The Church of the Holy Rosary, Kuala Lumpur (1903). Notice the Chinese characters on the facade which date from the time it was built.*[37]

[37] Illustration reproduced from FERMOR-HESKETH, ROBERT (ed.), *Architecture of the British Empire,* London; Weidenfeld and Nicolson, 1986, page 167.

4.2.4 SCHOOLS

Schools were established in Malaya by the British to give formal education to local children. One of the first schools to be built in Malaya was Penang Free School which was officially opened in 1916. The most prestigious school in Malaya, built exclusively for the education of Malay boys, is the Malay College[38] at Kuala Kangsar in Perak. It was built in 1905 on a large compound which consisted a number of separate buildings. The most dominant building within the large college ground is the *`Big School'* (Fig. 4.16). Its two-storey frame was ringed by pairs of Ionic columns in a Neo-classical style. It contained vast classrooms, dormitories and dining rooms. Modelled on the English public school system, it was considered the Eton and Harrow of Malaya[39].

In Kuala Lumpur, the initial development of education owed much to the voluntary work of individuals and local groups of people. The Victoria Institution was opened in 1894 and followed by some private schools such as the Methodist Boy's School (1898), Convent School (1899) and St. John's Institution (1904) (Fig. 4.17). The first government school began in 1890 and developed into other schools in which the

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[38] Malay College was established to educate the elite class of Malay society, e.g. the sons of Malay Sultans and noble people. Many generations of Malaysian rulers and political leaders had their early education in this college. This includes the present `Yang Di-Pertuan Agung' Sultan Azlan Shah (Malaysian paramount ruler), the present Sultan of Pahang (Sultan Ahmad Shah) and Tun Abdul Razak, a former Malaysian Prime Minister.

[39] VLATSEAS, S., *op. cit.*, page 65.

Figure 4.16: *`Big School' of Malay College in Kuala Kangsar, Perak (1905).*[40]

Figure 4.17: *St. John's Institution (1904) is one of the first schools to be built in Kuala Lumpur.*

40 Illustration reproduced from VLATSEAS, S., page 66.

teaching was carried out in English and Malay. Chinese vernacular schools had also been founded mostly by the efforts of the Chinese community and a Tamil (Indian) school was established in 1914.[41]

4.2.5 CLUBHOUSES

Social clubs were built as a consequence of the need for a privileged meeting place for the British colonial administrators[42]. Clubhouses were also used by the European community to accommodate their leisure activities and sports. As Robert Fermor-Hesketh points out, "one of the most striking features of the British middle classes overseas is their almost obsessive interest in games and sporting pursuits, often undertaken in the interests of good health, out of which there developed tent clubs, gymkhana clubs and station clubs that became centres not only for sports but also for drinking and relaxation". The famous English author, W. Somerset Maugham, often refers to the expatriate clubs of Malaya in his third volume of complete short stories.

Aesthetically and architecturally the clubs built in the British colonies were rarely impressive, but they provided an invaluable service in strenghtening the cohesiveness that was a necessary part of running an empire and

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41 MALAYSIAN INSTITUTE OF ARCHITECTS, *Guide to Kuala Lumpur Notable Buildings, op. cit.*, page 12.

42 MALAYSIAN INSTITUTE OF ARCHITECTS, "Clubs Now and Then", *Majallah Akitek,* March/April 1989, page 4.

bolstering the mores and morale of the British expatriate community. The club was a place where the cares and worries of `severe duty' could be temporarily shelved while the delights of `the refinement and luxuries of European Society' were savoured.[43]

Clubhouses built during the British colonial period in India are more gracious and symbolic while those in Malaya (Penang, Taiping, Klang and Ipoh among others) are derived from the architecture of the colonial bungalows (half masonry-half timber with the usual verandahs and roller blinds) added with a touch of English Tudor.[44]

The earliest of the local clubs, the Selangor Club was established at its present location in Kuala Lumpur in 1884. The original building of the Selangor Club, built in 1884, was a single storey *atap* structure. It was replaced in subsequent years by a two-storey building. The third version was another two-storey building built in 1890 in a `Tudor style' by A. C. Norman (Fig 4.18). The Club consisted of a clubhouse, a pavilion and stables. The upper lounge of the second floor of the clubhouse was used as the venue for dances and concerts. The stables were replaced by the Church of St. Mary the Virgin, also built by A. C. Norman in 1894.[45]

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[43] See FERMOR-HESKETH, ROBERT *op. cit.*, page 71.

[44] See MALAYSIAN INSTITUTE OF ARCHITECTS, "Clubs now and Then", *op. cit.*, page 4.

[45] MALAYSIAN INSTITUTE OF ARCHITECTS, page 4.

Robert Fermor-Hesketh describes the Selangor Club as a complex of mock-Tudor bungalows that represents a new feature to the early town of Kuala Lumpur. It was the station club, also known as the 'Spotted Dog' or the 'Dog' and was the oldest of such institutions in the Malay States[46].

The Selangor Club complex was built facing an open ground which is popularly known as the *Padang* (field). The Padang, originally a groove of fruit trees, was improved to become a cricket pitch. Later, two tennis courts and two football pitches were added. A bandstand was also erected at the Padang. The Club was redesigned and extended in 1910. At this time the second storey of the 1890 clubhouse was removed. An additional extension, following the half-timber design, took place in 1922. This extension was destroyed by fire in 1970.[47]

Another interesting club building in Malaysia is the Malaccan Club, built in 1911 by local planters to replace the original bungalow when it became too small to accommodate the flood of new members (Fig. 4.19). This two-storey club house was built facing the Malaccan River. The ground floor used to accommodate a billiard hall, a bar and a library, and on the first floor there was a permanent set-up for the staging of plays. The building, having run

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[46] FERMOR-HESKETH, ROBERT, *op. cit.*, pp. 70-71.

[47] MALAYSIAN INSTITUTE OF ARCHITECTS, *Guide to Kuala Lumpur Notable Buildings*, *op. cit.*, page 19.

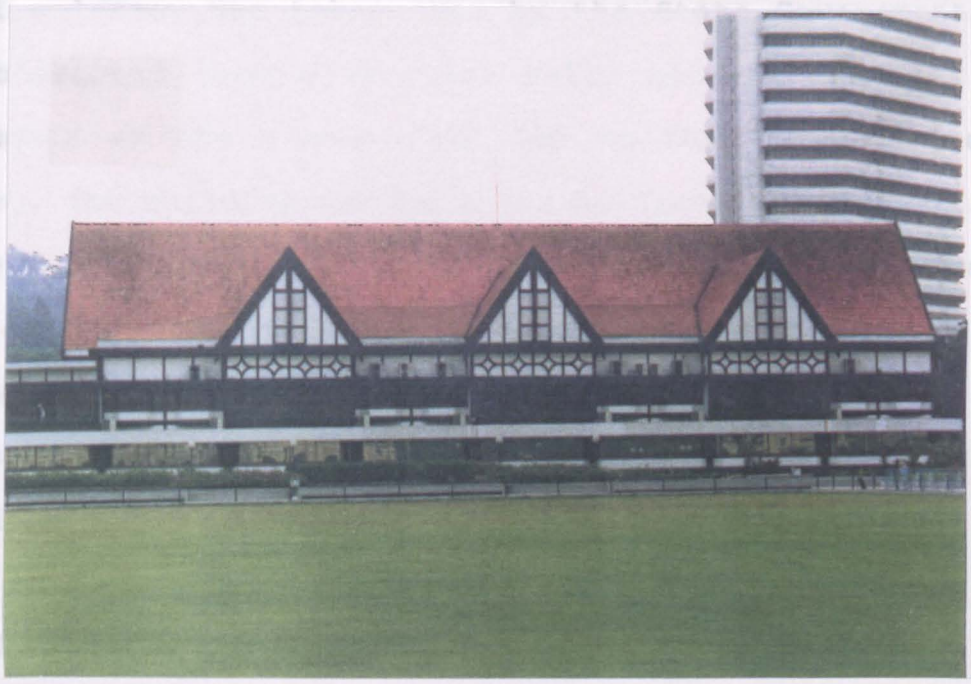

Figure 4.18: *The Selangor Club House (1890). The field in front of the Club is used for sporting activities.*

Figure 4.19: *The Malaccan Club (1911).*[48]

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[48] Illustration reproduced from VLATSEAS, S., *op. cit.*, page 76.

out its lease, was taken over by the State Government and was converted into a Memorial Hall, housing pictures and documents of the events that led to the independence of Malaya. The building was built using local stone and has a symmetrical facade with two projections (on both side of the central porch) topped by copper domes. The large windows and the covered verandah above the porch have been enclosed to accommodate air-conditioning services in the building.

4.2.6 MANSIONS AND BUNGALOWS

Bok House and Loke Yew Residence (Wisma Loke), which have been mentioned briefly in Chapter Three under European-Chinese Mansions, are two early examples of residential buildings which were strongly influenced by the West. These buildings displayed characteristics of European architecture in their use of pediments, architraves, columns, pilasters, fanlights and Venetian arches.

i. Bok House

A wealthy Chinese businessman named Chua Cheng Bok commissioned Richard Jones of Swan and MacLaren to design his residence in the style of the civic buildings that he saw on a visit to England. These buildings, built mostly in the 1800s were in the Palladian style of Renaissance revivalism. The design that the architect proposed, though of the Renaissance style, also had some Baroque

influences[49]. As in all Renaissance and Palladian buildings, the symmetry is the dominant feature of the residence. However, the subtle curves on the portico, the ornamentation on the gate and the grand central stairs reflect a Baroque influence (Fig. 4.20).

This house is one of the examples of the more purely European-style home built in the early 1900s in Kuala Lumpur. The symmetry of the building, the use of the classical structures, the particular shaped balusters and the doubling of the columns at the corners reflect Renaissance planning adapted to the tropical climate.

The roof is of a steep pitch and is reminiscent of the roofs of the French Chateaux in the Loire valley.[50] The balustrade on the roof peak gives an impression of an open balcony, but it actually serves the purpose of hiding a skylight which provides diffused lighting to the hall on the upper floor. A loggia surrounding the building on the upper floor serves as a shading device although loggias were originally used by Palladio as an arcade. The classical orders used in the Bok House are Tuscan columns, Ionic capitals and architraves.

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[49] HERITAGE OF MALAYSIAN TRUST, *Malaysian Architectural Heritage Survey: A Handbook,* Kuala Lumpur; Badan Warisan Malaysia (unpublished), 1985, page 97.

[50] HERITAGE OF MALAYSIAN TRUST, page 97.

Figure 4.20: *Front view of Bok House (1929).*

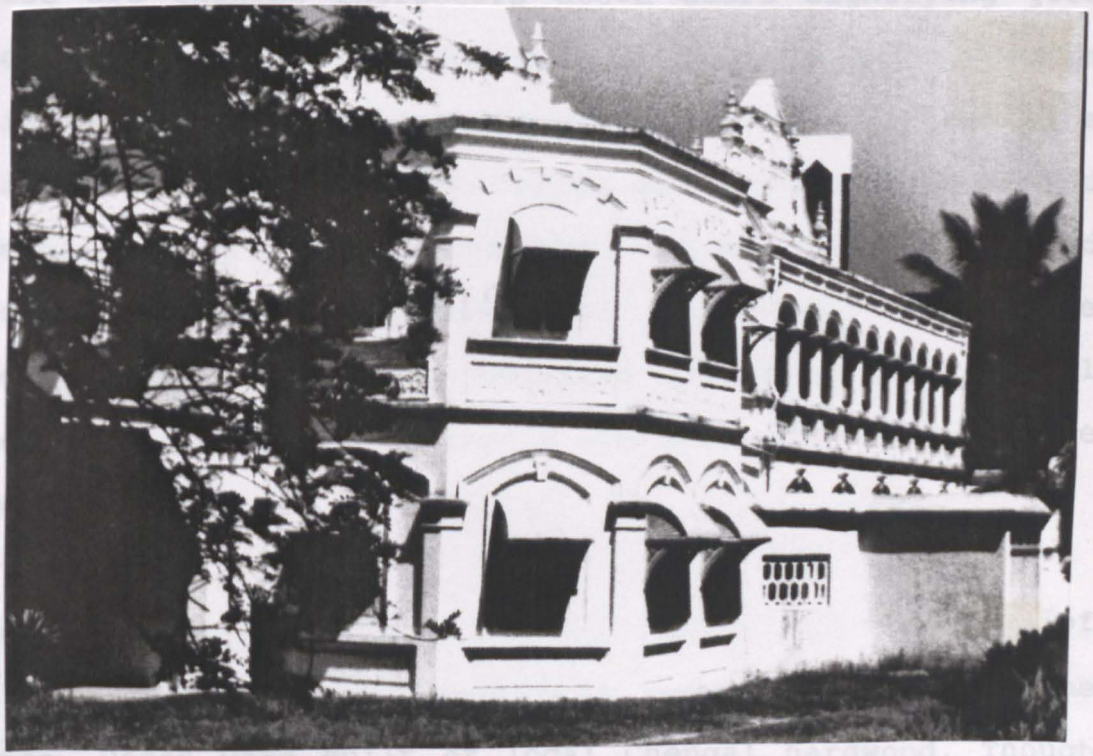

Figure 4.21: *Loke Yew Residence (1862).*[51]

51 Illustration reproduced from PERIS, ERIC, *Heritage of Malaysian Architecture,* Singapore; Concept Media, 1987, page 61.

ii. Loke Yew Residence

Loke Yew Residence stands on the site of an earlier mansion which was erected by a wealthy tin miner named Chow Ah Yoke in about 1862. Loke Yew bought this house and redesigned it, taking twelve years to complete the process. Much of the design work was made by Loke Yew himself and the job was carried out by European and Chinese craftsmen. The house reflects a mixture of European and Chinese influences (Fig. 4.21).

The house consists of two storeys with two large halls on each floor, divided by arched doorways. The rear hall on each floor is flanked by arched verandahs. Throughout the house are Chinese characters above doors signifying good luck messages. A large *Moon gate* (a shaped opening used in Chinese walls) leads to the garden. The main entrance is a Chinese style doorway with carved doors and a gold-painted ideograph with Chinese characters. The windows are arranged altenately with pilasters and the top frames are segmentally-arched with outlined keystones. Classical pediments and roof-top parapets are noticeably raised above the roof line.

The materials were imported from Europe and China. Tiles of a simple flower design cover the floors of parts of the house. Doors were built of local Chengal hardwood. Though the space planning is Neo-classical with an extensive use of arches, the overall structure reflects an equal emphasis on the use of the architectural elements from European and

Chinese sources. This building, popularly known as 'Wisma Loke', has now been converted into an art gallery and music conservatory.

Another colonial mansion worth mentioning is the *Carcosa* which was built in 1897. After the Federation of Malay States came into existence in 1895 and Kuala Lumpur was announced as its capital, the Resident General of the Federation moved from Singapore to Kuala Lumpur and lived at Carcosa. The building, described by Robert Fermor-Hesketh as a powerful-looking house well situated in a park[52], was recently converted into the Seri Negara Hotel.

Other notable colonial mansions around Kuala Lumpur are Loke Yew's house[53] (1900), now used as offices for the Malaysian Institute of Architects and a temporary office for the Heritage of Malaysian Trust, Eu Tong Sen's Residence[54] (1935), which is now the Malaysian Tourist

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[52] FERMOR-HESKETH, ROBERT, *op. cit.*, page 136.

[53] The second owner of Loke Yew's house was his son, Alan Loke, who later rented it out. It was converted into the Empire Hotel and in 1960 the Peninsula Hotel. The building was taken over and renovated by Pertubuhan Akitek Malaysia (PAM) or Malaysian Institute of Architects in 1973. See MALAYSIAN INSTITUTE OF ARCHITECTS, *Guide To Kuala Lumpur Notable Buildings*, *op. cit.*, page 29.

[54] Eu Tong Sen's house was taken over by the government in 1956. In 1958 a conference hall was added to the rear of the house and the building was named *Dewan Tunku Abdul Rahman*. See MALAYSIAN INSTITUTE OF ARCHITECTS, page 55.

Information centre and Chan Wing's Residence[55] (1928), which is now the National Palace.

iii. Bungalows

There is a diverse opinion about the origin of the bungalow. Anthony D. King remarks that the word bungalow may have originated from the word *bangla*[56], a term used in India to describe the common hut of the Bengal peasant which has a sloping roof on two sides and two gable ends.[57]

The word bungalow is first used to describe European dwellings in India. Anthony D. King points out that "the bungalow was a product of cultures in contact, an indigenous mode of shelter adopted and adapted for Europeans living in India".[58] From India, this building type spread to all other British colonies, including Malaya.

Many colonial bungalows in Malaya were built to accommodate the colonists of the higher ranks. They were mostly located in the suburbs far away from town centres, due to the fact

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[55] Chan Wing was a Chinese millionaire. His residence was used as an army mess during the Japanese Occupation from 1942-45. It then served as a residence for the Sultan of Selangor until 1957 when it was aquired by the Federal Government as the residence of the *Yang Di-Pertuan Agong*. See MALAYSIAN INSTITUTE OF ARCHITECTS, page 50.

[56] *Bangla* means 'of or belonging to Bengal'. It is one of fifteen possible sources of the word bungalow.

[57] KING, ANTHONY D., *The Bungalow: The Production of a Global Culture*, London; Routledge and Kegan Paul, 1984, page 18.

[58] KING, ANTHONY D., page 14.

the buildings in the towns (of *atap* structures) were vulnerable to the danger of fire. They were also largely found in the rubber plantations where the managers of the plantations lived. Interesting examples of colonial bungalows and houses can be seen on Carey Island, near Port Klang, Selangor (Fig. 4.22).

The popularity of bungalows in the British colonies was partly due to the development of `exportable bungalows' in late 1880s (Fig. 23). These bungalows were prefabricated iron and timber houses specially designed for conditions in the tropics. By the turn of the century, many British firms were sending bungalows abroad and the most typical of these were those by Boulton and Paul of Norwich who supplied bungalows to the managers of rubber plantations in Malaya and also to other countries like Sudan, Egypt and West Africa.[59]

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[59] KING, ANTHONY D., page 116.

Figure 4.22: *Two examples of colonial houses in Carey Island which were occupied by the estate managers.*[60]

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[60] Most of the estate managers' houses in Carey Island are two-storey high and there is also a club house (built exclusively for the managers to socialize) and a small castle (where the founder of the island, Mr. John Carey and his family used to live) on the island. Illustrations reproduced from ENDUT, ESMAWEE HAJI, *Kajian Lukisan Terukur di Pulau Carey,* Measured drawing report presented at University Teknologi Malaysia (unpublished), 1986, page 5 and page 130.

Figure 4.23: *Examples of `portable' bungalows by Boulton and Paul of Norwich.*[61]

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61 Illustration reproduced from KING, ANTHONY D., *op. cit.*, page 117.

4.3 COLONIAL BUILDINGS AND THEIR DEVELOPMENT

4.3.1 MAIN ARCHITECTURAL STYLES

Malaysian colonial buildings present a variety of European architectural styles which include Classical Renaissance, Tudor, Neo-Classical and Neo-Gothic styles. (see Appendix I). Colonial buildings have also, by necessity, been designed to respond to the hot-humid tropical climate of Malaysia. Two dominant styles which are typical in most private and public buildings in Malaya are the Palladian and *Indo-Saracenic* styles.

i. PALLADIAN STYLE

Many colonial buildings designed by the British have the features of the Palladian style of Georgean architecture which was popular in England from the sixteenth century to the nineteenth century.

Palladian architecture was developed in Europe from about 1710 to 1750. As the name implies, this style was based on certain rules established by Andrea Palladio (1508-80) who was one of the most famous architects of the Italian Renaissance. The Palladian style was first used for manor houses in the English countryside, and later adapted for churches and administrative buildings[62]. This style generally utilised symmetrical planning, harmonious proportions and also had Greek and Roman motifs. The great

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[62] HERITAGE OF MALAYSIAN TRUST, *op. cit.*, page 96.

success of the style explains why it was used in the English colonies, including Malaya.

In colonial India, from where most British East India colonists in Malaya originated, this Palladian influence had already evolved into a distinct architectural style, known as the *Anglo-Indian* style.[63]

The facade of a Palladian building is usually divided into three distinct horizontal parts - a raised basement, a principal storey (ground floor) given prominence by its ornamentation and large openings and an upper storey with smaller square openings. The verticality of the central part of the facade is emphasized by the presence of a central door, a Venetian window or by special ornamentation such as a triangular pediment with columns and pilasters.

ii. `INDO-SARACENIC' STYLE

Most public buildings built in Kuala Lumpur around the period of 1890-1920 are described as having followed a style known as the `Indo-Saracenic' which originated from British colonial architecture in India. Robert Fermor-Hesketh notes that "there were powerful *Indo-Saracenic* buildings in the state of Selangor. The Secretariat (Sultan Abdul Samad building) in Kuala Lumpur was a good example of

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[63] See KOHL, DAVID G., *op. cit.*, pp. 56-57.

these influential buildings, which were almost moral in their architectural rectitude".[64]

The group of buildings built in Indo-Saracenic style include:- Sultan Abdul Samad Building (1897), High Court (1909), Malayan Railway (KTM) Administration Headquartes (1917), Public Work Department (1896), General Post Office (1896) and City Hall (1896). These buildings are also referred to by some authors and scholars as having *Indo-Islamic, Euro-Islamic* or *Moorish* influences. David G. Kohl refers this group of buildings as having Euro-Islamic style. He points out that, "most significant to Kuala Lumpur's visual character are his `Euro-Islamic' General Post Office, City Hall and public buildings, all designed in 1896".[65] (Fig. 4.24 and 4.25)

The architectural style of Kuala Lumpur Railway Station (1911) is also thought to have *Saracenic* influences. Peter Stocker notes that "the octagonal towers of the railway station (which framed the main building and gables of the extended platform canopies) form the dominant feature of the whole complex. Their lineage can be traced from the Mungal Emperor Akhbar's sixteenth century capital of Fatehpur Sikri through two centuries of colonial

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[64] See FERMOR-HESKETH, ROBERT, *op. cit.*, page 136.

[65] KOHL, DAVID G., *op. cit.*, page 62.

architectural experimentation in India, culminating in the great civic buildings of the 1890s".[66]

Chris Abel regarded the architecture of administrative and public buildings of Kuala Lumpur as a fusion of Islamic and Classical forms. The Islamic influence is seen in the use of graceful domes, minarets and pinnacles while the Classical influence is seen in the architectural device of the multi-storey loggia (a Renaissance invention), arched openings and, in the case of Sultan Abdul Samad building, the placement of the building onto a major public open space (a field or a garden). In his analysis on `Built Sources of Malaysian Identity', Chris Abel remarks that "Islamic architectural forms and Renaissance forms have been fused together to produce what are now instantly recognisable as the characteristic features of the historic governmental and public buildings of Kuala Lumpur".[67]

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[66] STOCKER, PETER, *op. cit.*, page 25.

[67] ABEL, CHRIS, "Built Sources of Malaysian Identity", *Majallah Akitek*, Vol. 3, 1985, page 37.

Figure 4.24: *'Indo-Saracenic' or 'Euro-Islamic' style of General Post Office, Kuala Lumpur (1896).*[68]

Figure 4.25: *'Indo-Saracenic' style of City Hall, Kuala Lumpur (1986).*

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[68] Illustration reproduced from FERMOR-HESKETH, ROBERT, *op. cit.*, page 139.

4.3.2 PLANNING

Most of the British colonial buildings in Malaysia are designed using classical principles, predominantly the Renaissance concepts of harmonic proportions, symmetrical planning and order. A linear planning system was also popular in the design of churches and many public buildings.

The planning of the European villas in Malaysia mostly followed Palladian planning principles. A Palladian villa usually adopts a central-hall plan around which all the rooms are arranged symmetrically. The rooms that are considered the most important are the dining and living rooms and are located at ground level. Rooms which are considered less noble, such as kitchen and servants' quarters are located in the basement (in Malaysia, it is not possible to construct basements due to the high ground water level, therefore these areas are located at the rear of the building, or separated from the main building). Bedrooms are usually located on the first floor with a grand staircase connecting the two levels.

Apart from taking precedent from the building styles of Western countries, the planning of most public buildings in Malaysia very much follows the concepts of traditional planning in terms of adaptations to the climate. This is evident in the introduction of loggia or open corridors which extend from one end to the other. In the case of the Sultan Abdul Samad building, loggias are located on both

sides of the longitudinal periphery of the rectangular plans. The linear layout with loggias on both sides of the building allows through ventilation across the interior spaces. The loggias, besides being the main circulation areas, also act as transitional spaces that exclude the heat and direct light from entering the interior spaces. They also act as buffer zones to the busy, noisy streets that surround the buildings.

Churches in Malaysia on the other hand have closely followed the prototype examples found in the country of origin, associated with the mission boards, and have been adapted to regional climatic needs.[69] S. Vlatseas points out that "although the design of churches made the necessary concessions to the climate, their buildings remained, on the whole, copies of those of the homeland, with some elements of Imperial India".[70] A colonial city may be typified by church designs of diverse styles - a Romanesque Roman Catholic church, a Classical Anglican church, a Neo-Gothic cathedral, a Greek Revival Methodist chapel, a Gospel hall and so on.[71]

From the basic building form, interior layout and architectural elements incorporated in the design, the planning of Malaysian churches was based on the design

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[69] TOO, ANTHONY, *op. cit.*, page 89.

[70] VLATSEAS, S., *op. cit.*, page 68.

[71] TOO, ANTHONY, *op. cit.*, pp. 89-90.

principles of Western churches which had developed in Europe. Anthony Too identifies four design principles of Western churches which have been adapted in the planning of Malaysian churches. The principles can be summarized as follow:-

i. The Basilican Linear Plan

The Basilican linear plan has a rectangular plan, essentially processional in its longitudinal division into nave and aisles, separated by a colonnade, terminated at the apse, and with a narthex at the opposite end. The two lengths of nave walls each consists of three bands - ground level columns, an expanse of masonry above, and a series of clerestory windows at a higher level. The rectangular plan enhances the processional direction towards the altar. The apse with its expanding hollowness evokes the symbolic place of encounter between God and man.

ii. The Byzantine `Central Gravity' Principle

In Byzantine architecture, the dome is the primary space-defining element, where it is placed above a square or rectangular space. Brickwork properties and the development of building techniques allowed innumerable ways of shaping geometrical forms of which the *pendentive*[72] method was adopted for the dome. The geometrical shape derives from a square within a hemisphere, on top of which the dome is placed. The basis of the four pendentives

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[72] The word derives from the Latin `pendere' meaning `to lay down'.

between the four arches join to create a circle on which the dome rests.

iii. Romanesque Cruciform

The development of the Romanesque cruciform plan came about because of the additional duties of the priest who required further altars, side chapels and chevets. The popular veneration of saints and relics led to the creation of crypts. Large crowds of pilgrims increased circulation space, resulting in the development of ambulatories, galleries and transepts. The choir was developed to separate the clergyman from the laity.

The cruciform plan was adopted since it resembled Christ's cross. The ambulatory processional walkway acts as a circulation path, continuing from the aisles round the eastern apse, with radiating chapels and apses added to form a clear massing. The vaulting system has been adopted in the crypt, aisles, galleries and nave. It affects the substructure by creating a spatial unit (bay) and then determining the form and shape of its supports. The slender columns govern a linear movement within the building.

St. John's Cathedral (1955) and the older St. John's Church (1886), both in Kuala Lumpur, are two examples of Malaysian churches which adopted Romanesque planning principles. St. John's Cathedral has a distinctive cruciform plan while St. John's Church has a cross-shaped masonry structure in Neo-Classical style.

iv. Gothic Vertical Expression

The characteristic feature of a Gothic church is in the verticality of its architectural elements. Buttresses, which form a vertical series of supporting structures, were built with a wide base and stepped back as they went upwards and in the case of flying buttresses, they seem to press inward to support the clerestory walls.

Gables are decorated with pointed arches and towers surge upwards into pinnacles. The interplay of buttresses, pointed arches and towers merged to form a harmonic edifice which emphasizes a rhythmic vertical movement.

Geometric means of using certain regular polygons as modules help to create order and proportion, resulting in unity and harmony. The Gothic vaulting system is unified by the pointed arch. Walls are decorated with stained glass which generally filters the light. The introduction of light transfigures the building to express aspiration towards heavenly spirituality. Planes of light are enriched by the interposition of glass and lead to manifest the varied splendour of God. The Church of Holy Rosary (1903) in Bricksfield, Kuala Lumpur, is a good example of a Malaysian church which adopted Gothic design principles by the use of pointed arches, buttresses and central tower.

v. Renaissance Humanism - Harmonic Proportion

During the Renaissance period, a centralised church plan was developed which related to the human scale. The

mathematical symbols of centre, circle and sphere acquired special significance. By adding small geometric units to a basic circle, it was evident that a great variety of composite geometrical configurations can be produced with the same focal centre.

The theoretical works of Vitruvious, Brunelleschi, Bramante, Leonardo and Palladio in Italy were excellent examples of the central concern for concepts of church designs embodied in ideal classical proportions.[73]

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[73] Text edited from TOO, ANTHONY, *op. cit.*, pp. 95-98.

4.3.3 BUILDINGS COMPONENTS AND INTERIOR LAYOUT

Since this study covers a wide range of building types, only the main components of colonial residential buildings are covered here. Thus, comparisons may be made with the main components of traditional Malay and Chinese houses which have been discussed earlier in Chapter Two and Three respectively under the same heading.

The Main Components of Colonial Bungalows

The colonial bungalows built in Malaya generally consisted of the following spaces:-

i. Entrance Porch
ii. Verandah
iii. Sitting Room
iv. Dining Room
v. Kitchen
vi. Bedrooms
vii. Dressing and bathrooms
viii. Servant's quarters

i. Entrance Porch

Early colonial bungalows in Malaya usually had a circular drive and a porch (*porte-cochere*) where carriages could wait in the shade. The porch also provides protection to the occupants and guests (who board and alight from their vehicles) from the tropical sun and torrential rain

which usually comes down in the early evening of a monsoon period.[74]

The porch was still very much in use in colonial bungalows during the late nineteenth century. It was used as a sign which emphasized the main entrance and as a garage for the owner's automobile. The porch was usually linked directly to the main sitting room. It forms a formal reception for visitors to a house. The use of an entrance porch was also adopted in larger buildings like Chinese temples and some public structures.

ii. Verandah

The most essential part of a bungalow is the verandah, an element which had long been a feature of European colonial houses in the tropics[75]. The verandah generally functions as a device to keep the sun's heat off the walls, but it is also used as a reception, living and eating area. The width of the verandah varies from eight to twelve feet wide. In large bungalows, it may be built all around the house and in smaller bungalows, it may just extent in front of the house as a front corridor (Fig. 4.26).

iii. Sitting Room

The ground floor of a colonial bungalow normally consists of the sitting or living room, dining room and

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[74] See VLATSEAS, S., *op. cit.*, page 104.

[75] See KING, ANTHONY D., *op. cit.*, page 213.

kitchen. The sitting room is a large reception room where guests are entertained. It is usually located at the front of the house, facing the garden. In some instances (depending on the site layout), the sitting room may be placed on one side or at the rear of the house facing a rear garden. From the sitting room, there is usually a direct access to other parts of the house. Furniture may include a settee with coffee table, bookshelf, display cabinet, armchairs, writing bureau and side tables. There was no provision for a fireplace or any kind of heating system, as room temperatures are relatively warm throughout the year in tropical climates.

In large houses there is usually a second sitting room which is used as a family room. It can be either on the upper floor near to the bedrooms or on the lower floor near to the dining room.

iv. Dining Room

The dining room is usually attached to the sitting room. A typical dining room normally holds an oblong dining table with chairs and a sideboard. Display cabinets, side tables and an armchair may be added, depending on the owner's preference and the size of the dining room.[76] It usually had large openings with a view towards the front or rear garden.

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[76] ENDUT, ESMAWEE HAJI, *Lapuran Kajian Lukisan Terukur*, op. cit., page 84.

v. Kitchen

The kitchen is usually located at the rear of the house and near to the servant's quarters. It is an area for cooking, preparation of food and cleaning up of dishes. It normally has a stove, a working table, a pantry and a food store (larder).

vi. Bedrooms

Bedrooms are usually located on the first floor with a wide (usually ornate) staircase connecting them to the spaces on the ground floor. Bedrooms in colonial bungalows are generally large in size, airy and spacious. Anthony D. King notes that "the rationale for the large size was the concern for coolness....for the sake of airiness, the sleeping room should contain little furniture but the bed and wardrobe. This necessitates a dressing and bathroom and also a store room to keep personal belongings. These included a wardrobe, chest of drawers, washstand, bootrack, writing table and 'articles of a private nature'."[77] The concept of having a small amount of furniture in a bedroom can be related to the Malay concept of space which has an open plan and almost no furniture.

vii. Dressing and Bathrooms

A dressing room, bathroom and toilets were usually located adjacent to bedrooms and were never built close to the kitchen for convenience and hygienic reasons. This is

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[77] KING, ANTHONY D., *op. cit.*, page 212.

not like Chinese shophouses where bathrooms and toilets were built close to the kitchen and were considered as wet areas where all the washing was done. The proximity of bathrooms and kitchen in Chinese shophouses was also designed to facilitate drainage of waste water and partly as a result of limited floor space. By contrast, toilets in traditional Malay houses were built away from the main house. The traditional Malay concept of isolating toilets is seen as similar to the European space conception in terms of hygiene.

viii. Servant's Quarters

Servant's quarters were normally separated from the main house, in the rear part of the house compound. They consisted of small sleeping units with attached bathrooms. The servants employed were normally local Malays or Indians whose families worked on the estates or plantations.

Figure 4.26: *The front verandah of a colonial house in Carey Island, Selangor.*

4.3.4 MATERIALS AND CONSTRUCTION SYSTEM

The materials and construction techniques, which were introduced by the Europeans, contrasts with lightweight timber construction used by the Malays.

Most colonial buildings represent heavy and solid masonry construction with extensive use of stones and bricks as the main structural components. Construction generally consisted of load bearing walls and building materials which were derived from local quarries established in a number of locations in Selangor, Perak, Penang and Malacca. Local hardwood timber was generally used for roof structures and doors and windows frames. Some buildings finishes (roof and floor tiles), which were difficult to produce locally, were imported from Europe and China.

The construction system of colonial buildings in Malaya was generally based on the construction techniques used in European buildings. The design of public and residential buildings were also based on their prototypes in Europe with some modifications to suit local climatic conditions.

Many public buildings in Kuala Lumpur, Penang and Perak, of the late nineteenth and early twentieth centuries, were built using Chinese and Indian labour forces. Only a few European craftsmen were involved in the construction of colonial buildings during that period.

4.4 DESIGN PRINCIPLES

4.4.1 EUROPEAN CONCEPT OF SPACE

As the ruling power in the Malay states, the British built many administrative buildings in the principal towns of Malaya (Kuala Lumpur, Georgetown and Ipoh) which followed the architectural style of their place of origin. This was possibly to allow the English to feel more at home but mainly to give the impression and feeling of grandeur and, at least, a symbol of power.[78]

Most public buildings built by the British colonial regime can be classified as Imperial buildings. Apart from their practical uses, these buildings were constructed on a massive scale as an expression of grandeur and power. The grand scale psychologically symbolized the British authority and their status as ruler of the colonies.

The linear and symmetrical planning principles of the buildings emphasize the concept of formal space conception and expressed the intentions of the British people in creating noble and elegant buildings. As David G. Kohl points out "the Palladian concept was preferred by socially-aspiring colonists who were attracted by its association with rank, prestige, elegance and concepts of Renaissance humanism".[79]

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[78] ENDUT, ESMAWEE HAJI, *Search for Identity*, *op. cit.*, page 54.

[79] KOHL, DAVID G., *op. cit.*, page 56.

4.4.2 MAIN CHARACTERISTICS OF BUILDING

The main architectural characteristics of British colonial buildings built in Malaya are:-

i. Arches
ii. Loggia
iii. Wide verandahs
iv. Large windows
v. Deep roof overhangs
vi. High ceilings
vii. Raised floor levels

i. Arches

The arch was first introduced into Malaya by the Portuguese. It was also seen in some of the Dutch buildings. The arch was extensively used in British colonial buildings in the late nineteenth century. The shape of the arches may vary from one building to another and in some instances a single building may incorporate two or more different designs of arches (Fig. 4.27).

Three common types of arch found in colonial buildings in Malaya are:- round arch, pointed arch[80] and 'Islamic style' arch[81] (Fig. 4.28). The round arch is the most common type

[80] The pointed arch is also known as the 'Gothic arch' which was originally used in Gothic churches. Gothic arches date from the mid twelfth to the early fifteenth century.

[81] The 'Islamic style' arch is a term given to describe a pointed arch with small round arches arranged along the two curves which meet at the top. It is believed to have been originated from the colonial architecture of India with strong Islamic influence.

Figure 4.27: *Round and pointed arches in the High Court building, Kuala Lumpur. (1909)*

Figure 4.28: *`Islamic style' arches in the Information Department building, Kuala Lumpur. (1909)*

and is found in both residential and public buildings. The pointed arch is popular in administrative buildings and churches. The Islamic style pointed arch can be seen in government buildings and in a few mosques built during the British colonial period. These arches are often arranged along the open walkway to form an arcade or loggia.

ii. Loggia

The loggia is an important characteristic in colonial buildings in Malaya. This feature can be seen in many public buildings in Kuala Lumpur, Penang and Ipoh. The arcade is often articulated with other architectural elements like columns, segmented arches with outlined keystones, rails and balustrades to form an interesting building facade (Fig. 4.29). *Keretapi Tanah Melayu* (KTM)

Figure 4.29: *A combination of architectural elements in the design of loggia.*

Administration Headquarters is a fine example of a building characterized by the use of loggias (Fig. 4.30 and 4.31).

Figure 4.30: *KTM Administration Headquarters, Kuala Lumpur (1917). Its facade displays an extensive use of loggia.*

Figure 4.31: *Close view of the three-storey gallery arcade of the KTM Administrative Headquarters, Kuala Lumpur.*

iii. Wide Verandahs

The British incorporated verandahs, loggias and balconies in the design of their buildings. The verandah is seen as a typical characteristic of colonial buildings in Malaya and other British colonies in the tropics. For large public buildings, verandahs are generally used to provide shade for the interiors and served as a circulation area (similar to loggias). In small scale buildings, the verandah forms a large covered outdoor space which is often used as an activity space. A wide verandah in domestic buildings may be used as an outdoor dining area, an informal living area, a secured outdoor children's play area or just simply a place for relaxation.

iv. Large Window Openings

Most colonial buildings are equipped with large window openings. They create a brighter internal space, increase the amount of air entering the building and encourages the process of natural ventilation. Windows openings are usually built as low as one a half feet from the floor and up to the ceiling. The width ranges from four feet to eight feet. Arches, fixed glass openings or louvres are usually built above the windows and provide even more light to the internal spaces.

v. Deep Roof Overhangs

Deep roof overhangs are mostly seen in residential buildings. The main roof is often projected out to give shade and protection to walls and openings. The roof

projections also enhance comfort within the building and prevent rainwater, direct sunlight and glare from entering the building. Small overhangs or canopies are usually provided for windows and openings at ground level. The deep overhangs are usually difficult to sustain and therefore timber brackets are employed to support the projecting roofs (Fig. 4.32). These timber brackets are different from the Chinese timber brackets, in the sense that they are actually bolted to the wall structures and only support the projecting roof, whereas Chinese timber brackets consist of

Figure 4.32: *Example of a timber bracket in a colonial house.*

a series of small brackets interlocking with each other and form as part of the main structural system which supports the weight of the main roof itself.

vi. High Ceilings

The high ceiling is a typical characteristic of colonial buildings. It creates a larger internal volume and reduces the possible concentration of heat. Air vents, grilles and slatted openings are usually provided on walls in a high position to assist natural ventilation.

vii. Elevated from Ground Level

Another characteristic which is not so easily recogniseable is the fact that many colonial buildings were raised on bricks or stone bases. They were generally built only slightly above ground level, which is perhaps the reason why they are not noticeable. In some cases, the structure may be raised between three to four feet high leaving a hollow space underneath the ground floor.[82] The raised structures are often covered along the outside boundary with bricks or stone walls. The concept of having a raised structure correlates with Malay tradition and has environmental advantages. It also psychologically gives the building a more commanding position and the buildings may also look even bigger and more dominant.

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[82] Ground floors are usually raised to avoid contacts between the timber structures and the ground which may contains high humidity level. The shaded space underneath the ground floor is relatively low in temperature and may reduce ground floor room temperatures through radiation and air movement.

4.4.3 ADAPTATION TO CLIMATE

Colonial buildings in Malaysia were designed with some sensible environmental considerations to deal with the tropical climate. This is seen in the use of loggias, wide verandahs, large window openings, high ceilings, deep overhangs and, in some cases, the structures were raised on brick or stone bases.

Anthony D. King discusses colonial dwellings in the tropics as follows, "Unaccustomed to what was perceived as the hot, steamy and oppressive climate....the paramout need was to keep cool. For this, generous dimensions and the `perflation of breezes' were seen as pre-requisites".[83] He further notes that buildings should be spacious and lofty and verandahs should go round the building and be as wide as money will allow. A wide verandah is undoubtedly provides additional comform to buildings in the tropics.

For most public buildings, the verandahs were mainly used for circulation purposes. They also provide a transitional space between indoor and outdoor spaces which generally give good shade for the interiors. The rectangular and narrow building plans with high ceilings and large window openings, helped the process of natural ventilation within these buildings. As in traditional Malay buildings, the deep overhangs of colonial roofs also provide shade and keeps rainwater from walls, windows and corridors.

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[83] KING, ANTHONY D., *op. cit.*, page 212.

Many colonial buildings were also raised above the ground in order to avoid ground moisture and termite problems which may rot timber floors and other timber structures in the buildings.

The lofty design of church building with its double-volume internal space encourages the process of the stack effect[84]. The accumulated hot air is taken out from the building via clerestory windows and fresh cool air is brought inside through openings at ground level.

4.4.4 ORNAMENTATION AND DECORATIVE ELEMENTS

It has been observed that Palladian architecture gave more emphasize on ornamentation rather than on structures. Both David G. Kohl and Anthony Too remark that the motifs of Palladian architecture are used by some less motivated architects as a standard device where the architectural elements were constantly repeated in decorating the facades of private and public structures. David G. Kohl notes that "architects of less originality often derived their patterns and motifs from several editions of copy books, a flood of which existed by the 1760s. Designs were provided for the standard parts of the classical orders for doorways, windows, facades, as well as relationship of buildings from one to another".[85] Anthony Too also shares a

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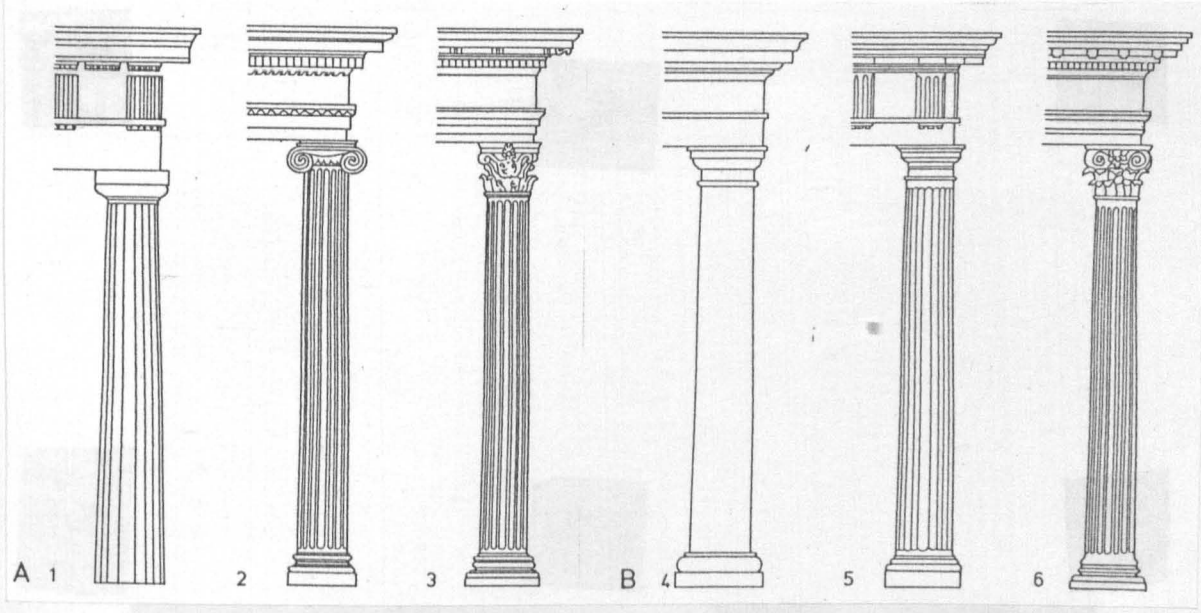
[84] See BUILDING RESEARCH STATION, "The Principles of Natural Ventilation of Buildings", *Building Research Station Digest,* London; H.M.S.O., No 34, Sept 1951, pp. 34/1-34/4.

[85] See KOHL, DAVID G., *op. cit.*, page 58.

similar view and points out that "Classical motifs, pillars, pediments and white stucco walls to the facades were often selected by master-builders from copious editors of copy books which existed by the 1760s".[86]

The classical columns used in many colonial buildings in Malaya are based on the Classical Orders (Doric, Ionic and Corinthian) and `Derived Orders'(Tuscan, Doric Roman and Composite) of the Greek and Roman periods of architecture (see Fig. 4.33). Pediments are used in collaboration with the columns to emphasize a symmetrical design (Fig. 4.34 and 4.35). These columns are often placed on pedestals.



Key: A Classical Orders - 1.*Doric* 2.*Ionic* 3.*Corinthian*
B Derived Orders - 4.*Tuscan* 5.*Doric Roman* 6.*Composite*

Figure 4.33: *The Classical Orders and Derived Orders.*[87]

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[86] TOO. ANTHONY, *op. cit.*, page 90.

[87] Illustration reproduced from WHITE, ANTONY and ROBERTSON, BRUCE, *Architecture and Ornament: A Visual Guide,* London; Studio Vista, 1990, page 10.

Figure 4.34: *The use of columns and pediments in Old District Council Office, Klang, Selangor (1910).*

Figure 4.35: *Tuscan Columns of Old District Council Office, Klang, Selangor.*

An interesting decorative element found in many colonial buildings of the late nineteenth century is the onion shaped dome. The domes are generally found on towers and minarets of several building types (mostly public buildings) of Kuala Lumpur, Penang and Malacca. These onion domes are believed to have been derived from *Saracenic* architecture of India (colonial architecture of India with Islamic influence) which was brought into Malaya by British colonists. Examples of onion domes can be seen in Sultan Abdul Samad building (Fig. 4.36), Kuala Lumpur Railway Station (Fig. 4.37), KTM Headquarters and Masjid Jamek of Kuala Lumpur (Fig. 4.38).

Figure 4.36: *Onion shaped dome of Sultan Abdul Samad building, Kuala Lumpur.*

Other decorative elements of colonial buildings are generally found in the design of arches, gables, doors, windows and staircases.

Figure 4.37: *Onion shaped domes of Masjid Jamek, Kuala Lumpur (1909).*

Figure 4.38: *A dome surrounded with pinnacles in the Kuala Lumpur Railway Station.*

Chapter Five

CONTEMPORARY MALAYSIAN ARCHITECTURE

5.1 MALAYSIAN ARCHITECTURE AFTER INDEPENDENCE

The British occupation and the great influx of foreign immigrants (Europeans, Chinese and Indians) are two critical factors which have progressively changed the local political system, social institutions and the cultural development of Malaysia. The impact of colonization and exposure to foreign cultures may be observed from the development of the physical forms of Malaysian cities. The architectural development clearly indicates Western influences in terms of building style, design and usage which have continually been practiced until the present time. As Brian Brace Taylor points out, "the Western models of physical planning had shaped the principal cities and continued to do so through inherited institutions and regulations, or that Western interpretations of local forms of architecture persisted as the framework in which daily life went on".[1]

Traditional Malay architecture was beginning to be discarded from the late nineteenth century when new building construction techniques, materials and styles were introduced. A vast number of traditional buildings (especially in urban areas) were replaced by new structures

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1 TAYLOR, BRIAN BRACE, "Rethinking Colonial Architecture: Demythologising Colonial Architecture", *Mimar*, No. 13, July/Sept. 1984, page 16.

which were built using Western systems. This marked a period of discontinuity in the development of local traditions. The cessation of local building traditions was further carried out in the period after independence when modern technology was brought into Malaysia. To quote David G. Kohl, "the traditional building activity seem to cease with the transition in the 1950's from the Malay, Chinese and colonial architectural traditions to the "International" movement in modern architecture which employs the use of structural steel skeletons, pre-stressed concrete and other building materials which are not part of the earlier traditions".[2]

Malaysia has had independence for nearly four decades. In order to make a systematic analysis on the development of Malaysian architecture after independence, it is important to group a number of important events concerning contemporary Malaysian architecture, and the architectural profession, into several phases. The first phase is the period between 1957 and 1967 (ten years after independence), the second phase is the second decade after independence (1968 to 1977) and the third phase is the period from 1978 to date (representing the third decade and the years that follow).

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[2] KOHL, DAVID G., *Chinese Architecture in the Straits Settlements and Western Malaya,* Kuala Lumpur; Heinemann, 1984, page 80.

5.1.1 THE FIRST DECADE AFTER INDEPENDENCE (1957-67)

The design of buildings built within this period generally reflects the source of training of the designers (architects). In the first few years after independence, a number of Malaysian architects returned to Malaysia after receiving full architectural training from overseas (mostly in the United Kingdom and Australia). These were a group of enthusiastic young professionals who were keen to demonstrate their new skills and capabilities. However, most of the private sector architectural practices were controlled by expatriates and these newly trained Malaysian architects had to compete with their expatriate partners. The majority of the architectural practices were considerably influenced by contemporary British architecture, e. g. the work of the Smithsons, Lasdun, the Brutalist movement in the 50's and the `hi-tech' influences of the early 60's.[3] With the changing mood of the nation and the departure of the colonial British administration, local architects began to take over these expatriate firms.

Commercial buildings built during this period were mostly owned by expatriates companies engaged in business in Malaya. Denmark House in Ampang Road, designed by James Ferrie and Partners, was reputed to be the first glass `curtain wall' building in the country. Leading office buildings at that time (mostly located near to the junction

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[3] See MALAYSIAN INSTITUTE OF ARCHITECTS, *Post-Merdeka Architecture: Malaysia 1957-1987,* Kuala Lumpur; Persatuan Arkitek Malaysia, 1987 (PAM Exhibition Catalogue), page 20.

of Campbell and Ampang roads) include the Great Eastern Insurance Building, Sime Darby Building, Borneo Motors Building and Harrison & Crosfield Building.

In the design of private houses, a discernible distinction can be made between houses designed by Malaysian architects trained in Australia and those trained in Britain. The Australian graduates generally responded more to the climate and used timber as the main building material whereas those trained in Britain had a greater modernist emphasis with a more experimental approach to the use of materials and to planning.

A number of low cost housing schemes, blocks of flats and standard timber housing developments began to be built throughout the country.[4] This period also saw the beginning of large housing estates of terraced houses being built in principal towns, especially in Selangor and Penang.

The Public Works Department was renamed as *Jabatan Kerja Raya* (JKR) and during this period (1957-1967) it began to produce standard office plans.[5] In 1967, the Malaysian Institute of Architects (Pertubuhan Akitek Malaysia or PAM)

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[4] MALAYSIAN INSTITUTE OF ARCHITECTS, page 20.

[5] The new JKR Headquarters in Kuala Lumpur (1957) was built using this standard office plan. This building is a 13-storey rectangular office block with corridors at the front of the offices and staircases at the ends. This plan type is also used to accommodate JKR offices in other states in the Malay peninsula.

was established.[6] The RIBA framework of by-laws and British building practice was adopted and re-structured to meet with local conditions.

Important public and institutional buildings built within this period in Kuala Lumpur and Selangor include the University of Malaya by Booty Edwards and Partners[7] (1961), the National Museum by Ho Kok Hoe (1963), Parliament House by JKR (1963), Kuala Lumpur General Hospital by Wells & Joyce Architects (1966-74), Subang International Airport by BEP Akitek Sdn. Bhd. (1965) and the National Mosque by JKR (1965).

Although buildings built during this period were generally plain in appearance, they have showed commendable efforts in utilizing some architectural devices like vertical and horizontal projections for the filtration of climate. Examples of these can be seen in the designs of the Maternity Hospital (1960), Parliament House and AIA Building in Kuala Lumpur (1964).

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[6] The number of PAM Corporate memberships in 1967 was 157.

[7] Booty, Edward & Partners was originally owned by British expatriate architects. It was taken over by Kington Loo (now Dato' Kington Loo), a local architect who had later re-registered the firm as BEP Akitek Sdn. Bhd. Now, it is one of the largest and most established architectural firms in Malaysia. Other buildings built by Booty Edward & Partners or BEP Akitek between 1957-67 include Kington Loo's House (architect's own house), Kuala Lumpur (1959); Brunei House, Kuala Lumpur (1960); The Award Winning House for the Malay Mail Ideal Home Competition (1961); Century Battery Factory, Petaling Jaya (1962); Employees Provident Fund (EPF) Building, Petaling Jaya (1962); Chartered Bank, Kuala Lumpur (1964); Guinness Brewery Factory, Petaling Jaya (1965); Colgate Pamolive Factory, Petaling Jaya (1965) and Setapak Roman Catholic Church, Kuala Lumpur (1967). See MALAYSIAN INSTITUTE OF ARCHITECTS, *op. cit.*, pp. 50-68.

5.1.2 THE SECOND DECADE AFTER INDEPENDENCE (1968-77)

During the second decade after independence, Malaysia experienced a rapid growth in its economy which was followed by a building boom. A series of national plans were prepared at five year intervals to give directives for national development. The First Malaysian Plan was introduced in 1967. The Second Malaysian Plan from 1971-75 gave emphasis to the building industry, designating it as the engine for growth for the economy. It also incorporated the New Economic Policy (NEP) and laid stress on modernising and diversifying the economy, with special emphasis on encouraging rural industrialisation in the form of agricultural processing.[8]

During this period, a larger number of Malaysian architects returned home after study overseas. Their return coincided with the country's rapid growth, where there was a great demand for the production of buildings, both in the public and private sectors. The situation gave great opportunities for these architects to establish themselves and resulted in a large number of architectural practices being established in the country.

Prefabricated high-rise building systems were introduced in Malaysia in the early part of this period. This period also saw the emergence of private sector housing developers, where large tracts of over 100 acres were developed for

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[8] MALAYSIAN INSTITUTE OF ARCHITECTS, page 22.

housing estates and mini-townships. These developments consisted mainly of low-rise linear developments of terraced houses of 20 to 24 feet frontages and a group of shophouses. Another type of housing development, which also incorporated similar building types, was generally planned using a cluster layout. The latter was seen as giving more consideration of site contours whereas the linear development was usually less sensitive towards the natural landscape and any hilly areas were usually flattened to make way for the intended buildings.

In general, the building output in most urban areas during this period was very high, especially in the inner city of Kuala Lumpur. This resulted in high density areas and a rapid increase in land values. Major institutions like banks, government agencies and Ministry headquarters were also constructed during this decade. The rapid urbanisation of Malaysian cities also created an awareness amongst a number of professionals and government administrators concerning appropriate type of development and building style. In response to these initial concerns, the first architectural seminar at national level was held in 1971.[9]

Commercial buildings built during this period were mostly large head offices and shopping complexes with built-up

[9] The 1971 seminar was organized by the Malaysian government. Apart from the concerns by a number of people, this seminar was also the outcome of the government's aspiration in searching for methods to achieve integration and work-efficiency among the various Malaysian ethnic groups (architecture was seen as one of the methods). For details about the seminar see section 5.2.2.

areas exceeding 100,000 square feet. Large mixed developments (complexes with a combination of shopping with offices and residential facilities) also began to take place in high density areas.

The Malaysian economic boom and intense development has also substantially increased the number of tourists visiting the country. Many international hotels (five and four stars) were built during this period to accommodate the influx of tourists, including the KL Hilton (1972), Equatorial Hotel (1973), Holiday Inn (1973) and Regent Hotel (1974) in Kuala Lumpur; Rasa Sayang Hotel and Penang Merlin Hotel in Penang; Tanjung Jara Beach Hotel[10] and Primula Hotel in Terengganu; Club Mediterranee, Kuantan Merlin Hotel and Kuantan Hyatt (1976-79) in Pahang.

Educational establishments and higher institutions built during this period include:- Universiti Sains Malaysia[11] (USM) in Glugor, Penang; Universiti Kebangsaan Malaysia[12]

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[10] Tanjung Jara Beach Hotel received one of the Aga Khan Awards for Architecture in 1983. See *Majallah Akitek,* No. 3, 1983 pp. 30-31. This building is described further in section 5.3.2: "Examples of practical and effective re-use of traditional design principles in new building".

[11] Most of the early buildings on the Universiti Sains Malaysia campus were financed by the World Bank. Their design, planning and use of materials were heavily influenced by university buildings in the United Kingdom. See MALAYSIAN INSTITUTE OF ARCHITECTS, *op. cit.*, page 23.

[12] The Universiti Kebangsaan Malaysia campus was coordinated by Abdullah Bakri. This was the first university building in Malaysia which started to exercise some aesthetic coordination between the various buildings.

(UKM) in Bangi, Selangor; Universiti Pertanian Malaysia[13] (UPM) in Serdang, Selangor; Institut Teknologi Mara[14] (ITM) in Shah Alam, Selangor and Maktab Rendah Sains Mara[15] (MRSM) built in almost every state.

5.1.3 THE THIRD DECADE AND CONSECUTIVE YEARS (1978-93)

The economic growth and building boom in Malaysia reached its peak between 1978 and 1984 and slowed down in the consecutive years due to a short recession. During this period, the Fourth and Fifth Malaysian Plans were launched. There was the initial proliferation of construction at a national scale motivated by the massive injection of capital from both the public and private sectors. Up to 1985, the economy enjoyed a high growth rate that was the envy of the surrounding nations.

A great effort made towards industrialization with imported technologies from Japan and Western countries. Many students were sent abroad to acquire skills in various technological fields. The discovery of oil as a new major source of income and the investment of foreign investors helped the nation to advance in the technological fields.

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[13] The Universiti Pertanian campus masterplan was prepared by Jurubena Bertiga. It is a university that specializes in the technology and development of agriculture.

[14] The Institut Teknologi Mara campus masterplan in Shah Alam was prepared by JKR. The institute is designed to provide higher education and industrial training exclusively for Malays. Subsidiary campuses were also built in several states.

[15] Maktab Rendah Sains Mara is a college or secondary school which provides pre-university education.

This further encouraged the confidence of the community and resulted in larger spending, larger external loans being made and the undertaking of huge projects by both the public and private sectors.

In the early part of this period, `mega-scale' housing developments of 500 acres and above were undertaken which took several years to complete. Examples are Taman TAR, Taman Megah and Taman Tun Dr. Ismail in Selangor, Island Glades in Penang and Taman Pelangi in Johore. There were also a number of large projects carried out by private housing developers which were abandoned for reasons of inadequate finance, leaving purchasers with incomplete houses. As a result, the Housing Developers (Control and Licensing) Regulations[16] came into force in June 1982. Building conservation also came to the fore, with the formation of Badan Warisan Malaysia (Heritage of Malaysian Trust), in the same year.

Condominiums were also introduced during this period as an alternative to low-rise housing development in urban areas. The condominum provides exclusive accommodation for middle class people who work in the city with attractive facilities such as a private car-park, a swimming pool, a

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[16] The legislation is made to control and regulate the growth of private housing development. It outlined certain conditions and standards by which all developers need to comply. In some types of housing projects, a certain percentage of low-cost houses needs to be built. This led to the introduction of narrow frontage low-cost houses (e.g. 15 ft. frontage) and small low-cost flats (e.g. 800 sq. ft.).

recreation club and sports' facilities. It was quickly to become a popular housing form in Kuala Lumpur.

The building boom increased the workload of the local architects and with the short delivery times, they were under tremendous pressure. In convergence with the demand and urgency in the production of buildings, a large number of new architectural practices were established in the early 1980s.[17] Another national architectural seminar was held in 1981[18] as a follow up to the 1971 seminar. Several other seminars and workshops were also organized by the Institute of Malaysian Architects in collaboration with some local and foreign universities (see section 5.2.2).

New hotels completed during this period include Subang View Hotel in Subang, Selangor, Shangri-La Hotel and Pan Pacific Hotel in Kuala Lumpur and Pelangi Beach Resort in Langkawi Island.

Refurbishment projects also began to take place as a step towards restoring old buildings and adapting them to new uses. Among the buildings which have been refurbished were

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[17] In 1978 there were 130 registered architectural practices, but by 1987 there were 330 architectural practices in operation. See MALAYSIAN INSTITUTE OF ARCHITECTS, *op. cit.*, page 25.

[18] The main concern in this seminar is about the high-rise development.

Sultan Abdul Samad building by BEP Akitek Sdn.[19], Post and Telegraph Offices by Hajeedar and Associates[20] and Kuala Lumpur Railway Station by Perunding Alam Bina Akitek[21]. The most commendable redevelopment project was the Central Market, Kuala Lumpur, in 1986 by the architects Chen Voon Fee, William Lim and Carl Larson.

The Influx of High-Rise and International Style

The early part of the third decade after independence (late 70's and early 80's) was an era of intensive high-rise development. Buildings owned by major private companies and banks were generally built to reflect their corporate images and the architectural style was generally of the `International Style'. With the construction of these high-rise buildings, the skyline of Kuala Lumpur has gradually changed from a horizontal city to a vertical city within a short period of time, despite the commendable efforts by the City Hall Kuala Lumpur (DBKL) which

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19 The refurbishment of Sultan Abdul Samad building was carried out in 1979 and included general restoration works and conversion from State Secretariat offices into a High Court building. The building was to accommodate offices for the Department of Justice, 2 Criminal High Courts, 6 Civil High Courts, 2 Appeal Courts and a Supreme Court. See DICKIE, MARTIN, "Bangunan Sultan Abdul Samad Building", *Majallah Akitek,* No. 3 & 4, 1986, page 34.

20 The building was originally built to house the Government Printing Office but was over the years used by the Post and Telegraph Offices and the Ministry of Labour. The building is popularly known as JKR 92 and the restoration was carried out in 1986. See YEO PANG BOON, "Restoration of JKR 92", *Majallah Akitek,* No. 3 & 4, 1986, pp. 17-21.

21 Kuala Lumpur Railway Station was renovated in 1981 following the government strategy in 1980 to rehabilitate all the major monuments in Kuala Lumpur. Perunding Alam Bina was appointed to deal not only with the Railway Station but also the KTM Administrative Headquarters and the new Dayabumi station. See STOCKER, PETER, "Kuala Lumpur Railway Station: An Appraisal", *Majallah Akitek,* No. 3 & 4, 1986, page 26.

attempted to match the accelerated vertical urbanisation of the city, by increased urban landscaping and the provision of paved pedestrian walkways.

In Kuala Lumpur, most of the high-rise buildings were built in an exclusive area known as the 'Golden Triangle'[22] which represents the new high-rise Central Business District (CBD) in Kuala Lumpur with high-class hotels, large commercial developments and private companies' headquarters. The area is bounded by Ampang Road, Raja Chulan Road and Tun Razak Road. It previously consisted of large residential bungalow plots of around one-half to one acre in size, with buildings set back some distance from the main road. The redevelopment of this area tended to follow the original layout. As a result, the new commercial buildings became isolated pristine and unconnected buildings on `island' sites with independent internal pedestrian systems and car-parks.

Examples of large mixed commercial developments[23] are The Mall, KL Plaza, Central Point, Yow Chuan Plaza, Sungei Wang

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[22] For details about the Golden Triangle, see BADSHAH, AKHTAR and DALE, JOHN, "Golden Triangle Area Study, Kuala Lumpur, Malaysia", *Mimar,* Vol. 19, Jan./March 1986, pp. 68-70 and YEANG, KEN, "Kuala Lumpur Golden Triangle Area Study, *Majallah Akitek,* No. 2, 1985, pp. 12-34.

[23] Mixed commercial developments generally consist of offices, shopping centres and cinemas. In some cases, it may combine a hotel like the Holiday Inn complex in Johore Bahru.

Plaza and Bukit Bintang Plaza[24] in Kuala Lumpur; Subang Parade in Petaling Jaya; Holiday Inn Complex in Johore Bahru and Complex Teruntum in Kuantan.

Dominant high-rise offices built during this period include the Malayan Banking Headquarters, Bank Pertanian, United Malays National Organisation (UMNO) Headquarters, Dayabumi Complex, Pilgrimage Fund Board Building (LUTH), Malaysian Airlines System Building, Menara Boustead and Plaza Atrium in Kuala Lumpur; IBM Plaza in Petaling Jaya; Terengganu State Secretariat (Wisma Darul Iman) in Kuala Terengganu and KOMTAR Building in Gergetown, Penang. Most of these buildings are between 15 to 20-storey high.

Trends in High-Rise Buildings in Malaysia

For a developing country like Malaysia, high-rise buildings generally reflect the state of wealth and development of the country. Most of the high-rise structures were predominantly built in Kuala Lumpur which, being the administrative and economic centre, is logically the focus of development.

Beside their functional requirements, the design of high-rise structures was influenced by various factors which include architectural heritage, expression of cultural or religious elements, the architects own imagination and

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[24] Sungei Wang Plaza and Bukit Bintang Plaza were attached and may be seen as a single complex. The combination made them the biggest shopping complex with the largest volume of commercial shopping space in the country.

climatic conditions. Some of these influences have shaped into recognisable design trends which can be listed as follow:-

i. International Modernism
ii. High-Rise Buildings with Islamic References
iii. High-Rise Buildings with Traditional Elements
iv. Post-Modernism

i. International Modernism

Many of the early high-rise structures were influenced by the contemporary architecture of Western countries. These buildings generally employed the so-called `International Style' and merely present a straight forward modern design with little consideration towards local climatic conditions. Examples of this type of high-rise buildings are Komtar in Penang and Pernas Building in Kuala Lumpur, both by Jurubina Bertiga International. David Teh, a former President of the Malaysian Institute of Architects noted that this building type as has "an orthodox modern architecture which showed only too clearly their commercialism and poor design".[25] It should be noted that in some of these buildings, some considerations was given to climatic factors and local context, as exemplified by the use of some degree of sunshading and low technology materials.

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[25] See MALAYSIAN INSTITUTE OF ARCHITECTS, *op. cit.*, page 38.

Another group of buildings takes a different direction where the form and symbols of capitalism and corporate power dominate the overall design of the buildings. Examples of these are the MAS Headquarters, LTAT Building and Menara Promet, all built in Kuala Lumpur. There is no obvious reference to place. These buildings are mainly corporate headquarters and in most cases, the client's brief called for a 'landmark' building or a building with a corporate image. The pure forms, curtain walling and reflective glass contribute to the corporate imagery required by the clients. Some of the buildings were analogous to certain objects like the 'kris' (a traditional Malay weapon). This type of building is more akin to 'metaphor' architecture.

ii. High-Rise Buildings with Islamic References

Another trend in high-rise buildings in Malaysia is when modern design is coupled with the use of Islamic motifs and references. The Dayabumi Complex (1984), a joint project undertaken by BEP and MAA Akitek, is an example of this approach (Fig. 5.1). Here in a rationally conceived tower, the architects have used Islamic motifs of pointed arches and geometrically patterned grilles to articulate and decorate the building.[26] This style can be classified as hybrid, being a mixture of European technology and Islamic elements.

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[26] MALAYSIAN INSTITUTE OF ARCHITECTS, page 39 and page 126.

Figure 5.1: *The Dayabumi Complex in Kuala Lumpur.*

Another notable development, which is based on Islamic planning principles and extensive used of Islamic decorative elements, is the `Pusat Islam' (Islamic Centre) built in Kuala Lumpur by Kumpulan Senireka in 1985. This type of development may look interesting but perhaps does not truly belong to Malaysia and may be more appropriate for middle eastern countries.

Another important building in Kuala Lumpur that uses Islamic references is the LUTH Building which was designed by Hijjas Kasturi and Associates in 1986 (Fig. 5.2). The building has an abstract and symbolic concept with the five external pillars symbolizing the five pillars of Islam. This claim to symbolic expressionism can be controversial and hardly be accepted by people who are not members of the religion.

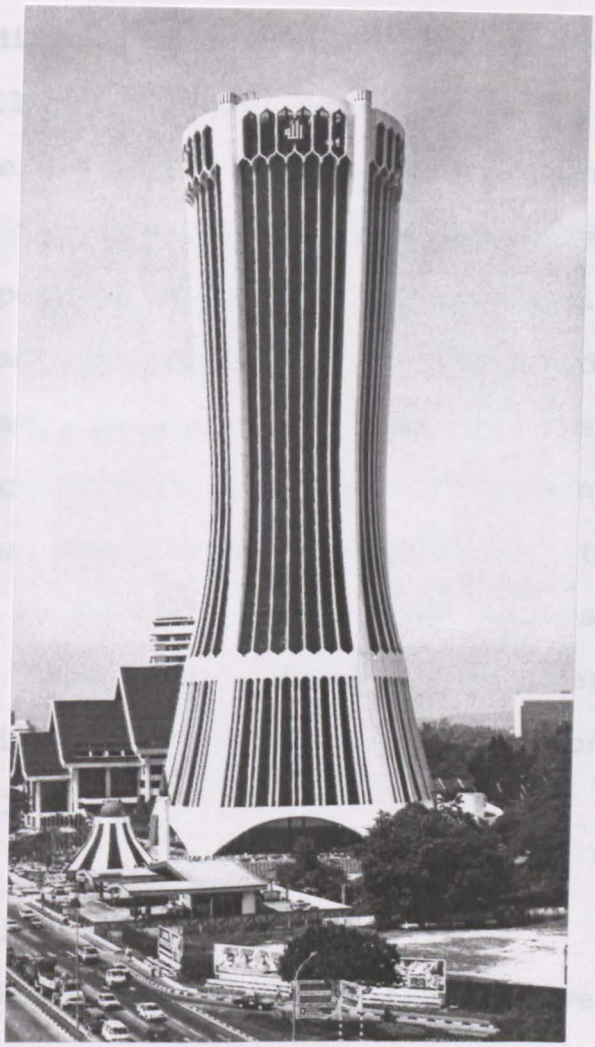

Figure 5.2: *Pilgrimage Fund Board Building or LUTH in Kuala Lumpur.*[27]

[27] Illustration reproduced from MALAYSIAN INSTITUTE OF ARCHITECTS, page 133.

iii. High-Rise with Traditional Elements

Another category of high-rise building attempts to express a Malaysian identity by incorporating the forms and elements from traditional Malay architecture. Bank Bumiputera Building in Kuala Lumpur by Kumpulan Akitek was considered as the first high-rise building with features of traditional architecture, although the adaptation was only made to the podium block which stood in front of the main high-rise building. The architect appeared not to have been able to reconcile traditional elements in the main building and had therefore left it as a modern tower. The application of the traditional form into the podium block itself could perhaps have been more meaningful if the architecture had not merely copied the traditional form, but had instead, incorporated some of the concepts of traditional architecture in new and modern terms. This building however, has attracted vast media attention which had publicized it as one of the first successful attempts in integrating traditional forms into modern buildings. Many new buildings were later built based on this design (see section 5.3).

iv. Post Modernism

High-rise buildings of the late 1980's were influenced by the international Post-Modern architecture and a group of these buildings were designed to respond to the effects of the tropical climate. Plaza Atrium and IBM Plaza (Fig. 5.3), both by Tengku Robert Hamzah and Yeang are two fine examples of this type. These buildings demonstrate a new

design approach where certain architectural elements like semi-enclosed shaded space and atrium were used to modify the climate (see section 5.3). Other high-rise buildings in this group are seen as being more rigid and less sensitive to the climate, but have showed some cultural influences from both regional and international sources. The influence can be seen in the articulation of building facades which display various uses, architectural elements and colours. Nagaria Complex and Makissa Building, both by Pakatan Reka are two examples of this approach. Other high-rise buildings and large scale developments are seen as

Figure 5.3: *Plaza Atrium (left) and IBM Plaza (right) by T. R. Hamzah and Ken Yeang.*[28]

[28] Illustration reproduced from YEANG, KEN, *Tropical Urban Regionalism: Building in A South-east Asian City,* Singapore; Concept Media, 1987, page 48 and 58.

'gigantic monuments' which lack reference and are alien to the immediate surroundings.

The development of high-rise buildings came to a halt in 1986 when the high prices of primary commodities, which had earlier fuelled the nation's accelerated growth, had fallen considerably and led to a sharp decrease in the number of foreign investors. Mismanagement in a number of major banking and financial institutions has resulted in reduced lending to local businesses. These factors have had a major effect on the building industry and there is a surplus amount of office spaces in large buildings.

The recession recovered slowly due to the laborious efforts of the government in restructuring economic policies and in introducing new programmes to attract foreign investors. This included investment in tourism and sending delegations abroad to promote Malaysia. In 1991, the present Malaysian Prime Minister, Dato' Sri Dr. Mahathir launched a new programme[29] called `Wawasan 2020' (Vision 2020), to promote the spirit of nationalism and create consciousness among the people to develop towards an intellectual population and to support the nation to progress effectively. The various plans have successively stabilised the nation's economy and brought Malaysia back into yet another phase of rapid growth in the building industry.

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[29] The programme was transcribed in a working paper entitled 'Malaysia Langkah Ke-Hadapan' (Malaysia-The Way Forward) which was presented at a trade conference on the 28th. of February 1991 by the Prime Minister in one of the international hotels in Kuala Lumpur.

5.2 MALAYSIAN IDENTITY IN ARCHITECTURE

5.2.1 THE IDENTITY CRISIS

The question of identity in contemporary Malaysian architecture has been a controversial issue for more than two decades now (Fig. 5.4 and 5.5). People from the architectural profession, politicians and members of the public have been involved in hot debates and heated discussions on the subject. One of the main topics of discussion is about the direction that contemporary design is taking.

In the long period of the crisis, many attempts have been made to try to portray the features of traditional building styles. Unfortunately, these buildings, with their so-called 'national identity', merely present the images of the past and have actually created pastiche architecture instead. Most attempts towards a national identity in architecture tend to concentrate on symbolic images from the past.[30] The old styles have only been taken at a superficial level without any intellectual understanding of what such interpretation could mean to contemporary architecture. The roof form is the most popular emblem of identification, closely followed by arches and decorative motifs.[31] Designers and architects are often forced to use

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[30] SHERWIN, DEAN, "Malaysian Identity Around Penang", *Majallah Akitek,* No. 4, 1979, page 18.

[31] KASTURI, HIJJAS, "Traditionalism and Modernism-1", *Majallah Akitek,* No. 2 & 3, 1987, page 36.

THE IDENTITY CRISIS

Ken Yeang

TOWARDS A NATIONAL IDENTITY IN ARCHITECTURE

BUILT SOURCES OF MALAYSIAN IDENTITY

Chris Abel

REALISM AND UNREALITY IN THE IDENTITY CRISIS

NATIONALISM, ARCHITECTURE AND THE CRISIS OF IDENTITY

By Ruslan Khalid

ELEMENTS OF MALAYSIAN IDENTITY IN ARCHITECTURE

Figure 5.4: *Some captions from journals and newspapers about the issue of identity in architecture.*

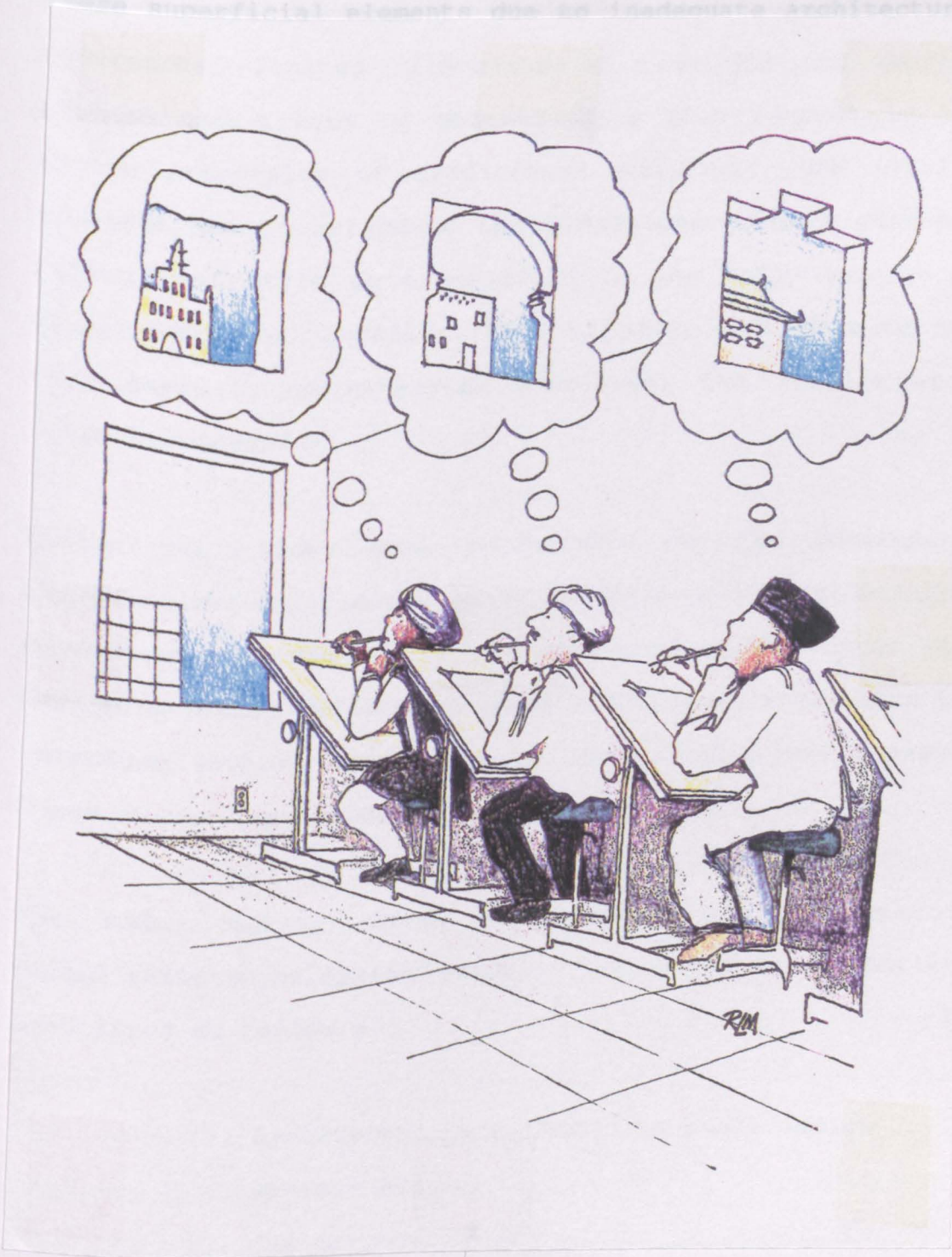

Figure 5.5: *A cartoon showing students facing a dilemma in searching for identity.*

these superficial elements due to inadequate architectural references, limited allocation of time for the design-process and a lack of understanding with respect to the design principles of traditional buildings. One popular approach was to introduce the Minangkabau double pitched, hipped roof style as exemplified in the Malay vernacular houses of Negeri Sembilan. When attempts were made to use this style in multi-storey complexes, the results were often unsuccessful.

Design guide-lines were established by the government following two major architectural seminars. The guide-lines encouraged the use of Malay vernacular examples in the design of public buildings. Local architects later began to introduce several variations in their individual designs based on the same guide-lines.

The main factors which constitute the problem of establishing a Malaysian identity in architecture can be identified as follow:-

i. Architects' background and their design approaches.
ii. The corporate images.
iii. Domination by the politicians
iv. Multi-racial society.
v. Strong local traditions.

i. Architects' Background and Their Design Approaches.

Many contemporary buildings built in the first two decades after independence were strongly influenced by the aesthetic preferences of the Western world. Design methodologies were derived from foreign examples. This is due to the fact that many Malaysian architects who started their practices during these early periods were trained overseas and they generally used western architecture as the main source of reference. They introduced all kinds of Western ideas ranging from conventional modern designs to sophisticated and abstract designs which are quite alien to the local context and tradition. Hijjas Kasturi points out that "some of our architects have returned from overseas with more than their share of alien cultural baggage, to the extent that they would prefer not to see an alternative to a rather strained pursuit of foreign architectural fashion, be it high-tec or post mod".[32] It was inevitable that someone would come up with designs which use striking colours and extravagant forms, though whether the public reaction is favourable or otherwise, is not of much concern.

With the process of rapid urbanisation, these architects were faced with an endless task to produce so much in very little time. No sooner had a particular project been completed than they were faced with a new challenge. Thus, there was an on-going pressure for architects not only to

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[32] KASTURI, HIJJAS, page 32.

perform very rapidly but also with adequate professional competence. To ensure this, there was no other means than to adopt a method of approach or design concept which had been established in other nations, especially in the more developed ones. Local identity was invariably lost through the inclination to impose the recycling of building types out of International Modernism. This adaptation of foreign building designs is made with little analysis of its practicality and implications. The design and styles of these buildings was seen to be successful in western countries and so it was thought that these should work accordingly in Malaysia. The mistakes made in the west are bluntly repeated in the design of new buildings in Malaysia.

ii. Corporate Image by Large Organisations

Many building clients and foreign investors representing large private organizations, major companies and financial institutions have insisted that local architects design buildings which stand out as symbols of their corporate organisations. For these wealthy clients, the most important criterion was for the buildings to uphold their corporate image and flagship; everything else was secondary. As a result, many purely modern buildings or 'hi-tech' structures with no reference to place were built in the cities especially in Kuala Lumpur. The architects, who were eager to get the commissions, did little to convince their clients to look at alternative designs or building styles which relates to the local context. As they

were mostly foreign educated architects who spent many good years overseas, it perhaps explains the fact that they did not feel the commitment to encourage their clients to be sensitive towards the existing environment.

iii. Domination by the Politicians

All development in the public sectors is controlled by the government and their agencies. As a developing nation, economic success and stability largely depends on the effectiveness of the government's administration system. The urban and rural developments are predominantly monitored and financed by central and local government. All profits generated from the primary commodities are injected into the central government, and the money in return is distributed to the respective states to help finance the building industry and various developments.

Under the Malaysian administration system, there are two chambers (House of Representatives and Senate) in the parliament where general assemblies are held and decisions on national policies are made. The central government is run by the Prime Minister and his cabinet with all the ministry offices based in Kuala Lumpur. Planning is the responsibility of the cabinet under the Prime Minister. The National Development Planning Committee and the Economic Planning Unit[33] (EPU) are responsible for the formulation,

[33] The government has established the Economic Planning Unit (EPU) to review any development prepared by public or private sectors. The EPU has been set up in every state and has worked independently under the State Secretary of every state.

implementation and evaluation of plans. Major ministries have their own planning divisions and private enterprise planning is coordinated by an advisory committee known as Capital Investment Committee.[34]

Each of the 13 Malay states has its own state executive and legislative assembly[35] and these local authorities have their own planning units. Any development proposed by the private sector has to obtain written approval from respective local authorities and several government sub-agencies.

In the development of public buildings, the clients are usually the state governments and a number of politicians are appointed to be in charge of selecting and approving the design proposed by designers. The design proposals are usually brought to meetings where comments are received. Many politicians, not knowing much about the technical aspects of architecture, simply instruct the buildings to be designed according to a certain style which accords to their own taste, preference and experience (perhaps some of the politicians may have visited some European countries and were fascinated with some of the buildings they saw). This has resulted in the reproduction or replication of buildings which have been built in other countries in the West. Since the politicians have the authority to decide on

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[34] See KURIAN, GEORGE THOMAS, *Encyclopedia of the Third World,* 3rd. ed., Vol. II, New York; Facts On File, 1987, page 1270.

[35] See KURIAN, GEORGE THOMAS, page 1265.

which type of building style and services are to be used, architects are left with no alternative but to accept all the requirements outlined by these politicians.

In response to the call for an identity in architecture, many politicians have insisted on the use of traditional Malay roof forms in the design of new buildings. This has again resulted in a direct copy of traditional building forms into modern buildings. It was very unfortunate that none of the traditional design principles were employed in the design of new buildings. Almost all of the proposals by local architects to try and achieve natural ventilation in modern buildings were turned down and the politicians have, instead, insisted on using air-conditioning systems, even on small buildings.

The domination of the politicians in the development of public buildings, and their direct involvement in the design process, has caused architects considerable difficulties in applying some of the traditional design principles into new buildings.

iv. Multi-Racial Society

Malaysia is a multi-racial country and this creates an inherent difficulty in searching for a national identity. Its resolution requires not only a better understanding of different societies with different cultures, origins and characteristics, but more crucially to grasp and compose each essence of various societies into one common interest

- a unifying symbol or a national identity. The need to give a nation a sense of identity within widely distinct ethnic groups, with their diversity in many aspects, is one of the most challenging problems faced by planners, architects and urban designers.

v. Strong Local Traditions

There are a large number of Malaysian people (especially those living in rural areas) who still strongly believe in their old customs and religious practices. Although they may seem content with the technological advancements that have been brought to their lives, these people are still very much in touch with the traditional way of running their lives and social activities. This attitude not only applies to Malay society, but also to a vast number of Malaysian Chinese who live in the urban areas.[36] This conservative attitude has led these people to resist any government plans to develop their land and upgrade their standard of living. An extreme example of this confrontation can be seen in the parish of Rusila, Terengganu, where the majority of people living in this area are totally against the redevelopment proposals which have been brought forward by the local government. The same problem also occurred in many parts of Kelantan.[37]

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[36] See EVERS, HANS-DIETER, "The Culture of Malaysian Urbanisation: Malay and Chinese Conceptions of Space", *Urban Anthropology,* 1977, Vol. 6 (3), pp. 205-216.

[37] The people living in these areas are largely the supporters of the main opposition party which is the Islamic Revolutionary Party, locally known as PAS.

Among the steps which have been taken by the government to solve the problem include:- purchase of property at a very high prices, offering an alternative area which they may develop for themselves or rehabilitating them in a completely new housing scheme. The reluctance of these people in cooperating with the government has caused many projects to be abandoned and restrained efforts in search of an architectural identity.

5.2.2 PROGRAMMES IN SEARCH OF MALAYSIAN IDENTITY IN ARCHITECTURE

Architecture is seen by the Malaysian government as a manifestation of culture and therefore has been chosen as a method to convey national aspiration for an identity. The role of architecture as a mean of expressing Malaysian identity was recognised by the Malaysian National Cultural Congress under the Ministry of Culture, Youth and Sport in 1971. Thus, 'architecture' stood as starting point for the government's specific effort in searching for an identity for the nation. The Malaysian architectural institute and several government agencies were given the task to produce unique buildings which embody local features and create an environment which could be seen as `Malaysian'.

5.2.2.1 THE 1971 SEMINAR ON ARCHITECTURE

The Malaysian National Cultural Congress has outlined several guide-lines for architectural development for the nation. The following resolutions came as a by-product of a seminar on architecture which was held in 1971.

It was affirmed in the seminar that the local traditional architecture is basically Malay architecture. It was pointed out that this local style developed as early as the sixth century A.D. and reached a reasonable standard by the fourteenth century. External influences on the architecture (due to colonial interventions) since the fifteenth century has indirectly hindered the progress of this style of architecture. Buildings that are characteristically Malay architecture are very rare today and therefore it was suggested that there should be efforts to re-examine and reinstate the progress and dominance of this architectural style in the local scene.[38]

To ensure this, the Congress proposed that proper direction should be given to initiate research into all aspects of Malay architecture endemic to Malaysia and its neighbouring regions (Thailand, Indonesia and Philippines). A new method of building design suitable for carrying out the national aspiration to establish identity in architecture was called for. The Congress also underlined that buildings of colonial influence should be preserved for their historical significance.

The role of national identity in this case was seen as a study of the evolutionary process of traditional architecture. Thus the tendency was to draw back to the

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[38] See MINISTRY OF CULTURE, YOUTH AND SPORT, *Report on 1971 Seminar on Architecture,* Kuala Lumpur; Kementerian Kebudayaan, Belia dan Sukan (unpublished), 1971.

point where evolution became stagnant. Focus on a single building form was inevitable since the approach only recognised the expression of national identity by emphasizing the Malay vernacular style. This has created a diversity in terms of design interpretations. These design interpretations were generally emphasized during 1970's with regard to public buildings[39], although there are a considerable number of privately owned buildings which demonstrate such an emphasis.

5.2.2.2 THE 1981 SEMINAR TOWARDS THE NATIONAL IDENTITY IN ARCHITECTURE

In the light of the diversity of expressions of traditional architectural styles in new buildings and the process of rapid urbanisation, there was a strong re-assertion on the part of the government over the issue of national identity in architecture. In 1981, the National Advisory Council for Culture (an advisory committee for the Ministry of Culture, Youth and Sport), in identifying the cultural progress and development of the country, made the following resolutions:-

i. To see architecture in Malaysia as recognisable through its own character and having an order of its own.

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[39] The first two examples of public buildings in Kuala Lumpur which incorporated elements of Malay vernacular architecture are the National Museum (1963) and Bank Bumiputera (1980).

ii. Traditional skill and craftsmanship should take an important role in the development of the physical environment.

iii. Architectural education in Malaysia should reflect an indigenous growth in the aspects of culture, so that it can contribute positively towards cultural development in the nation as a whole.

iv. Effective measures should be taken especially in the administrative and legislative sectors to ensure that the national objective of environmental development can be achieved.

Emphasizing the above points, a seminar was subsequently organised to highlight the issue and entitled, "Seminar towards National Identity in Architecture".[40] Several guide-lines were drawn up for this seminar, and the following topics were discussed:-

a. The issue of identity.
b. The issue of education.
c. The issue of conservation.
d. The issue of institution and network.

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[40] See MINISTRY OF CULTURE, YOUTH AND SPORT, *Report on 1981 Seminar Towards the National Identity in Architecture,* Kuala Lumpur; Kementerian Kebudayaan, Belia dan Sukan (unpublished), 1981, also see IDID, SYED ZAINOL ABIDIN, *The Alternative Approach in Expressing Malaysian National Identity in Architecture: Human Aspects in Built Form,* A dissertation presented for Master of Arts in Urban Design, Oxford Polytechnic (unpublished), 1985, Chapter 1.

The context of 'architecture' was discussed in its totality (not as a single aspect), so as to ensure that there would be a meaningful resolution for all concerned. The responsible bodies, like local authorities, were called to use their powers to ensure that the 'concrete jungle' will not prevail in Malaysia and that instead, towns in Malaysia should be seen as 'architectural gardens'.

a. The Issue of Identity

The development of architecture, according to the discussion, should be looked upon as one aspect of cultural development, and architectural identity should reflect the national character in a cultural context - to be the symbol of national unity. In doing so, it was suggested that architectural designs should be a manifestation of culture. The public has the right to comment on any creation which seems inappropriate for some reason. It was suggested that cultural aspects were to be looked upon from various viewpoints and that these should be determined by climatic factors, lifestyles and local customs, technical know-how and the usage of local materials.

b. The Issue of Education

It was realised that the public should be made aware of the importance of the nation's architectural history and immediate problems in the built environment. For that reason, it was felt that there was a need to educate the public to appreciate their architectural heritage and physical surroundings. Research and investigations into all

aspects of traditional architecture was lacking and it was suggested that steps should be taken to conduct research and documentation pertaining to traditional architecture.

c. The Issue of Conservation

Old government buildings were regarded as one of the sources of traditional architecture, and historical buildings were regarded as a positive contribution towards the development of identity in architecture. It was generally agreed in the discussion that there was a lack of legislation and measures regarding the conservation and preservation of historical buildings.

d. The Issue of Institution and Network

It was a general view that architects must have an understanding of the cultural aspects of Malaysia, so that they can convey a genuine message to the public and the country through their building designs and works of art. It was suggested that architects should work in collaboration with traditional craftsmen so that this interaction could foster some positive contributions towards the development of national identity.

Landscaping is another area that was generally accepted as contributing towards national identity. It was suggested that in all new developments, a sum of money be set aside for displaying artifacts and decoration.

e. The Overall Recommendations

After discussions on the various issues, several recommendations were made to give directions for future developments. The recommendations were as follow:-

i. Malaysian architecture should have a certain identity which is recognisable by the public and this should be based on the Malay culture.

ii. In fostering the Malaysian architectural identity, the national philosophy (aspiration) that has been reflected in tradition, the national language, etc., should be amalgamated.

iii. Education should include architecture as one of the subjects. The public should be exposed to architecture in terms of appreciation at an early stage.

iv. The government should sponsor all efforts in research and documentation on traditional architecture.

v. A national body should be established to investigate buildings that have traditional architectural characteristics or that can be considered as having historical significance, for the purpose of conservation and preservation.

On the whole, several advancements in the effort to discuss the context of identity in architecture can be noticed in

the 1981 seminar. Unlike the earlier seminar in 1971, this seminar encouraged the discussion of architecture to include the total environment. It also covered a wider range of related aspects, such as education, recognising the need to foster awareness amongst the public regarding the role of architecture, conservation and financing. This awareness is due to the fact that after ten years (1971-1981), the government was able to grasp the consequences of various actions that have taken place in response to the previous seminar.

The next ten years (1981-1991) saw some of the recommendations of the second seminar being implemented. A conservation institute called `Badan Warisan Malaysia' or Heritage of Malaysian Trust was established in 1982 to deal with traditional and historical buildings throughout Malaysia. Two leading architectural schools in Malaysia (University Teknologi Malaysia and Institut Teknologi Mara) both doubled their effort in documenting surveys and reports of old Malaysian buildings. The students were made aware of the problems of identity and an increasing number of research students were given scholarships to investigate aspects of Malaysian traditional architecture.

5.2.2.3 The 1983 Aga Khan Award Seminar on Architecture

The ninth Aga Khan Award seminar on architecture was held in Kuala Lumpur between July 25 and 27 at the University Teknologi Malaysia. The subject of the seminar, the first regional affair in the series, was "The Search for Identity in Architecture". Participants included 25 of South-east Asian's best known architects and 10 colleagues from India, Hong Kong and Middle East.[41]

Given the theoretical nature of the subject and the multiplicity of cultures and nationalities represented, the themes of the papers presented were, not surprisingly, extremely diverse, ranging from traditional architecture and architecture without architects to the International context for South-east Asia. Although the discussion led to the most vague and tentative resolutions, two important objectives were achieved, first, the seminar provided an unprecedented opportunity for a regional exploratory discussion of the issues and second, it undoubtedly marked the beginning of a new awareness of the subject and its complexity.[42]

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[41] The participants of this seminar include Professor Parid Wardi Sudin, Dean of Architectural School, Research and Consultancy of Universiti Teknologi Malaysia; Eric Lye, Dean of the Hong Kong School of Architecture; Charles Correa and Romi Khosla from India; Robi Sularto from Indonesia; Sumet Jumsai from Thailand and Tay Kheng Soon from Singapore.

[42] See GRETCHEN, M., K.L.: "Regional Seminar on Architectural Identity", *Mimar,* Vol. 9, July/Sept. 1983, pp. 14-15.

During the three day discussion, several interesting points were raised which included a statement by the Indian architect, Charles Correa, who cautioned that "the search for identity is an unconscious process. Any attempts to short circuit the process is manipulation because then you are talking about signals, not symbols". He felt it was important for architects to rediscover `open to the sky' spaces as opposed to western boxes and implied that creating a new identity would happen anyway in the course of solving architectural problems.

Robi Sularto from Indonesia explained about the architecture of Bali and mentioned that "the Balinese have a highly structured approach to building forms that is indivisible from social customs and perception of the universe. A house should represent a microcosm harmonious with the macrocosm, it's orientation should be distinct, the hierarchy of its spaces correct, the proportion of its measurements exact and the use of its materials appropriate". He added that an identity must be based on the principle of `unified diversity'.[43]

Eric Lye from Hong Kong pointed out that "the search for identity is a cryptic statement. At the crux of it is how do we resolve the contradiction between history and culture on one hand and that which is rational, technological and logical on the other. It is not a question of decorating

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[43] GRETCHEN, M., page 14.

boxes differently". Tay Kheng Soon from Singapore stated that "we must invent an architectural language which can appeal to users of buildings at many levels of his conscious and subconscious".

Based on several constructive propositions which emerged from the wide ranging discussion, the conclusions were presented by Charles Correa. The resolutions can be summed up as follows:-

i. Culture is not something that can be fabricated.

ii. Any discussion on identity must take into account the pluralism of South-east Asian states and that identity is not something that is frozen in time - it changes constantly.

iii. The search for identity is a process not an end for itself.

iv. The importance of learning more about your own environment (versus being smitten by the developments in the west as seen in the latest magazines).

5.2.2.4 PAM Design Competitions

In 1984, the Malaysian Institute of Architects (PAM) together with The Aga Khan Program for Islamic Architecture organised an ideas competition following a seminar organised by Universiti Teknologi Malaysia, entitled "In Search for Architecture". The theme of the competition was a positive and direct attempt to encourage, identify, analyse and synthesize what the Malaysian architecture in the modern environment could be like. The competition invited ideas for urban regeneration of Kuala Lumpur's Golden Triangle Area (the new emerging Central Business District) which at that time was the most intensively-developed area in the country. The area was also earmarked by entrepreneurs and estate agents as prestigious and exclusive because of its up-market office buildings and international hotels.

The competition had brought together participants from three universities; Institut Teknologi Mara (ITM), Universiti Teknologi Malaysia (UTM) and Massachusetts Institute of Technology (MIT), USA. The students of these universities explored a range of ideas and possible alternatives to the current trends of buildings within the designated area.

The competition was a unique research project which addressed the issue of `High Intensity Development' in the Golden Triangle Area and it was divided into two phases: 1) data collection and documentation and 2) design projects.

The research was carried out under the supervision of Professors Parid Wardi Sudin and Kamaruddin Ali of UTM, P. Kasi of ITM and Akhtar Badshah, Julian Beinart and Ronald Lewcock of MIT.[44] About thirty students from the three institutions took part in the programme.

A number of entries to the design competition were selected for an exhibition which was held in August 1985 at the Malaysian Institute of Architects' building in Kuala Lumpur. The students' works showed encouraging efforts in culminating constructive solutions to the urban problem and the issue of identity. Selective schemes were published in several local and international architectural magazines.

Several other competitions, seminars and workshops were organized between 1985-1993, in all of which major discussions on the issue of national identity took place. Some of the buildings illustrated in the following section have resulted from these discussions, seminars and competitions.

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[44] See BADSHAH, AKHTAR and DALE, JOHN, *op. cit.*, page 68.

5.3 ANALYSIS OF MALAYSIAN CONTEMPORARY BUILT FORMS

This section attempts to assess some recent developments which incorporate the characteristics of local Malay architecture. Comments are made by the author in judging whether the designers of the respective buildings have considered the use of traditional design principles or have simply adopted the basic traditional forms in their overall designs.

A major set-back in many contemporary buildings is the lack of consideration given towards adjusting to local climatic conditions. The study on Malay, Chinese and colonial architecture has showed that climate was the most influential factor in the design of traditional buildings. In designing for the hot Malaysian climate, there is a great necessity for providing shade. The use of verandahs, loggia and five-foot walkways is one of the main design characteristics that generally filters the climate and has traditionally demonstrated a high efficiency in energy saving. Although new buildings should reflect new elements and styles, the traditional concept may still be used in a different mode, subject to the creativity of the designers.

5.3.1 EARLY ATTEMPTS TO INCORPORATE TRADITIONAL ELEMENTS IN MODERN BUILDINGS.

i. Muzium Negara, Kuala Lumpur (1963).

The Muzium Negara or National Museum, designed by Ho Kwong Yew and Sons was the first large public building to incorporate features of traditional Malay architecture in

Malaysia (Fig. 5.6). The museum had a mandate to preserve Malaysia's national heritage and educate the population about its culture.[45] In accordance with these aspirations, the design of the building was made to reflect traditional architecture as well as to explore the use of modern materials. According to Hijjas Kasturi, the building demonstrates an interesting mixture of traditional and modern elements. It is a "remarkable building which combined visual traditions with modern requirements"[46]

As the museum was the first public building to incorporate traditional elements in its design, much of the early criticism generally highlighted and appraised the positive aspects of the traditional image, although it has demonstrated very little emphasis in adjusting to the climatic conditions and was not the best example to have adopted traditional design principles.

Aesthetic elements in the building include the 'gable horns' (which was popular in the design of traditional Malay buildings), a double-layered roof and vertically arranged perforated openings. Practical use of traditional concepts include the use of double-volume space at the entrance hall which enhanced the circulation of air, recessed lower walls with large windows, pitched roofs and the use of water in front of the building as a cooling

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[45] UIA EDITORIAL, *UIA International Architects, op. cit.*, page 42.

[46] KASTURI, HIJJAS, *op. cit.*, page 32.

element (to reduce the heat reflected from the hard landscaping built around the building).

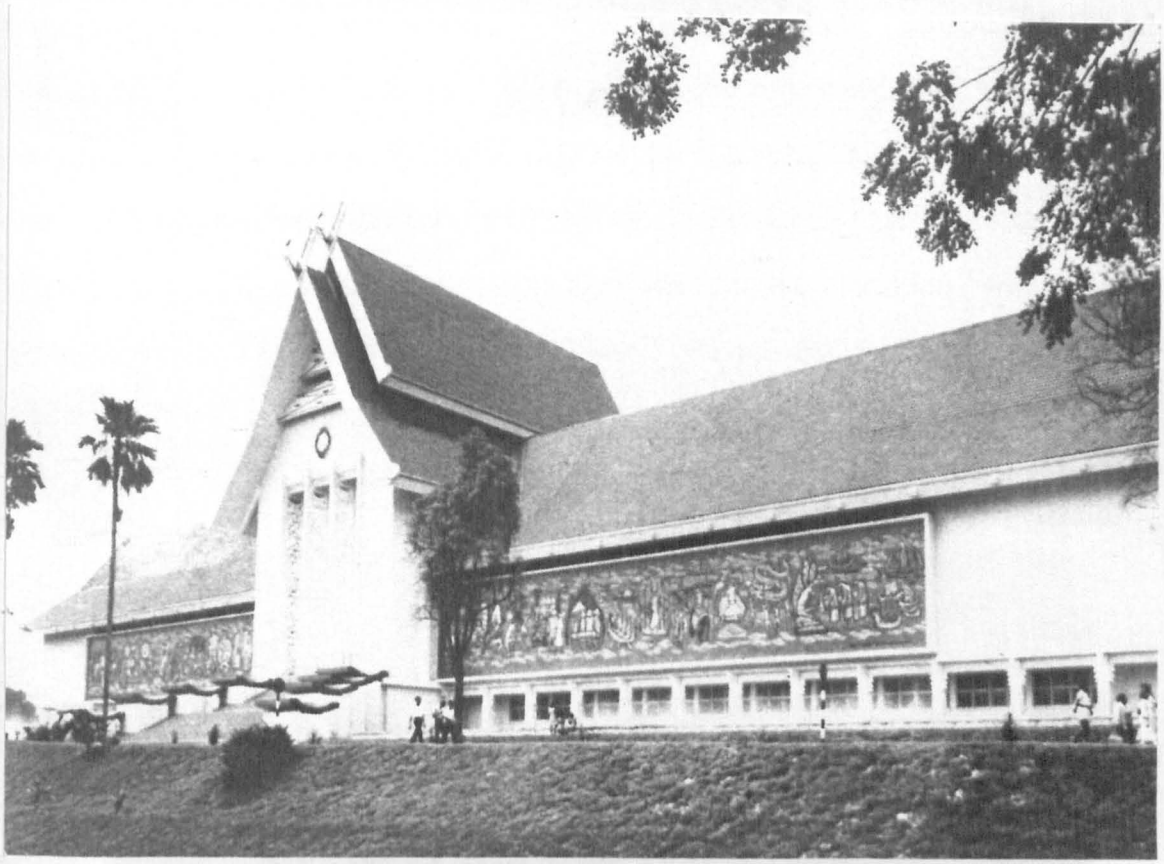

Figure 5.6: *National Museum, Kuala Lumpur (1963) - the first large public building to incorporate traditional Malay architecture.*[47]

[47] Illustration reproduced from MALAYSIAN INSTITUTE OF ARCHITECTS, *op. cit.*, page 57.

ii. Bank Bumiputera, Kuala Lumpur (1980).

The building, designed by Kumpulan Akitek, consists of a front podium designed as the banking hall and a tower office block behind. It represents an extreme approach of giving modern buildings a `Malaysian' flavour by adopting a traditional Malay house form with rich ornament and details. A small plaza in front contributes to the urban design of the area.[48] This building is the first attempt to mix a high-rise structure with elements of traditional architecture, although the traditional style was only adopted to the podium block (see Fig. 5.7) and the high-rise office tower does not have any traditional features at all.

Figure 5.7: *The podium block of Bank Bumiputera, Kuala Lumpur.*

[48] MALAYSIAN INSTITUTE OF ARCHITECTS, page 106.

iii. Hyatt Hotel, Kuantan (1976-79).

The Hyatt hotel is located near Teluk Cempedak beach in Kuantan, Pahang, and is only a few miles from the town centre. It is an international hotel with 250 rooms. The hotel was designed to enhance the natural landscape of the site with all rooms having a view towards the sea (Fig. 5.8).

The site constraints called for a linear, low-rise development along the north and south axis to take maximum advantage of the views to the sea and allowed the major spaces to be arranged close to the beach. The open layout of the *kampung* and the colonial adaptation of buildings with wide eaves and verandahs were the basis for the design. The different sections in the hotels are linked by a covered pedestrian walkways. All the rooms are fully air-conditioned and some parts of the hotel (like the main lobby and circulation spaces) are naturally ventilated.

The main reception area is a semi-enclosed space and has a large double-tiered pyramid roof which encourages the process of natural ventilation within this reception area. The lobby pavilion is separated from the L-shaped enclosed pavilion (which houses the restaurant, bar and function rooms) by an artificial reflecting pool and waterfall. The water also helps to enhance comfort within the circulation area by reducing the air temperature.

Figure 5.8: *Site plan and cross sections of Hyatt Hotel in Kuantan, Pahang.*[49]

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[49] Illustration reproduced from UIA EDITORIAL, *UIA International Architects, op. cit.*, page 43.

iv. Kelantan State Secretariat Building (Kota Darulnaim), Kota Bharu, Kelantan (1984).

In the search for local identity, this government complex is sensitively designed using distinct Kelantanese roof forms, crafts and architecture (Fig. 5.9 and 5.10). The pavilions are set around landscaped courtyards and are linked in an informal manner. Mir Shahariman of MAA Architects, who was commissioned to design the building, points out that "the design of this complex embodies distinct elements of Kelantanese architecture. Deliberately kept low, its form is enhanced by a loose spatial arrangement that projects an informal, yet disciplined overall layout".[50]

The Assembly Hall (main conference hall) is the focus, with its distinctive roof form inspired by the old mosque of Masjid Kampung Laut. Flanking it is the Banquet Hall, which has a roof form adapted from the *Istana Sri Akar* (Sri Akar Palace). To give a formal approach, strong axes have been incorporated into the design of both these buildings. The rest of the complex, which houses office departments, uses roof forms resembling the Istana Balai Besar and common village houses of Kelantan. All the buildings and courtyards are connected by plazas and linkways adapted from the traditional concepts of *Selang* (immediate space).

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50 See UIA EDITORIAL, page 42.

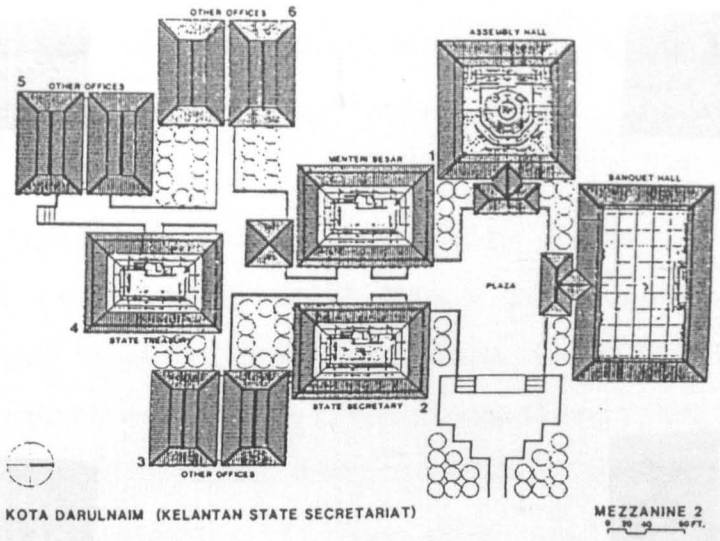

Figure 5.9: *Mezzanine floor plan of 'Kota Darulnaim', Kelantan.*[51]

Figure 5.10: *Entrance to the main plaza of 'Kota Darulnaim' (Kelantan State Secretariat Building) in Kota Bharu, Kelantan.*[52]

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[51] Illustration reproduced from MALAYSIAN INSTITUTE OF ARCHITECTS, *op. cit.*, page 142.

[52] Illustration reproduced from MALAYSIAN INSTITUTE OF ARCHITECTS, page 142.

Well-planned landscaping highlights the complex's spaciousness and village atmosphere, enabling it to blend amicably with the natural surroundings.[53]

In this project, the architect has successfully incorporated traditional roof forms in the design of the buildings. But most of the buildings were built to cater for large offices which has resulted in oversized traditional-styled roofs. The buildings perhaps may have worked more effectively if they were smaller in size and were built with a greater number of annexes. The concept of keeping the buildings low in height is an interesting aspect which relates to existing buildings, but a more disperse arrangement of buildings and courtyards may have generated a friendlier environment which relates to the cluster layout of a *kampung*. With smaller buildings, and by actually applying traditional design principles, natural ventilation may have been achieved in some of the offices. It was unfortunate that all the buildings are equipped with air-conditioning.

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[53] UIA EDITORIAL, *UIA International Architects, op. cit.*, page 42.

5.3.2 EXAMPLES OF POORLY DESIGNED BUILDINGS WHICH INCORPORATE TRADITIONAL FORMS

i. World Trade Centre, Kuala Lumpur (1985).

This World Trade Centre, designed by Kumpulan Akitek, was a huge project initiated by central government to provide conference and exhibition facilities which could meet international standards. The complex[54] consists of exhibition halls, banqueting halls, an hotel, offices and a large multi-purpose hall which was modelled on a traditional Malay palace (Fig. 5.11).

A similar version of the `Malay-style' conference hall can be seen in `Wisma Darul Iman' (Terengganu State Secretariat building) in Kuala Terengganu, built in 1986 by Indah Reka in collaboration with Maurice Wee, Consultant (Fig. 5.12). The traditional image was adopted without any reference to the actual purpose of the architectural elements used in the building. The convention halls of the Terengganu State Secretariat and World Trade Centre were constructed using modern technology and materials (in the case of Putra World Trade Centre, the hall is clad in glass). The auxiliary spaces, like the circulation areas and small offices which were provided around the halls, may function more efficiently if they were made as 'transitional spaces' between the interior and exterior spaces. The concept of 'verandah' may have worked successfully in these buildings

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[54] The four major components of the complex are:- The Pan Pacific Hotel; the new UMNO Headquarters; the multi-purpose hall and the main exhibition area.

Figure 5.11: *The Putra World Trade Centre complex (1985).*

Figure 5.12: *Terengganu State Secretariat Building in Kuala Terengganu (1986).*

in filtering the climate, and subsequently may have reduced the cost of cooling the halls (these buildings absorb a lot of heat due to the dark-coloured glass and concrete surfaces).

This type of development, which adopts the image of traditional Malay architecture is seen as superficial, `pastiche' and simply out of proportion in terms of the actual scale of traditional Malay buildings. But surprisingly, it quickly became a popular style which has been adopted in many public buildings throughout Malaysia. Other contemporary buildings which were built in this fashion include:- the Malacca State Museum in Malacca (Fig. 5.13); Negeri Sembilan State Secretariat Building and Kompleks Taman Sri Budaya (Handicraft Complex) in Negeri Sembilan (Fig. 5. 14); National Bank Kota Bharu Branch in Kelantan (Fig. 5.15); Shah Alam Club in Shah Alam, Selangor; Karyaneka (Handicraft Centre) in Chendering, Terengganu (Fig. 5.16) and the proposed Terengganu State Museum in Losong, Terengganu.

Figure 5.13: *Malacca State Museum, Malacca.*[55]

Figure 5.14: *Handicraft Complex in Negeri Sembilan.*

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55 The design of this museum was inspired by the Malacca Sultanate palace (Sultan Mansur Shah's palace) which was built in about 1465 (see Chapter 2 section 2.1).

Figure 5.15: *The National Bank in Kota Bharu, Kelantan (1985).*

Figure 5.16: *'Karyaneka' (Handicraft centre) in Chendering, Terengganu.*

5.3.2 EXAMPLES OF PRACTICAL AND EFFECTIVE RE-USE OF TRADITIONAL DESIGN PRINCIPLES IN NEW BUILDINGS

i. Tanjung Jara Beach Hotel, Dungun, Terengganu.

The Tanjung Jara Beach Hotel stands as one of the best examples of contemporary building which has successfully employed some traditional design principles (see Fig. 5.17 - 5.19). Situated about 65 kilometres south of Kuala Terengganu, the Tanjung Jara Beach Hotel is spread over 77.7 acres around a crescent shaped beach of golden yellow sand. A natural stream runs across the property. By placing a weir at the mouth of the stream, a lagoon was formed. Bridging this lagoon are the public rooms with terraces, all looking towards the ocean, and located within the lagoon are duplex cottages. Behind them at a higher elevation are two storey buildings each having 8 to 12 guest rooms overlooking the cottages, the lagoon and the beach beyond. To the south are similar cottages and two-storey buildings lined along the beach in a curve ('S' shape) to capture the best view towards the beach.

The overall design of the hotel is seen as being very sensitive towards environmental constraints and attempts have been made to blend the man-made edifices with the natural surroundings. Among the features used are - raised ground floor level, use of local materials, covered terraces, shading devices, traditional roof forms, elaborate carvings and exposed structures. Although many of

the rooms have air-conditioning, its use is optional.[56] A similar development was made for Club Mediterranee in Cherating, Pahang, with a major emphasis in the use of traditional elements in the overall design (Fig. 5.20). It is interesting to note that most public areas in Tanjung Jara are naturally ventilated, such as the bar, billiard

Figure 5.17: *A typical single storey guest room in Tanjung Jara Beach Hotel.*

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56 In every room, there are three cooling options: air conditioning, paddle fan or natural ventilation. In the case of natural ventilation the windows comprise inward opening glass casements, inward opening mesh shutters (to prevent insect ingress) and outward opening louvre shutters to provide a wide range of control of climate. The use of louvre shutters allows for fine control of sunlight into the buildings.

Figure 5.18: *A typical window in one of the guest rooms.*

room, reception and dining areas. The design of the restaurant in particular, is very interesting. It is located above and infront of an artificial lake. The water underneath the building helps to reduce air temperature and the wind which flows from the direction of the sea passes the pool of water and flow underneath and into the dining area (see Fig 5.19).

Figure 5.19: *The restaurant above the lagoon in Tanjung Jara Beach Resort, Dungun, Terengganu.*

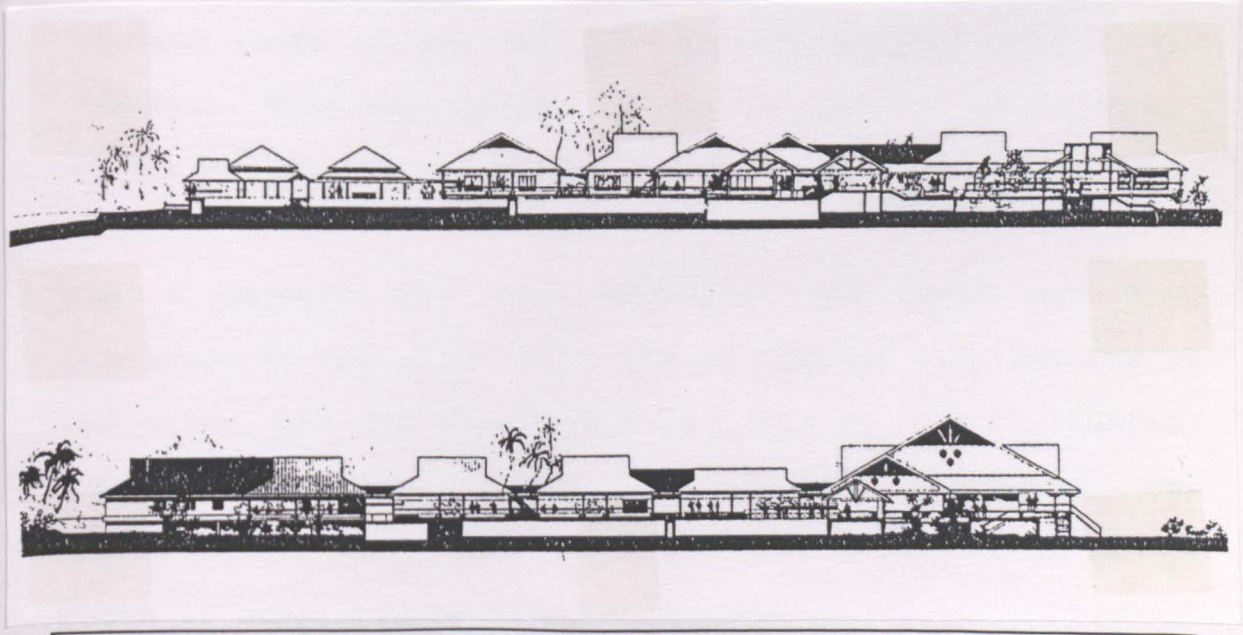

Figure 5.20: *Longitudinal section of Club Mediterranee in Cherating, Pahang (1980).*

ii. Tadika Yayasan Islam, Kuala Terengganu (1989).

Tadika Yayasan Islam or Islamic Foundation Kindergarten is another successful attempt by a local architect to incorporate traditional principles in a design of the building (see Fig. 5.21 - 5.23). The building follows the concept of linear planning with corridors which was prevalent in the design of many colonial buildings built in the early nineteenth century. Two double-storey buildings are arranged in parallel to create an elongated courtyard, the middle of which is used as the school garden and a source for natural lighting. The two buildings are connected by a covered bridge and corridor (Fig. 5.24).

The most outstanding feature of this building is the complex roof configuration which follows the traditional Malay roof form of 'bumbung perabung lima' with finials. The roof also has the characteristics of traditional Chinese roofs in the use of exposed rafters, purlins and brackets. Colonial influences can be seen in the planning system and in the use of the stained glass for the windows.

The classrooms are all naturally ventilated and have corridors on one side and a row of windows with louvres on the other. The corridors are orientated to face the central courtyard and are covered by large roof overhangs. The windows at ground level are covered by a continuous canopy which is supported by timber brackets.

The client for the project was the Terengganu Islamic Foundation and the architect responsible for the design of the building was Raja Bahrin Shah of Seni Bahri Arkitek. The scheme is a medium-scale development and feels appropriate in its relationship with the surrounding development, which mostly consists of medium-scale housing. The architect has successfully incorporated some traditional design principles in the design of the building by the use of a linear planning system, naturally ventilated interiors, courtyards, corridors and the imaginative articulation of the traditional roof forms. The building, if not the best, is definitely one of the better school designs in the country.

Figure 5.21: *The overall view of Islamic Foundation Kindergarten in Kuala Terengganu (1989).*

Figure 5.22: *The interplay of `bumbung perabung lima' with finials creates an interesting visual form.*

Figure 5.23: *Children's playground at the rear of the building.*

Figure 5.24: *The courtyard and the covered corridor which links the two parallel buildings.*

ii. Walian House, Kuala Lumpur (1985).

The Wilian house designed by Jimmy Lim of CLS Associates is a good example of residential building which has successfully incorporated not only the Malay design principles but also the Chinese concept of *Feng Shui*.

The client wanted the house to be cool, comfortable and in close contact with nature. As the Feng Shui concept emphasizes the siting and orientation of a building to ensure beneficial effects and good fortune for its occupant, this house was orientated in such a way that the main entrance faced south-east. The building is generally made of bricks and timber (hardwood *chengal*) which are available locally. The roof structure is built up of timber trusses, braced, bracketed and bolted to chengal beams to create a suspended layered roof (Fig. 5.25).

The house is divided into two main buildings; one for guests and the other for the family. The space in-between these two areas serves as a common central lounge. This central space is a three-storey volume with layers of structurally exposed roofs.[57] The sides of this volumetric space are opened to a waterfall which is located on the north-western side and a landscaped garden on the south-eastern side. The layering of the roofs for this central space with its open sides is effective in preventing rainwater coming in and the living space is continuously cooled by cross breezes.

The outstanding feature of this house is the interpretation of the traditional vernacular in a modern context and the adaptation of geometric principles. It also responds to the site and achieves natural ventilation by the use layered

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[57] The height of the roof ridge is 15.24 metres above the ground level.

roofs, volumetric space and large openings. An intricate system of detailing was achieved through the experimentation with timber and the application of geometrical planning.[58]

Figure 5.25: *The central hall of Wilian House, Kuala Lumpur.*[59]

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58 See MIMAR EDITORIAL, "Walian House, Kuala Lumpur", *Mimar,* Vol. 26, Dec. 1987, pp. 30-35 and UIA EDITORIAL, "Jimmy Lim: House, Kuala Lumpur", *UIA International Architects, op. cit.*, page 32-33.

59 Illustration reproduced from UIA EDITORIAL, "Jimmy Lim: House, Kuala Lumpur", page 32.

iii. Pelangi Beach Resort, Langkawi Island, Kedah (1989).

The Pelangi Beach Resort (Fig. 5.26) is the most recent development to display a sensitive design approach towards climatic conditions which emphasizes the use of traditional elements and design principles. This holiday resort was designed by Unibina Architect in association with Chao Tse Ann and Partners. The architecture of this resort goes beyond the Malay, Chinese or colonial building traditions to the extent of making a combination of traditional Malaysian, Thai and Indonesian vernacular influences.[60]

Pelangi Beach Resort occupies 10.2 hectares (about 25 acres) of coastal land on the western coast of Langkawi in Kedah Darul Aman. The site, which faces the Indian Ocean, is 13 kilometres from the island's airport and is 22 kilometres from the Kuah ferry terminal, the main entry point from mainland Malaysia.

The resort was completed in September 1989[61] just in time for the Commonwealth delegation[62] who arrived in Malaysia for the Commonwealth Conference and the resort was

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[60] See MA EDITORIAL, "Pelangi Beach Resort", *MA: Majalah Arkitek,* Vol. 1, No. 5, Sept./Oct. 1989, pp. 10-11.

[61] The resort was developed in two phases. Under Phase 1, 300 rooms were housed in single and double storey chalets, including 2 presidential suites, and was completed in March 1989. Phase 2 was completed in September 1989 and included 48 Commonwealth Suites to house 48 Head of Governments who came for their weekend retreat.

[62] The Commonwealth delegation include Britain's Margaret Thatcher, Zambia's Kenneth Kaunda and Pakistan's Benazir Bhutto.

specially chosen as the venue for their weekend holiday retreat.

The main material used for the construction of the chalets is timber. The guest rooms are spacious and have large semi-outdoor spaces used as private balconies. Every room is designed with full-height windows with louvres that can be adjusted to control air flow and glare. Although air-conditioning is provided, every room can be naturally ventilated by opening the windows and the balcony doors to allow cross ventilation. Each room also has an overhead fan to facilitate air movement.

The timber chalets are raised about two feet above the ground on concrete pedestals laid out in a grid. Entry to rooms on the lower floors is by means of steps and a common balcony and for rooms on the upper floors there are two flights of stairs leading to an upper common balcony. The rooms on the upper floors are relatively bigger in volume than the rooms on the lower floors as a result of the internally exposed roofs.

The main hotel block has an imposing entrance porch which echoes the Balai Besar building in Alor Setar on the mainland. Because of its large structure, the main block was constructed in reinforced concrete but was clad with timber to give the impression that the whole structure was constructed in timber. The main block houses the Lobby Lounge, a bar and executive offices. Adjoining the main

block on one side is the 'Pelangi Lounge' (a music lounge) while on the opposite side is the 'Spice Market Restaurant' (hotel restaurant). There are some noticeable inconsistencies in the articulation of the roof forms but the discrepancies are masked by the fine detailing throughout.

In keeping with traditional building construction, carved fascia panels are placed continuously under the roof eaves and there are no roof gutters to obstruct the rhythm of the eaves roof lines. Rainwater is allowed to fall on perimeter strips of gravel and pebbles, through which water seeps into the underground drainage.

The interior design work was undertaken by Juruhiasan Consult and the concept was to create a friendly atmosphere by using soft finishes in the public areas and exposing traditional crafts and decorative fixtures like pieces of wattlework and eaves panelling in the chalets.[63]

Hotel landscaping was undertaken by Malik Lip and Associates who emphasized on the use of native plants available on the island with plants that have traditionally been associated with local culture and lifestyle (plants that were traditionally used for food, medicine and

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[63] See MA EDITORIAL, "Hotel Interior: Pelangi Beach Resort Langkawi", *MA: Majalah Arkitek,* Vol. 1, No. 5, Sept./Oct. 1989, pp. 64-65.

cosmetics). Some of the selected species were brought from the mainland and were planted in the hotel compound.[64]

Figure 5.26: *Sketches of Pelangi Beach Resort in Langkawi Island.*

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64 See MA EDITORIAL, "Hotel Landscaping: Pelangi Beach Resort Langkawi", *MA: Majalah Arkitek,* Vol. 1, No. 5, Sept./Oct. 1989, pp. 75-77.

5.3.3 ALTERNATIVE FORMS AND IDEAS

i. Plaza Atrium Office Tower, Kuala Lumpur.

The Plaza Atrium was designed by Ken Yeang and the building is located in the Golden Triangle area of Kuala Lumpur. The building is a multi-storey statement of the valve analogy for tropical buildings (the external climate is allowed to flow into the building, past adjustable filters and baffles, instead of being totally excluded by air conditioning). Its main external feature is the 13-storey, semi-enclosed, multi-storey space onto which every internal office floor looks. The office floors are designed as stepped-back landscaped terraces overlooking the atrium and plaza below.

The idea of an atrium in a tropical climate is to invert the concept of the totally enclosed volume. Instead of locating the multi-storey volume within a building - as in other atrium buildings, which would make the totally enclosed space an expensive energy consumer - the atrium here is a transitional space, between the inside and the outside of the building.

The atrium here serves an architectural function similar to that of the traditional five-foot walkway of the old shophouses or the porch of colonial urban houses, which are part of the Malaysian urban typology and architectural heritage. In the tropics, the 'in-between space' provides an intermediary comfort zone that offers partial protection from the climate as a transition to the outside.

The multi-storey atrium space functions as a canopy providing sun shading and ventilation to the multi-layered terraces. This multi-storey space is enclosed at the top by a ventilated baffle-type roof, a filter like device that lets the hot air, collected within the atrium, through. Each of the 24 floors has a different floor configuration, and it is combined with a terrace to overlook the plaza. These areas allow vertical landscaping and there are executive amenities and wash rooms.

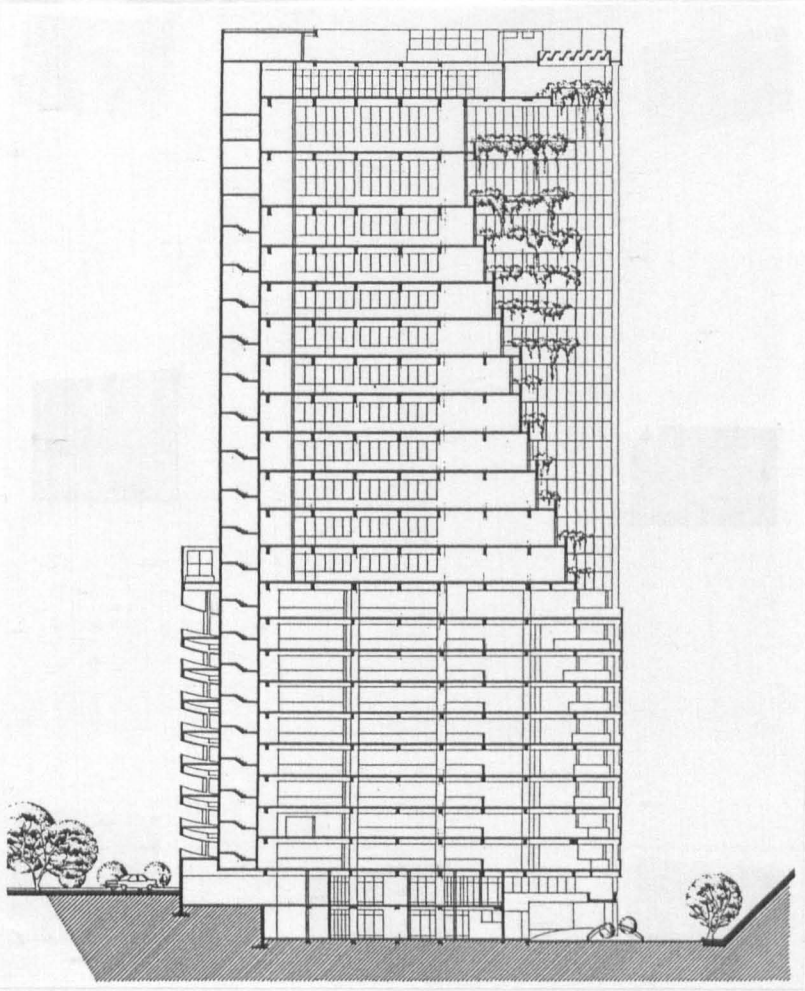

Figure 5.27: *Section showing the 'transitional space' of Plaza Atrium.*[65]

[65] Illustration reproduced from YEANG, KEN, *op. cit.*, page 49.

Figure 5.28: *The planting terraces inside the atrium.*[66]

[66] Illustration reproduced from YEANG, KEN, page 51.

ii. The Roof-roof house, Kuala Lumpur (1984).

The house sits at the edge of a 30 acre housing scheme and differs significantly from the surrounding houses (Fig. 5.29). There has been a conscious effort to use climatic factors to shape the building. The north-south orientation reasonably protects major spaces from direct solar heating. The ground floor living room is next to the swimming pool, which enables the prevailing south-east to north-west wind to modify the micro-climate inside the house. Air is cooled as it passes across the pool water and into the living space (Fig. 5.30 and 5.31). Solar orientation, wind direction and rainfall are primary tropical design concerns, and the Roof-roof house investigates and reinterprets these elements in a new tropical-functionalism.

The Roof-roof house has a `baffle' roof, exaggerated and oversized, spreading above the actual reinforced concrete flat roof and pool terrace area (Fig. 5.32). It shades the roof terrace underneath and the pool. The baffle roof resulted from the valve analogy which suggests that building enclosures in the tropics should filter out undesired climatic elements and filter in what is wanted.

The design intention for this house was to produce a new language based on the old vocabulary. It is very different from any attempt to re-investigate and re-access the established forms in this tropical country. By contrast, the approach questions the notion that the traditional

forms are the only logical solutions to tropical climatic conditions. Its principal concern is to analyse and synthesize enclosures that would generate other forms and solutions.

The interior planning shows a preoccupation with non-regular geometry. This is in sharp contrast with the exterior form which is basically modernist in language. The practicality of spaces can be questioned. For example, the irregular shaped bedrooms need tailor-made irregular beds rather than conventional rectangular ones. The dining area is too small to be effective. The master bedroom has problems of privacy. But the Roof-roof house is a breakaway from the obvious and the established. This building has been considered as an experiment and remains inconclusive and transitional.[67]

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[67] See LEE KWONG YAN, "The Roof-roof House", *Majallah Akitek,* Vol. 2, 1984, pp. 22-26.

Figure 5.29: *External view of the 'Roof-roof house'.*[68]

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[68] Illustration reproduced from POWELL, ROBERT, *Ken Yeang: Rethinking the Environmental Filter,* Singapore; Landmark Books, 1989.

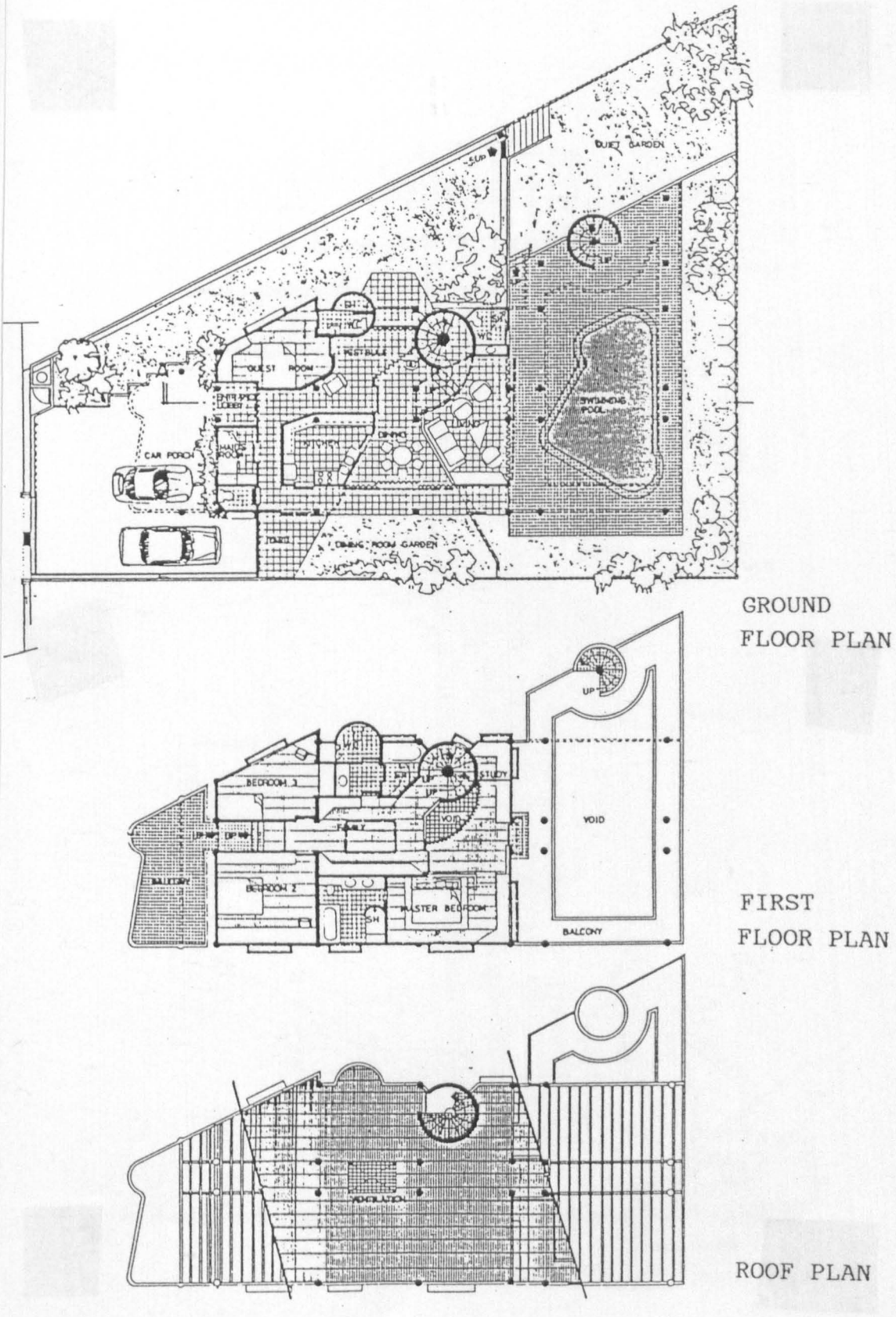
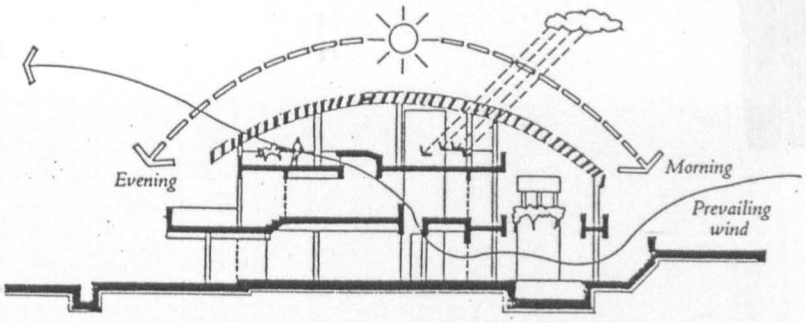
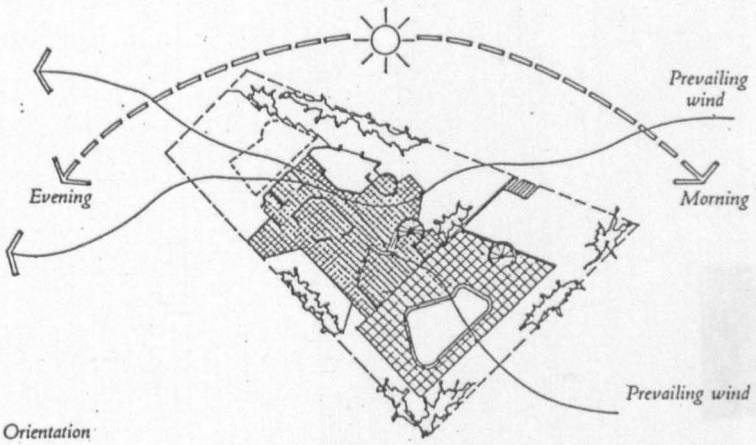


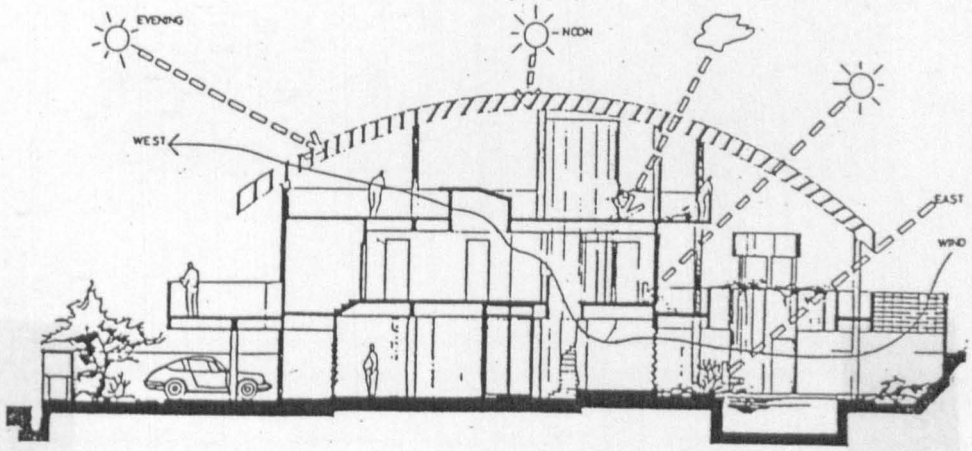
Figure 5.30: *Plans of 'Roof-roof house'.*



Section showing climatic responses



Orientation



LONGITUDINAL SECTION

Figure 5.31: *Climatic responses of the Roof-roof house.*

Figure 5.32: *Swimming pool underneath the 'baffle' roof.*[69]

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[69] Illustration reproduced from YEANG, KEN, *op. cit.*, page 55.

Chapter Six

CONCLUSIONS AND RECOMMENDATIONS

6.1 THE ESSENCE OF MALAYSIAN TRADITIONAL BUILT FORMS

The manner in which foreign cultures and architecture are assimilated into a nation is a very complex process. Before independence Malaya was subject to various architectural influences due to the influx of foreign immigrants, largely Indonesian Malays, Chinese and European. A large proportion of these foreigners settled in Malaya and, together with local people, they created a variety of buildings styles based on their own traditions.

Although Malaysia consists predominantly of Malay people, and the Malay architectural style is recorded as the earliest in the evolution of Malaysian architecture, the contributions made by the Chinese and Europeans are of equal importance. They have contributed a substantial amount of knowledge and advancement in the development of Malaysian architecture. The Malay, Chinese and colonial architecture all formed a vital part in the formulation of the Malaysian architectural heritage.

Traditional Malay building systems incorporate the beliefs of the Malays (animism, Hinduism and Islam)[1] with major architectural and cultural influences from Minangkabau in Indonesia and Patani in south of Thailand. The form of

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[1] See GIBBS, PHILIPS, *Images of Asia: Building A Malay House,* Singapore; Oxford University Press, 1987, page 7.

traditional buildings in Malaya can briefly be described as a family of related dwelling types originating from various islands in the Malay Archipelago (now Indonesia). The major building types found in Malacca, Perak and the east coast states were reflections of the respective cultural groups who came to settle in different parts of Malaya. There were also some additional features to these basic types, such as the distinctive tiled stairways of the Malaccan houses which were derived from Chinese and European immigrants who settled in the Malacca Straits[2]. There is also the use of large fascia boards (*pemeleh*) in Malay buildings in Kelantan and Terengganu which were derived from the early Malay-Indian Kingdom of Langkasuka (now Patani).

Buildings in *kampungs* were traditionally built in a random pattern or were organised in a cluster form with the mosque being the focus of social and religious activities.[3] In small *kampungs,* houses were usually organised around the chiefs' houses[4] or around open grounds that were used by the inhabitants to hold public ceremonies, sporting events or as a children's playground.[5] The design of the

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[2] ABEL, CHRIS, "Regional Transformations", *Architectural Review,* Nov. 1986, page 37.

[3] The mosque was used as the centre of religious and social activities after the arrival of Islam. Before that, the palace was generally the centre of public events.

[4] The chief of a *kampung* was locally known as *penghulu*. The *penghulu* was responsible for keeping the order and taking care of the people's welfare. His house was relatively bigger than ordinary folk houses.

[5] In the case of *kampungs* which were situated at the seaside, the beach was usually used as the centre of public activities.

traditional Malay house (after the arrival of Islam) was very much determined by the climate and the Islamic way of life which emphasized the seclusion of men from women (for non-family members).

Traditional Chinese buildings in Malaya were specifically designed to accommodate the commercial activities, social requirements and philosophical beliefs of the Chinese immigrants who settled in the Straits Settlement. They later spread to other towns in the west coast of the Malay peninsula and their architecture quickly became a characteristic of every Malayan towns. The architecture of traditional Chinese buildings in Malaya was based on Southern Chinese architecture with the adaptation of the *Feng Shui* concept, *Jian* modules, philosophical elements and courtyard designs. The design of shophouses was originally derived from town houses in the city of Canton.

The principles outlined in the two great manuscripts on Chinese architecture - *Ying-zao fa-shi* (Building Standards) and *Kung-ch'eng tso-fa* (Structural Regulations) - were predominantly applied to Imperial buildings of China and are not so relevant to the buildings in the Malay peninsula.[6] These documents generally present construction rules and principles for the construction of large public and monumental buildings in China which include palaces, temples, pagodas and libraries. However, the principles

[6] Most of the traditional Chinese buildings in the Malay peninsula were owned by peasants and middle class people.

have been used in the design of some Chinese buildings in Malaya like temples and *Kongsi* houses which were owned by established Chinese associations, leaders and *towkeys* (wealthy Malayan Chinese).

Colonial buildings in Malaya were largely based on western architectural styles and ideals. As part of the British empire, many of the public and administrative buildings in Malaya were designed on a grand scale to enhance the strength of the colonial power with the expression of grandeur, elegance, formality and incorporated symmetrical design layouts. Colonial residential buildings were largely built to accommodate the British colonial officers and administrators, and the interior layout of the houses generally reflects their western lifestyle.

As this study has shown, various building design concepts, constructional devices and materials have been developed in response to the climate of Malaysia. Some of these are common to the three main historic architectural traditions of Malaysia (Malay, Chinese and colonial). The main traditional elements used to modify environmental conditions in buildings are listed below. This list also shows where each of these elements has been used in the three main architectural traditions.

	MALAY	CHINESE	COLONIAL
- *Airwells and courtyards*	[*]	[*]	[*]
- *Canopies*	[ ]	[*]	[*]
- *Carved wall panels*	[*]	[ ]	[ ]
- *Clay roof tiles*	[*]	[*]	[*]
- *Clerestory windows*	[ ]	[ ]	[*]
- *Cluster building layout*	[*]	[ ]	[ ]
- *Deep roof overhangs*	[*]	[*]	[*]
- *Elongated/linear plans*	[*]	[*]	[*]
- *Exposed structures*	[*]	[*]	[ ]
- *Five-foot walkways*	[ ]	[*]	[ ]
- *High ceilings*	[ ]	[*]	[*]
- *Jack roofs*	[ ]	[*]	[ ]
- *Large openings*	[*]	[*]	[*]
- *Loggias*	[ ]	[ ]	[*]
- *Open plan concepts*	[*]	[ ]	[*]
- *Overlapping roofs*	[*]	[*]	[ ]
- *North-south orientations*	[*]	[*]	[*]
- *Pitched roofs*	[*]	[*]	[*]
- *Raised ground floors*	[*]	[ ]	[ ]
- *Use of timber and other lightweight materials*	[*]	[*]	[ ]
- *Wide verandahs*	[*]	[*]	[*]

Apart from the principles used in adapting to the local climate, there was also an extensive use of decorative elements in the design of traditional buildings, especially

in Malays and Chinese buildings[7]. These elements were not merely used as decorative fixtures, but also functioned as part of the overall building composition and have their own philosophical meanings, as well as practical uses. The most distinctive feature is the use woven or carved wall panels and partitions in traditional Malay houses which act like a *masrabiah,*[8] which allows Muslim women to see people (non-family members - especially men) outside the house and at the same time prevents them from being seen by people outside the house.

The underlying principles and decorative elements have both played important roles in strengthening the overall appearance and structural composition of traditional buildings. They also at the same time worked as a mechanism for achieving comfort within the buildings which finally contributed to the well-being of the occupants. In others words, the essence of traditional Malaysian building lies in the resourceful integration of climatic design principles and the 'dual function' decorative fixtures which were designed to meet the social, culture and religious requirements of the building's occupants.

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[7] The decorative elements of traditional Malay and Chinese buildings include:- *Buah Butung* (finials); woven and carved wall panels; *Pemeleh* (fascia board); *Bendul* (threshold); *Mahkota Atap* (roof crown); continuous carved eaves; *Tebar layar* (gable end with sun-burst motif), decorative tiles and ridge ornaments. For colonial buildings, decorative elements include arches, columns, domes, pinnacles and decoration on walls, doors and windows, which were directly adopted from western building styles.

[8] *Masrabiah* is a concept used in Arabic houses to screen women from men.

The period after independence saw a change of direction in terms of building trends. Traditional building systems were quickly replaced by international modern building designs and the introduction of reinforced concrete and glass curtain walling. New concepts and building systems were introduced for housing and commercial developments.[9] Large tracts of modern housing were erected throughout the country to accommodate the growing middle-class population and at the same time, high-rise buildings quickly dominated the skylines of Malaysian towns and cities. With the continuing process of adopting western building styles, Malaysian towns and cities are becoming more and more like western towns which do not have their own discernible character.

6.2 THE VALIDITY AND LIMITATIONS OF USING TRADITIONAL FORMS AND DESIGN PRINCIPLES

The Malays, Chinese and British constructed buildings to reflect their cultures, religions and aesthetic requirements. Alongside with these, they developed distinctive design characteristics as a result of adjusting their buildings to the local climatic conditions. All buildings were generally designed to achieve maximum comfort by encouraging the process of natural ventilation, avoiding direct sunlight to reduce heat gain and keeping

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[9] The new design concept in modern buildings generally requires special equipments for services such as air conditioning and artificial lighting. This has led to a dramatic consumption of electricity and has also resulted in power failures due to the fact that Malaysia cannot keep pace with the rising demand for electricity.

rainwater clear of external walls. The building features were designed to modify the micro-climate (whether intentionally or unintentionally) and have worked accordingly with the requirements and activities of local people.

Many architects presumed that traditional design principles could only work in traditional buildings and that there was a limited use of traditional principles in new buildings. Most of them only designed buildings with traditional characteristics if the client's brief requires them to do so. As Dan Cruickshank points out, "to many architects, indigenous architecture seems to offer merely a style of design and construction that can be used as an alternative to Western Modernism when the conditions and brief permit".[10] The reluctance to use traditional design principles was due to ignorance about the subject and a preference for using western styles and images. Some architects only imitate the aesthetic features of traditional buildings rather than adopting the climatic principles. This attitude need to be changed and architects should not undermine the potential of traditional principles since they have proved to work so successfully

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[10] Dan Cruickshank discusses the issue on creating a national identity in architecture in India (a similar issue as in Malaysia) and raised similar problems concerning the design of contemporary buildings. See CRUICKSHANK, DAN, "Variations and Traditions", *Architectural Review*, page 51.

in traditional buildings throughout Malaysia for centuries.[11]

It is very disappointing that many architects have chosen to use only the aesthetic elements of traditional architecture rather than actually applying climatic design principles.

Every modern building has it own set of conditions and requirements which differ from the requirements of traditional buildings. However, this does not mean that traditional design principles cannot be adopted in modern buildings. Traditional design principles should be seen as essential elements in creating buildings that are responsive to the climatic requirements of Malaysia. The principles are 'adaptive features' which can be utilized in modern designs. This study has shown how traditional design principles and decorative elements can be applied together in order to develop a new vernacular design. With current building technology, it is possible to improve some of the principles to suit the requirements of new buildings.

The design and construction of new buildings should be aimed at producing highly effective buildings with high-efficiency in terms of energy saving, efficient use of space, appropriate use of building materials, economic

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[11] The design principles of traditional Malay architecture have been used for several hundred years and in the case of traditional Chinese architecture, for almost two thousand years. See LIU, LAURENCE, *Chinese Architecture,* London; Academy Editions, 1989, page 27.

viability, adaptation to the climatic conditions and suitability to the local context and surroundings. By adopting the appropriate principles, some of these objectives could be achieved. The following section of this study attempts to clarify the importance of traditional principles and looks at alternative solutions to the current problems in modern buildings.

i. The Concept of Natural Ventilation

For a tropical country like Malaysia, natural ventilation is the most sensible form of ventilation for most buildings (especially for low and medium-rise developments). It has the advantage in that it is easy to install and cheap to maintain compared with mechanical ventilation or air-conditioning which involves additional capital investment and increased running costs. Natural ventilation can easily be achieved by the provision of specific apertures in the building fabric, such as openable windows and ventilator ducts which can be controlled by the building's occupants.[12]

In traditional buildings, natural ventilation was achieved by the use of large openings, grills, perforated panels (woven and carved panels), high level windows, exposed roof structures, high ceilings, tiered roofs, jack roofs and raised floors. These principles can similarly be applied to

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[12] HUSSAIN, MAHMOOD, *A Study of the Wind Forces on Low-Rise Building Arrays and Their Application to Natural Ventilation Design Methods*, Ph.D dissertation, University of Sheffield (unpublished), Nov. 1978, page 1.

modern buildings to encourage the process of natural ventilation.

The choice of what type of ventilation system to adopt in a building is very important and should be decided at an early stage in the design process. As Mahmood Hussain points out, "the choice of the method to deal with a particular situation effectively is the first important step in the planning of a ventilation system and is governed by either the architectural design principles or the cost and the required standards of the internal environment of the building. The type of ventilation technique used often dictates the shape of the building which in turn affects many other architectural design principles".[13] Architects should attempt to use natural ventilation at the beginning of a design process and the planning of a building should be arranged in such a way that natural through ventilation can be achieved.

Although natural ventilation may not be suitable, or the best solution, for some building types (especially for high-rise buildings, buildings with complex interior layouts and buildings which require specific internal conditions), architects should always bear in mind the potential and possibilities of incorporating natural ventilation to some parts of these buildings. In residential buildings, natural ventilation is most

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[13] See HUSSAIN, MAHMOOD, page 1.

applicable and should be used to the optimum. Only in special cases should be supported by a mechanical ventilation system. The use of air-conditioning where possible.

ii. North-south Orientation

A north-south orientation is an important characteristic for buildings in tropical climates. In the tropics, the maximum sun height at 12.00 hours solar time is at least 60 degrees[14]. For Malaysia which geographically is located near to the Equator, the sun height during mid-day is almost 90 degrees. As the sun path runs in an east to west direction, buildings should logically be positioned to face north or south to avoid the direct penetration of sunlight into buildings (see Fig. 6.1).

Many traditional buildings have been designed to follow this principle by having major openings on the north or south elevations and, whenever the site did not permit for such orientation, buildings have been supplemented with additional devices, such as deep overhangs, loggias and wide verandahs to avoid harsh sunlight from entering the buildings.

The north-south orientation can help architects to save energy consumption in buildings by avoiding building interiors from being exposed to direct sunlight. This in

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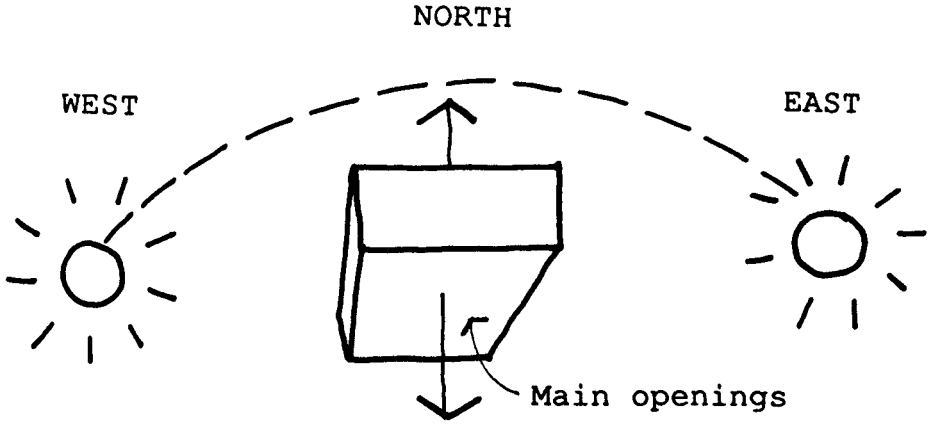
[14] See WALL, H. B., "New Recommendations for Building in Tropical Climates", *Building and Environment,* Vol. 28, No. 3, 1993, page 274.

turn helps to create a cooler environment, reduces the cooling load for buildings which have to have air-conditioning and also reduces the probability of using mechanical devices such as paddle fan for naturally ventilated buildings.



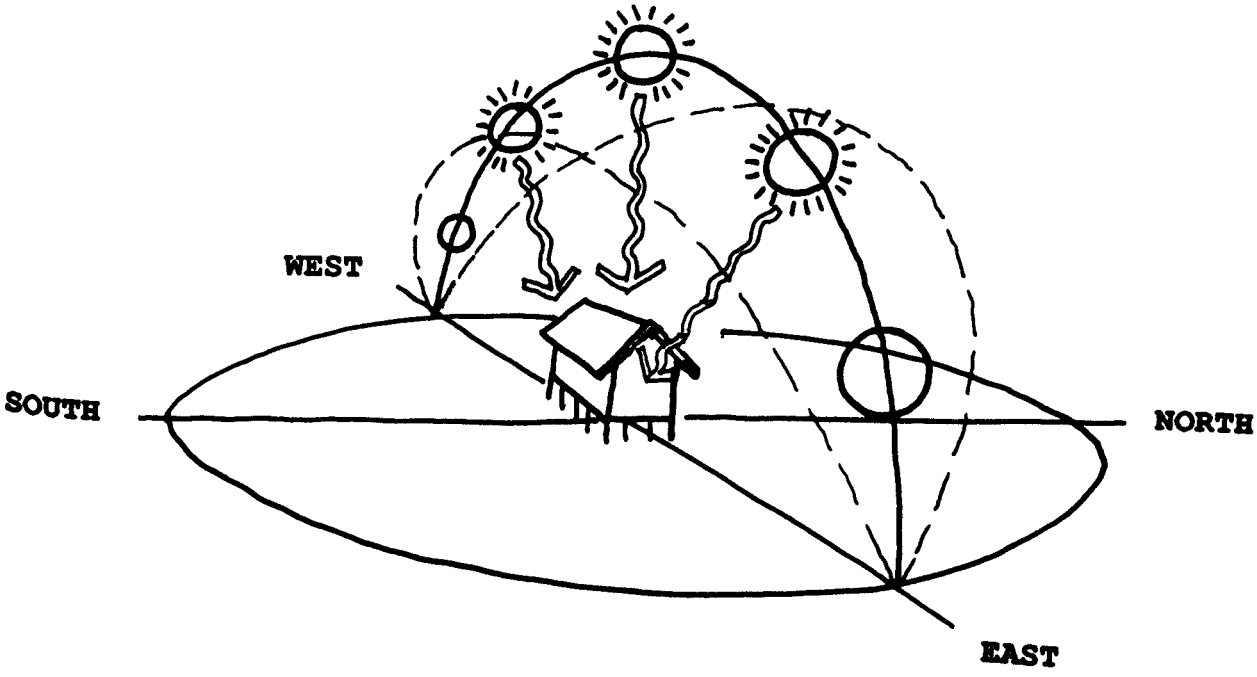


Figure 6.1: *The sun path and the north-south orientation of a building.*

iii. Courtyard Design

The use of courtyards in the planning of buildings is one of the most important characteristics for building in the tropics. Traditional buildings have showed that courtyards can help the process of natural ventilation, they provide natural lighting for the interiors as well as provide an internal private open space and a semi-enclosed circulation area.

Examples of Chinese and colonial buildings have demonstrated how courtyards can be used as important devices to adjust the micro-climate of traditional buildings. The importance of these courtyards was often emphasized by having important living spaces facing into these internal courts. Their importance was further emphasized in larger buildings which had a few large courtyards which were beautifully landscaped.

The concept of courtyard design is essential in the planning of new buildings where natural ventilation is intended and where a secure and undisturbed internal area is required.

iii. The Use of Water and Vegetation

Water and vegetation are two important aspects which are not really emphasized in the design of traditional buildings but form an essential element in the design of tropical buildings. These elements can be used to reduce temperature and provide shade and fresh air to the

immediate surroundings. In traditional Malay architecture, trees were planted around houses to provide food as well as to modify the climate. Coconut trees provide all kinds of useful implements.[15] They also shade the houses and allow fresh and cool air to pass below the 'umbrella' provided by the leaves.[16] Fruit trees are normally planted within the house compound, vegetables in the backyard and small plants at the entrances. In traditional Chinese shophouses and colonial houses, plants were incorporated in the design of courtyards and gardens.

In modern buildings, the concept of courtyard gardens, landscaped areas and extensive use of water and vegetation will undoubtedly create a pleasing atmosphere and may solve the problems of over-heated spaces. This will also minimise the use of air-conditioning and subsequently minimise capital investment and maintenance costs.

iv. The Five-foot Walkway

The five-foot walkway of traditional Chinese shophouses was a creative invention which enabled people to walk in a cool, dry, shaded and safe space while browsing along the shop-fronts. The five-foot walkway is also termed

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15 Among the items which can be produced from a coconut tree are:- water for drinking; milk for cooking; water-buckets made from coconut shells; the fibre, which covers the fruit, is used as a material for burning; sweeping brooms are made from the strips in the leaves and the leaves are used for making mats and as an alternative material for *atap*.

16 See GIBBS, PHILLIP, *Images of Asia: Building a Malay House*, Singapore; Oxford University Press, 1987, page 14.

as *corridor development*.[17] The recessed ground floor limits the penetration of sunlight and prevents rain from entering the buildings.

This concept may be used in the design of modern buildings which aim at controlling environmental conditions without the use of mechanical devices. For the development of a single building, the walkway may run or extend all around the building and should not necessarily be confined to the front. With recessed and shaded external walls, desirable internal conditions may be achieved.

v The Design of Loggia and Wide Verandah

The loggia (colonnade) and wide verandah of colonial buildings have a similar function to the five-foot walkway. It provides a sheltered circulation area for offices and public buildings and at the same time shields the external walls from direct sunlight and rain. The loggia and wide verandah have demonstrated that recessed walls at higher levels can also improve internal conditions and provide sufficient area for circulation. Loggias and verandahs in colonial architecture were not only used at ground level, as in the Chinese five-foot walkway, but were commonly used on upper levels as well.

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[17] The continuous pedestrian walkway of Chinese terraced and shophouses is seen as a stretch of long, semi-enclosed corridor and it is popularly known as five-foot walkway. In some references, it is also termed as *corridor development*. See CHIN, W. Y., "Towards a National Identity In Architecture", *Majallah Akitek*, Vol. 1, 1981, page 21.

vi. The Use of Local Materials

As one of the most versatile, cheap and plentiful materials, timber has been extensively used in the construction of traditional Malay and Chinese buildings. Malaysia has a vast area of rain forest and a wide selection of hardwood timbers.[18] Most of the timber types are suitable for the construction of buildings. However, the development of timber technology in Malaysia has been severely affected by the introduction of other imported materials such as concrete, steel and glass. These new materials have attracted many people, they have subsequently became popular and have finally dominated the market in building materials (despite the fact that a large amount of the raw materials used for the manufacture of these building products are imported from foreign countries). As a result, the use of local timber in the construction of buildings has been substantially reduced.

For a tropical country like Malaysia, that has an abundant supply of hardwood, timber has the potential to be developed into the most resourceful material for the building industry. Timber technology and properties should be explored and new construction systems, techniques of detailing, construction joints and concepts for using

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[18] There are about 2500 species of timber found in the tropical Malaysian forest and most of them are grouped into hardwood timber (only about 10 species of them are softwood) The main types of hardwood which are used in the construction of buildings are *Balau, Balau Merah, Bitis, Chengal, Giam, Kekatong, Keranji, Merbau, Resak* and *Tembusu*. Only one species of softwood is used in timber construction and its commercial name is *Damar Minyak*.

timber as the main material for the construction of buildings should be looked upon favourably.

Briefly, timber has many advantages over other building materials. It is a durable material with a high ratio of strength over weight;[19] it has an attractive appearance and finish; it is easy to manufacture; it is a low electricity conductor (good insulator); it is high in performance (in the case of treated timbers); it can be used as the main material for all building components and it is reasonably cheap and available locally.

Timber can be used particularly in housing developments and to some extent in the development of public and commercial buildings. For large buildings, laminated timber[20] can be used as an alternative to steel or concrete structures. Timber can also be used in combination with other materials. If it cannot be the most important building material in Malaysia, then at least it should be treated as equally important and used as extensively as any other material.

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[19] The quality of hardwood timber is determined by the ratio of strength over weight (in a dry condition). The higher the ratio is, the stronger the timber is. The Forestry Department of Malaysia has classified Malaysian hardwood into three categories based on the timber strength and durability. These are heavy hardwoods, medium hardwoods and light hardwoods.

[20] The strength of laminated timber can be increased by the use of carbon fibre, placed in-between the timber layers.

vii. Clay Roof Tiles

Clay roof tiles are a particularly good and feasible roofing material for buildings in Malaysia. The most important characteristic of the clay tile is that it is a good thermal and sound insulator. Another advantage of clay is that it is cheap compared to other building materials. As a good thermal insulator, clay prevents radiant heat being transmitted into buildings. Rough textured clay tiles can also absorb a certain amount of rainwater which help to reduce temperatures inside the buildings. In other words, clay can give a 'cooling effect' to buildings and contribute towards a more pleasant interior.

Traditional Malay and Chinese buildings have both used clay tiles as the main material for their roofs.[21] At present, the use of clay tiles is very restricted because people prefer to use other materials, such as concrete roof tiles, shingles, asbestos cement and metal sheets. Corrugated iron sheet was once very popular and was used in many traditional Malay buildings as to replace clay and *atap* roofs. Corrugated iron sheet has many disadvantages and creates many problems such as; it can absorb and transfer heat very rapidly into building interiors[22], it create a loud noise during heavy rainfall and, with the high

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[21] For traditional Malay buildings, 'senggora' clay tiles were normally used and for traditional Chinese buildings, glazed clay tiles were used as the main roofing material.

[22] The radiant heat trasmitted through iron sheets can increase room temperatures to unbearable conditions if buildings are not well-ventilated.

humidity of the Malaysian climate, it suffers from rapid corrosion (it is worse for buildings in coastal areas).

Asbestos roofing sheets was also popular when it was first introduced in Malaysia. Many people have replaced their old corrugated iron sheet with asbestos, and many housing developers have used this cheap material for the construction of low cost houses. After the dangers[23] of asbestos were discovered, the use of asbestos was substantially reduced, but for many rural and less developed areas, local authorities did little to prevent people from using this material. Therefore, there are still many houses (which are under construction and planned to be built) using this undesirable material as the main roofing material.

The use of clay tiles should be encouraged in building industry as an alternative roofing material for new buildings. Studies on the properties of clay tiles should be carried out as to improve the standard and versatility of this material (such as new sizes and new methods of installation) so that the performance of clay tiles can be upgraded and subsequently able to comply with the requirements of consumers.

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[23] Asbestos contains fibres which may cause lung cancer and other diseases like *Asbestosis* and *Mesothelioma*. Building work involving asbestos products may cause atmospheric contamination (there is always a hazard whenever airborne fibres are released). For information and safety guidance on the use of asbestos, see HMSO, "Asbestos: Guidance Note MS 13 from the Health and Safety Executive", Medical Series MS 13, Revised April 1988, pp. 1-4.

viii. Cluster Building Layout

The traditional cluster building layout, as found in *kampungs*, is a preferable alternative to the linear building arrangement found in many modern housing estates. Traditional Malay *kampungs* have demonstrated that the cluster formation helps the air to circulate freely between the scattered buildings (Fig. 6.2). A linear arrangement may totally block the movement of air and may result in stagnant air (or poor air change rates) within the interiors. Poor internal planning (arrangement of spaces) of residential buildings may also reduce air ventilation.

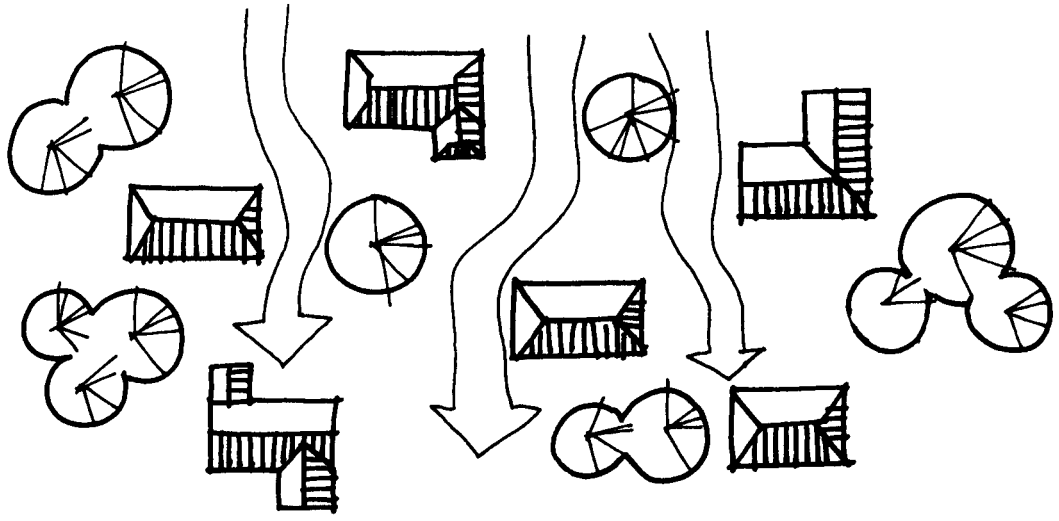

Figure 6.2: *Cluster arrangement of traditional Malay houses.*

Modern buildings should be designed to allow air to pass through from one side of the building to the other. Openings at roof level also encourages hot air to escape and induces cool air to enter the building.

ix. The Rectangular Plans and Open Plan Concept

Traditional Malay, Chinese and colonial buildings followed a similar concept in terms of planning with the use of linear or elongated building plans to achieve natural ventilation. The open plan concept and the minimal use of partitions in traditional Malay buildings encourages the through ventilation of air from one side of a house to the other. The design of low internal walls and the provision of perforated carved panels (on the partitions) also allow air to circulate around the building.

The deep plan or long section of traditional Chinese shophouses was broken down by internal courtyards which separate the houses into several sections. This concept helps the interiors to receive natural light and ventilation. The rectangular building plans, the minimal use of partitions, the low height walls and the provision of courtyards, can all be used in modern buildings to encourage the process of natural ventilation.

x. Large Openings and Clerestory Windows

The provision of large openings and careful positioning of windows allows as much air and light as necessary to enter a building. In the design of traditional Malaysian buildings, large windows were provided to maximise the amount of air and light which can enter the buildings. These large openings also create spaciousness and visual contact between the natural environment and interiors. These large openings were usually sheltered from

direct sunlight by the provision of verandahs or terraces. With large windows and openings at roof levels, air and natural light (diffuse and reflective) is provided to almost every part of the building, so that all rooms can be naturally ventilated and illuminated.

The design of high level openings or clerestory windows can be used in both residential and public buildings, such as bungalows, churches, mosques, sports halls and galleries. These openings can help hot air to escape and provide natural lighting to a large floor area (see Fig. 6.3).

Figure 6.3: *The practical use of high level openings in the design of a modern house.*

xi. High Ceilings and Exposed Structures

To take advantage of openings at high levels, roofs should be exposed and not covered by any form of barriers (e.g. flat ceilings). For multi-storey buildings, floor to floor heights should be reasonably high so as to provide sufficient space for the circulation of air and allow for warmer air to rise above head height. High ceilings with low internal partitions can help air to pass through the interiors and obstruction to air movement should be minimised. The provision of high ceilings and exposed structures can help the process of natural ventilation in modern buildings and make office or living spaces more spacious, cool and comfortable.

xii. Pitched Roofs and Deep Roof Overhangs

The pitched roofs in traditional buildings were primarily designed to drian water out from rooftops and deep roof overhangs helped to give shade and avoid rainwater from reaching the external walls. An angle between 30 to 40 degrees is reasonably adequate for the removal of rainwater and preventing rubbish (blown away by wind) from sticking on roofs. Roof angles below 30 degrees are relatively low and inadequate (to remove litter by the force of water) and roof angles above 40 degrees may result in fast running water and overflows in gutters.

Deep roof overhangs are an important characteristic of traditional buildings. They reduced the amount of penetrated sunlight and rain from entering the buildings.

This feature can still be used in modern designs especially for modern houses. An alternative to deep roof overhangs is to provide recessed walls or recessed openings.

Flat roofs are generally inappropriate for buildings in Malaysia (especially for houses). In buildings with flat roofs, consideration has to be made to provide roof insulation (to minimise the transmissions of radiant heat from roof tops to spaces underneath) and means to dispose rainwater from roof surfaces. For large public buildings with flat roofs, the concept of landscaped gardens (roof garden) and viewing areas can be incorporated in the roof designs. Instead of using the roof to accommodate services equipment, the roof can be utilized as a public or private activity space or recreational area.

xiii. Jack Roofs and Overlapping Roofs

The jack roof is a characteristic of traditional Chinese buildings in Malaysia. It is a small roof with openings placed above the main roof to allow hot air, accumulated underneath the main roof, to escape.

The tiered roof follow the same principle as a jack roof. Apart from the traditional concept of giving hierarchy and stressing the importance of buildings, these overlapping roofs help to ventilate the spaces underneath. These principles can be used in modern buildings as a means of encouraging the process of natural ventilation.

6.3 CONTEMPORARY DESIGN PROBLEMS AND ALTERNATIVE SOLUTIONS

During this study, it has became apparent that the problems in contemporary Malaysian architecture mainly revolve around two main building types - first, in the development of residential buildings (particularly in terraced houses) and second, in the development of high-rise (public and administrative buildings). In this chapter, alternative solutions are suggested to the current trends in modern housing and high-rise developments through the application of traditional design principles.

6.3.1 THE APPLICATION OF TRADITIONAL DESIGN PRINCIPLES IN CONTEMPORARY HOUSING

i. Terraced Houses

At present, the most popular house type in Malaysia is the two-storey terraced house. Most large housing developments predominantly consist of terraced houses with a small percentage of semi-detached houses, bungalows and shops.

Although there has been an extensive development of terraced houses, the design and layout of most of these houses do not reflect a proper adaptation to climatic conditions. There is a general lack of concern towards site constraints, use of local materials and natural ventilation. Little effort and study has been made to overcome these problems. It seems that the main concern of designers and developers is the creation of fanciful facades to attract house buyers (most of this form of

housing is constructed by private developers for sale). As a result, many of these houses incorporate 'gimmicks' or 'cosmetic' devices by planting Tudor, Classical or Roman elements onto the facades which bear no relation to the structure or preferred location of window openings behind.

Architecturally, these types of houses are very poor and can be classified as 'pastiche' because they simply adopt other forms and elements without understanding the concepts and reasons for using them. Surprisingly, these houses are very popular among Malaysians and there is always a high demand for these type of houses. This has led many commercial architects and developers to continue building the same type of houses throughout Malaysia.

The interior of these houses is generally based on western houses and reflects the occupant's preference to adopt a western lifestyle. The planning of housing estates is generally based on grid layouts for economic advantages and developers usually adopt simple building plans with small rooms in order to obtain maximum profit. The grid pattern of most housing developments to some extent discourages community interaction because of the distance between houses and the lack of provision for community use. Sloping or hilly sites are usually flattened before construction begins regardless of the site conditions, and trees are removed. Surveys of site constraints and potentials are often overlooked. All these have resulted in poor design.

A good housing scheme in Malaysia should generally be sensitive towards the environmental aspects and natural landscape, and emphasis should be made on providing public spaces for social and recreational activities, and the use of local materials should be explored.

In undertaking a housing project, it is important for architects to look at the relationships between the elements of the proposed development. Housing developments generally consist of three basic elements - street layout, land division and planned open spaces. It is important that patterns of land use and division must derive from overall topographical conditions. If the landform is hilly, it may suggest curvilinear streets in combination with certain straights roads, in which case the curvilinear streets would have a sense of containment and thus be suitable for intimate groupings of houses (cluster arrangement). The straight streets might in then be suitable as major connectors and feeders to the more intimate curved streets.[24]

The interior planning of terraced and row houses in Malaysia is generally compact, the distance between the party walls is narrow and the main openings are generally confined to the front and rear elevations of the buildings. Therefore, it would be useful to incorporate courtyards

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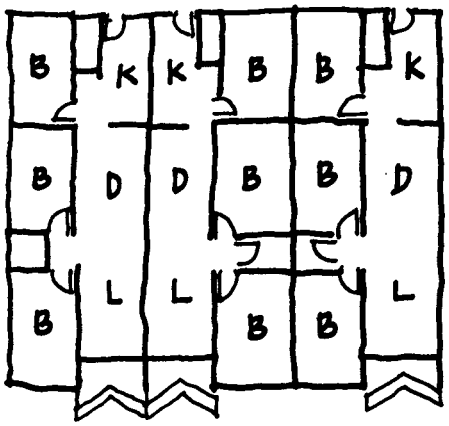
[24] SPREIREGEN, PAUL D., *Urban Design: The Architecture of Towns and Cities,* New York; McGraw-Hill, 1965, page 148.

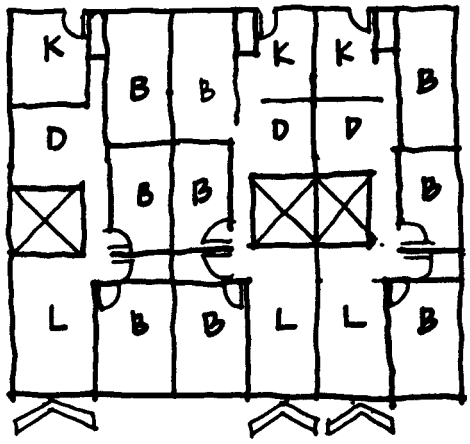
into the design in order to improve the lighting and ventilation of the interiors (see Fig. 6.4).

A TYPICAL PLAN OF THE TYPE OF TERRACED HOUSE PROVIDED BY DEVELOPERS

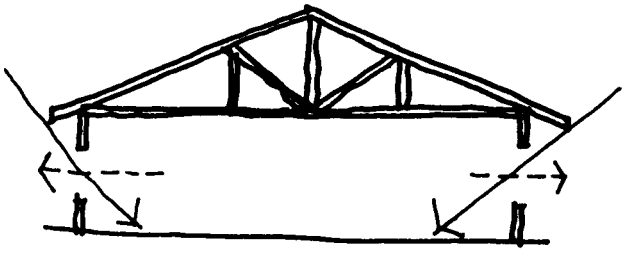


Deep and compact planning.

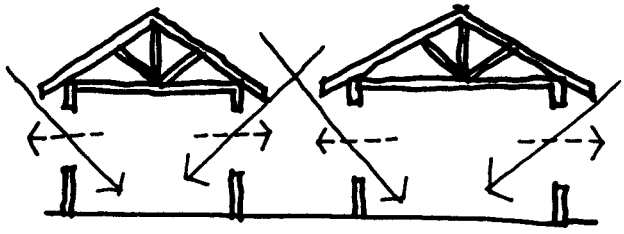
ALTERNATIVE DESIGN



Houses with individual courtyard.



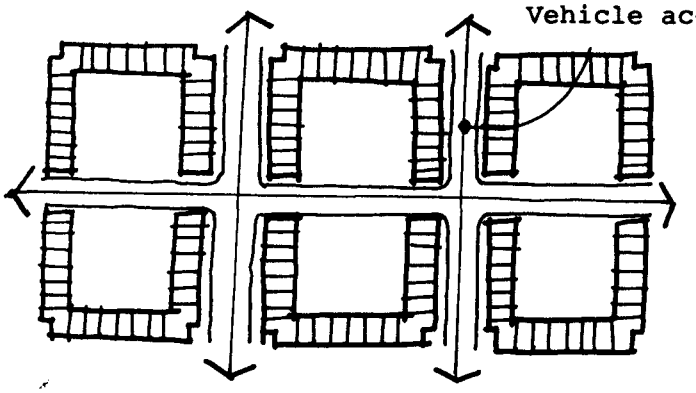
Openings confined to front and rear elevations of house.



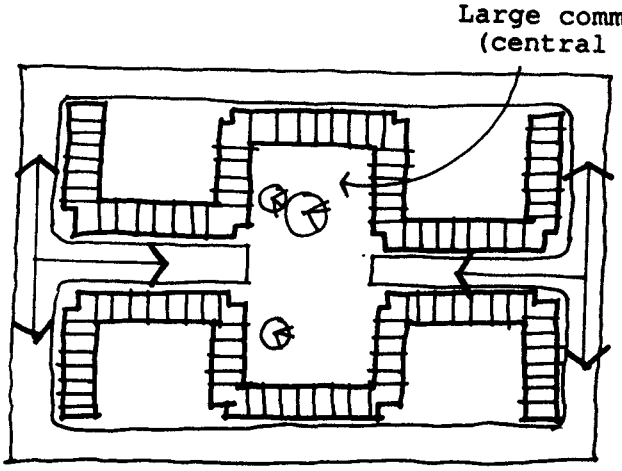
Openings on many sides.

Figure 6.4: *The design of courtyard in terraced houses to improve lighting and ventilation.*

Apart from incorporating private courtyards in the design of individual houses, housing estates in Malaysia could also be designed around central or communal courtyards. The communal courtyard may form the basis of design, similar to the planning concept of traditional Malay houses which were arranged in cluster form using an open space as the centre for public activities. The following illustrations show some possible layouts of how modern terraced houses may be arranged by using courtyards as the basis for the layout (see Fig. 6.5 and 6.6).

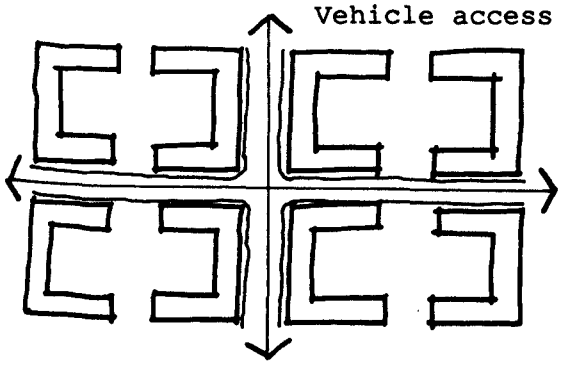


ALTERNATIVE A

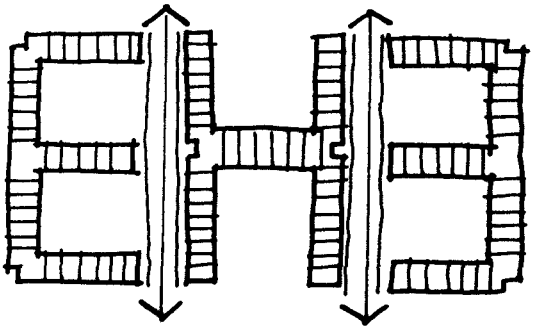


ALTERNATIVE B

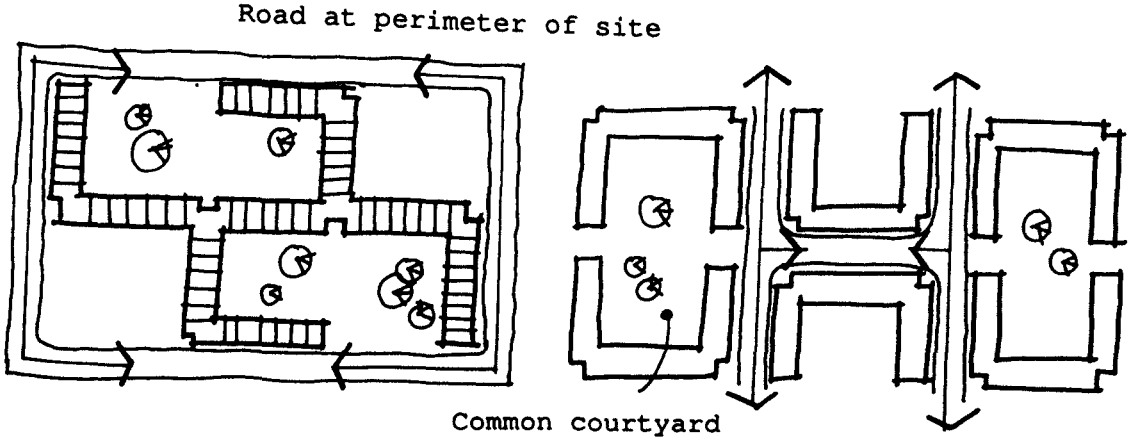
Figure 6.5: *Some alternative layouts for modern housing development.*



ALTERNATIVE C



ALTERNATIVE D



ALTERNATIVE E

ALTERNATIVE F

Figure 6.6: *Some alternative layouts for modern housing development.*

In summarising a discussion held in the early twenties in New York City on problems in community housing, Paul D. Spreiregen points out that, "the piecemeal development of residential communities on endless gridiron tracts was wasteful and unnecessary - worse still, it did not produce the kind of housing and communities we were capable of creating".[25] Figure 6.8 (based on a research done by Paul D. Spreiregen in the 1960s) shows an alternative solution to the standard row houses (Fig. 6.7) and how a communal space can be incorporated in a similar size of development.

Communal spaces in housing estates can be utilised as gardens, recreation centres, childrens' play areas or even, if large enough, as a natural park. Existing trees should be preserved. Additional trees can be planted and with some selected plants, the area can be transformed into a landscaped garden. Large trees can be used to provide shade; small covered shelters (*wakaf*) with benches can be used for resting; pools can provide water for cooling and attract wild birds and even a performance stage can be provided at one corner of that open area for community special events.

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[25] SPREIREGEN, PAUL D., page 39.

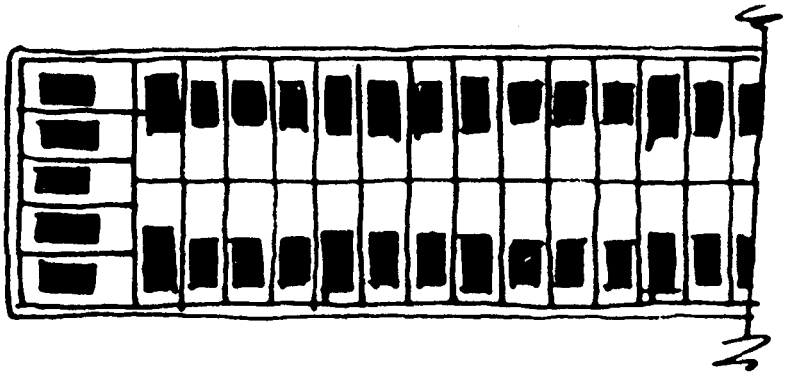

Figure 6.7: *Typical block development in US in the 1920s - duplex houses; narrow side yards; poorly lit and poorly ventilated side rooms - with no common play space.*[26]

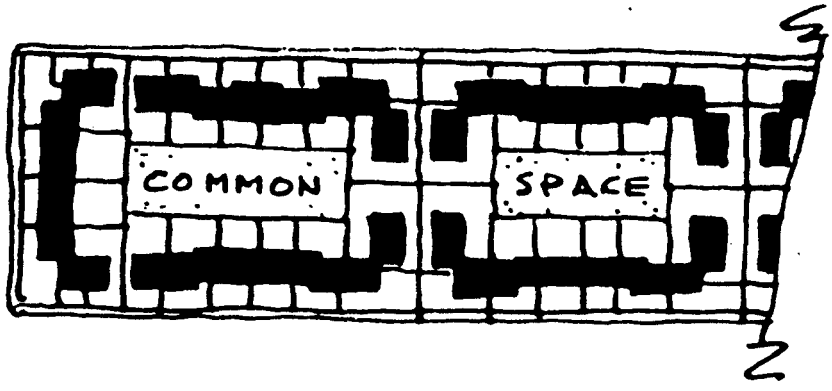

Figure 6.8: *An alternative development - row houses eliminating useless sideyards; well-lit and well-illuminated rooms; usable private yards, plus ample common play space.*[27]

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[26] Illustration reproduces from SPREIREGEN, PAUL D., page 39.

[27] Illustration reproduced from SPREIREGEN, PAUL D., page 39.

Timber can be used as the main building material for all types of houses in Malaysia and can help buildings to be more in context with their natural surroundings. Integrating buildings with nature and adopting the concept of natural ventilation can be easily achieved in free-standing buildings like bungalows and semi-detached houses. These houses can be individually designed to respond to climatic conditions and can easily exploit the use of timber. But for terraced houses, the use of timber may have to be restricted. However, terraced houses may be contructed using composite materials (a combination of different materials such as timber, bricks, concrete and glass) with timber being the main building material. Bricks may be used for the construction of party walls, concrete for the foundations and the rest of the building may be built in timber.

If timber is used for floors, roofs and walls, the concept of raising houses on stilts can be adopted in these buildings, which would encourage natural air movement. The incorporation of this natural ventilation would make the interior a more pleasant environment for its occupants.

As an alternative to ground floors being completely raised above the ground, terraced houses may be partially raised with half of the building built on the ground. With this, the concept of a courtyard could be incorporated into the design. A 'split-level' concept may be appropriate for this type of house and, by having the different floor levels

which are connected by stairs and halls, air could flow freely through the various floor planes via the connecting stairs, openings and halls (see Fig. 6.9 - 6.11).

Most modern housing places the internal ground floor directly on external ground. This restricts the circulation of air within the houses, since air may only enter through openings on roofs and elevations and not through the ground floor. By having a raised floor or partially raised floor, more air can be encouraged to circulate within the interiors of such houses.

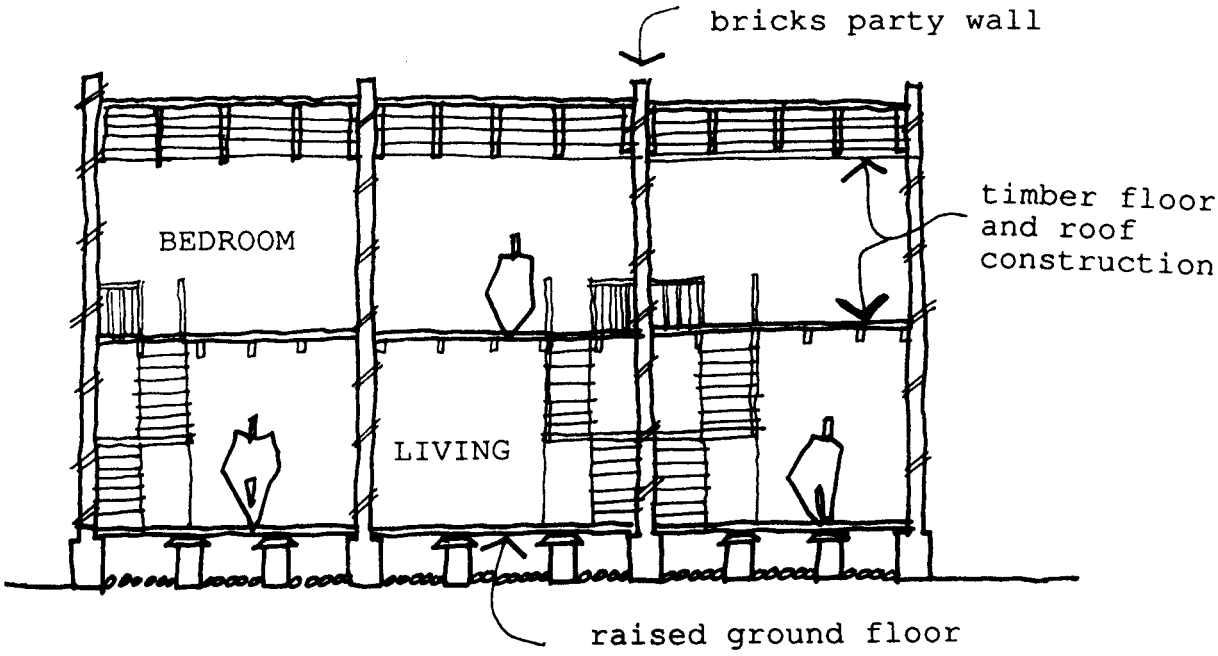

Figure 6.9: *The raised floor of terraced houses and the use of bricks for party walls for fire safety reason.*

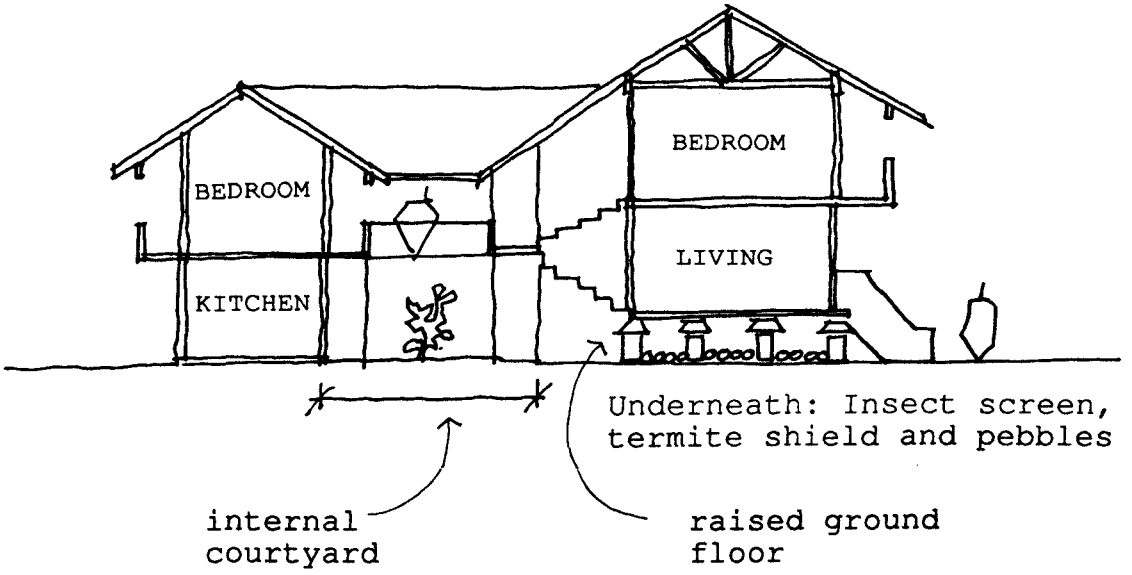

Figure 6.10: *Section showing a partially raised terraced house with the incorporation of a courtyard at the rear to improve lighting and natural ventilation.*

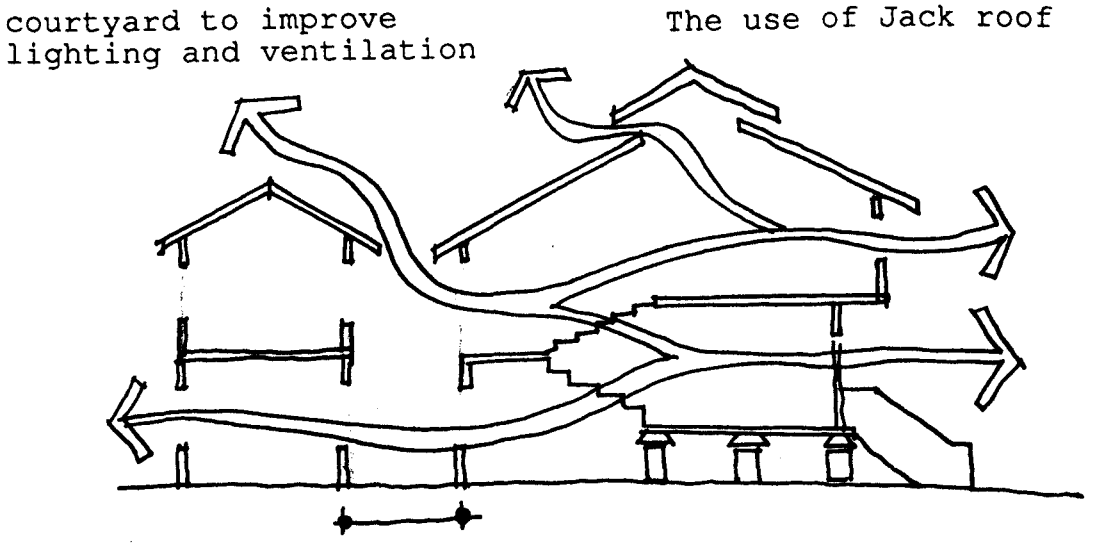

Figure 6.11: *The split level concept to encourage natural ventilation.*

As an alternative to brick party walls, terraced houses may also use timber in the construction of party walls. Studies carried out by Timber Research and Development Association (TRADA) has showed that timber can be used for separating walls and can be designed to achieve fire-safety standards through the provision of cavity barriers[28] and firestops[29] (see Fig. 6.12 and 6.13).

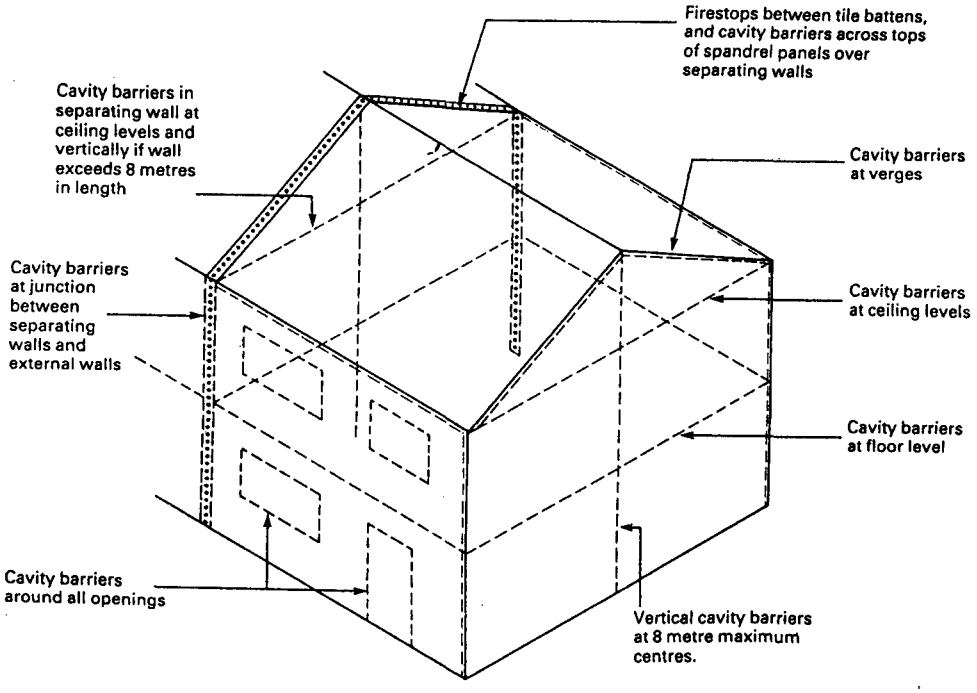

Figure 6.12: *Typical requirements for firestops and cavity barriers for buildings in the United Kingdom.*[30]

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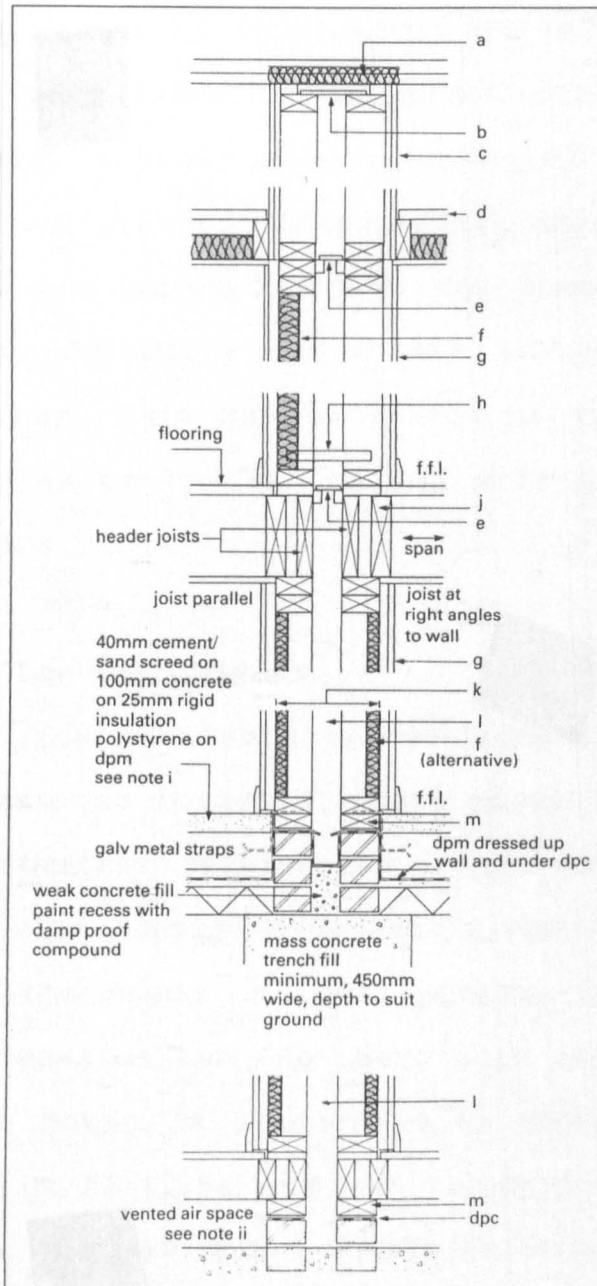
[28] A cavity barrier may be constructed of any material which is capable of providing fire resistance of at least half an hour. For buildings in the United Kingdom, cavity barriers usually comprise of 38 mm wide timber battens or 'sausages' of polyethylene covered mineral wool. See SUNLEY, JOHN and BEDDING, BARBARA (eds.), *Timber in Construction,* London; B. T. Batsford, 1985, page 111.

[29] Firestops are required to seal imperfections or fit between fire resisting building elements or where openings are made through such elements for services, etc. They must be constructed of non-combustable material. See SUNLEY, JOHN and BEDDING, BARBARA, page 111.

[30] Illustration reproduced from SUNLEY, JOHN and BEDDING, BARBARA, page 113.



Suspended timber ground floor

Note:

a Mineral wool (rock or slag) packed between battens.

b 9mm asbestos insulation board as fire stop or equivalent.

c Two 12.7mm plasterboards fixed to break joint.

d Roof bracing support.

e Horizontal fire stop, rigid or flexible.
Mineral wool to be 50mm thick and wire reinforced.

f 80mm quilt stapled to framing all round or, two 25mm quilts stapled to framing in each leaf.

g 31.5mm plasterboard (19mm plus 12.7mm) or 38mm plasterboard (three 12.7mm boards) fixed to break joint.

h Light gauge metal ties 14-16swg at 1.2m centres.

j Solid blocking between joists but nailed to top and bottom plates only. (Flooring not carried through.)

k Cavity dimension recommended not less than 220mm for 38mm plasterboard lining and 250mm for 31.5mm plasterboard.

l Services permitted with proviso in England and Wales and Northern Ireland. Services not permitted in void in Scotland, refer Class Relaxation 75.

m Preservative treated base plate on dpc.

Note i
Alternative solid ground floor constructions will not normally affect the sound insulation performance of the wall above.

Note ii
The ventilation below a suspended timber ground floor must not pass under the separating wall.

Figure 6.13: *Typical separating wall construction.*[31]

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31 Illustration reproduced from SUNLEY, JOHN and BEDDING, BARBARA, page 112.

Traditional Malay buildings were normally raised between four and eight feet above the ground. Because there is no more danger of flood water and wild animals, modern housing may only need to be raised about three feet above the ground in order to give sufficient space for the passage of air yet prevent children from using this space underneath. This low height however, may create other problems such as damp and dirty which may attract creeping animals and insects. This may be solved by providing termite shields, pebbles to the ground and wire or plastic mesh under the floors.

ii. Low-Cost Houses

Low cost housing developments were introduced by the government to rehabilitate people who live in the *kampungs* or squatter settlements in the urban areas. The design of low cost houses is generally very poor and is inappropriate for the needs of local people, especially the Malays who are Muslims and for those with large families. The size of each house is inadequate to cater for the needs of most Muslim families and the rooms are so small that it looks like the people are squatting or live in 'box houses'. With this type of housing, the cultural values and religious disciplines of the Malays and the Chinese are difficult to sustain (because the planning of modern housing generally does not comply with religious requirements - e.g. no seclusion of men from women). High density areas increase the risk of crime and may create health and social problems like pollution, loss of moral values and vandalism.

Houses with a fifteen feet frontage and 800 square feet of floor area are relatively small by Malaysian standards and inconsistent with the kampung form of housing which is far more generous in the size of dwellings and associated area of land. The Economic Planning Unit (EPU) should review the minimum size for the frontage of houses and the total floor area and provision should be made to improve the standard of these houses.

6.3.2 THE APPLICATION OF TRADITIONAL DESIGN PRINCIPLES IN HIGH-RISE DEVELOPMENTS

Many high-rise buildings in Malaysia have been built using steel and concrete with extensive use of glass as the finishing material for walls. These high-rise buildings generally consume a substantial amount of energy with the use of artificial lighting, lifts and air-conditioning. Tinted glass generally absorbs a lot of heat and to cool a building which is constantly heated by intense sunlight is undeniably expensive.

The glass surfaces of these high-rise buildings also reflects sunlight onto pavings and other hard surfaces. The reflective heat then generates unbearable temperatures around the building which makes walking near these high-rise buildings a very unpleasant experience. The reflective glasses also create glare to pedestrians and motorists. These buildings may also generate other problems like vortices, long overcast shadows and negative (useless) spaces around the buildings.

High-rise buildings also do not have any references to the local context. Each building is built individually with no relationship to any adjoining buildings and there is no consideration of harmony in such groups of buildings. These buildings have their origins in many western countries and are not appropriate for a tropical country like Malaysia.

An alternative and far more effective alternative to high-rise development is the low-rise 'perimeter development' or 'courtyard development'. In this type of development, the same amount of floor space can be achieved as in a high-rise buildings and there is the advantage of a large, confined and secure outdoor open space or courtyard within the development. Elements, such as water (including fountains), trees and gardens, may be introduced into this open space to control the micro-climate of the immediate area. There are also many other advantages of low-rise perimeter development. Natural ventilation of the building can be adapted; there will be a reduction in the cost of cooling or heating; greater accessibility will be provided for the disabled; there will be a reduction in the length of overcast shadows and there is unlikely to be a risk of wind problems. Therefore, it is obvious that low-rise developments are more efficient and effective in terms of energy saving than high-rise buildings.

The theoretical work carried out at Cambridge University in the 1960s, under the direction of Sir Leslie Martin and Lionel March, has showed that a given site can be developed

with the same amount of floor area in several different ways - high-rise, medium-rise and low-rise. On the same site and resulting in the same floor area, one could have for example, Le Corbusier's single 60-storey Cartesian skyscraper, or 49 separate eight-storey blocks. But, more interestingly, one could also have an eight-storey development around 25 courtyards, providing a dramatic increase in the open space available and in the use that can be made of this[32] (Fig. 6.14).

A more precise way of making this comparison between what Martin called the 'pavilion' and 'hollow square' forms is to say that the 'hollow square' form places the same built space on the same area of land in exactly one-third of the total height of the 'pavilion' form (Fig. 6.15). This has proved that there is no need to built high-rise towers in order to achieve high densities. This type of development is most practical to the development of the 'Golden Triangle Area' of Kuala Lumpur which has been marked as a high-density area.

Studies and efforts should be made to change the current trend of high-rise buildings (in Malaysian cities in general and in the Golden Triangle Area in particular) into low-rise developments which are more efficient and appropriate for the tropical climate of Malaysia.

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32 MARTIN, LESLIE and MARCH, LIONEL, *Urban Space and Structures*, London; Cambridge University Press, 1972, pp. 6-27.

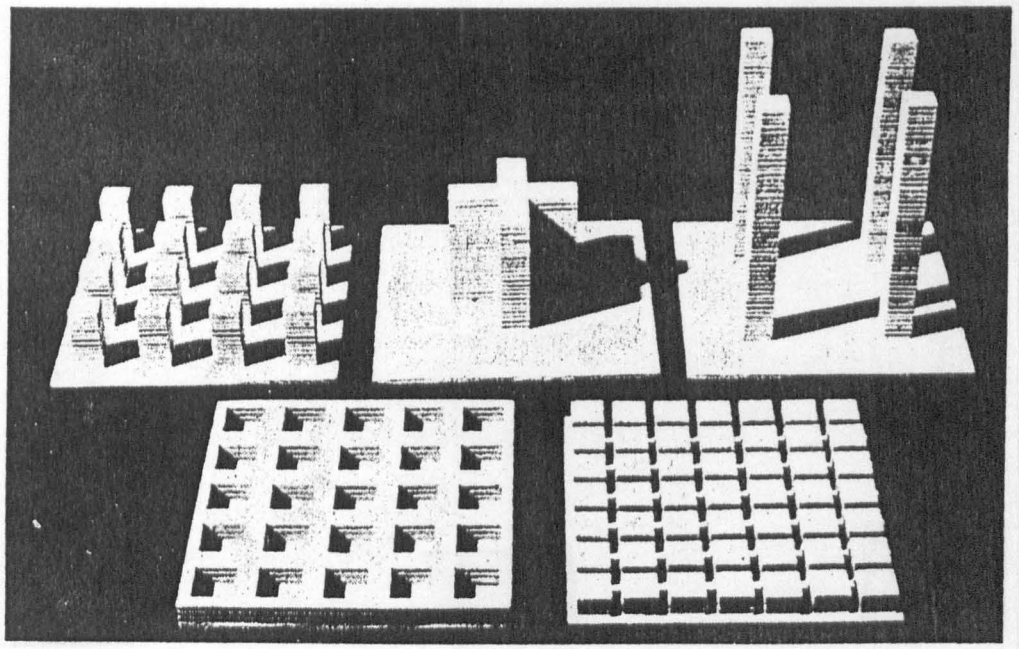

Figure 6.14: *Models showing theoretical studies of the same amount of floor area developed in different ways on the same site.*[33]

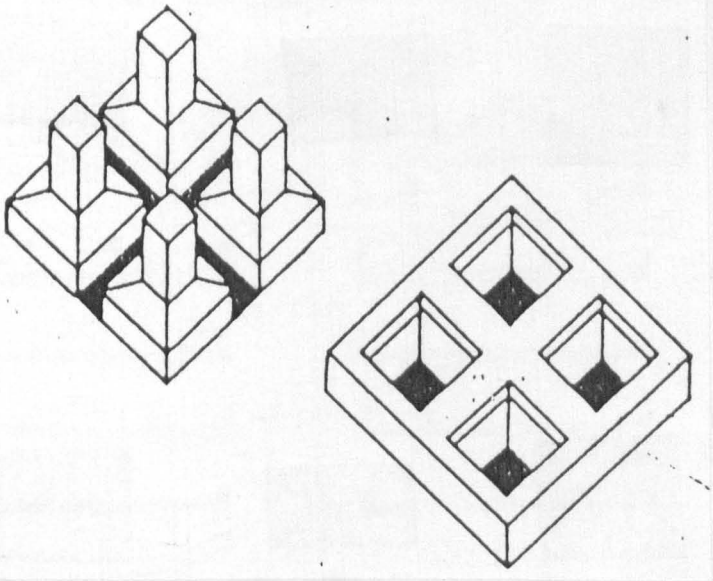

Figure 6.15: *Sketches illustrating the 'hollow square' form as opposed to high-rise 'pavilions'.*[34]

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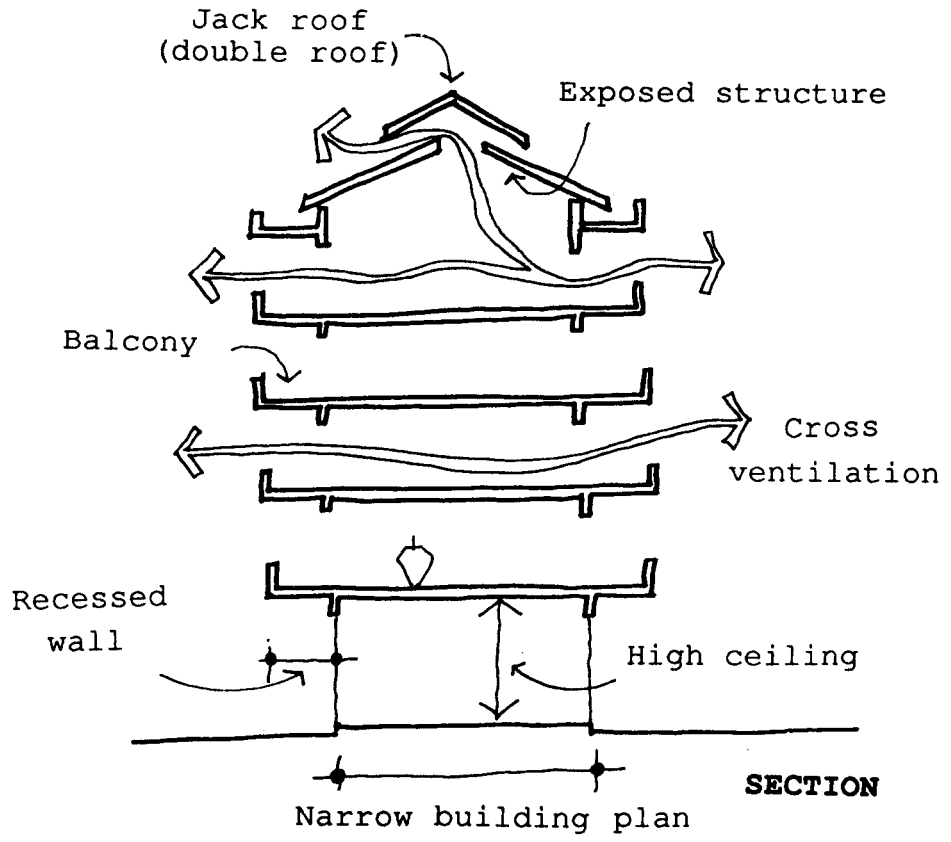
[33] Illustration reproduced from; MARTIN, SIR LESLIE, "Architects' Approach to Architecture", *RIBA Journal*, May 1967, page 196.

[34] Illustration reproduced from; MARTIN, LESLIE and MARCH, LIONEL, *Urban Space and Structures, op. cit.*, page 20.



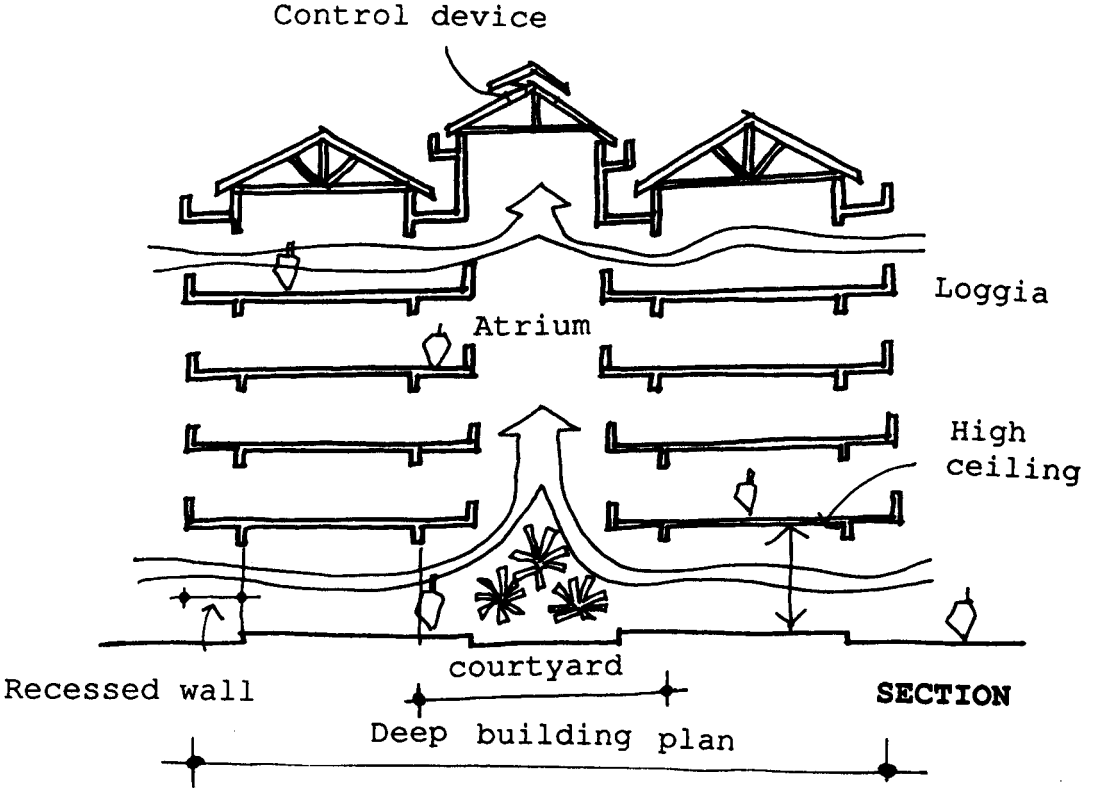


Figure 6.16: *Two sketches showing how traditional design principles can be used to achieve natural ventilation in modern buildings.*

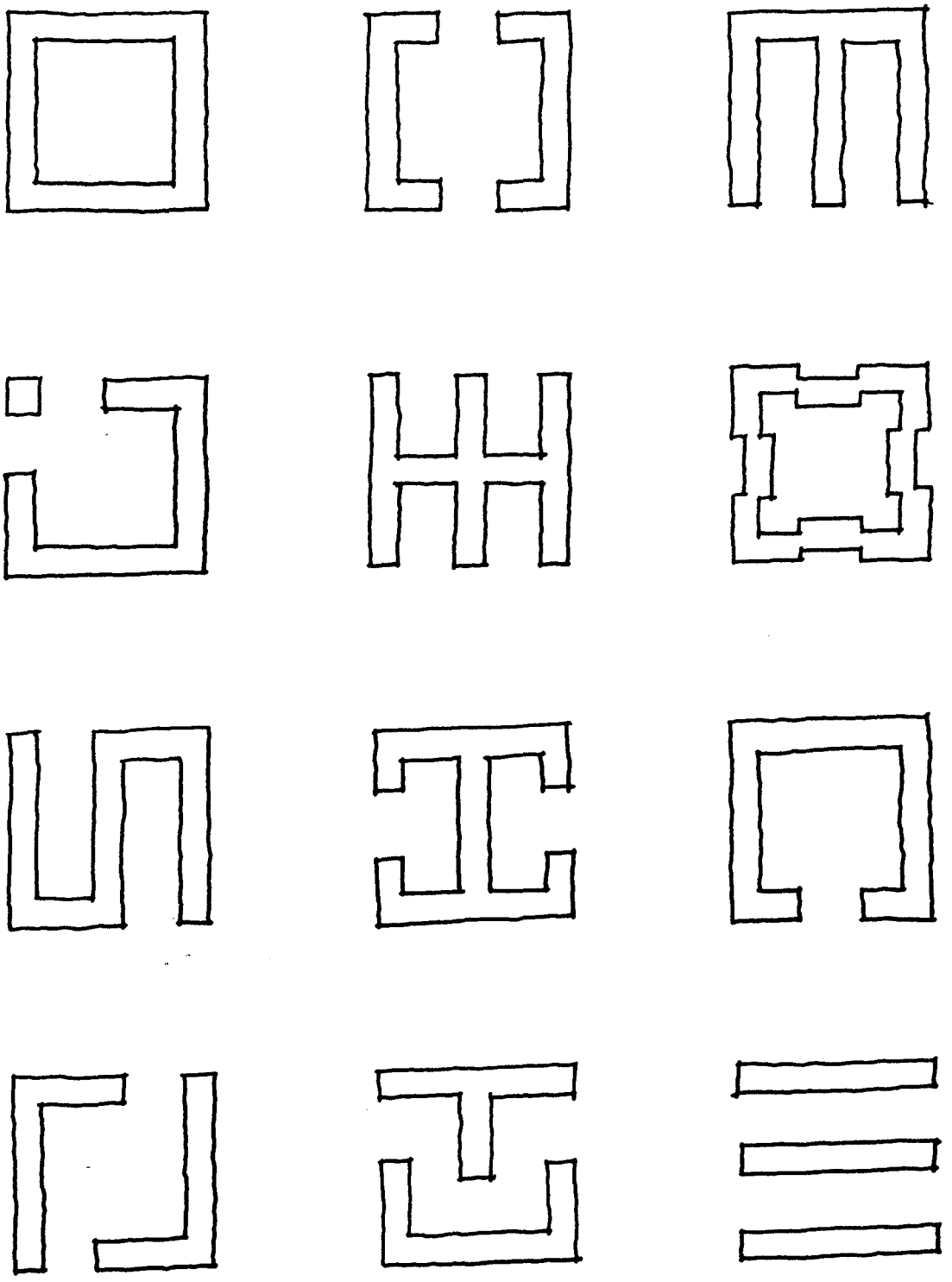


Figure 6.17: *Theoretical studies on different building configurations for 'perimeter development'.*

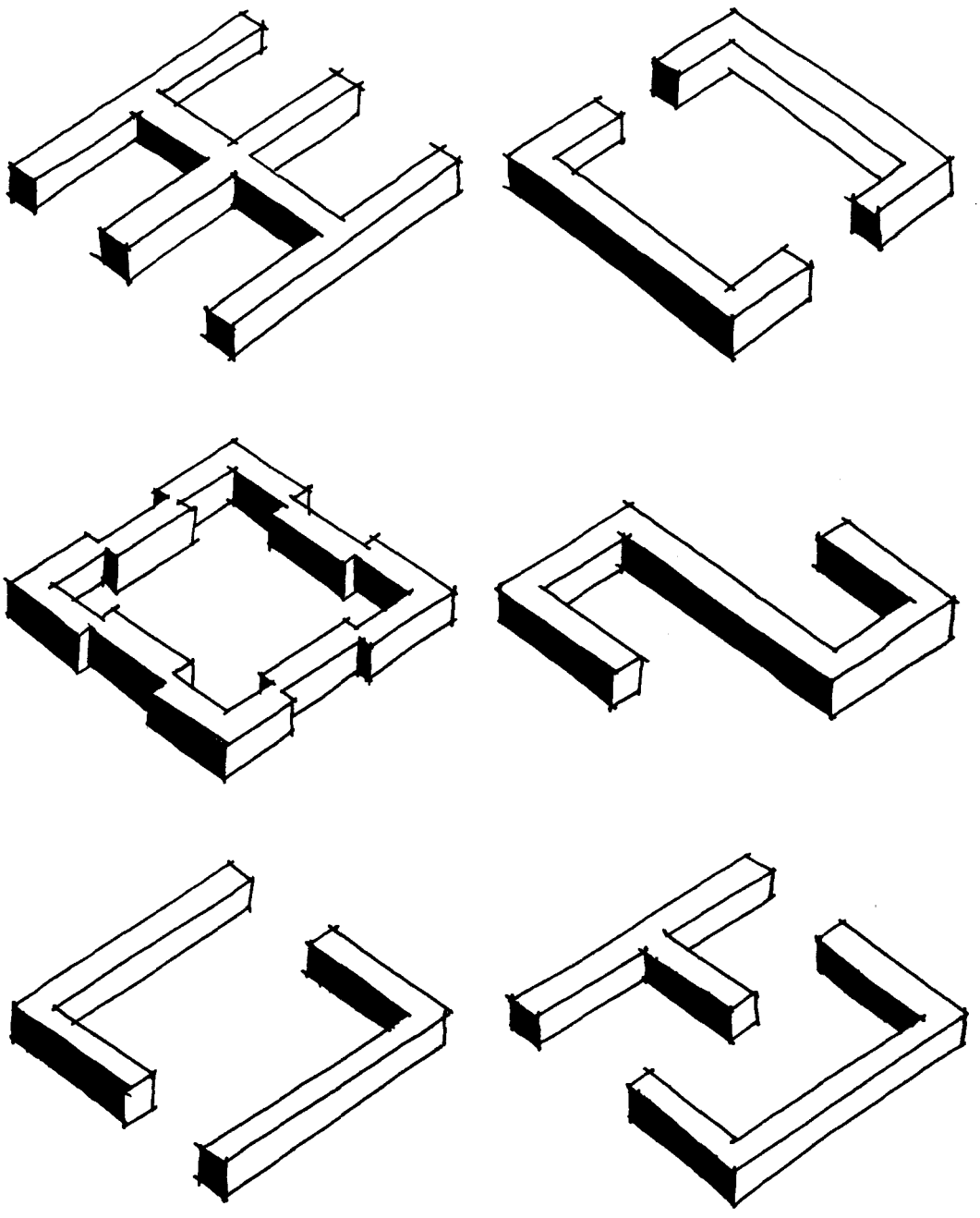


Figure 6.18: *Isometric view of alternative building layouts for 'perimeter development'.*

6.3.3 THE PROBLEM OF SCALE IN LARGE DEVELOPMENT

Attempts to incorporate traditional elements in large modern buildings have often resulted in oversized traditional structures. It seems that architects often encounter problems with scale and proportion in designing large buildings in a traditional manner. This may have resulted because of a lack of reference and studies on the subject of scale and proportion in traditional buildings.

Traditionally, the scale of traditional buildings reflects the limits of the materials used in the construction and also the building techniques employed. The size of each structure was appropriate to carry the load imposed on one particular structure, and the size of the whole building was usually determined by the limits of the structures and the requirements of its occupants.

Examples from contemporary buildings which have the characteristics of traditional Malay architecture show that it is incorrect to just simply blow up the scale of traditional buildings and have vastly oversized barge-boards and finials, etc. which have no purpose at all. The size of traditional structures is basically governed by the properties of the materials. With new building materials, the proportional technique can be worked out accordingly based on the properties of the new materials and false images should not be incorporated.

If the new building must follow the traditional pattern, it may be better to break down the large building into smaller units (Fig. 6.19) and for buildings with large roofs, the roof could be broken into several layers to make it looks more in proportion. For example, to use a pitched roof on a large building may result in a plain elevation and generate other problems, such as a large gutter (due to the large amount of water which may accumulate from heavy rainfall on the large surface area) and the oversized pitched roof, without any openings, may result in a substantial amount of heat gain. One solution is to break the roof up into several layers. This could improve the elevations, solve the 'big-gutter' problem (by using smaller gutters at each roof layer) and the openings between the roof layers could facilitate natural ventilation and solve the problem of heat gain (Fig. 6.20).

The validity of having a raised ground floor has been very much questioned in Malaysia. This principle is no longer used in most modern buildings. However, building directly on ground level creates problems of heat gain and negates the adoption of natural ventilation. This problem may be partially solved by having a shallow building and a recessed ground floor as an alternative to providing a canopy and having a raised floor (Fig 6.21). Another alternative solution is to adopt the concept of *corridor development* to a large single building with the provision of loggias and verandahs on every building facet (instead of merely simple straight walls). This could also shield

the ground floor areas from receiving direct sunlight and glare (Fig. 6.22).

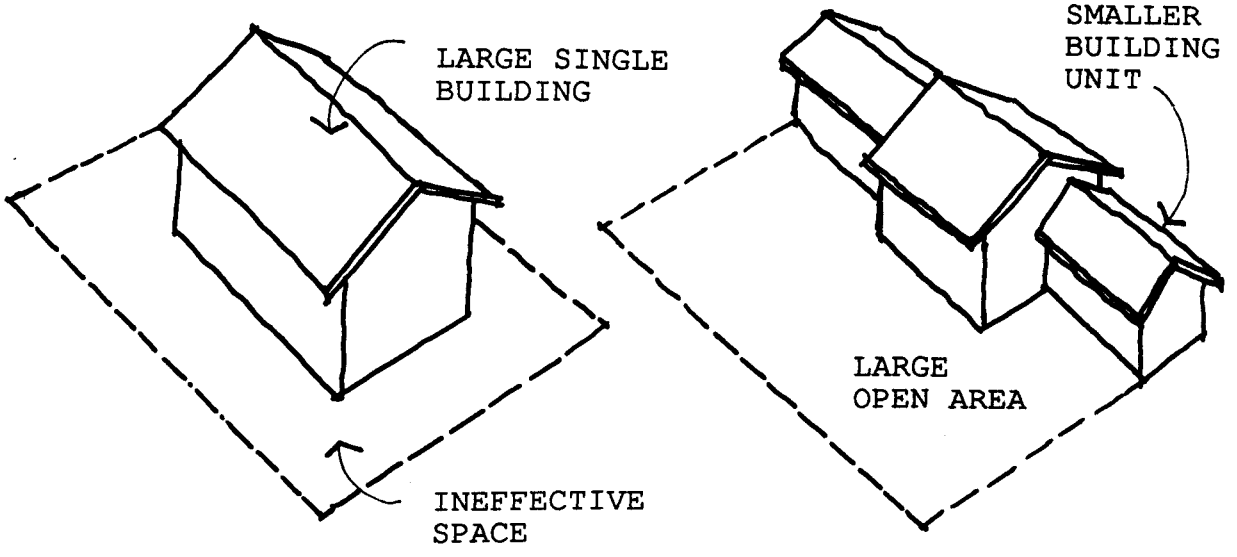


Figure 6.19: *Bringing down the scale by breaking up the mass.*

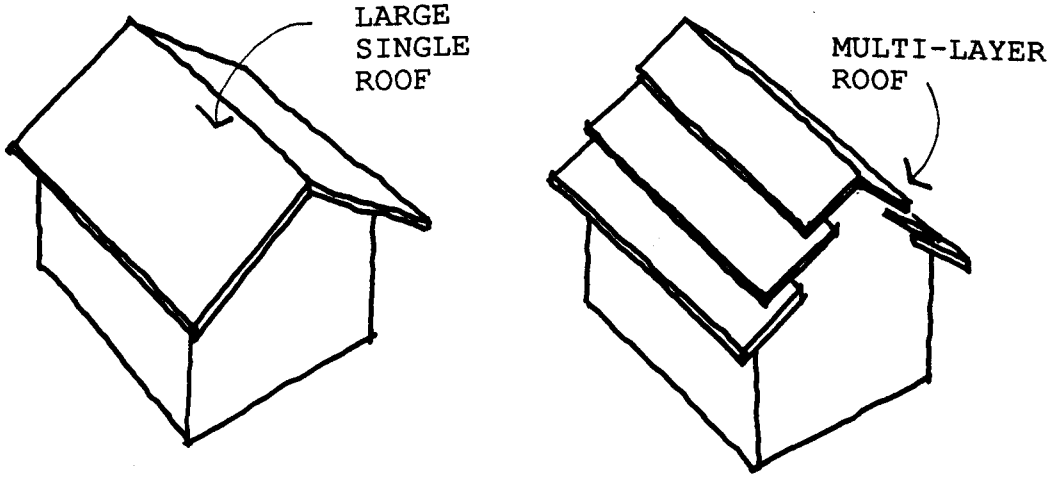


Figure 6.20: *Layered roofs solve the problems of heat gain and disposal of water. It also encourages natural ventilation and provides natural lighting.*

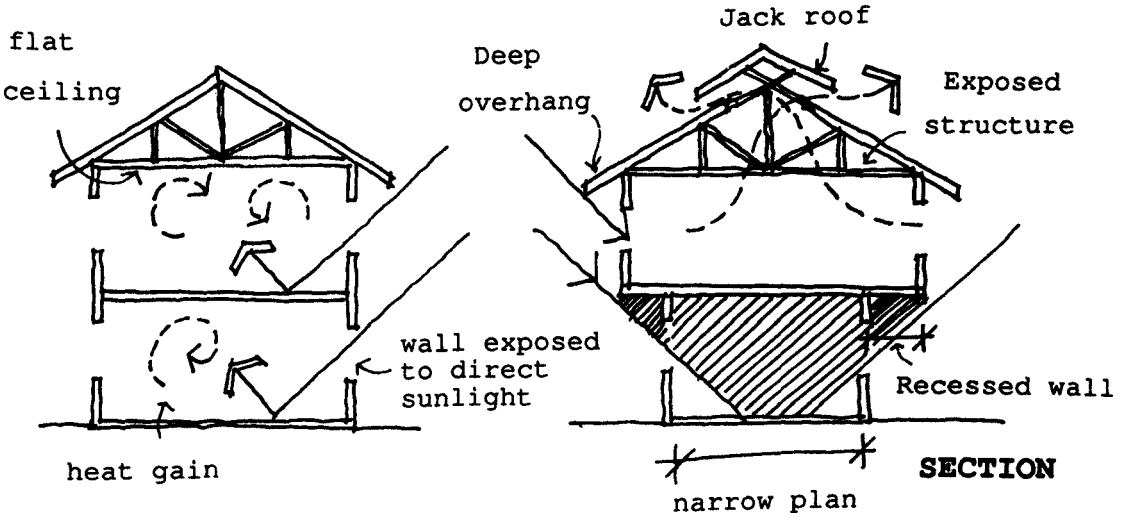


Figure 6.21: *A narrow and recessed ground floor.*

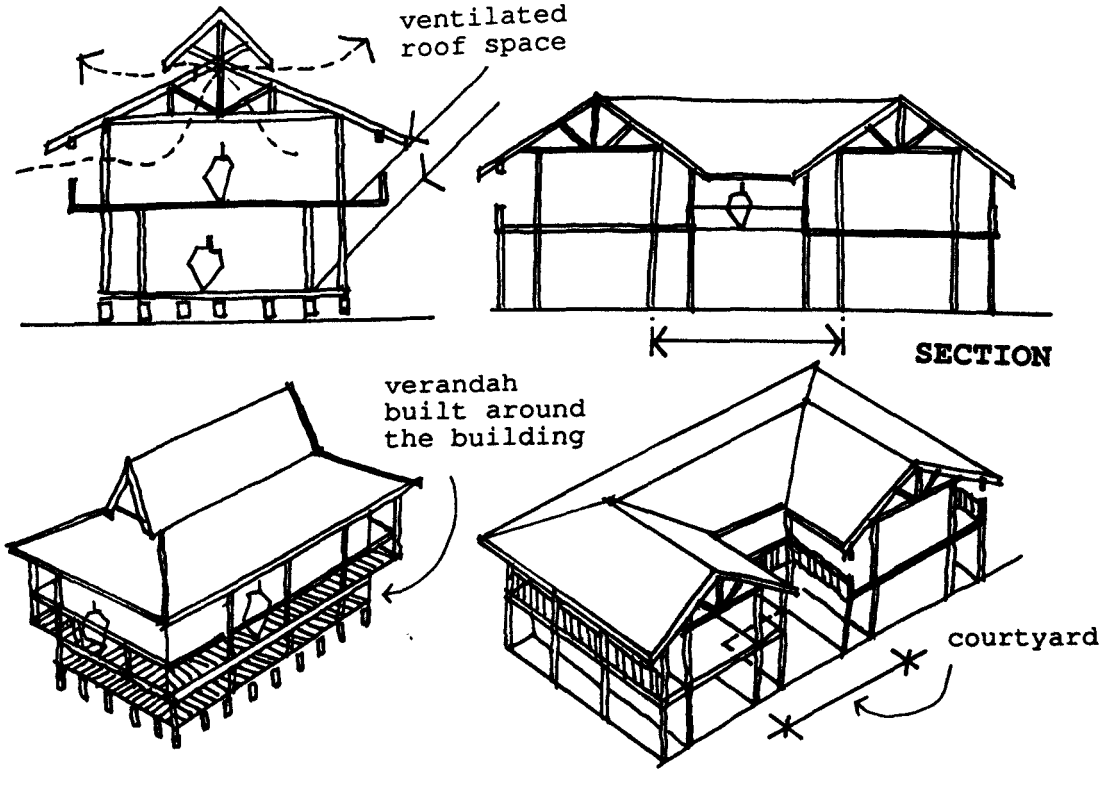


Figure 6.22: *A 'corridor development'* with loggias and verandahs on every building facet.

6.4 THE OUTCOME OF THE IDENTITY CRISIS AND FUTURE DIRECTIONS

The question of identity is a complex subject. Although there is no definite answer to this problem, it has certainly created great awareness and interest among Malaysian people. Those in the architectural profession think there is a necessity to study and appreciate local building traditions and to limit themselves in the use of western architectural styles in the construction of new buildings. These are seen as positive results and research on tropical buildings and regional architecture is on the increase.

Having undertaking this study, it became apparent that national identity in architecture could well be derived through the creation of buildings which give consent to environmental factors as well as to the social, cultural and religious aspects of local people. Buildings should reflect people's needs, make use of local resources (technology and materials), they should be climatically responsive, sympathetic to the past and should fit in context with the immediate surroundings. Effective designs may be derived through the clever integration of traditional design principles and the requirements of modern building. Future buildings may be orientated towards 'tropical' or 'regional architecture' with a sense of place or locality and this in fact is in line with Malaysian building traditions which were designed with due respect to the local context and environment. Juhani Pallasmaa remarks

that "the constituents of a sense of specific locality are reflections of natural, physical and social realities. They are expressions and experiences of specific nature, geography, landscape, local materials, skills and cultural patterns".[35]

A national identity is not really something that can be created instantly and is also not necessarily confined to built forms; it may consist of the culture and lifestyle of the people.[36] Therefore, it may go beyond the boundary of architecture itself into other areas such as the psychological and philosophical aspects of the local inhabitants. With changing lifestyles, many Malaysian people have also changed their attitude from being modestly conservative to socially open-minded people and this unfortunately, has diminished the sense of identity in themselves. Yet, the new image may also be regarded as a new identity of the people. Similarly in architecture, new buildings may also bring an image to a place.

The search for an identity in architecture may be an endless process or may take a long time to draw conclusions. Nevertheless, it is important to make constructive efforts during the process and to consider

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[35] PALLASMAA, JUHANI, "Tradition and Modernity: The Feasibility of Regional Architecture in Post-Modern Society", *Architectural Review*, Vol CLXXXIII, No. 1095, May 1988, page 28.

[36] See IDID, SYED ZAINOL ABIDIN, *The Alternative Approach in Expressing Malaysian National Identity: Human Aspects in Built Form*, a dissertation presented for the degree of Master of Arts in Urban Design, Oxford Polytechnic (unpublished), 1985.

various relevant aspects (such as social and cultural) in the search for identity in architecture. As Dean Sherwin points out, "a national identity in architecture should logically be brought about by responding to one or more factors which are special to that nation or region, thus by meeting ideas or needs that are unique to a particular nation, a unique manner of building will be born".[37] Dan Cruickshank in discussing national identity in India confidently remarks that, "it is obvious that any search for a national identity must end ultimately in a form of regionally-based design that is capable of expressing local traditions of building and construction in a rational and logical manner (not pastiche) while also being able to accommodate the demand for a wide spectrum of building types".[38]

In seeking an identity, modern design should have a continuity with the past that includes the cultural traditions and the architectural heritage of the place. This linkage can be an abstract interpretation or a direct application of traditional design principles. The continuation of an architectural heritage should not be held as a fixed set of devices and images, but rather should consists of superimposed layers of inventions.

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[37] SHERWIN, DEAN, "Malaysian Identity Around Penang", *Majallah Akitek*, No. 4, 1979, page 18.

[38] CRUICKSHANK, DAN, *op. cit.*, page 51.

Every designer and architect should learn about the essence of Malaysian architectural heritage and see how traditional design principles could help them to deal with architectural design issues such as climate, use of local materials and forms of assembly, geography and ecology, spatial organisation and culture, etc. Architects should unravel the principles to see how the indigenous archetypes can subsequently be transformed into contemporary forms and use.

The architecture of the past should be used as a major reference in developing the architecture for the future. "It is only by understanding the past that we can be sure and certain in facing the future".[39] Ken Yeang notes that "the identification and re-working of existing elements, along with the development of new ones, are essential steps in the process of deriving a critical vernacular".[40] New buildings in Malaysia should not necessarily be copied from traditional architecture. Architects could develop new methods of adapting buildings to the climate based on the traditional design principles. New buildings should be sympathetic to the past and yet should offer a substantial vision of the future.

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[39] MOHD SALLEH, YB TAN SRI ABDULLAH, in his forward for *The Terengganu Timber Malay House,* Kuala Lumpur; Badan Warisan Malaysia, 1989, page v.

[40] YEANG, KEN, "Notes for a Critical Vernacular in Contemporary Malaysian Architecture", *UIA International Architects,* Issue 6, 1984, page 16.

Further research and detail needs to be undertaken into the alternative solutions suggested in this study compared with current building trends in Malaysia - perimeter development versus high-rise buildings, and the planning of residential areas and the design of houses which take into account the natural landscape rather than the linear development.

Specific studies on traditional design principles can be carried out to look at other possibilities of integrating the principles in new buildings. The design solutions presented here will hopefully enlighten and encourage fellow architects to further explore this subject.

SELECTED BIBLIOGRAPHY

UNPUBLISHED MATERIAL

ENDUT, ESMAWEE HAJI, *Lapuran Kajian Lukisan Terukur Di Pulau Carey,* Measured drawing report presented at University Technology Malaysia, 1986.

ENDUT, ESMAWEE HAJI, *Search For Identity: A Survey of Malaysian Architectural Forms and Styles,* A dissertation presented at School of Architecture and Interior Design, Brighton Polytechnic, Dec. 1989.

HERITAGE OF MALAYSIAN TRUST, *Malaysian Architectural Heritage Survey: A Handbook,* Kuala Lumpur; Badan Warisan Malaysia, 1985.

HUSSAIN, MAHMOOD, *A Study of the Wind Forces on Low-rise Building Arrays and Their Application to Natural Ventilation Design Methods,* A dissertation presented for a Doctorate Degree at the University of Sheffield, Nov. 1978.

IDID, SYED ZAINOL ABIDIN, *The Alternative Approach in Expressing Malaysian National Identity: Human Aspects in Built Form,* A dissertation presented for the Degree of Master of Arts in Urban Design, Oxford Polytechnic, Nov. 1985.

JOHNSTON, ROBERT STEWART, *Planning and Architectural Design in China,* A dissertation presented for a Doctorate Degree at the University of Nottingham, 1972.

MD. ALI, KAMARUDDIN, *A Vanishing Heritage: The Old Traditional Malay House,* A dissertation presented for the Degree of Master of Arts in Conservation Studies, Institute of Advanced Architectural Studies, University of York, 1983.

NASIR, ABDUL HALIM, *Kesinambungan Senibina Melayu Tradisi di Semenanjung dan Pengaruh-pengaruh Senibina Serumpun/Serantau pada Rumah-rumah Melayu Tradisi,* Papers presented for monthly Lecture Series at Pusat Kebudayaan, University Malaya, 1989.

RAJA AHMAD BAHARUDDIN SHAH, R. K. B. S., *Traditional Terengganu Malay House,* A dissertation presented for the Degree of Bachelor in Architecture, University of Melbourne, 1980.

WAN MUSTAFA, WAN NOR ARJUNA, *Kajian Ragam Corak Terhadap Lima Buah Istana Lama Di Kelantan dan Terengganu, Semenanjung Malaysia,* University Teknologi Malaysia; Sessi 1989/1990.

WARD, IAN C., *Current Malaysian Housing and Their Energy Implications,* A discussion paper presented at School of Architectural Studies, University of Sheffield, 1991.

BOOKS AND MONOGRAPHS

AGA KHAN AWARD FOR ARCHITECTURE, *The Changing Rural Habitat: Volume II Background Papers,* Singapore; Concept Media, 1982.

ALEXANDER, CHRISTOPHER, *Houses Generated by Patterns,* California; Center for Environmental Structure, 1970.

ALEXANDER, CHRISTOPHER, *Notes on the Synthesis of Form,* Cambridge; Harvard University Press, 1964.

BASTIN, J. S. and WINKS, R. W. (eds.), *Malaysia: Selected Historical Readings,* London; Oxford University Press, 1966.

BELL, JUDITH, *Doing Your Research Project,* Milton Keynes; Open University Press, 1987.

BROADBENT, G., BUNT, D. and LLORENS, T. (eds.), *Meaning and Behaviour in the Built Environment,* Chichester; John Wiley and Sons, 1980.

BRUNSKILL, R. W., *Illustrated Handbook of Vernacular Architecture,* 3rd. ed., London; Faber and Faber, 1987.

CALLOWAY, STEPHEN (ed.), *The Elements of Style: An Encyclopedia of Domestic Architectural Details,* London; Mitchell Beazley, 1991.

CALNAN, JAMES, *Coping With Research,* London; William Heinemann Medical Books, 1984.

DAVIES, PHILIP, *Splendours of The Raj: British Architecture in India 1660-1947,* Middlesex; Penguin, 1987.

DUMARCAY, JACQUES, *The House in South-east Asia,* Singapore; Oxford University Press, 1987.

DUMARCAY, JACQUES, *The Palace of South-east Asia, Architecture and Customs,* Singapore; Oxford University Press, 1991.

EVANS, B., POWELL, J. and TALBOT, R. (eds.), *Changing Design,* Chichester; John Wiley and Sons, 1982.

FATHY, HASSAN, *Architecture for the Poor: An Experiment in Rural Egypt,* Chicago; University of Chicago Press, 1973.

FATHY, HASSAN, *Natural Energy and Vernacular Architecture: Principles and Examples with Reference to Hot Arid Climates,* Chicago and London; University of Chicago Press, 1986.

FATIMI, S. Q., *Islam Comes to Malaysia,* Singapore; Malaysian Sociological Research Institute, 1963.

FERMOR-HESKETH, ROBERT (ed.), *Architecture of the British Empire,* London; Weidenfeld and Nicolson, 1986.

FISHER, CHARLES A., *South-east Asia: A Social, Economic and Political Geography,* London; Methuen, 1964.

FITCH, J. M., *American Building: The Environmental Forces That Shape It,* 2nd. ed., Boston; Houghton Mifflin, 1972.

FLETCHER, BANISTER, *A History of Architecture,* 18th. ed., London; Anthlone Press, 1975.

GIBBS, PHILLIP, *Building A Malay House,* Singapore and Oxford; Oxford University Press, 1987.

GUELDEN, MARLANE, *Kuala Lumpur,* Singapore; Times Edition, 1986.

GULLICK, JOHN MICHAEL, *Malaysia: Nations of The Modern World,* London; Ernest Benn, 1969.

HALL, D. G. E., *A History of South-east Asia,* 4th. ed., London; Macmillan, 1981.

HARRISON, BRIAN, *South-east Asia: A Short History,* 3rd. ed., London; Macmillan, 1967.

ISMAIL, YAHYA, *The Cultural Heritage of Malaysia,* Kuala Lumpur; Dinamika Kreatif, 1990.

IZIKOWITZ, K. G. and SORENSEN, P. (eds), *The House in East and South-east Asia,* Scandinavian Institution of Asian Studies, London; Curzon Press, 1982.

KARIM, GULROSE (ed.), *Information Malaysia 1990-91 Yearbook,* Kuala Lumpur; Berita Publishing, 1990.

KENNEDY, JOSEPH, *A History of Malaya,* 2nd. ed., London; Macmillan, 1970.

KESWICK, MAGIE, *The Chinese Garden History, Art and Architecture,* London; Academy Editions, 1978.

KING, ANTHONY D., *The Bungalow: The Production of a Global Culture,* London; Routledge & Kegan Paul, 1984.

KOENIGSBERGER, OTTO H., *Manual of Tropical Housing and Building - Part 1: Climatic Design,* London; Longman, 1974.

KOHL, DAVID G., *Chinese Architecture in the Straits Settlements and Western Malaya,* Kuala Lumpur; Heinemann, 1984.

KONYA, ALLAN, *Design Primer for Hot Climates,* London; Architectural Press, 1980.

KUKREJA, C. P., *Tropical Architecture,* New Delhi; Tata-McGraw Hill, 1978.

KURIAN, GEORGE THOMAS, *Encyclopedia of the Third World,* 3rd. ed., Vol II, New York; Facts on File, 1987.

LIANG SSU-CH'ENG, *A Pictorial History of Chinese Architecture: A Study of the Development of Its Structural System and the Evolution of Its Types,* London; The MIT Press, 1984.

LIM JEE YUAN, *The Malay House: Rediscovering Malaysia's Indigenous Shelter System,* Penang; Institut Masyarakat, 1987.

LIU, GRETCHEN, *Malacca,* Singapore; Times Editions, 1986.

LIU, LAURENCE G., *Chinese Architecture,* London; Academy Editions, 1989.

MACFARQUHAR, RODERICK, *The Forbidden City,* United Kingdom; Reader's Digest, 1972.

MALAYSIAN INSTITUTE OF ARCHITECTS, *Guide to Kuala Lumpur Notable Buildings,* Kuala Lumpur; Pertubuhan Arkitek Malaysia, 1976.

MALAYSIAN INSTITUTE OF ARCHITECTS, *Post-Merdeka Architecture: Malaysia 1957-1987,* Kuala Lumpur; Pertubuhan Arkitek Malaysia, 1987.

MINISTRY OF INFORMATION, *Malaysian Official Yearbook,* Kuala Lumpur; Kementerian Penerangan Malaysia, 1975.

MOORE, NICK, *How To Do Research,* 2nd. ed., London; The Library Associatiopn, 1987.

MOORHEAD, F. J., *A History of Malaya and Its Neighbours,* London; Longman, Green and Coy, 1957.

MORRIS, J. and WINCHESTER, S., *Stones of Empire: The Building of The Raj,* Oxford; Oxford University Press, 1986.

NASIR, ABDUL HALIM, *Traditional Malay Wood Carving,* Kuala Lumpur; Dewan Bahasa dan Pustaka, 1987.

NETTO, GEORGE, *Indians in Malaya: Historical Facts and Figures,* Singapore; The Author, 1961.

OAKLEY, DAVID, *Tropical Houses: A Guide to Their Design,* London; B. T. Batsford, 1961.

OLGYAY, VICTOR, *Design with Climate: Bioclimatic Approach to Architectural Regionalism,* Princeton, N.J.; Princeton University Press, 1963.

OLIVER, PAUL, *Shelter and Society,* London; Barrie and Jenkins, 1969.

OOI JIN BEE, *The Climate of West Malaysia and Singapore,* London; Oxford University Press, 1974.

OOI JIN BEE, *Peninsular Malaysia,* London; Longman, 1976.

PERIS, ERIC, *Heritage of Malaysian Architecture,* Kuala Lumpur; American Express, 1989.

POWELL, ROBERT (ed.), *Regionalism in Architecture,* Singapore; Concept Media, 1987.

POWELL, ROBERT, *Ken Yeang: Rethinking the Environmental Filter,* Singapore; Landmark Books, 1989.

PURCELL, VICTOR W., *The Chinese in Malaya,* London; Oxford University Press, 1948.

PURCELL, VICTOR W., *The Chinese in South-east Asia,* 2nd. ed., London; Oxford University Press, 1965.

RAJA AHMAD SHAH, R. B. S., *The Terengganu Timber Malay House,* Kuala Lumpur; Badan Warisan Malaysia, 1989.

RAJA TUN UDA, RAJA FUZIAH, *Heritage The Changing World: Our Heritage and Our Future,* Kuala Lumpur; Dewan Bahasa dan Pustaka, 1990.

RAPOPORT, AMOS, *House Form and Culture,* Englewood Cliffs, N. J.; Prentice-Hall, 1969.

RICHARD, J. M., *Hassan Fathy: Architects in the Third World,* London; Architectural Press, 1985.

RUDOFSKY, BERNARD, *Architecture Without Architects,* New York; The Museum of Modern Art, 1964.

RUDOFSKY, BERNARD, *The Prodigious Builders,* London; Secker and Warburg, 1977.

RYAN, NEIL JOSEPH, *The Cultural Heritage of Malaya,* 2nd. ed., Kuala Lumpur; Longman Malaysia, 1971.

RYAN, NEIL JOSEPH, *The Making of Modern Malaysia and Singapore: A History from Earliest Times to 1966,* 4th. ed. rev., Singapore; Oxford University Press, 1969.

SANDHU, KERNIAL SINGH, *Indians in Malaya: Some Aspects of Their Immigration and Settlement (1786-1957),* Cambridge; Cambridge University Press, 1969.

SCOTT-ROSS, MARCUS, *A Short History of Malacca,* Singapore; Chopmen, 1971.

SHARP, DENNIS, *Form and Function: A Source Book for the History of Architecture and Design,* London; Crosby Lockwood Staples, 1975.

SHEPPARD, MUBIN, *Malay Courtesy: A Narrative Account of Malay Manners and Customs in Everyday Use*, Singapore; Eastern University Press, 1957.

SHEPPARD, MUBIN, *A Royal Pleasure Ground: Malay Decorative Arts and Pastimes,* Singapore; Oxford University Press, 1986.

SMITH, T. E. and BASTIN, J. S., *Malaysia,* London; Oxford University Press, 1967.

STEELE, JAMES, *Hassan Fathy: Architectural Monographs,* London; Academy Editions, 1988.

SZU-CH'ENG, LIANG, *A Pictorial History of Chinese Architecture,* Massachusetts; MIT Press Cambridge, 1984.

TAN DING EING, *A Portrait of Malaysia and Singapore,* Singapore; Oxford University Press, 1975.

TARLING, NICHOLAS, *A Concise History of South-east Asia,* New York; Frederick A. Praeger, 1966.

TURNBULL, CONSTANCE MARY, *A Short History of Malaysia, Singapore and Brunei,* Singapore; Graham Brash, 1981.

TURNER, JOHN F. C. and FICHTER, ROBERT (eds.), *Freedom to Build: Dweller Control of The Housing Process,* New York; Macmillan, 1972.

TREGONNING, KENNEDY GORDON, *A History of Modern Malaya,* Singapore; Eastern University Press, 1964.

WELLS, CAMILLE, *Perspectives in Vernacular Architecture II,* Columbia; University of Missouri Press, 1986.

WHEATLEY, PAUL, *The Golden Khersonese,* Kuala Lumpur; University of Malaya Press, 1966.

WHITE, ANTONY and ROBERTSON, BRUCE, *Architecture and Ornament: A Visual Guide,* London; Studio Vista, 1990.

WINSTEDT, R. O., *A History of Malaya,* 3rd. ed. rev., Kuala Lumpur; Marican, 1968.

WINSTEDT, R. O., *Malaya and Its History,* London; Hutchinson, 1966.

WOODCOCK, GEORGE, *The British in the Far East,* London; Weidenfeld and Nicolson, 1969.

YEANG, KEN, *Rethinking the Environmental Filter,* Singapore; Landmark Books, 1989.

YEANG, KEN, *The Tropical Verandah City: Some Urban Ideas for Kuala Lumpur,* Kuala Lumpur; Sinar Grafiks, 1986.

YEANG, KEN, *Tropical Urban Regionalism: Building In A South-east Asian City,* Singapore; Concept Media, 1987.

VLATSEAS, S., *A History of Malaysian Architecture,* Singapore; Longman Singapore Publishers, 1990.

WATERSON, ROXANA, *The Living House: An Anthropology of Architecture in South-east Asia,* Singapore: Oxford University Press, 1991.

JOURNALS

ABEL, CHRIS, "Built Source of Malaysian Identity", *Majallah Akitek,* Vol. 3, 1985, pp. 32-40.

ABEL, CHRIS, "Educating Architects in the Art of Using History", *Majallah Akitek,* No. 12, Dec. 1985.

ABEL, CHRIS, "Living in a Hybrid World I: The Evolution of Cultural Identities in Developing Countries", *Design Studies,* July 1982.

ABEL, CHRIS, "Rationality and Meaning in Design", *Design Studies,* Vol. 1, No. 2, Oct. 1979.

ABEL, CHRIS, "Regional Transformations", *Architectural Review,* Nov. 1986, pp. 37-43.

AL-BAKRI, HISHAM, "Towards a New Architecture of Humanism in Urban Design", *Majallah Akitek,* 5th. ed., 1972.

ANBALAGAN, T., "From Colonial Villa to Malaysian Architecture", *Majallah Akitek,* Vol. 1, 1985.

ATKINSON, G. A., "An Introduction to Tropical Building Design", *Architectural Design,* Vol. 23, Oct. 1953, pp. 268-271.

ATKINSON, G. A., "Building in the Tropics", *RIBA Journal,* Vol. 57, June 1950.

ATKINSON, G. A., "Design and Construction in the Tropics", *Housing and Town and Country Planning,* Bulletin 6, United Nations; 1952, pp. 7-20.

ATKINSON, G. A., "Principles of Tropical Design", *Architectural Review,* Vol 128, No. 761, July 1960, pp. 81-83.

BADSHAH, AKHTAR and DALE, JOHN, "Golden Triangle Area Study, KL, Malaysia", *Mimar,* Vol. 19, Jan/March 1986, pp. 68-72.

CAIN, A., "Traditional Cooling System in the Third World", *The Ecologist,* Vol. 6, No. 2, Feb. 1976, pp. 60-64.

CAIN, A., AFSHAR, F. and NORTON, J., "Indigenous Building and the Third World", *Architectural Design,* Vol. 45, No. 4, April 1975, pp. 207-224.

CHAN, SAU LAI, "The Need for a Local Urban Identity", *Majallah Akitek,* No. 3, 1976.

CHEN, CHARLES, "Chinese Architectural Theory", *Architectural Review,* Vol. 102, July 1947, pp. 19-25.

CHEN, CHARLES, "Some Ancient Chinese Concepts of Town and Country", *Town Planning Review,* Vol. 19, Summer, 1947, pp. 160-163.

CHIN, W. Y., "Towards a National Identity in Architecture", *Majallah Akitek,* Vol. 1, 1981, pp. 19-22.

COOPER, JACKIE, "The Making of Malaysia: A Short History", *U.I.A. International Architect,* Issue 6, 1984, pp.

CORREA, CHARLES, "Climate Control", *Architectural Design,* Vol. 39, Aug. 1969, pp. 448-451.

DICKIE, MARTIN, "Bangunan Sultan Abdul Samad, Jalan Raja", *Majallah Akitek,* No. 3 and 4, 1986, pp. 32-36.

DICKIE, MARTIN, "Pre-war Malaysia Colonial House", *Majallah Akitek,* No. 2, 1986, pp. 25-28.

EDKINS, J., "Chinese Architecture", *JNCBRAS,* Vol. XXIV, 1890, pp. 253-288.

EMRICK, M., "Vanishing Kuala Lumpur: The Shophouses", *Majallah Akitek,* No. 2, 1976.

EVERS, HANS-DEITER, "The Culture of Malaysian Urbanisation: The Malay Chinese Conception of Space", *Urban Anthropology,* Vol. 6 (3), 1977, pp. 205-216.

FITCH, J. M. and BRANCH, D. P., "Primitive Architecture and Climate", *Scientific American,* Vol. 203, No. 6, Dec. 1960, pp. 134-144.

GRETCHEN, M., "KL: Regional Seminar on Architectural Identity", *Mimar,* Vol. 9, July-Sept. 1983, pp. 14-15.

GURSTEIN, PENNY, "Traditional Chinese Shophouses of Peninsular Malaysia", *UIA International Architect,* Issue 6, 1984, pp. 22-23.

HAMDI, N. and ROBBINS, E., "3rd. World", *Architectural Review,* Vol. 178, No. 1062, 1985, pp. 11-12.

HASHIM, DAVID MIZAN, "Typology and the Evolution of the Malaysian Mosque," *Majallah Akitek,* Vol. 2, No. 6, Nov./Dec. 1990, pp. 70-82.

HILTON, R. N., "The Basic Malay House", *JMBRAS,* Vol. 29, Pt. 3, Aug. 1956, pp. 134-155.

JAYEWARDENE, SHANTI, "Profile: Bawa: A Contribution to Cultural Regeneration", *Mimar,* Vol. 19, Feb. 1986, pp. 47-49.

KASTURI, HIJJAS, "Traditionalism and Modernism-1", *Majallah Akitek,* No. 2 and 3, 1987, pp. 32-36.

KHALID, RUSLAN, "Nationalism, Architecture and The Crisis of Identity", *Majallah Akitek,* No. 3 and 4, 1986, pp. 54-58.

KOENIGSBERGER, OTTO and others, "Window and Ventilator Openings in Warm and Humid Climates", *Architectural Science Review,* No. 2, 1959, pp. 82-96.

KUBAN, DOGUN, "Modern versus Traditional: A False Conflict?", *Mimar,* No. 9, August 1983, pp. 54-58.

KULTERMANN, UDO, "Architecture in South-east Asia 4: Malaysia", *Mimar,* Vol. 26, Dec. 1987, pp. 64-72.

LAM, TIMOTHY T. F., "Life in the Cities of Tomorrow", *Majallah Akitek,* 6th. ed., 1972.

LEE KWONG YAN, "The Roof-roof House", *Majallah Akitek,* No. 2, 1984, pp. 22-26.

LEMER, ANDREW C., "Malaysian Identity in Architecture", *Majallah Akitek,* No. 3, March 1981.

LIEW SOOK FOON, "Rediscovering the Malaysian Mosque", *South-east Asia Building Materials and Equipment,* March 1987, pp. 43-50.

LIM, C. S., "Abuses of Historical Architecture in Local Environment", *Majallah Akitek,* Vol. 1, 1975.

LIM CHONG KEAT, "Traditionalism and Modernism-2", *Majallah Akitek,* No. 2 and 3, 1987, pp. 37-40.

LIM, JIMMY, "Malaysia's Architecture", *Majallah Akitek,* No. 3, 1975.

LIM, JIMMY, and others, "Strategies for Professional Practice in Asia: Design Directions in Asian Architecture: Special issue - Malaysia" *Habitat Pakistan,* Vol. 1, No. 1, 1986, pp. 7-41.

LOO, KINGTON, "Architectural Concept Which Will Create a Malaysian Atmosphere", *Majallah Akitek,* 2nd. Quarter Issue, 1971, pp. 17-19.

MAHMUD, ZAHARAH BTE. HAJI, "The Period and the Nature of Traditional Settlement in the Malay Peninsula", *JMBRAS,* Vol. 43, Part 2, Dec. 1970, pp. 81-113.

MALAYSIAN INSTITUTE OF ARCHITECTS, "Clubs Now and Then", *Majallah Akitek,* March/April 1989, pp. 4-18.

MALAYSIAN INSTITUTE OF ARCHITECTS, "Design in the Malaysian Context: PAM Annual Discourse on Design", *Majallah Akitek,* No. 1, March 1983, pp. 16-64.

MURRAY, PETER, "Style and Regionalism in Malaysia", *RIBA Journal,* Vol. 91, No. 11, Nov. 1984, pp. 40-45.

NOONE, R. O., "Notes on Kampong, Compound and Houses of The Petani Village", *JMBRAS,* 1948, pp. 124-147.

NOORDIN, S., "Realism and Unreality in the Identity Crisis", *Majallah Akitek,* No. 3, 1982, pp. 56-57.

PALLASMAA, JUHANI, "Tradition and Modernity", *Architectural Review,* Vol. CLXXXIII, No. 1095, May 1988, pp. 27-34.

PARKINSON, C. N., "The Homes of Malaya", *MHJ,* Vol. 2, Dec. 1955, pp. 123-130.

POSENER, J., "House Traditions in Malaya", *Architectural Review,* Oct. 1961, pp. 280-283.

POSENER, J., ""Malaya", *Architectural Review,* No. 128, 1960, pp. 59-65.

PURCELL, VICTOR, "Chinese Settlement in Malacca", *JMBRAS,* Vol. XX, Part 1, 1947, pp. 115-125.

RAJA AHMAD SHAH, R. B. S., "Conservation of a Terengganu Malay Timber House: Istana Tengku Long", *Majallah Akitek,* No. 3 and 4, 1986, pp. 10-12.

RICHARD, J. M., "Profile: Geoffrey Bawa of Sri Lanka", *Mimar,* Vol. 19, Feb. 1986, pp. 45-46.

ROBBINS, EDWARD, "Appropriating the Appropriate", *Architectural Review,* Vol. 178, No. 1062, 1985, pp. 13-18.

SALIYA, YUSWADI, "Notes on Architectural Identity in the Cultural Context", *Mimar,* Vol. 19, Feb. 1986, pp. 32-33.

SHARP, DENNIS, "Transformation of the Traditional", *Building Design,* No. 960, 1989, pp. 22-27.

SHEPPARD, MUBIN, "Traditional Crafts of Malaysia-1: Traditional Malay Buildings and their Architecture", *Majallah Akitek,* No. 3, Sept. 1983, pp. 27-29.

SHEPPARD, MUBIN, "Traditional Crafts of Malaysia-2: How some can be adapted for use in Modern Buildings", *Majallah Akitek,* No. 4, 1983, pp. 14-17.

SHEPPARD, MUBIN, "Traditional Malay House Forms in Terengganu and Kelantan", *JMBRAS,* Vol. 42, Pt. 2, 1969, pp. 1-9.

SHERWIN, DEAN, "Lifestyles and Building Forms: Some Aspects of Local Architecture", *Majallah Akitek,* Vol. 1, 1978, pp. 14-17.

SHERWIN, DEAN, "Malay Roof Forms and Ventilation", *Majallah Akitek,* 1977.

SHERWIN, DEAN, "Malaysian Identity Around Penang", *Majallah Akitek,* No. 4, 1979, pp. 18-23.

SUDIN, PARID WARDI, "The Malay House, Malaysia", *Mimar,* Vol. 2, Nov. 1981, pp. 55-63.

SUDIN, PARID WARDI, "Traditional Malay Houses of Peninsular Malaysia", *UIA International Architect,* Issue 6, 1984, pp. 34-35.

STOCKER, PETER, "Kuala Lumpur Railway Station: An Appraisal", *Majallah Akitek,* No. 3 and 4, 1986, pp. 22-30.

STOCKER, PETER, " The Early Clubs: The Genesis of A Building Type", *Majallah Akitek,* No. 1, 1987, pp. 13-17.

SYED ISMAIL, SYED SOBRI, "In Search for Akitektur Design Rationales", *Majallah Akitek,* (special edition) No. 1, 1984, pp. 4-71.

TAN, L. A. and YEO, K. H., "Old Row Houses of Peninsular Malaysia", *Majallah Akitek,* No. 2, 1976.

TARLING, NICHOLAS, "British Policy in the Malay Peninsula and Archipelago 1824-1871", *JMBRAS,* Vol XXX, Pt. 3, 1957, pp. 9-85.

TAYLOR, BRIAN BRACE, "Demythologising Colonial Architecture, Forms and Models", *Mimar,* Vol. 13, July/Sept 1984, pp. 16-25.

TAYLOR, BRIAN BRACE, "Perspectives and Limits on Regionalism and Architectural Identity", *Mimar,* Vol. 19, Feb. 1986, pp. 19-21.

TAYLOR, BRIAN BRACE, "Transfer and Transformations", *Mimar,* Vol. 32, June 1989.

TOO, ANTHONY, "Churches", *Majallah Akitek,* Vol. 2, No. 6, Nov./Dec. 1990, pp. 89-98.

WAAL, H.B., "New Recommendations for Building in Tropical Climates", *Building and Environment,* Vol. 28, No. 3, 1993, pp. 271-185.

WILKINSON, R. J., "Papers on Malay Customs and Beliefs", *JMBRAS,* Vol. 30, Pt. 4, 1957, pp. 1-87.

WILSON, R. G., "Learning from American Vernacular", *Architectural Review,* Vol. CLXXX, No. 1077, Nov. 1986, pp. 77-84.

WINSTEDT, RICHARD OLOF, "The Malay House", *JMBRAS,* Vol. VII, Pt. 3, 1929, pp. 459.

WURSTER, WILLIAM W., "Row House Vernacular and High Style Monument", *Architectural Record,* Aug. 1958, pp. 141-150.

YEANG, KEN, "Notes for a Critical Vernacular in Contemporary Malaysian Architecture", *UIA International Architect,* Issue 6, 1984, pp. 16-17.

YEANG, KEN and others, "Special Issue: KL Golden Triangle Area Study", *Majallah Akitek,* No. 2, 1985, pp. 12-36.

YEANG, KEN, "The Identity Crisis", *Majallah Akitek,* No. 4, 1979, pp. 15-17.

Abbreviations in Bibliography

1. *JMBRAS* - Journal of the Malayan Branch of the Royal Asiatic Society.
2. *JNCBRAS* - Journal of the North China Branch of the Royal Asiatic Society.
3. *MHJ* - Malayan Historical Journal.

GLOSSARY

Adat - Local custom; common or customary law in general.

Alang - Beam used for supporting the roofs of traditional Malay houses.

Anjung - An entrance porch found in front of Malay houses.

Atap - Roofing thatch. Customarily manufactured from fronds of the nipa palm (*Nipa fruticans*). *Atap* from the bertam palm (*Eugeissona tristis*) are also common but considered of inferior quality.

Atap Meru - A pyramidal roof of a building commonly found in Malacca and the southern states on the west coast of the Malay peninsula.

Atap Senggora - Clay tiles. Traditionally, this roofing material was imported from south of Thailand and was used in many old Malay buildings.

Awan Larat - One of the best known basic designs adopted by wood carvers and metal workers. The meaning of the words may be 'Protracted clouds' (*Awan,* a cloud: *Larat* to drag on, to be protracted.); A popular design in traditional wood carving; A form of coiled and knotted carving, like the morning cloud.

Baji - Wedges used to tighten the mortise and tenon joints of Malay houses.

Bendahara - Chief minister and Treasurer in the old Malay political system.

Bendul - A threshold between inside and outside of a traditional building. Also used externally, normally around the bottom edge of the external walls. Psychologically, it marks the different sections of the house and acts as a boundary.

Buah Butung - A piece of wood measuring 60cm to 100cm, placed at the apex of the roof in houses of Terengganu, Kelantan, Kedah and Johore.

Bumbung - Roof.

Bumbung Limas - A roof that has an inclination, no matter from which direction it is viewed. This includes hipped-roof, hip-gabled roof and pyramidal roof shapes.

Bumbung Limas Bungkus - Hipped roof.

Bumbung Minagkabau - Minangkabau roof. A roof type commonly found in the state of Negeri Sembilan. The roof style is believed to have been originated from the Minangkabau region in Sumatra, Indonesia.

Bumbung Panjang - A long gable roof used in Malay buildings.

Bumbung Potong Belanda - Hip-gabled roof. This roof type is believed to have been copied from the Dutch colonial masters.

Bumbung Potong Perak - Hip-gabled roof. Similar to *Bumbung Potong Belanda*.

Cengal - One of the best types of hardwood. It is used for carvings and the structure of Malay buildings.

Dapur - Kitchen.

Gajah Menyusu - Translates as 'baby elephant sucking its mother', it is the name given to a Malay house that has an extension projecting from the side of the house in similar form but comparatively smaller in scale.

Istana - Palace.

Itik pulang petang - A kind of carving with ducks as a motif containing a moralistic message. This carving is believed to have originated from West Sumatra. Such carvings can be found in Negeri Sembilan.

Jawi - Arabic script.

Kampung - Small cluster of houses within a village or hamlet.

Kasau Betina - Common rafter.

Kasau Jantan - Principal rafter.

Kasau Lintang - Purlin.

Koran - Muslim's bible.

Kuali: A wok; a common kitchen utensil used for cooking.

Laksamana - Senior naval officer; chief warrior or admiral in the old Malay political system.

Lepau - Literally translates as fringe. It is an extension found in front of the main house (*Rumah Ibu*).

Limas Potong Perak - A traditional Malay house roof type which evolved by combining hip and gable roof forms (*hip-gabled roof*). This type of roof is also commonly known as *Potong Belanda* and is believed to have been copied from the roof shape of Dutch houses in Malacca.

Madrasah - A Malay Islamic school.

Mengkuang - Pandanus plant (*pandanus aurantiacus*) used for making mats and other household implements.

Meranti - (*Shorea Albida*) A type of hardwood commonly used in the construction of Malay buildings.

Merbau - (*Intsia Bakeri*) A type of hardwood used in the construction of Malay buildings.

Mukim - Territory sharing a common mosque, usually a group of villages; territorial sub-division for purposes of land revenue and administration.

Nipah - (*Nipa fruticans*) A palm found in swampy areas. Its leaves are used for making thatch roofs.

Pelantar - A raised platform or deck at the rear of the *Rumah Ibu* (normally used as washing area).

Pelapik Tiang - Stone used as footings to the *tiang*, or column.

Penghulu - Head man or administrator of a *kampung*.

Pisang Sesikat - A small lean-to roof usually used to cover steps and minor extensions to a Malay house.

Pola Bingkai - Frame pattern.

Pola Bujang - Single pattern.

Pola Lengkap - Complete pattern.

Pola Pemidang - Screen pattern.

Ruang Selang - An intermediate space between various sections of a traditional Malay house or enclosed walkway connecting two separate structures. Normally between the main house and the kitchen.

Rasuk Panjang - Floor beam.

Rasuk Pendek - Floor joist.

Rumah - House.

Rumah Bujang - A small traditional house commonly found in the East coast of the Malay peninsula. Also known as *rumah tiang enam*.

Rumah Dapur - The kitchen of a traditional Malay house.

Rumah Ibu - Literally mean Mother house. It is the main and largest section of a traditional Malay house utilised as the main activity area.

Rumah Tiang Dua Belas - House with twelve pillars.

Rumah Tiang Enam - House with six pillars.

Rumbia - (*Metroxylon spp.*) A type of palm tree. Its leaves are used for making thatch roofs.

Sarung - A large cloth normally used by the Malays as casual wear and also worn while performing their prayers or taking their bath. (For men it is called *kain pelikat*).

Serambi - A covered balcony; a raised front corridor or entrance porch of Malay buildings (especially houses).

Serambi gantung - The guest area adjacent to the *rumah ibu*. The floor of *serambi gantung* is usually lower than the floor of *rumah ibu*.

Serambi samanaik - The space adjacent to the *rumah ibu*. The floor of *serambi samanaik* is usually level with the floor of *rumah ibu*.

Shahbandar - Harbour superintendent; executive port officer or municipal-cum-port officer.

Silang Gunting - A traditional roof feature normally fitted on top of a gable end.

Sultan - King. The leader of a Malay state.

Surau - A small mosque, also a place for learning the *Koran*.

Tebar Layar - Triangular shape of gable ends in traditional Malay buildings.

Tebuk Separuh - Semi-piercing.

Tebuk Terus - Direct piercing.

Tebuk Timbul - Emboss piercing.

Temenggong - Chief magistrate in the old Malay political system.

Tiang - Timber column or pillar.

Tiang Seri - Central column. Normally it is the first column to be raised in the erection of a Malay building.

Tikar - A straw mat used by the Malay people to cover the floor. It is used traditionally for praying, sitting, eating and sleeping.

Timba - A metal bucket used to fetch water from the well.

Tongkat - A walking stick; an intermediate support of a traditional Malay house.

Tunjuk Langit - King post in a roof truss.

Wakaf - Property donated for religious or community use. An open shed made for local inhabitants (mainly men) to gather in the afternoon to socialize, relax or play checkers.

Yang Di-pertuan Agung - Paramount ruler, or Malaysian head of the nation. A title given to a Malay sultan who serves as the paramount ruler of Malaysia for the period of five years. Other sultans will take turn to be elected.

Yang Di-pertuan Besar - Title of the ruler of Negeri Sembilan.

APPENDICES

A - The Rulers of Malacca

B - The Malaccan System of Leadership

C - The Remaining Examples of Traditional Malay Palaces in the Malay Peninsula

D - The Remaining Examples of Traditional Malay Mosques in the Malay Peninsula

E - Dynasties of China

F - Notable and Historical Chinese Temples and Kongsi Houses in the Malay Peninsula

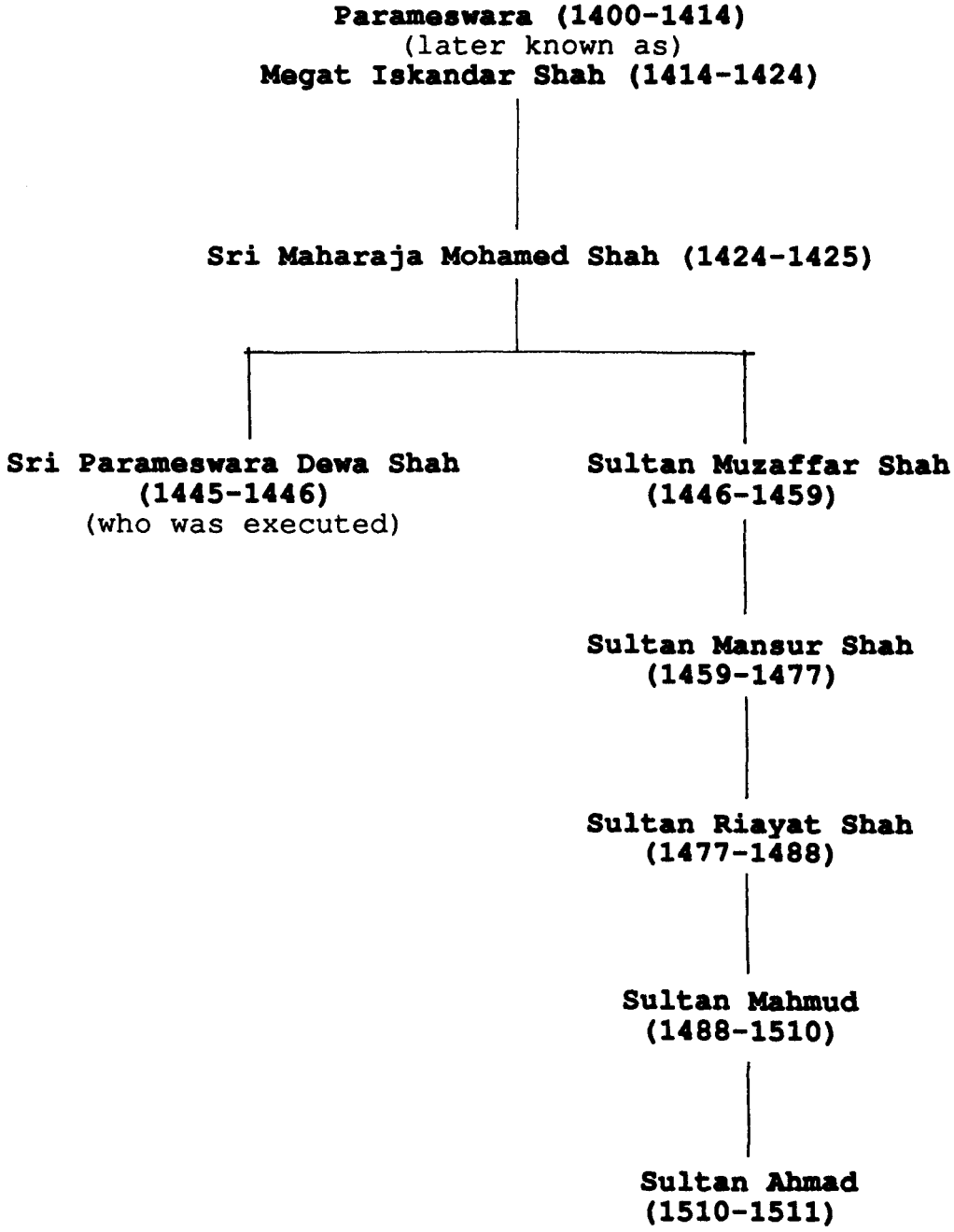
G - Notable and Historical Colonial Buildings in the Malay Peninsula

H - Architectural Styles in Britain

I - Architectural Styles in Malaysia

APPENDIX A

THE RULERS OF MALACCA[1] (1400-1511)



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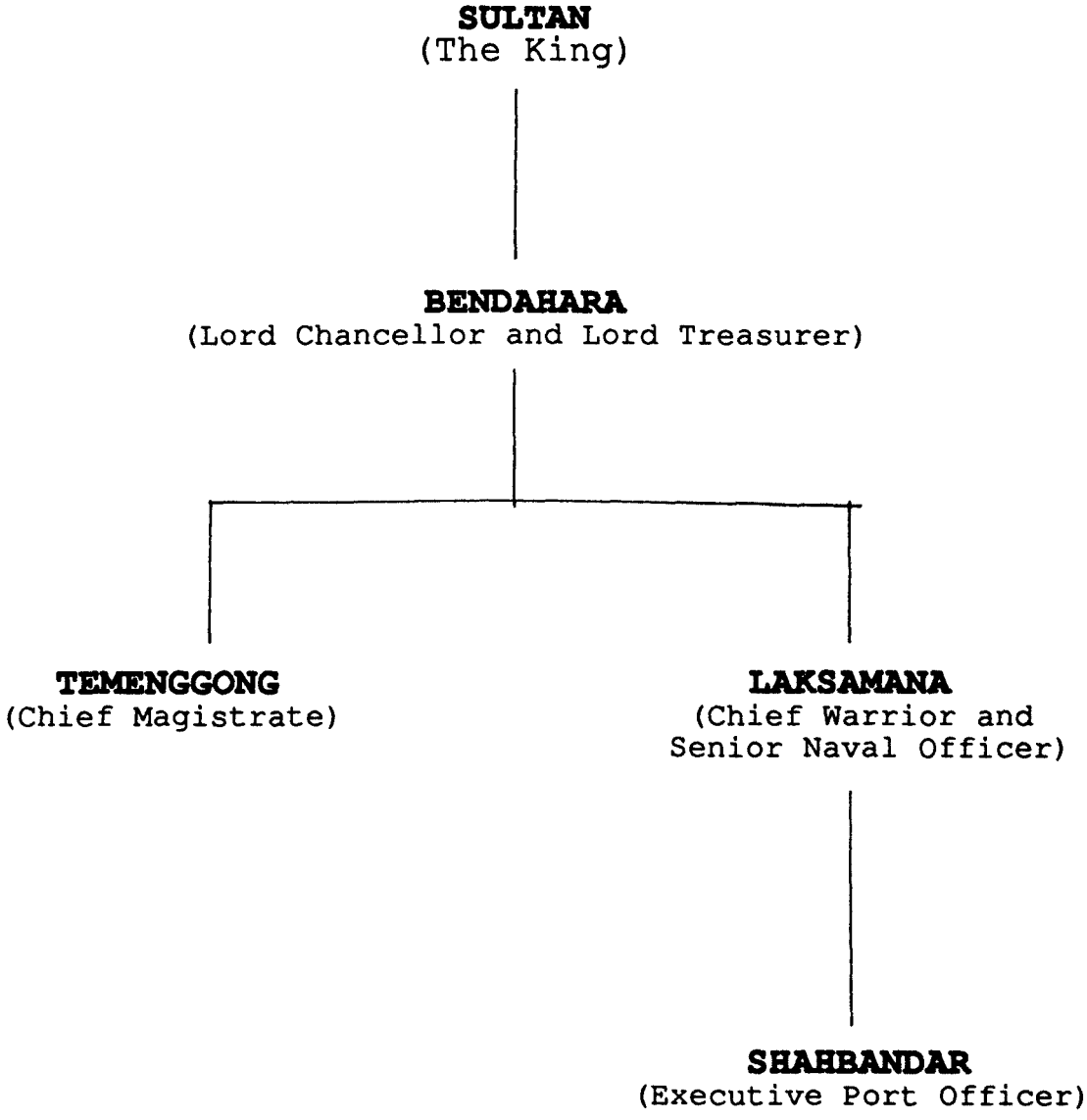
[1] See TURNBULL, CONSTANCE MARY, *A Short History of Malaysia, Singapore and Brunei,* Singapore; Graham Brash, 1981, pp. 24-34.

APPENDIX B

THE MALACCAN SYSTEM OF LEADERSHIP[2]



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2 See HARRISON, BRIAN, *South-east Asia,* 3rd. ed., London; Macmillan, 1967, page 64.

APPENDIX C

THE REMAINING EXAMPLES OF TRADITIONAL MALAY PALACES IN THE MALAY PENINSULA[3]

No.	Name of Palace	Location	Year Built
1.	Istana Balai Besar	Kota Bharu, Kelantan	1844
2.	Istana Seri Akar	Kota Bharu, Kelantan	
3.	Istana Jahar (also known as Istana Raja Bendahara)	Kota Bharu, Kelantan	1885
4.	Istana Tengku Besar Indera Di Raja	Kota Bharu, Kelantan	
5.	Istana Tengku Nik (also known as Istana Tengku Anjang Zahab)	Museum site, Kuala Terengganu	1888
6.	Istana Tengku Long	Museum site, Kuala Terengganu	1879
9.	Istana Raja Besut	Besut, Terengganu	
8.	Istana Satu	Museum site, Kuala Lumpur	
9.	Istana Seri Menanti	Negeri Sembilan	1908
9.	Istana Ampang Tinggi	Seremban, Negeri Sembilan	1861
10.	Istana Kenangan (also known as Istana Lembah and Istana Kuning)	Kuala Kangsar, Perak	1926
12.	Istana Baiturrahmah	Kuala Kangsar, Perak	
13.	Balai Besar	Alor Setar, Kedah	1898
14.	Istana Mahkota Kelang	Selangor	

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[3] See DUMARCAY, JACQUES, *The Palace of South-east Asia, Architecture and Customs,* Singapore; Oxford University press, 1991 and WAN MUSTAFA, WAN NOR ARJUNA, *Kajian Ragam Corak Terhadap Lima Buah Istana Lama Di Kelantan dan Terengganu, Semenanjung Malaysia,* University Teknologi Malaysia; (unpublished) Sessi 1989/1990, NASIR, ABDUL HALIM, *Traditional Malay Wood Carving,* Kuala Lumpur; Dewan Bahasa dan Pustaka, 1987.

APPENDIX D

THE REMAINING EXAMPLES OF TRADITIONAL MOSQUES IN THE MALAY PENINSULA[4]

No.	Name of Mosque	Location	Year Built
1.	Masjid Kampung Laut	Nilam Puri, Kelantan	1750
2.	Masjid Langgar	Kota Bharu, Kelantan	1871
3.	Masjid Tok Tuan	Kemaman, Terengganu	1895
4.	Masjid Kampung Hulu	Malacca	1728
5.	Masjid Tanjung Keling	Malacca	(1728) 1748
6.	Masjid Terengkera	Malacca	1728
7.	Masjid Tangga Batu	Malacca	
8.	Masjid Pengkalan Rama	Malacca	
9.	Masjid Peringgit	Malacca	
10.	Masjid Paloh	Ipoh	1912
11.	Masjid Kampung Tinggi[5]	Bagan Serai, Perak	1897
12.	Masjid Jamek	Muar, Johore	
13.	Masjid Abu Bakar	Johore Bahru, Johore	

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[4] See HASHIM, DAVID MIZAN, "Typology and the Evolution of the Malaysian Mosque", *Majallah Akitek,* Vol. 2, No. 6, Nov./Dec. 1990. pp. 70-82 and LIEW SOOK FOON, "Rediscovering the Malaysian Mosque", *South-east Asia Building Materials and Equipment,* March 1987, pp. 43-50.

[5] Masjid Kampung Tinggi was recently demolished.

APPENDIX E

DYNASTIES OF CHINA[6]	
Shang Dynasty	1766-1122 B.C.
Chou Dynasty (Feudal Period)	1122-221 B.C.
Ch'in Dynasty	221-206 B.C.
Han Dynasty	206 B.C. - 221 A.D.
Three Kingdoms	221-265
Tsin Dynasty	265-316
Northern and Southern Empire	316-589
Sui Dynasty	589-618
T'ang Dynasty	618-907
Five Dynasty Period	907-960
Sung Dynasty	960-1127
Kin and Southern Sung Dynasties	1127-1280
Yuan (Mongol Dynasty)	1280-1368
Ming Dynasty	1368-1644
Ch'ing (Manchu) Dynasty	1644-1911

6 FITZGREALD, C. P., *China,* Cresset Press, 1942 quoted in RYAN, NEIL JOSEPH, *The Cultural Heritage of Malaya,* 2nd., ed., Kuala Lumpur; Longman Malaysia, 1971, page 87, also see list by MACFARGUHAR, RODERICK, *The Forbidden City,* United Kingdom; Reader's Digest, 1972, page 20.

APPENDIX F

NOTABLE AND HISTORICAL CHINESE TEMPLES AND "KONGSI" HOUSES IN THE MALAY PENINSULA[7]

No.	Building Name	Location	Year Built
1.	Cheng Hoon Teng Temple	Malacca	
2.	Kwan Yin Temple	Kuala Lumpur	1800
3.	Seah Yeah Temple	Kuala Lumpur	
4.	Khoon Yam Temple	Kuala Lumpur	1898
5.	Sze Ya Temple	Kuala Lumpur	1883
6.	Chan See Shu Yuen Temple	Kuala Lumpur	1906
7.	Snake Temple	Penang	
8.	Bat Temple	Penang	
9.	Kek Lok Si Temple	Penang	1904
10.	Khoo Kongsi	Penang	1901
11.	Bagan Jermal Temple	Penang	
12.	Kuan Yin Temple	Penang	
13.	Buddhist Association	Penang	1920s
14.	Yap Temple	Penang	1928
15.	Teoh Kongsi	Penang	1931

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[7] Compiled from various sources; MALAYSIAN INSTITUTE OF ARCHITECTS, *Guide to Kuala Lumpur Notable Buildings,* Kuala Lumpur; Pertubuhan Akitek Malaysia, 1976, KOHL, DAVID G., *Chinese Architecture in the Straits Settlements and Western Malaya,* Kuala Lumpur; Heinemann, 1984.

APPENDIX G

NOTABLE AND HISTORICAL COLONIAL BUILDINGS IN THE MALAY PENINSULA[8]

Name of Building	Location	Year Built
i. Administative Offices		
Anglo-Oriental Building	Jalan Tangsi, Kuala Lumpur	1936
City Hall	Jalan Raja, K. Lumpur	1896
Custom and Excise Department	Georgetown, Penang	1907
District Council	Klang, Selangor	1910
District Office	Taiping, Perak	1879
General Post Office	Jalan Raja, K. Lumpur	1896
Ipoh Municipal Building	Ipoh, Perak	
Information Department	Jalan Tun Perak, K. L.	1909
Immigration Department	Georgetown, Penang	1900
Malayan Railway (KTM) Headquarters	Jalan Sultan Hishamuddin, Kuala Lumpur	1917
Municipal Council Office	Georgetown, Penang	1879
Old Town Hall	Georgetown, Penang	1900-1903
Public Works Department	Jalan Sultan Hishamuddin, Kuala Lumpur	1896
Sultan Abdul Samad Building	Jalan Raja, Kuala Lumpur	1897
State Religious Department	Georgetown, Penang	1884
Sultan Ibrahim Building	Johore Bahru, Johore	1912
Negeri Sembilan State Secretariat Building	Seremban, Negeri Sembilan	1912
Perlis State Secretariat Building	Kangar, Perlis	
ii. Railway Stations		
Ipoh Railway Station	Ipoh, Perak	1917
Johore Bahru Railway Station	Johore Bahru, Johore	1920s
Kuala Lumpur Railway Station	Jalan Sultan Hishamuddin, Kuala Lumpur	1911
Penang Railway Building	Georgetown, Penang	1907
iii. Schools		
Anglo-Chinese School	Ipoh, Perak	1914
Convent of The Holy Infant Jesus	Jalan Bukit Nanas, K. L.	1909
High School	Muar, Johore	1915

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[8] Compiled from various sources: FERMOR, ROBERT-HESKETH (ed.), *Architecture of the British Empire,* London; Weidenfeld and Nicolson, 1986; MALAYSIAN INSTITUTE OF ARCHITECTS, *Guide to Kuala Lumpur Notable Buildings, op cit.;* VLATSEAS, S., *op. cit.;* TOO, ANTHONY, "Churches", *Majallah Akitek,* Vol. 2, No. 6, Nov/Dec. 1990, pp. 89-98.

King Edward VII's School	Taiping, Perak	1905
King's George V's School	Seremban, Negeri Sembilan	1928
Malay College	Kuala Kangsar, Perak	1905
Methodist Boy's School	Kuala Lumpur	1898
Penang Free School	Georgetown, Penang	1916
St. George's School	Taiping, Perak	1915
St. John Institution	Jalan Bukit Nanas, K. L.	1907
St. Michael's School	Ipoh, Perak	1912
Sultan Idris Teaching College	Tanjung Malim, Perak	1922
Victoria Institution	Jalan Shaw, Kuala Lumpur	1929

iv. Banks

Overseas Chinese Banking Corporation	Jalan Tun Perak, K.L.	1926-27
Standard Chartered Bank	Georgetown, Penang	1925

v. Courts

Court House	Batu Gajah, Perak	1892
High Court	Jalan Raja, Kuala Lumpur	1909
High Court	Georgetown, Penang	1904

vi. Hotels

Eastern Hotel	Jalan Ampang, K. Lumpur	1915
E & O Hotel	Georgetown, Penang	1884
Majestic Hotel (now National Art Gallery)	Jalan Sultan Hishamuddin, Kuala Lumpur	1932
Seri Mutiara Hotel	Georgetown, Penang	1890
Coliseum Theatre, Hotel and Restaurant	Jalan Tuanku Abdul Rahman, Kuala Lumpur	1920

vii. Museums

Perak Museum	Taiping, Perak	1883

viii. Monuments

Birch Memorial	Perak	1909
Independence Memorial	Malacca	1911
Victoria Tower	Georgetown, Penang	1897

ix. Forts

A Farmosa	Malacca	1511
Fort Cornwallis	Georgetown, Penang	1808

x. Churches

Cathedral of the Assumption	Georgetown, Penang	1860
Christ Church	Malacca	1741
Church of Holy Rosary	Jalan Bricksfield, K.L.	1903
Lady of Sacred Heart Church	Taiping, Perak	1883
St. Andrew's Church	Kuala Lumpur	1920
St. Anthony's Church	Jalan Robertson, K.L.	1911
St. Francis Xavier's Church	Malacca	1849
St. George's Church (St. George the Martyr)	Georgetown, Penang	1818

St. John's Cathedral	Kuala Lumpur	1955
St. John's Church	Ipoh, Perak	1910
St. Mary's Anglican Cathedral (Church of St. Mary The Virgin)	Jalan Raja, Kuala Lumpur	1894
St. Paul's Church (Church of Our Lady of the Annuciation)	Malacca	1566
Wesley's Church	Ipoh, Perak	1896

xi. Mosques

Masjid Abu Bakar	Johore Bahru, Johore	1892
Masjid Jamek	Jalan Tun Perak, K. Lumpur	1909
Masjid Jamek	Muar, Johore	1925

xii. Temples

Chan See Shu Yuen Temple	Jalan Petaling, K. Lumpur	1906
Khoon Yam Temple (Wai Chan Kung)	Jalan Birch, Kuala Lumpur	1898
Khoon Yam Temple	Jalan Ampang, K. Lumpur	1880
Sasana Abhiwurdhi Wardhana Society	Jalan Berhala, K. Lumpur	1895
Sze Ya Temple	Leboh Pudu, Kuala Lumpur	1883

xiii. Clubhouses

Malacca Club	Malacca	1911
Selangor Club	Jalan Raja, K. Lumpur	1890,1910
Selangor Chinese Recreation Club	Jalan Robertson, K. Lumpur	1929

ix. Palaces

Istana Tetamu	Pesiaran Swettenham, Kuala Lumpur	1900
Istana Besar (Sultan Abu Bakar's palace)	Johore Bahru	1866
Istana Sri Menanti	Seremban, Negeri Sembilan	
Istana Maziah	Kuala Terengganu	1895
Istana Kedah (now Royal Museum of Kedah)	Kedah	1800s

x. Villas/Mansions/Houses

Bok Residence (now Le Coq d'or Restaurant)	Jalan Ampang, K. Lumpur	1929
Chan Cheng Siew's House (now Baba-Nyonya Heritage Museum)	Malacca	1896
Chan Wing's Residence (now National Palace)	Jalan Istana, K. Lumpur	1928
Carcosa (now Seri Negara Hotel)	Kuala Lumpur	1897
Dato Jaafar Residence	Johore Bahru, Johore	1893
Eu Tong Sen Residence	Jalan Ampang, K. Lumpur	1935
Loke Yew Residence	Jalan Medan Tuanku, K. L.	1862
Loke Yew's House (now PAM Building Centre)	Jalan Tangsi, K. Lumpur	1900
Hatter's Castle (Residence of John Carey)	Carey Island, Selangor	1910

APPENDIX H

ARCHITECTURAL STYLES IN BRITAIN[9]

No.	Style	Period
1.	Roman	43-410 A.D.
2.	Anglo-Saxon	650-1066
3.	Norman (Romanesque)	1045-1180
4.	Early English (Gothic)	1175-1250
5.	Decorated (Gothic)	1290s-1375
6.	Perpendicular (late Gothic)	1350-1630
7.	Tudor	1485-1558
8.	Elizabethan	1558-1618
9.	Jacobean	1618-25
10.	Stuart	1618-90s
11.	Baroque	1675-1725
12.	Queen Anne	1702-14
13.	Georgian	1714-1810
14.	Palladian	1715-50
15.	Gothic Revival	1750-1900s
16.	Neo-clasical	1750s-1830s
17.	Regency	1810-30
18.	Greek Revival	1819-40s
19.	Victorian	1830s-1900
20.	Arts and Crafts	1880s-1914
21.	Art Nouveau	1890s-1920s
22.	Modern (Functional)	1920s-70s
23.	Post Modern	1980s-

[9] Based on a timechart by WHITE, ANTONY and ROBERTSON, BRUCE, *Architecture and Ornament: A Visual Guide,* London; Studio Vista, 1990, pp. 97-101.

APPENDIX I

ARCHITECTURAL STYLES IN MALAYSIA[10]

Anglo-Indian	-Palladian building practices and motifs as modified by the British in India in the 17th and 18th centuries, typified by high ceilings, Neo-classical ornamentation and white stucco finish on exterior and interior walls.
Art-Deco	-A decorative style of design widely used in the 1920's and 1930's and exhibited on some of the facades of Malaysian shophouses.
Baroque	-An architectural style characterized by highly elaborated ornamentation derived from European art. It was popular in Europe in 17th and 18th centuries (1600-1750 AD).
Chinese Baroque	-The Chinese version of the Baroque period with excessive ornamentation of a symbolic nature. It shares with the European Baroque period a vital interest in the dramatic manipulation of mass, rhythm, space and silhouette in architectural composition. In Malaysia, the style is reflected in temples, Kongsi houses, Chinese mansions and terraced houses.
Classicism	-A style inspired by ancient Greece and Rome, and also by the classical trends during the Italian Renaissance. The five Orders of architecture are a characteristic feature.
Compradoric	-Hybrid architectural style of Europeanized areas of China, combining western building forms, verandahs, neo-classical ornament with Chinese roofing, building materials and construction techniques.
Eclectic	-In architectural terms, a style which is derived from borrowing a selection of elements from other styles. In Malaysia this is very prevalent in most of the early urban architecture (especially in the Straits Settlements).
Edwardian	-Architecture of the reign of King Edward VII of England (1901-1910).

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[10] Based on the glossary of architectural styles in HERITAGE OF MALAYSIAN TRUST, *Malaysian Architectural Heritage Survey: A Handbook*, Kuala Lumpur; Badan Warisan Malaysia (unpublished), 1985, pp. 27-30.

Euro-Chinese -The architecture of Chinese-European villas and mansions in Malaya with Renaissance, Baroque or Palladian influences.

Euro-Islamic -The architecture of most public buildings in Kuala Lumpur built the around 1890s to 1920s. Euro-Islamic is a combination of European and Islamic architectural styles and originates from British colonial architecture in India. Also known as Indo-Saracenic.

Fukien -Style of roof-top ornamentation originating from the southern part of Fukien province in China, utilizing a mosaic of broken ceramic pieces over flat panels, ridges and sculptured forms. Also known as Minnan style.

Georgian -Characteristic of the reign of the four Georges who ruled Great Britain from 1714-1830. Distinguished by the Palladian mode of classical architectural motifs in elevation and plain interior decoration.

Gothic -The style of pointed Mediaeval architecture which developed in Western Europe between the 13th and 15th centuries and was succeeded by the classical forms of the Renaissance.

Gothic Revival -A movement which originated in the late 18th century with the intention of reviving the forms of Gothic architecture.

Imperial -Northern or National style of Chinese architecture, distinguished by the use of blue or yellow colours to differentiate Imperial structures from others. See Northern style.

Indo-Saracenic -An architectural style with Islamic motifs such as onion-shaped domes, minarets and pointed arches on structures basically European in function, such as the Railway Station and Sultan Abdul Samad building in Kuala Lumpur. See Euro-Islamic.

International -Architectural style of 20th century characterized by asymmetrical composition, cubist facades, large windows, an absence of mouldings and the use of structural steel and concrete structures.

Minangkabau -Style of architecture originating with the indigenous people of central West Sumatra. Characterized by a curved ridge used for ventilation and a distinct structural system used on their wooden buildings.

Minnan -See Fukien.

Neo-Classicism -The last phase of European Classicism of the late 18th and early 19th centuries, characterized by monumental appearance, a sparing use of ornaments and a strict use of the Classical Orders. It was popular throughout the 19th century in Europe, America and European colonies in Asia and Africa, strongly influencing the Anglo-Indian style.

Northern -Chinese architecture of Peking and the Northern regions, typified by austerity, double roofs and large solid plinths or foundations.

Palladian -Architectural style strictly using Roman forms as set forth in the publications of the Italian architect Andrea Palladio (1518-1580). The Renaissance motifs imitated ancient Roman architecture with regard to Classical principles.

Regency -Characteristic style of furniture and architecture prevalent during the regency of George IV of Great Britain from 1811-1820. Typified by an eclectic combination of influences from European and Asian sources.

Renaissance -Style of the European 14th to 16th centuries, employing motifs from ancient Greek and Roman architecture, notably the Greek Doric, Ionic and Corinthian Orders, Tuscan and Roman styles and the round arch, dome and vault.

Revival -Romantically inspired styles of building design and ornament of the 18th and 19th centuries, including Neo-Gothic, Neo-Classic and Euro-Islamic styles.

Rococo -The term applied to a type of late Renaissance ornament characterized by rock-like forms, scrolls and shells prevalent in France in the final phase of the Baroque period around the middle of the 18th century.

Romantic	-Any architectural style which duplicates the motifs of a bygone or geographically distant culture; specifically refers to 19th century styles emulating Gothic cathedrals, Greek temples, English cottages and Romanesque castles.
Saracenic	-See Euro-Islamic and Indo-Saracenic.
Straits-Eclectic	-A term used to describe the eclectic blend of architectural elements found on the early buildings in Malaya, primarily in the Straits Settlements (Malacca, Penang and Singapore). The mix of Chinese, Malay and European structural systems and decoration created a style unique to this region.
Sino-Malay-Palladian	-Architectural style of the 19th century homes in Malaya representing a combination of influences - Chinese roofing over a Palladian elevation with the structure raised above the ground like the traditional Malay house.
Tudor	-Characteristic of the architectural style popular from the reign of the English monarch Henry VII (1485) to that of Elizabeth I (1603), having the typical features of large exposed wooden beams in a half-timbered wall.
Victorian	-A style of architecture which was revivalist and eclectic and was produced in the 19th century in Great Britain and named after the reign of Queen Victoria (1837-1901).